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Kristia Kristia

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SUSTAINABLE FOOD CONSUMPTION OF GENERATION Z IN INDONESIA

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DECLARATION

I undersigned Kristia Kristia, date of birth: 11 October 1990 declare under penalty of perjury and certify with my signature that the dissertation I submitted in order to obtain doctoral (PhD) degree is entirely my own work.

Furthermore, I declared the following:

- I examined the Code of the Károly Ihrig Doctoral School of Management and Business Administration and I acknowledge the points laid down in the code as mandatory;
- I handled the technical literature sources used in my dissertation fairly and I conformed to the provisions and stipulations related to the dissertation;
- I indicated the original source of other authors' unpublished thoughts and data in the references section in a complete and correct way in consideration of the prevailing copyright protection rules;
- No dissertation which is fully or partly identical to the present dissertation was submitted to any other university or doctoral school for the purpose of obtaining a PhD degree.

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PREFACE

Indonesia faces a pressing challenge, where high levels of food waste coexist with persistent nutritional insecurity. Understanding how young consumers decide what to eat, what to value, and how to manage food waste is therefore of both theoretical and practical significance. This dissertation addresses the role of Generation Z of Indonesia in shaping sustainable food consumption, a group that represents the largest consumer cohort in the country and whose behaviours are critical for advancing the United Nations Sustainable Development Goal 12 on responsible consumption.

Theoretically, the dissertation advances the study of consumer behaviour in three ways. First, this dissertation applies Item Response Theory (IRT) to validate the indicators of food motives, sustainable food choice, and food waste management among Generation Z of Indonesia. Compared with Classical Test Theory, IRT offers more precise evidence by identifying discriminant parameters and difficulty thresholds. These results make it possible to identify which indicators are broadly accepted even among respondents with low latent motives or behaviours, and which indicators are endorsed only by those with higher latent motives, requiring stronger underlying dispositions to be activated. Second, it integrates the Value-Attitude-Behaviour (VAB) and Stimulus-Organism-Response (SOR) frameworks to explain how sustainability values as a higher-order construct, together with exposure to food influencers, shape traditional food consumption through both utilitarian and hedonic attitudes. Third, it expands the Theory of Planned Behaviour (TPB) in the context of digital food environments by incorporating price promotion, price consciousness, knowledge, subjective norm, and perceived behavioural control, clarifying how these factors interact to influence sustainable food waste behaviour.

Practically, the dissertation provides guidance for designing interventions that are both realistic and effective in the Indonesian context. The segmentation of Generation Z of Indonesia into distinct clusters shows that interventions should be differentiated. Evidence that sustainability values influence traditional food consumption suggests that promoting local foods should emphasise their economic and social contributions, supported by food influencers whose messages align with utilitarian reasoning. In the context of food waste, price promotions delivered through food delivery applications do not shift behaviour directly. Their contribution becomes positive when users are more price conscious and feel able to portion, store, and reuse food, reflecting mediation through price consciousness and perceived behavioural control. Subjective norms shape behaviour through a separate route, both directly and via attitudes. Practical interventions should therefore pair promotions with digital nudges that strengthen

price-conscious choices, education and tools that build perceived behavioural control, and norm-based campaigns that mobilise family and peer expectations. Taken together, the dissertation offers both methodological tools and applied insights that support more effective interventions for shaping sustainable consumption among Indonesian youth.

1. TOPIC AND OBJECTIVE

1.1. Introduction of the Topics

Indonesia is experiencing a profound paradox in pursuing food sustainability; while the level of food waste from consumption is alarmingly high (14 million tonnes per year), the highest in Southeast Asia (United Nations Environment Programme, 2024); on the other hand, a substantial portion of the Indonesian population is still struggling to access nutritious food due to the high cost of food and even the healthy diet basket price in Indonesia is the most expensive (US$ 4.8 per day per person), compared to other Southeast Asian countries (Balagamwala et al., 2024; Herforth et al., 2024). The concurrent challenges of excessive food waste and pervasive nutritional insecurity underscore the urgent need for a consumption transformation among Indonesians, reinforced by strategic action from the food industry-related producers, marketers and the government (Wardhani et al., 2023). This imperative is consistent with United Nations Sustainable Development Goal No. 12, which advocates sustainable consumption and production and SDG 2 to create access to affordable, nutritious food for all (Kristia et al., 2023a). Within the transformation process, understanding consumption behaviour, digital engagement, and the various factors that motivate Generation Z to make sustainable food consumption decisions is paramount since this generation of digital natives represents the most significant generational cohort in Indonesia, constituting nearly 27% of the total population, and the driver of national consumption (BPS - Statistics Indonesia, 2025; Damanik et al., 2024; Espejo et al., 2025).

This dissertation comprehensively discusses sustainable food consumption and food waste behaviour among Generation Z, the nation's most significant demographic cohort and a national consumption driver. Three interrelated studies have been conducted to advance empirical, methodological, and theoretical discourse on the topic of sustainable consumption namely: 1) validation of food consumption motives and sustainable behaviour constructs using Item Response Theory, and motives-based segmentation on Generation Z of Indonesia; 2) the role of sustainability values as a higher order construct and food influencer-driven on traditional food purchase intention; 3) the influence of price promotions offered by food delivery applications, knowledge, price consciousness, and the TPB on sustainable food waste management behaviour.

1.2. Objectives and Scope of the Studies

Evidence from different national contexts indicates that Generation Z’s food choices are shaped by taste and price considerations, a growing attention to health and sustainability, and

the influence of social media food trends (Espejo et al., 2025; Halicka et al., 2025). Eventhough belonging to the same generational cohort, the daily food consumption drivers among Generation Z may varied and have different effects on their sustainable food choice and food waste management behaviour (Jakubowska et al., 2024). Some segments that prioritise health tend to be more receptive to adopting sustainable eating habits, such as consuming organic local produce that is beneficial to health (Munaqib et al., 2025). However, in some segments, such as young respondents living in Jakarta (the former capital city of Indonesia), even though they prioritise health and sustainability, when other competing motives are stronger, such as price consciousness and convenience, they may be resistant to consuming environmentally friendly foods that are relatively pricey and limited in availability (Agustina et al., 2024; Purwanto et al., 2023; Ulita et al., 2024). Ecological motives independently may have a firm influence on consumer dietary choices, particularly among those with solid purchasing power and knowledge, as found in research conducted in the United States and Canada, but these motives are less effective in driving actual purchasing behaviour among consumers with consumption barriers (Dlamini et al., 2024; Makowska et al., 2024; Mollaei et al., 2023; Su et al., 2019). Food choices and the food disposal aspects of a person's diet can be influenced by various other motivations, including sensory preferences, the desire to follow the behaviour of those around them, social media trends, or social welfare concerns that are more altruistic in nature. This heterogeneity emphasised the necessity to conduct a segmentation-based approach study, especially in the context of understanding what consumption motivations shape sustainable food choices and food waste management behaviour in Indonesian youth. Study 1 of this dissertation addresses the absence of segmentation studies on Generation Z of Indonesia by examining seven food consumption motives (sensory appeal, convenience, health concern, price consciousness, ecological concern, social-welfare concern, and social adherence) within the context of sustainable food choices and food waste management. Using Item Response Theory (IRT), the study not only evaluates the discriminatory power of each indicator but also identifies which motives and sustainable behaviours are more easily endorsed versus which require higher engagement among Indonesian youth.

Traditional foods offer a potential entry point for the broader Generation Z community to adopt sustainable diets, due to their affordability and widespread availability (Hough & Contarini, 2023; Ugoala, 2025). In response to these prospects, the Indonesian government has been promoting the consumption of traditional foods made from local agricultural ingredients to achieve the sustainability goals and food security. Previous studies have linked traditional food consumption to different forms of sustainability value. These sustainability values include its economic role for local producers, its contribution to cultural identity, and ecological benefits

that come from short supply chains (Acevedo-Ortiz et al., 2024; Ullah et al., 2024). Yet most of these studies discuss each aspect separately, without examining how they work together as part of a broader sustainability construct.

In the digital era, Generation Z of Indonesia is surrounded by a wide range of food options, such as modern fast foods, which are convenient and favourable with young people's tastes, often compete with and sometimes displace traditional dishes. In this context, food influencers play a growing role in making less popular traditional food become more appealing and reaching younger audiences (Populix, 2023). One recent example of a traditional food that was initially forgotten by young people but has become popular again and is now selling well among young people is bika ambon (a traditional cake from North Sumatra), which was reviewed by food influencers (Harefa et al., 2025). However, limited empirical work addresses how sustainability values and influencer promotion jointly shape intention in traditional food consumption especially in the Indonesian context. Moreover, the psychological mechanisms through which these drivers operate, particularly the roles of hedonic and utilitarian attitudes, remain under-studied. Study 2 of this dissertation examines how Generation Z of Indonesia evaluates traditional foods through the lens of sustainability values, conceptualised as a higher-order construct with economic, socio-cultural, and ecological dimensions.

Apart from the culinary trends on social media, food delivery application services are another external stimulus that can shape young Indonesians' consumption patterns, especially among active gadget users. Food delivery applications have become a dominant platform of the Indonesian food environment, with transaction values exceeding US$4.5 billion annually, the largest in Southeast Asia. Generation Z of Indonesia segment is one of the most frequent users of ShopeeFood, GoFood, and GrabFood delivery application (typically spending US$3–7 per order) (Rakuten Insight, 2023c). The form of price promotions that are favourites of young food delivery application service users varies widely, ranging from discounts, flash sales, food bundling packages, and free delivery services (Horta et al., 2022; Varughese & Thomas, 2024). Exposure to competitive pricing is worrisome as it may encourage consumers to buy excessive meals and waste more food (Watt et al., 2023). However, emerging studies suggest a different reality: Consumers who buy food by taking advantage of the benefits of price promotions, especially those who are price-sensitive consumers, rather than being wasteful, actually manage their food consumption well and avoid wasting food because they avoid financial losses (Tsalis et al., 2024). The contradiction in the research findings emphasises the need for empirical studies to study the factors that can encourage young Indonesian consumers to engage in sustainable food waste behaviour, especially in light of the country's severe food waste

situations and the proliferation of food discount promotions offered by food delivery application services.

The main objective of this dissertation is to investigate the multidimensional factors that can drive Generation Z of Indonesia to engage in sustainable food consumption and food waste reduction, addressing empirical, theoretical, and methodological gaps in research related to consumer behaviour. This dissertation pursues eight primary research objectives (RO) through three complementary studies: Study 1 aims to achieve RO1, RO2; Study 2 aims to achieve RO3, RO4, and RO5; and Study 3 aims to achieve RO6, RO7, and RO8.

RO1: To assess the ability of food consumption motives and sustainable food behaviour indicators to differentiate among Generation Z of Indonesia, identifying those indicators that tend not to be strongly rejected at lower levels of motivation and behaviour and those that require higher engagement at upper levels of the latent traits.

RO2: To segment Generation Z of Indonesia into distinct consumer groups according to their food consumption motives, and to examine how these motives shape sustainable food choices and food waste management behaviours within and across the identified groups.

RO3: To prove that the sustainability values of traditional food consumption indeed consist of economic, socio-cultural, and ecological value dimensions, which drive Generation Z's traditional Indonesian food purchase intention.

RO4: To prove that the content of traditional food reviews by food influencers can shape Generation Z's purchase intention in consuming traditional Indonesian food.

RO5: To clarify the pathways through which each internal sustainability value and stimulus exposure to content from food influencers as external stimulus translate into an intention in consuming traditional Indonesian food among young consumers, whether primarily driven by hedonic or utilitarian attitudes.

RO6: To clarify how the price promotion offered by food delivery service platforms can influence the level of price consciousness, perceived behavioural control, and food waste reduction management among Generation Z of Indonesia.

RO7: To prove how food waste management knowledge can influence perceived behavioural control, attitude, and intention in implementing more sustainable food waste management behaviour within the Theory of Planned Behaviour framework.

RO8: To clarify how subjective norms influence attitudes and sustainable food waste behaviour among Generation Z Indonesia.

All three studies in this dissertation focus on Generation Z of Indonesia, namely those born between 1997 and 2006 and are Indonesian citizens. However, the geographical scope and sample representation are tailored to the characteristics of the consumption behaviour studied in each study. Study 1 attempts to reflect the main regional distribution in Indonesia, with samples used from the regions of Java, Sumatra, Kalimantan, Bali & Nusa Tenggara, Sulawesi and Papua so that the results are regionally representative of the Generation Z of Indonesia population nationally. Study 2 on the intention in consuming traditional food involved respondents from the islands of Java, Sumatra, and Kalimantan, areas with strong local food traditions and where young people have better digital accessibility than in other regions of Indonesia, ensuring that respondents have experience of watching the promotional content of food influencers, a central theme of this study. Study 3, which discusses food delivery promotion and the waste management behaviour of young people, focuses on responses from areas with a high penetration rate and active users of food delivery applications, such as major cities on the island of Java, namely Jakarta, Bandung (West Java), Yogyakarta and Central Java, and Surabaya (East Java). The conceptual framework of the three studies in this dissertation is shown in Figure 1.

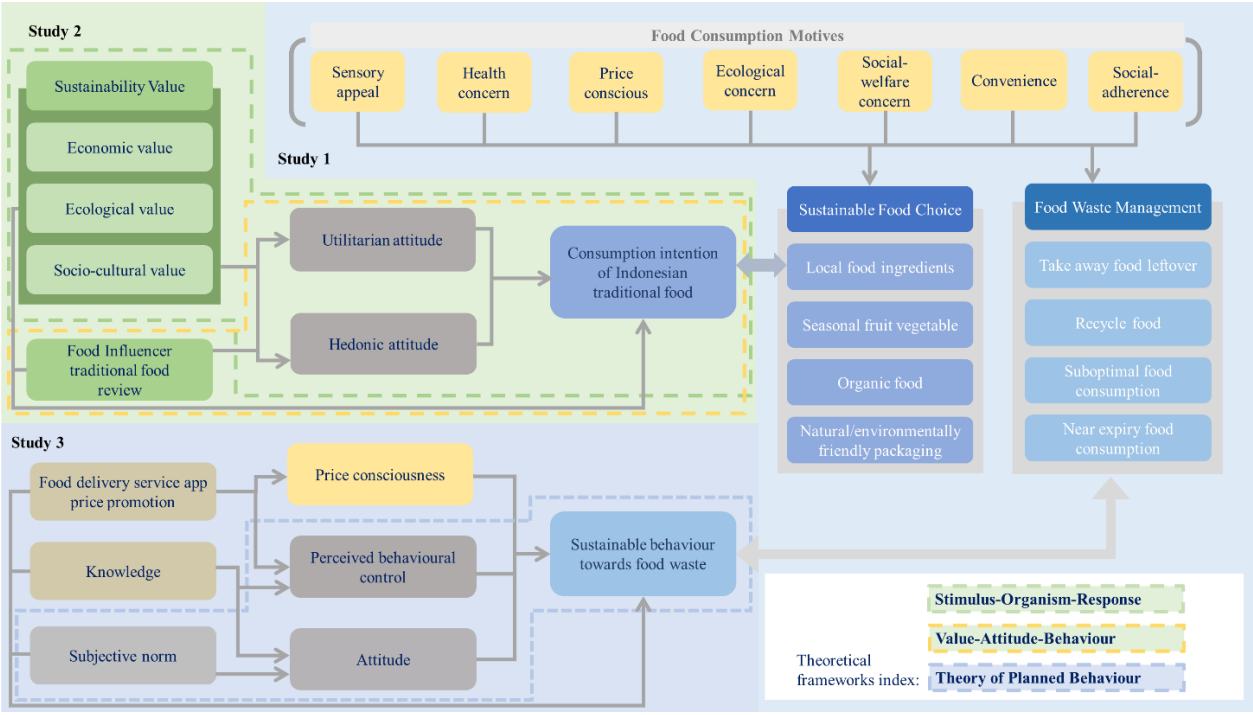

Figure 1 Summary of Conceptual Framework of Study 1, Study 2, Study 3

Sources: Author's own elaboration, 2026

1.3. Research Gap and Research Questions

Despite the increasing focus of researchers on the sustainable behaviour of Generation Z, research on the segmentation of this generation based on their various consumption motives remains absent. At the global level, there have been some studies discussing the underlying food choice motives of Generation Z (Bergh et al., 2024; Zimmerman, 2024). However, those studies rely on classical test theory to validate their research instruments, which can hinder a deeper understanding of how different indicators contribute to distinguishing respondents' levels of motivation and latent behaviour (Gao et al., 2024). The Item Response Theory methodological approach remains rarely used in research related to the sustainable behaviour of Generation Z of Indonesia, despite the fact that this method has the potential to provide more accurate insights into the preferences of various levels of motivation of young people and their behavioural engagement, as well as to provide a more rigorous parametric evaluation of the research instruments used (Giacomelli et al., 2021; Sethar et al., 2022; Shaw et al., 2021). Study 1 through RQ1 and RQ2 aims to bridge the empirical gap of the lack of Generation Z of Indonesia segmentation studies and also the existing methodological gap by employing the modern response theory, namely Item Response Theory, to evaluate the discrimination power of research instrument indicators and also provide insights into the various segments of Indonesian youth based on their food consumption motives.

Prior studies regarding traditional and locally produced food have examined the congruence of ecological values (Acevedo-Ortiz et al., 2024; Wani et al., 2024), the benefits of this meal to local communities economic growth (Ullah et al., 2024), and the cultural preservation value of traditional food consumption (Chatcharawan et al., 2023; Zhong, 2023), yet they often investigate those values in isolation rather than as an integrated construct that drives a person's consumption intention (Calizaya et al., 2023; Ossowska et al., 2024). Understanding sustainability values as higher-order construct is essential since consumers rarely evaluate their food consumption decisions based on isolated values. The Triple Bottom Line framework (Anal et al., 2023; Elkington, 1994) support the perspective that traditional food consumption's economic, socio-cultural, and ecologic values need to be seen as interconnected concept that can underlie a person's sustainable attitude and behaviour (Tuu, 2024). By integrating economic, ecological, and socio-cultural values into sustainability values as higher-order construct, Study 2 of this dissertation provides a comprehensive framework to fill the empirical and theoretical gap in assessing how this value can motivate the Generation Z of Indonesia to consume traditional food.

Beside internal value drivers, exposure to food promotion content by food influencers that Generation Z frequently accesses also has the potential to shape their consumption choices, as found in studies on young people in South Korea (Jang et al., 2024), Hong Kong (Wong et al., 2024), and the UAE (Alwafi et al., 2022). Survey by (Populix, 2023) on Generation Z of Indonesia confirm that influencer recommendations and viral foods trend, which is food items that rapidly gain popularity via social media, influence their food choices, yet their impact on encouraging traditional food consumption as a form of sustainable food choice remains inconclusive. The Value-Attitude-Behaviour (VAB) framework often undermines the role of external stimuli and the interaction between internal values and social pressure factors in shaping consumption decisions. Study 2 through RQ3 and RQ4 combines the Value-Attitude-Behaviour (VAB) with the Stimulus-Organism-Response (SOR) theoretical framework to capture the dynamic interaction between their values and food influencers' content as external stimuli that Indonesian young people widely access (Bhardwaj et al., 2023; Lavuri et al., 2023). To complement the theoretical framework, Study 2 through RQ5, also examines how hedonic and utilitarian attitudes can mediate the relationship between sustainability values and food influencers' traditional food-related content, with a systematic intention in traditional food consumption among Generation Z of Indonesia, which has rarely been studied.

Theory of Planned Behaviour (TPB), although through its three central elements (subjective norm, perceived behavioural control, and attitude) has been proven to effectively explain the formation of behavioural intention to manage food waste, the predictive power ability of the model can still be improved if the theory is combined with other relevant antecedent variables (Canova et al., 2024; Çetin & Çetin, 2024), as was done in Study 3 through RQ6, RQ7, RQ8. In the context of the Indonesian digital food environment, where food delivery applications engage with the internal characteristics of young consumers, namely price sensitivity and their level of knowledge in food waste reduction, through the aggressive offer of financial incentives in the form of price promotions, grounded extensions of the TPB are needed. Contradictory findings from previous research on the effect of food price promotions on the resulting food waste, with some finding that price-conscious consumers who take advantage of price promotions lead to more food waste (Tsalis et al., 2024), while other research findings found that consumers who are prone to food promotion deals are even better able to control their food waste to avoid financial losses (Coşkun & Yetkin Özbük, 2020; Salem & Wagner, 2025), highlighting the existence of an empirical gap in the relationship between price promotion, price consciousness, perceived behavioural control and sustainable food waste behaviour tested in Study 3 of this dissertation. Additionally, previous research found that people with adequate environmental knowledge are motivated to engage in sustainable behaviour (Aka & Buyukdag,

2021). However, other research found that consumers with adequate knowledge do not necessarily integrate sustainable behaviour into their real action, especially if they do not have adequate facilities to process their food waste (Schrank et al., 2023; Simões et al., 2024). Study 3 examines how knowledge can influence food waste reduction behaviour through perceived behavioural control to address the previous empirical discrepancies. Table 1 summarises the research gaps addressed in this dissertation. It also highlights the key evidence drawn from prior studies and the literature search, and outlines how each study within the dissertation is designed to fill these gaps.

Table 1 Summary of Dissertation Research Gaps

Research Gap	Evidence from Literature Search & Existing Studies	How this Dissertation Fills the Gap?
Limited use of Item Response Theory (IRT) in validating psychometric instruments of food motives among Generation Z (methodological gap).	There are, in total, 66 articles from the Scopus and Clarivate databases with the following advanced search keywords: "item response theory" AND ("motive" OR "sustainability"). There are no articles that test the item response theory of various variables of food consumption motives, sustainable food choice, and food waste management with Generation Z Indonesia as respondents (keyword search: "item response theory" AND ("food choice motive" OR "consumption motive"), yielding 0 results.	Study 1 employs item response theory to provide rigorous insights into evaluating discrimination and threshold indicators, which cannot be generated by classical test theory in general.
Lack of segmentation studies for Generation Z of Indonesia based on comprehensive food consumption motives (empirical gap).	Previous studies have segmented Generation Z in various country contexts; there is limited research exploring the segmentation of Generation Z Indonesia. From Scopus and Clarivate databases with the keywords ('segment*' OR 'cluster' OR 'segmentation') AND ('generation z') AND 'sustainable' yielded 21 articles. In contrast, the keywords ('segment*' OR 'cluster') AND ('generation z' OR 'youth') AND 'sustainable' AND 'Indonesia' yielded 0 results.	Study 1 provides a segmentation-based approach, offering a data-driven typology of Generation Z of Indonesia, addressing their unique cultural and motivational characteristics.
Limited studies examine the influence of food consumption motives on sustainable food choice and food waste management at the customer segment level (empirical gap).	Most previous studies have proved the effect of consumption motives and sustainable behaviour only on the general population or the aggregate ((Brunin et al., 2022; Lema-Blanco et al., 2023), which may neglect the heterogeneity of behaviour within the population.	Study 1 provides detailed insight into how various motives for sustainable food consumption can drive sustainable food choices and management of food waste in different clusters.

Limited evidence on sustainability value as a higher-order construct influencing traditional food consumption among Generation Z of Indonesia (empirical & theoretical Gap).	Previous studies investigate ecological, economic, and socio-cultural values separately rather than as an integrated construct (Calizaya et al., 2023; Ossowska et al., 2024).	Study 2 evaluated sustainability value as a higher-order construct (economic, ecological, socio-cultural), assessing its impact on attitudes and interest in traditional food consumption.
Few studies integrate Stimulus-Organism-Response (SOR) and Value-Attitude-Behaviour (VAB) frameworks in traditional food consumption research (theoretical gap).	The SOR model alone neglects long-term internalized values and normative reasoning, while VAB alone ignores external stimuli (Pelletier & Rocchi, 2023; Nazirova & Borbala, 2024). With the search keyword ('stimulus-organism-response' OR 'SOR') AND ('value-attitude-behaviour' OR 'VAB') on Scopus and WoS, there are only two articles published, one of which is Study 2, which has been published.	Study 2 integrates SOR and VAB frameworks to examine how external stimuli (food influencer content) interact with internal values and attitudes to shape traditional food consumption decisions.
Empirical gap on how food influencers impact Generation Z of Indonesia interest in sustainable traditional food consumption (empirical gap).	Despite surveys confirming influencer impact on Generation Z food choices in Indonesia, evidence specifically linking influencers to sustainable traditional food consumption remains inconclusive (Populix, 2023; Prihantoro, 2024).	Study 2 examines how food influencers' content shapes Generation Z of Indonesia sustainable traditional food consumption through hedonic and utilitarian attitudinal pathways.
Limited research on the mediation roles of hedonic and utilitarian attitudes in traditional food consumption (empirical gap).	The database search ('hedonistic attitude' AND 'utilitarian attitude' AND 'traditional food' AND 'Generation Z' AND 'Indonesia') shows one result (Study 2 of this dissertation, which has been published).	Study 2 explores explicitly the mediating roles of hedonic and utilitarian attitudes in linking sustainability values and influencer content with traditional food consumption interest.
A limited theoretical exploration of the interaction between knowledge as an internal characteristic of consumers and price promotion in the era of digital delivery and its relationship to the food waste behaviour within the Theory of Planned Behaviour (TPB) framework.	The TPB often overlooks external stimuli such as digital price promotions that may interact with internal factors, potentially modifying consumer behaviour.	Study 3 integrates TPB with external stimuli variables (price promotions from food delivery applications) and internal consumer characteristics (price consciousness and knowledge), exploring their combined effects on sustainable food waste behaviour.

Empirical inconsistency regarding price promotions' impact on food waste behaviour in digital food-ordering contexts.	Previous research findings are contradictory: some studies suggest promotions increase food waste (Graham-Rowe et al., 2014; Schmidt, 2016; Setti et al., 2016; Silvennoinen et al., 2014; Tsalis et al., 2021), whereas others argue that price-conscious consumers manage food waste better due to financial incentives (Salem & Wagner, 2025; Tsalis et al., 2024). A search on the specific study of the Indonesian context with the keywords ('price promotions' AND 'food waste' AND 'food delivery applications' AND 'Generation Z') resulted in 1 article (Study 3 of this dissertation, which has been published).	Study 3 clarifies contradictory findings by investigating how price promotions influence sustainable food waste behaviour mediated by price consciousness and perceived behavioural control.
Unclear role of knowledge on sustainable food waste behaviour via perceived behavioural control among Generation Z of Indonesia.	Contradictory findings indicate knowledge can positively influence sustainable behaviour (Aka & Buyukdag, 2021) but may not necessarily translate into action without adequate behavioural control (Schrank et al., 2023; Simões et al., 2024).	Provides empirical evidence on how knowledge affects sustainable food waste reduction through attitude and perceived behavioural control among Indonesian youth.

Source: Author's own elaboration based on the literature review, 2025

This dissertation addresses the following eight main research questions based on the research objectives and identified research gaps.

RQ1: How do food consumption motives and sustainable food behaviour indicators distinguish varying levels of motivation and behaviour among Generation Z of Indonesia, highlighting those that are most readily endorsed at lower levels and those that require higher engagement at upper levels of the latent traits?

RQ2: What consumer groups can be identified within Generation Z of Indonesia based on food consumption motives and in what ways do these motives influence sustainable food choices and food waste management behaviours within and across the identified groups?

RQ3: Does Generation Z of Indonesia truly value sustainability, which consists of economic, ecologic, and socio-cultural value in shaping purchase intention of traditional and locally produced food?

RQ4: Do food influencers influence Generation Z of Indonesia to purchase traditional and locally produced food?

RQ5: Do hedonic and utilitarian attitudes significantly mediate the relationship between food influencers' promotion of traditional food as an external stimulus and sustainability values with intention in consuming traditional food among Generation Z of Indonesia?

RQ6: How does the price promotion offered by food delivery service applications influence price consciousness and perceived behavioural control, subsequently influencing sustainable food waste behaviour among Generation Z of Indonesia consumers?
RQ7: How does knowledge about food waste reduction influence perceived behavioural control and attitude, subsequently influencing sustainable food waste behaviour among Generation Z of Indonesia consumers?
RQ8: How does subjective norm shape attitude and subsequently influence sustainable food waste behaviour among Generation Z of Indonesia consumers?

1.4. Hypothesis

Following are 16 hypotheses formulated to address the eight main research questions of this dissertation. Figure 2 illustrates how each hypothesis is linked to its corresponding research question.

Hypothesis 1: Indicators of food consumption motives and sustainable food behaviours are able to distinguish the level of motivation and behaviour among Generation Z in Indonesia with adequate discriminative capacity.
Hypothesis 2: There are distinct segments within Generation Z of Indonesia based on their food consumption motives.
Hypothesis 3: Sustainability values affect the intention to consume traditional and locally produced foods.
Hypothesis 4: Food influencers influence the intention to consume traditional and locally produced foods.
Hypothesis 5: Hedonic attitude mediates the relationship between sustainability values and consumption intention of traditional and locally produced foods.
Hypothesis 6: Hedonic attitude mediates the relationship between food influencers and traditional and locally produced food consumption intention.
Hypothesis 7: Utilitarian attitude mediates the relationship between sustainability values and consumption intention of traditional and locally produced food.
Hypothesis 8: The relationship between food influencers and the consumption intention of traditional and locally produced food is mediated by a utilitarian attitude.
Hypothesis 9: Price promotion has a significant effect on sustainable behaviour towards food waste.
Hypothesis 10: Knowledge of food waste reduction has a significant effect on sustainable behaviours towards food waste.
Hypothesis 11: Subjective norms significantly affect sustainable behaviours toward food waste.

Hypothesis 12: Price consciousness mediates the relationship between price promotion and sustainable behaviour towards food waste.

Hypothesis 13: Attitudes mediate the relationship between knowledge and sustainable behaviour towards food waste.

Hypothesis 14: Attitudes mediate the relationship between subjective norms and sustainable behaviour towards food waste.

Hypothesis 15: Perceived behavioural control mediates the relationship between price promotion and sustainable behaviour towards food waste.

Hypothesis 16: Perceived behavioural control mediates the relationship between knowledge and sustainable behaviour towards food waste.

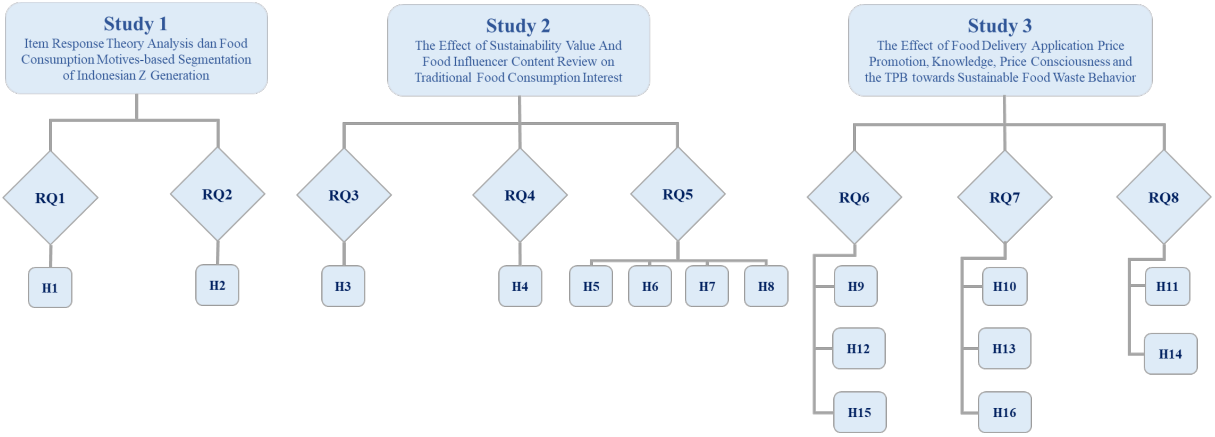

Figure 2 Research Questions and Hypotheses Structure

Sources: Author's own elaboration, 2026

2. LITERATURE REVIEW

2.1. Definition and Conceptualization of Sustainable Food Consumption

Sustainable food consumption involves a series of dietary consumption lifecycles, from food selection and consumption methods to the management of the disposal stage, which considers the balance between fulfilling human needs, minimising the harmful effects of consumption on the planet, and prioritising economic viability also social equity (Fodor et al., 2024; Genova & Allegretti, 2024; Hooker et al., 2024). The application of sustainable food consumption encompasses various practices, including the consumption of organically labelled food produced with a minimum of chemicals that are harmful to the environment and health (Kazimierczak et al., 2024; Mkhize & Ellis, 2024); consumption of local and seasonal food, which is expected to emit lesser carbon footprint than imported meals products (Discetti et al., 2024; Varela, 2024); adopting plant-based diets to minimise the greenhouse effect of high consumption of meat-based food (Bunge et al., 2024); implementing the entomophagy diet which is an alternative source of high-quality protein with a low environmental footprint (Jankowski et al., 2025; Maciejewska et al., 2025); reducing and processing food waste (Moraes et al., 2025; Ruetgers et al., 2025).

Not all forms of sustainable consumption are widely accepted by consumers from countries where most of the population has limited purchasing power since they belong to aspiring middle-class and middle-class economic groups, such as in Indonesia (Statistics Indonesia, 2024b). Sustainable food typically associated with higher price points, such as organic food, due to stringent certification and small-scale production, is primarily demanded by a limited market segment but has not been well accepted en masse in Indonesia (Hough & Contarini, 2023; Ulita et al., 2024). An alternative production method to enhance the availability of affordable, healthy, environmentally friendly agricultural products lies in applying agroecology, emphasising the local food system (Hough & Contarini, 2023; Pandangwati et al., 2024). A diet to reduce meat consumption is urgently needed in high-income countries with the world's highest average meat consumption annually, particularly beef, such as the United States (Zimmerman, 2024), Australia (Shah et al., 2024), Nordic and Balkan countries (Balan & Trasca, 2025), and Germany (Northrope et al., 2024), to reduce nitrogen footprints and also reduce the threat of chronic health problems in consumers due to excessive meat consumption. However, shifting to a vegetarian or flexitarian diet must be cautiously planned for implementation in countries that still experience malnutrition problems to not aggravate nutrient deficiency problems due to a lack of vitamin B12, protein, zinc, and iron, mainly sourced from animal products (Beal, 2024; Drewnowski, 2024). The application of meat

substitute alternatives such as lab-grown meat also needs to be reviewed carefully since meat substitute foods are ultra-processed foods that can cause nutritional imbalance and digestive problems (Kraak & Aschemann-Witzel, 2025; Lee et al., 2024). They may also be expensive because they are produced with advanced technology, mainly if the ingredients are imported from developed countries that are pioneers in their production, thus contradicting their eco-friendly benefits (Romão et al., 2025).

Commercialising insect consumption as a protein alternative is also controversial; despite its environmental and nutritional benefits, the thing that hinders the consumption of processed insect food is the safety risk since insects may harbour various bacteria (Pal et al., 2024). Insects contain chitin in their exoskeleton and proteins such as tropomyosin, which are indigestible for some people and may cause allergic reactions (Leoni et al., 2019; J. Yang et al., 2024). Insect eating has a historical place in the diet of certain populations, for example in Madagascar (Rakotondrasoa et al., 2024) and in small communities in Gunung Kidul, Indonesia, where Javanese grasshoppers are consumed (Priyatnasari et al., 2025). Even so, many young consumers tend to reject insect-based foods, often linking them with poverty or marginalised groups (Lim et al., 2024; Mopendo Mwisomi et al., 2023; Sabri et al., 2023). Regulation adds another layer of complexity. In the European Union, insects are classified as novel foods and require strict safety assessments before approval (Precup et al., 2022). Indonesia has not issued specific regulations for insect-based foods, so insect based food producers are required to follow the general provisions of national food law instead (Priyatnasari et al., 2025).

2.2. Scientific Overview of Generation Z's Sustainable Food Consumption Behaviour Themes

To map scholarly discussions of previous research on sustainable food consumption behaviour in Generation Z, the scientific article tracking was performed through the Scopus and Web of Science/Clarivate databases with a search cut-off in February 2025, resulting in 70 and 60 articles, respectively. The search is conducted using the subsequent boolean search keywords: (“sustainable food” OR “green food” OR “eco-friendly food” OR “pro-environmental food” OR “traditional food” OR “local food” OR “seasonal food” OR “organic food” OR “suboptimal food” OR “near expir*” OR “food waste”) AND (purchase OR “purchase intention” OR consumption OR “consumption intention” OR attitude OR behavior OR behaviour OR “segment*” OR “cluster”) AND (“Generation Z” OR “Gen Z” OR “iGen” OR “post-millennials”). Using the help of R Studio version 2024.12.0+467, the databases obtained through Scopus and Clarivate were combined, and then 43 duplicate documents were removed, leaving a total of 87 articles written in English and consisting of 71 published articles, eight

early access articles, seven conference papers, and one book chapter. Scientific investigation of sustainable food consumption (SFC) commenced in 1990, focusing primarily on organic food consumption (Kristia et al., 2023a). However, research related to SFC, specifically among Generation Z, began receiving attention in 2018, notably pioneered by qualitative research which explored young people's consumption intention and their sustainable perspectives of traditional food in North Cyprus (Garanti & Berberoglu, 2018).

Figure 3 displays the annual scientific article production on the theme of sustainable food consumption among Generation Z, displaying a gradually upward trend, with annual growth reaching 34.59%. The peak of the highest number of article publications throughout the period was in 2024, reaching 30 articles, of which most articles used the Theory of Planned Behavior framework to comprehend the formation of a sustainable diet (Ruzgys & Pickering, 2024a), intention in food waste reduction (Ardi et al., 2024; Setiawan et al., 2024), concern of young consumers in choosing food packaging and the process of sustainable food delivery (Nakpathom et al., 2024), and intention in consuming seafood-like foods made from plant-based ingredients (Hoo et al., 2024) among the Generation Z. In terms of the predominant author keywords employed by article from year to year, Figure 3 shows that keyword Generation Z has been steadily appearing from 2021 to 2025. In addition, at the peak of the most articles produced, which was the period from 2023 to 2024, the terms that dominated were the Theory of Planned Behaviour, consumer behaviour, and food waste, indicating a thematic concentration on sustainable behaviour among the young segment.

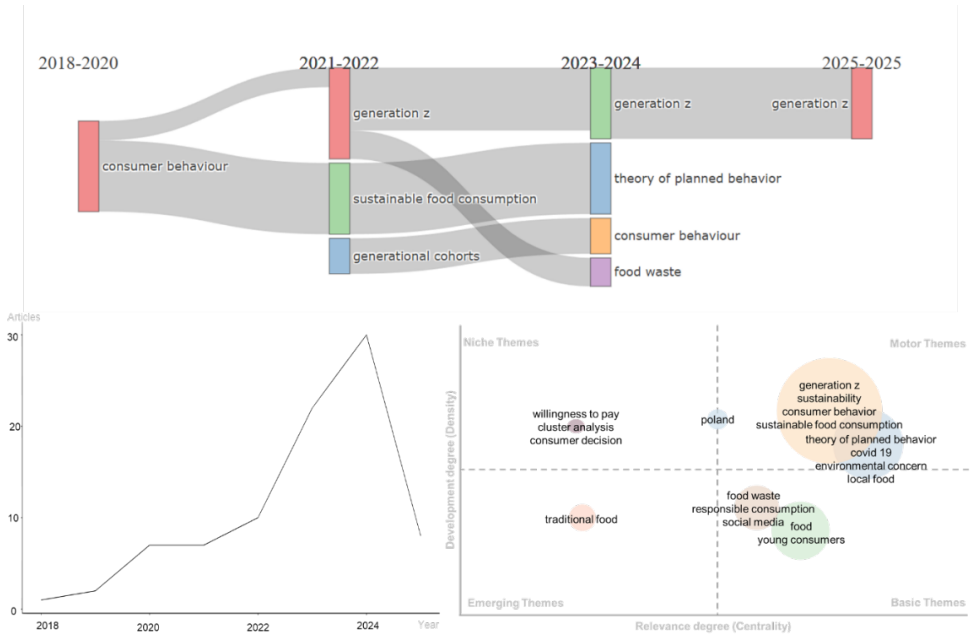

Figure 3 Theme Evolution Over the Years (Top); Annual Scientific Article Production (Bottom Left); Thematic Map (Bottom Right)

Source: Generated by the author with Biblioshiny-bibliometrix package in R, 2025

The thematic map in Figure 3 reveals significant connections among several topics from previous research, which also inspired the topics of the articles in this dissertation. Figure 2 was generated using conceptual structure function, employing the network approach and thematic map option. The analysis was based on the co-occurrence of author keywords extracted from the abstracts of the selected articles. Prior to analysis, synonymous keywords ("generation z" was merged with "gen z", "generation y" with "millennials", and "consumer behaviour" with "consumer behavior") were merged to avoid duplication. The clustering of related words was performed using the walktrap algorithm, which identifies densely connected subgraphs that represent thematic clusters formed based on a hierarchical clustering approach (Brusco et al., 2024). The X-axis on the thematic map indicates the extent to which a theme is connected to other themes in the network. The further to the right a cluster is positioned on the thematic map, the more central its role is in connecting other themes. The Y-axis represents density and measures how well-defined, mature, and specific a theme is. High density indicates that the theme has been well-defined conceptually, with strong internal connections among its constituent keywords, indicating the presence of a mature and robust body of research.

The resulting quadrants of the thematic map classify themes as motor (high centrality and density), niche (low centrality, high density), basic (high centrality, low density), and emerging or declining (low centrality and density). There are two main clusters in the motor themes, namely "generation z", "sustainability", "consumer behaviour", "sustainable food consumption", and "theory of planned behaviour", which show the highest density; and clusters with slightly lower density consist of the keywords "covid 19", "environmental concern", and "local food". Post-consumption responsibility and the influence of digital media in the lower right quadrant (basic theme) consists of "food waste", "responsible consumption", "social media", "food", and "young consumers". Economic and methodological perspectives in the upper left quadrant (niche) consists of the keywords "willingness to pay", "cluster analysis", and "consumer decision". The lower left quadrant includes emerging themes like "traditional food," representing less developed research interest. Study 1 regarding the segmentation of Generation Z of Indonesia based on food consumption motives is closely related to the topic "consumer behaviour", "generation z" in the motor themes quadrant, combined with the topic' cluster analysis' in the niche themes quadrant. Study 2 on the influence of sustainability value and social media influencers on traditional food consumption is closely related to "social media" from the basic theme quadrant and "traditional food" in the emerging themes quadrant. Additionally, the third study surrounding the influence of the Theory of Planned behaviour-derived variables on sustainable food waste behaviour in the context of food purchase through

food delivery applications is closely related to the topic of the "Theory of Planned Behaviour" in the motor themes quadrant and "food waste" in the basic theme quadrant.

The top six most globally cited documents on the theme of sustainable food consumption behaviour among Generation Z include: Su et al. (2019) with 123 citations; Alae-Carew et al., (2022) with 114 citations; Gomes et al., (2023) with 98 citations; Kamenidou et al. (2019) with 91 citations; Kymäläinen et al. (2021) with 53 citations; Zhang et al. (2021) with 50 citations. The top two cited documents are research on the segmentation of Generation Z in the United States based on sustainability beliefs (Su et al., 2019) and demographic variation in the adoption of plant-based food in the United Kingdom (Alae-Carew et al., 2022), showing important topics regarding segmentation that are of concern to developed countries and are also referenced by different segmentation studies from various countries. The document with the third most citations found a green value-action gap in Portuguese Generation Z; even though they consider that the consumption of green products has benefits and good quality, they do not necessarily want to buy it due to the price of green products that are considered expensive, doubts about product effectiveness, and inconsistency of brand information (Gomes et al., 2023). Segmentation studies on university students in Greece found that young people there are divided into two clusters, namely those who are intent on sustainable food consumption, especially by doing local and seasonal food, while the other segment is relatively indifferent to implementing sustainable behaviour (Kamenidou et al., 2019). A qualitative study on urban youth in Finland stated that large food portions and the temptation of discounts are their main challenges in minimising food waste (Kymäläinen et al., 2021).

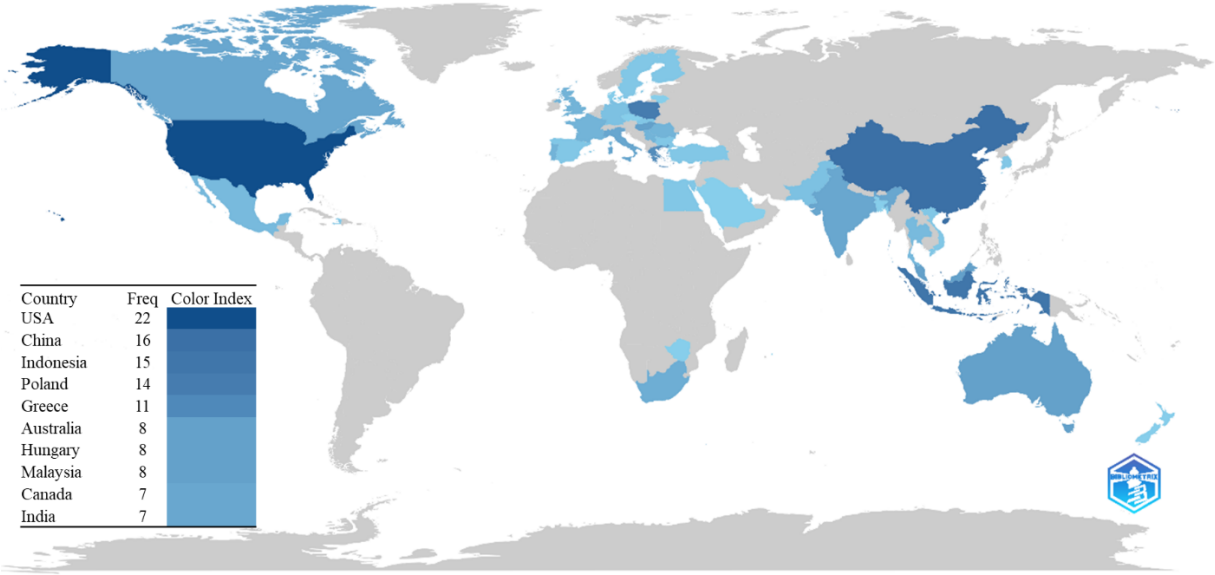

Figure 4 Country Scientific Production

Source: Generated by the author with Biblioshiny (bibliometrix package in R), 2025

Figure 4 shows the ten countries with the most publications on sustainable food consumption among the Generation Z, presented in shades of blue on a world map (darker colours indicate more publications). The United States leads with 22 publications, followed by China with 16 publications and Indonesia with 15 publications. United States consumers tend to be more willing to pay thresholds than consumers from other countries for healthy and sustainable food consumption, such as organic food, although financial constraints are still a barrier for young consumers (Nian et al., 2023). They are also knowledgeable about and inclined to buy food with various types of sustainability-related food product labels such as non-GMO, fair trade, and B-Corps labels, but somewhat sceptical about labels that are less familiar to them (Li & Lin, 2023; Nian et al., 2023). China's research on sustainable consumption is shaped more by government policy, such as regulations to maximise domestic consumption rather than consumer drive (Shih, 2023). Indonesia, which is currently experiencing various environmental problems, especially the most serious one is related to food waste, is also starting to be concerned about researching what factors can encourage Generation Z, the largest generational cohort in the country, to carry out more sustainable behaviour (Agustina et al., 2024).

2.3. Literature Review of Study 1

2.3.1. Characteristics of Sustainable Food Consumption among Generation Z of Indonesia

In the context of Generation Z consumption behaviour in Indonesia, there have been several preceding studies conducted, with the main topics being sustainable food consumption in general (Agustina et al., 2024), green consumption (Iqbal et al., 2024), healthy sustainable food consumption (Ulita et al., 2024), organic food consumption (Wijaya et al., 2022), food waste reduction behaviour (Ardi et al., 2024; Setiawan et al., 2024), and inedible food waste management (Purwanto et al., 2023). Young urban Indonesians who mainly live in the capital city of Jakarta have shown a growing intention in adopting healthy, environmentally friendly consumption patterns and supporting the economy of local producers, but they still face various challenges to implementing them into their daily routine, such as the financial barrier to buying sustainable food, which is often considered more expensive than conventional food, sensory misalignment between young people taste preferences with sustainable food option, and limited access of eco friendly health food alternatives in their area (Ulita et al., 2024). In another study with similar urban characteristics respondents, it was found that health-conscious segments will tend to choose food that is good for their health, such as organic food, high in fibre, and also consider buying food that is produced in an environmentally friendly way and supports economic welfare (Agustina et al., 2024) . In influencing the intention of young people to buy speciality green products, with the main claim being that it has a good impact on environmental

sustainability, it is evident that Generation Z in Indonesia is influenced by social media exposure, but a positive attitude towards green products does not necessarily encourage purchasing (Iqbal et al., 2024).

Regarding the food waste reduction studies, which primarily consisted of female respondents residing in Jakarta and the surrounding area, analysed through the Theory of Planned Behaviour theoretical framework, it was found that the respondents made efforts to reduce food waste because they were influenced by internal motivations such as moral responsibility, their perceived behavioural control to control portions of food so as not to produce much food waste, and also a positive attitude towards reducing food waste (Ardi et al., 2024; Setiawan et al., 2024). Meanwhile, external pressures such as social norms have been proven to have a weak or even no influence on the movement to reduce food waste (Ardi et al., 2024; Setiawan et al., 2024). This may be due to the independence of this generation in controlling their consumption patterns and weak social pressure from family and friends to reduce food waste (Qi et al., 2025; Viccaro et al., 2023). Efforts to reduce food waste are carried out not only in a preventive manner through meal portion control but also by managing food waste that can no longer be consumed through composting, making eco enzymes with the help of maggots, and utilising inedible food waste as animal feed (Caldwell et al., 2024; Sarangi et al., 2024). From (Purwanto et al., 2023) study, with the characteristics of respondents being young people from various cities on the island of Java and 60% being men, it is evident that the respondents rarely process inedible food waste. The behaviour of inedible food waste management processing is significantly influenced by interest, attitude, and environmental awareness, while social support and perception of environmental impact exert a weaker influence (Setiawan et al., 2024).

2.3.2. Food Consumption Motives in Generation Z

Food consumption motives refer to the unobservable internal drives that underlie individuals' food choices (Panatsa & Malandrakis, 2024; Skalkos & Kalyva, 2023; Waehning & Filieri, 2022). This study examined seven types of food consumption motives relevant to the Generation Z of Indonesia context, namely sensory appeal, convenience, health concern, price consciousness, ecological concern, social-welfare concern, and social adherence adapted from the food choice motives survey instrument (Steptoe et al., 1995), which has also been used with modifications in various recent studies (Dlamini et al., 2024; Maina et al., 2024; Moshtaghian et al., 2024). The foundational theory of food consumption motives rooted in (Steptoe et al., 1995), a pioneering study conducted to understand general everyday meal choices in the Western adult of high-income countries context, which include consideration of health aspects, mood, convenience, sensory appeal, natural content, price considerations, familiarity, weight

control, and ethical concerns. Generational studies, especially on young adults, emphasise how different types of motives interact with the complex interplay of socioeconomic situation, demographic characteristics, personal health preferences and goals, and lifestyle, leading to variations in consumption profiles between and within generational cohorts (Kamenidou et al., 2020; Savelli et al., 2023).

The preference for sustainable food can be due to multiple motivations, not only because the consumer is concerned about the environment and wants to make a social impact (Kumar & Pandey, 2023). Consumers can be motivated to eat sustainable food because of egoistic or personal motives, which is food motivation based on individual preferences, such as because of the health impacts contained in the food or because the food is the consumer's favourite, convenience to buy, and affordable (Mertens et al., 2022; Mesić et al., 2021; Vehapi & Mitić, 2021; Wei et al., 2022). If consumers feel that consuming certain foods can align with their consumption motives, attitude and behaviour are expected to become a stronger predictor of consumption intention (Jung et al., 2020). For example, environmental concern can amplify the relationship between antecedent variables and a person's consumption intention (Balıkçıoğlu Dedeoğlu et al., 2022) but can also weaken the relationship between variables (Skallerud et al., 2021).

Following Maslow's Hierarchy of Needs, people with financial limitations will prioritise functional aspects such as affordability, availability, and sustenance motivation since access to basic food security is their priority physiological need and tend not to be motivated by higher-level needs such as self-actualisation to contribute to achieving sustainability (Veer et al., 2024; Verdeau & Monnery-Patris, 2024). Generation Z is a generation that is aware of sustainability issues, but their food choices are still limited by their financial capabilities and their trust in various sustainability claims (Jakubowska et al., 2024). In a study comparing consumers from the United States, the United Kingdom, and Brazil, it was found that in purchasing decisions, consumers from all three countries prioritise price, quality, and brand over considerations of sustainability. With slightly higher prioritisation of sustainability in the United States and the United Kingdom than in Brazil, and more prominent among older respondents than among younger respondents (Elmor et al., 2024).

Sensory appeal, defined by the taste, aroma, and texture of food, constitutes a fundamental aspect of the food preferences of many individuals within Generation Z. Universal appreciation of the sensory qualities of cuisine proved to be a prominent motive in the context of consumers from countries with rich, diverse culinary traditions such as Serbia (Mitić & Vehapi, 2021), Nepal (Dahal et al., 2022), Iran (Hoseinean et al., 2024), and in higher income respondents in

Kenya (Maina et al., 2024). Young students in Greece were also found to prioritise sensory appeal and familiarity as dominant non-moral motives over moral motives such as environmental concerns (Panatsa & Malandrakis, 2024). However, young people who prioritise sensory appeal may gravitate towards unhealthy food options, including fast food, which do not align with sustainability goals (Imtiyaz et al., 2021). People's sensory appeal tastes also vary greatly; young people typically favour crispy, savoury, or meaty foods, resulting in a diminished appreciation for sustainable food options, which are usually plant-based, bland, and not as salty or sweet as conventional foods, which causes sensory appeal cannot drive them to eat sustainable food (Papies et al., 2023; Rehman et al., 2024). Individuals who choose food because they are compelled by its taste, aroma and appetising appearance, and those who prefer food because of its nutritional content and positive impact on health, will tend to hesitate to consume foods such as those processed from leftovers or from ingredients that do not meet retail aesthetic standards, which is part of the effort to tackle food waste (Moshtaghian et al., 2024).

Health, environmental, and social welfare motives are transituational motives driven from enduring personal values relatively persist across different contexts (Arboleda et al., 2023). Recent shifts related to increasing environmental awareness and ethical considerations in food consumption are contemporary trends among young people (Halme et al., 2023). In Canada's Generation Z respondents found that the youth segment is divided into two segments, namely eco-centric individuals who consume sustainable food because of its impact on health and society, usually they are people who are more knowledgeable about environmental issues; the other segment is egocentric, which consumes sustainable food because they want to get health benefits for their bodies (Ruzgys & Pickering, 2024b). However, the health and environmental aspects are not a top priority, and they are still below the taste motivation, and price is the main barrier to realising a sustainable diet (Chiciudean et al., 2024; Ruzgys & Pickering, 2024b). In the Italian context, consumers tend to be driven more by personal values which bring direct advantages to themselves, such as health benefits and affordability, than by environmental protection motivations linked to public attributes whose benefits are shared collectively across society (Piracci et al., 2023). Individuals tend to prioritise health when they have special dietary needs, are in poor health, or have a history of certain diseases (Agustina et al., 2024). Zagreb young adults were motivated the strongest by health motives followed by environmental concerns compared to other food motives, especially those with chronic non-communicable diseases such as overweight, obesity, and living in urban areas (Ilić et al., 2023). Health consumption motives have also proved to be the top priority in food selection under certain conditions, such as during a pandemic (Skalkos & Kalyva, 2023).

Individuals with high ecological awareness or environmental concern motives are expected to have pro-environmental beliefs and personal norms in line with the Value-Belief-Norm theory (Hoque et al., 2024; Yang et al., 2024). In countries with a collectivist culture, environmental motives are more effective in driving people to practice sustainable consumption and good food waste management when these actions are supported and aligned with group expectations (Al-Mamun et al., 2024). In previous research, it was found that young adults who have high environmental concern motives tend to be more involved in food waste reduction efforts, such as being willing to donate food and reprocess their food leftovers in the context of respondents from Saudi Arabia (Ajina et al., 2024), willing to buy suboptimal food in Taiwanese consumers (Chen, 2024b), having a high intention in consuming organic (Nguyen & Dekhili, 2024). The Attitude-Behavior Gap phenomenon highlights that people with high environmental concerns do not necessarily demonstrate sustainable behaviour, which can be caused by various factors, including consumptive lifestyle choices and prioritising convenience such as choosing fast food among young people, financial constraints, prioritising essential motivation for their food consumption such as prioritising preferred taste, difficulty changing from old habits that are less sustainable, lack of access to products or supporting infrastructure, low trust in products with sustainable claims, or lack of self-efficacy in realising sustainability (Beciu et al., 2024; Cauwelier et al., 2024; Dieli et al., 2024; Krsnik & Erjavec, 2024; Moharam & Yacout, 2024).

Locavorism, the spirit of individual solidarity that leads people to choose to use local products, can contribute to the increase in consumption of traditional and local foods (Balzano & Vianelli, 2022; Kim & Huang, 2021). Food consumption motivation, in the form of a desire to improve the welfare of local farmers and micro and small enterprises, is a form of altruistic motivation that encourages people to consume local food as part of sustainable food (Birch et al., 2018; Kim & Huang, 2021; Lema-Blanco et al., 2023; Reich et al., 2018; Waehning & Filieri, 2022). In the context of Generation Z, especially young American customers, when consuming food, they are driven to support local communities, so they prioritize buying food produced by local businesses (Torres, 2020). In a study in the context of consumers in the productive age range of Croatia, it was found that people buy local food because they are driven by their concern to contribute to improving the local economy. The characteristics of this segment are those who are highly educated and those who come from the middle to upper economic class (Mesić et al., 2021).

In the context of Generation Z, some unique characteristics that encourage them to consume food are that they want to join social media trends and try the same food eaten by people closest to them or recommended by trusted food influencers (Kamenidou et al., 2019; Kombanda et

al., 2022; Qutteina et al., 2019). Therefore, in this study, the three indicators are grouped into one food consumption motives variable, which is named social-adherence driven. The formation of this motivation variable is based on the subjective norm aspect of the Theory of Planned Behaviour, which states that peer influence, the behaviour of people closest to them, and the opinions of people who are idolised and considered influential can shape a person's behaviour (Ahmad et al., 2020; Chen, 2024a). Another theory that can underlie social adherence as a driver of food consumption is Social Cognitive Theory, which states that a person is moved to take action because of observing behaviour and learning the benefits obtained from consuming certain foods from people around him or influential figures (Kim et al., 2022).

Food motives vary in how widely they are shared (Brunin et al., 2022; Moshtaghian et al., 2024; Wei et al., 2022). However, limited research has systematically examined how different motives vary in their ability to discriminate levels of motivation and behaviour among Generation Z in Indonesia. Item Response Theory (IRT) offers a methodological leverage in this context. Rather than treating all indicators as if they function in the same way, IRT makes it possible to see which motives are easily endorsed across respondents and which require a stronger level of underlying motivation before they are accepted. A systematic search in Scopus and Clarivate identified 66 articles using the keywords “item response theory” AND (“motive” OR “sustainability”), but none applied IRT to food motives, sustainable food choice, or food waste management in the Generation Z of Indonesia context.

Segmentation work on Generation Z has been undertaken in a number of countries, but there is still little that speaks to the context of the Generation Z of Indonesia. Evidence from database searches underscores this gap. At the global level, 21 studies appeared when using (“segment*” OR “cluster” OR “segmentation”) AND (“generation z”) AND “sustainable.” Yet, once the scope was narrowed to include Indonesia (“generation z” OR “youth”) AND “sustainable” AND “Indonesia”), not a single study was found. In addition, the studies that have tested the role of food motives in shaping sustainable food choice and food waste behaviour have generally examined populations in the aggregate (Brunin et al., 2022; Lema-Blanco et al., 2023). Such an approach overlooks behavioural variation within the generation itself and risks flattening meaningful differences that only emerge when motives are analysed at the level of distinct clusters. Addressing these methodological and empirical gaps, Study 1 advances two hypotheses:

H1: Indicators of food consumption motives and sustainable food behaviours are able to distinguish the level of motivation and behaviour among Generation Z in Indonesia with adequate discriminative capacity.

H2: There are distinct segments within Generation Z of Indonesia based on their food consumption motives.

2.4. Literature Review of Study 2

2.4.1. Stimulus-Organism-Response and Value-Attitude-Behaviour as Conceptual Foundations of Study 2

In understanding how Generation Z of Indonesia makes decisions to consume traditional foods, it is necessary to examine through behavioural frameworks that encapsulate both external stimulus influence and internal processing mechanisms, namely in Study 2, combining the use of the Stimulus-Organism-Response (SOR) and Value-Attitude-Behaviour (VAB) models. The SOR model, originally a psychology theory from the early 20th century, has been widely used in its development to research how digital cues influence individual consumption (Mehrabian & Russell, 1976; Rahim & Goi, 2025). Within the SOR model, external stimuli from various sources, such as digital promotional content, social influence, labels, or packaging, can elicit behavioural responses through organismic processing (Luo et al., 2025). The SOR model, which is essentially applied to examine individual responses to external situational factors, has been criticised for potentially undermining the role of long-term internalised values and neglecting normative reasoning (Pelletier & Rocchi, 2023; Wang et al., 2024). Conversely, the VAB framework, when applied in isolation, tends to neglect the influence of external stimuli and assumes that the individual is a stable, independent, and mainly steadfast person with values he believes in (Nazirova & Borbala, 2024). Integrating the SOR and VAB frameworks assumes that in the stimulus-rich conditions young people face, value salience may be activated by digital cues and possibly triggered by utilitarian and hedonic attitudes that shape consumption behaviour.

The VAB psychological model was developed around the same period after SOR, to be precise in 1988, and was first used to test the internal mechanism hierarchy of how fundamental values can influence attitudes and behaviour (Homer & Kahle, 1988; Kautish et al., 2023). Previous studies on foreign tourists coming to Indonesia have found that their consumption of traditional food is mainly driven by several values such as their curiosity to experience new flavors (epistemic), pleasant emotions when traveling culinary (emotional), functional aspects of food, and social experience interactions (Thio et al., 2024). Study 2 in this dissertation uses sustainability-oriented values grounded in the triple pillar of sustainability to capture more profound normative commitment in Generation Z Indonesia. Based on Rokeach's value dichotomy, the logical reasoning for decision-making on consumption is based on 1) terminal

value, which is the desired state that someone wants to achieve in their life, such as happiness, satisfaction, and health; 2) instrumental value, which is a functional method whose benefits can be felt immediately and is expected to help achieve their long-term goals, such as affordable prices, good taste, and ease of access (Kautish et al., 2023). The indicators of sustainability values in Study 2 are primarily categorised as terminal commitments, such as ecological preservation, cultural preservation, and economic welfare.

2.4.2. The Role of Sustainability Values in Shaping Traditional and Locally Produced Foods Consumption Intention

Consumption value reflects the benefits that consumers expect from consuming certain types of products, the definition of which was first developed in the Theory of Consumption Value (TCV) in 1991 (Sharma & Kushwah, 2024). Recent advancements in TCV, which underlie consumer behaviour, have called for its extension, such as integrating altruistic aspects or environmental benefits to understand consumer decisions in the sustainable food consumption domain, including traditional food consumption. Based on the TCV perspective, the economic value of traditional food is in line with the functional value component, which is related to practical benefits and price efficiency aspects and social value as consumption of these foods can increase economic support for communities (Garrity et al., 2024); socio-cultural value is related to the concept of social and emotional value since this dimension is related to maintaining cultural identity, strengthening social relationships, and providing an authentic dining experience (Stone & Zou, 2023); ecological value is related to the concept of functional value in the context of providing environmental sustainability benefits (O'Neill et al., 2022; Zhong, 2023). Combining the concept of TCV with the Triple Bottom Line (Anal et al., 2023), sustainability values in this study goes beyond personal utility; instead, it is constructed in a triadic structure (economic, socio-cultural, and ecological dimensions) as a form of participation in collective well-being.

Study 2 evaluates the concept of traditional food consumption's sustainability values as higher-order construct reflected through economic, socio-cultural, and ecological value dimensions. Economic value refers to the financial benefit aspect of sustainable consumption, both from the consumer's point of view of affordability and also the economic impact on local producers, small retailers, and employment opportunities (Cavalleri et al., 2023). In their daily food consumption, Generation Z consumers want nourishment with good value for money, not merely cheap (Kalyva et al., 2024). Perceived affordability of local and traditional foods varies across countries, for instance consumers in Singapore or particular regions in Australia perceive these foods as nutritious and fresh but costly, making the financial aspect a barrier to their

purchasing decisions (Godrich et al., 2025; Nakajima, 2022). Whereas consumers from other countries, such as Kenya and East Caribbean countries, perceive local or traditional foods as affordable, making consumption of these foods more regular (Demmler et al., 2025; Oladele et al., 2022). Traditional food consumption is encouraged not only by the self-benefit but also by the economic impact generated by the local society. Consumers who view the consumption of traditional foods as a way to support the local economy welfare are more likely to consume local foods (Pandey et al., 2023). This consumption potentially increases farmers income, employment prospects, and potentially lead to higher local government tax revenues (Apak & Gürbüz, 2023). Consumer segments that place importance on economic contribution for community values are often more interested in implicit story behind local food production and the benefits it brings to locals, rather than relying on explicit organic certifications which do not necessarily indicate local production (Torres, 2020). These social story attributes are essential to attract this consumer segment, and they are primarily conveyed through social media and community-oriented storytelling (Mars, 2022).

Ecological value is about considering the impact of daily consumption practices on environmental welfare and endorsing the preservation of biodiversity, realising through choosing foods with minimal carbon emissions or food that is produced with minimal chemical substances (Shin et al., 2017). A well-designed certification and labelling system can effectively convey the ecological value of a product. Consumers in Denmark and Italy, with high environmental awareness and who recognise environmental value in traditional foods, are most likely to consume them if convinced by label claims, information on production methods and food origin, or environmental certification (Johnston et al., 2023; Piracci et al., 2023). The Green Food label is favourably trusted by young consumers in China, indicating that the food product is, traceable to its origin, and produced using environmentally friendly practices (Mota-Gutierrez et al., 2024). Consumers' perception of the environmental value of a particular product may not necessarily be accurate, especially if they do not have adequate environmental knowledge, are misled by the information on the label, or only make heuristic judgements and believe in prior beliefs rather than actual sustainable evaluation (Neuhofer et al., 2023). An imported organic product can appear “greener” because it carries an organic seal and comes in glass. That impression can miss the carbon costs of long-haul air transport and energy-intensive glass production (Groth et al., 2023). Conversely, consumers may not recognise the environmental benefits of traditional food simply because it is not branded and marketed as an eco-friendly option despite the fact that the ingredients are locally sourced with a low carbon footprint (Cho et al., 2024). In several EU markets, front-of-pack carbon labels print a numeric CO_2 value (kg per unit), letting shoppers compare products directly (Dreist et al., 2024). A

visual scheme can also aid appraisal. Traffic-light eco-labels (green = lower impact; red = higher) and composite grades from A (very low) to E (very high) provide an immediate read of environmental performance and enable quicker like-for-like comparisons (Dreist et al., 2024; Potter et al., 2024).

For local foods, certification schemes such as Protected Designation of Origin (PDO), which are well established on food labels such as Parmigiano Reggiano cheese and Prosciutto di Parma ham from Italy, Roquefort sheep's milk cheese from France, explicitly ensuring that all stages of production, processing, and preparation must take place within a specific geographical area (Galli, 2024; Glogoveţan et al., 2022). Protected Geographical Indication (PGI), a less strict standard certification that only requires one stage of production, processing, or preparation to take place in a specific region, has begun to be applied to food products from China (such as Pixian Doubanjiang, a fermented bean paste from Sichuan) and Turkey (Aydın İnciri, dried figs from Aydin) (Galli, 2024). In Indonesia, traditional and local foods rarely display front-of-pack environmental labels or carbon-footprint figures (Hendriadi et al., 2024). Several items such as *Amed Bali* salt, *Gayo Arabica* coffee, *Temanggung Robusta* coffee, and many other agricultural products, have Geographical Indication (GI) status, yet GI marks are seldom visible in everyday retail settings (Hendriadi et al., 2024). In practice, Indonesian consumers' assessment of the ecological aspects of traditional foods often depends on heuristic and informal cues, such as the use of natural packaging materials (e.g., banana leaves or teak leaves) (Salman et al., 2021), the presence of farmers selling their own produce (Wiloso et al., 2019), or the perception of local origin with minimal transport. This reliance on rules of thumb points to an information gap. Clear front-of-pack labels or other accessible systems that explain the environmental benefits of traditional and local foods would strengthen perceived sustainability value and help consumers make more informed choices.

Beyond its taste appeal, consuming traditional food could be based on internal motivation to preserve cultural practices, brings a sense of authenticity, and strengthens connections with family, friends, and local communities (Apak & Gürbüz, 2023; Cavalleri et al., 2023; Suhartanto et al., 2023), which are the indicators of socio-cultural value dimension of Study 2. This socio-cultural value has a similar definition to the “tradition” value component from Schwartz’s theory, refers to the motivation to maintain customs and cultural continuity (Bryła, 2021). Aligning with research on Taiwanese Generation Z, although the consumers are exposed to many modern foods, traditional nourishment such as braised pork rice and beef noodles is still their comfort food, a medium of cultural manifestation and authentic identity (Lin, 2024). In Indonesia, there are many traditional foods, one of which is *ketupat*, a food made from rice

wrapped in woven coconut leaves and occasionally served on Moslem holidays, functioning as a cultural artefact imbued with intergenerational memory and religious meaning a symbol of gratitude (Setiarto & Herlina, 2024). Although prior research has discussed how the socio-cultural value of traditional foods can shape a person's food choices, most studies have been conducted through qualitative exploration methods or case studies (Sakapaji et al., 2024), only few studies have examined this factor as part of a sustainability assessment and proven its quantitative influence on consumption interest among Generation Z (Poddar, 2024).

Some prior studies have investigated the impact of economic, ecological and socio-cultural values separately on different types of food consumption (Calizaya et al., 2023; Ossowska et al., 2024), though findings have been varied and inconclusive, with some studies showing significant correlations and others showing no correlation. Study 2 validates the concept of sustainability values reflected by three first-order constructs, then tests the effect of the higher-order construct on the intention in traditional food consumption, hypothesised as follows,

H3: Sustainability values affect the intention to consume traditional and locally produced foods.

2.4.3. The Role of Food Influencer in Shaping Traditional and Locally Produced Foods Consumption Intention

In the vast digital landscape that young people face, food influencers who present various types of content, ranging from food seller reviews to culinary travel experiences to recipes, not solely act as commercial endorsers but also as stimuli that shape the audience's practical perceptions and emotional interpretations of food (Kristia et al., 2024). When considering influencer recommendations, Generation Z values authenticity and is more interested in influencers with similar characteristics or preferences who like to interact with the audience, are talkative, and deliver entertaining content (Tirocchi, 2024). In a prior study grounded on parasocial relationship theory among Iranian social media users, it was found that those who strongly resonate and have a one-way emotional closeness with influencers could go beyond rational judgement and follow the culinary recommendations of food influencers even when it comes to unhealthy food (Shabahang et al., 2024). Although the motivational driver of Generation Z in watching food influencer content tends to be dominated by hedonic drivers, a prior Elaboration Likelihood Model-based study of North American Instagram users proved that peripheral factors alone (when content is considered mainly entertainment and tends to arouse the affective aspects of the audience) is not able to motivate consumers to purchase a particular product, but it needs to go through the central route (when the audience focuses on the cognitive aspect of the detailed information provided) (Farivar et al., 2023; Liu et al., 2023).

The cultural values of Generation Z Indonesia are a complex interplay between collectivist and individualistic cultural values since the previous generations, especially the Baby Boomers and Generation X, traditionally had collectivist cultural values, while Generation Z is showing a shift towards more individualistic values due to the influence of globalisation (Priwati & Sanitioso, 2024). The effectiveness of influencers in shaping audience consumption behaviour can vary across cultural values; for example, in the United States, where the dominant cultural value is individualistic, they prefer influencer content that tells personal stories and achievements because it shows self-reliance and independence (Silva et al., 2023). In Brazil, with collectivist cultural values that value group harmony and collective well-being, influencers must emphasise emotional connection and building interaction with the audience to be more attractive (Silva et al., 2023).

While not directly discussing the sustainable food movement, prior research in the context of Generation Z in India revealed that the expertise and trustworthiness characteristics of influencers were effective in encouraging young people to consume fast food (Ghosh et al., 2024). In other countries, the significance of influencers in influencing young consumers' decisions to use sustainably related products has been proven effective in research in the UK and China (Dekoninck & Schmuck, 2023), Germany (Dekoninck & Schmuck, 2023), Poland (Surmacz et al., 2024), and Tunisia (Horrich et al., 2024). Whereas in a recent study conducted in Taiwan, with the majority of respondents being Generation Y and Z women, it is evident that media exposure has no effect on consumer intention to buy more sustainable products and is effectively influenced by the recommendations of relatives and friends. Previous research examining the influence of influencers on Millennials and Zoomers in Indonesia, with most of the respondents from the island of Java, found that influencers' opinions and recommendations with the Instagram platform can significantly influence particular product purchase intention (Anis et al., 2022). Food influencers may encourage their followers, specifically Generation Z (Orea-Giner & Fusté-Forné, 2023), to consume food by showcasing specific consumption patterns, providing comprehensive information about the benefits of traditional food consumption, presenting an enjoyable dining experience, and depicting the food as aesthetically pleasing (Ashraf et al., 2023). The following is the fourth hypothesis of Study 2,

H4: Food influencers influence the intention to consume traditional and locally produced foods.

2.4.4. Hedonic Attitude Reinforcement of Sustainability Values That Shape Traditional Food Consumption Intention

A hedonic attitude is a psychological tendency that drives individuals to seek pleasure, excitement, enjoyment and sensory satisfaction through the consumption of certain products or

services (Kusumawardani et al., 2023; Zamil et al., 2023). Compared to the characteristics of value, which are more stable over time, attitude is more flexible and may still change based on experience, stimuli, and situational factors (Lake et al., 2024). Hedonic attitude might serve as a mediation factor between normative values and traditional food consumption, mainly when the experience of consuming the food is associated with an emotionally enjoyable experience that is also congruent with familiar sensory expectations (Khorisantono et al., 2024). Recent studies suggest that when meal consumption can offer a sense of pride or emotional satisfaction that aligns with the socio-cultural dimension of the value aspect of traditional food, sustainable consumption is not perceived as a burden but rather as something interesting to do (Guth & Poczta-Wajda, 2025; Morkunas et al., 2024). Due to the limited amount of research that examines the relationship between sustainability values, hedonic attitude, and traditional food consumption intention, the following is the fifth hypothesis of Study 2.

H5: Hedonic attitude mediates the relationship between sustainability values and consumption intention of traditional and locally produced foods.

2.4.5. Hedonic Attitude Reinforcement of Food Influencers That Shape Traditional Food Consumption Intention

Among young audiences, food influencers are seen as a source of affective stimulus that presents a pleasant experience through the visualisation of dining experiences, detailed information on the taste of food, expressive storytelling, and aesthetic video presentation formats (Jeyhan & Pangaribuan, 2024; Sokolova et al., 2024). The emotional connection and the audience's fondness and trust in the influencer make the audience tend to emulate the influencer's diet (Shabahang et al., 2024). Although proven to evoke positive emotional reactions, the transformative behavioural abilities of food influencers driven by hedonistic attitudes may weaken their role, especially when the food is seen as indulgent and entertaining content so that there is no urgency in its consumption (Arya et al., 2024). The phenomenon of hedonic attitude-intention detachment, which is when liking is not translated into intention, can also occur if the influencer's aspirations are not seen as convenient for the audience to realise (Sestino et al., 2024), for instance, in the consumption of traditional food, the price of the food is not within budget, or the location is overly distant. Study 2 tested through Hypothesis 6 whether hedonic attitude mediates the relationship between food influencer review and intention in consuming traditional food, with the hypothesis as follows,

H6: Hedonic attitude mediates the relationship between food influencers and traditional and locally produced food consumption intention.

2.4.6. Utilitarian Attitude Reinforcement of Sustainability Values That Shape Traditional Food Consumption Intention

Food consumption from a utilitarian perspective is a cognitive, instrumental, and goal-oriented approach that prioritises the nutritional value, satiety, energy, accessibility, and affordability of food items (Kusumawardani et al., 2023). Utilitarian attitude or the view that traditional food has a beneficial functional use is not value-neutral; this inner state is often activated by internalised values such as the desire to support local communities' welfare, preserve culture, or the choice to consume food with a low carbon footprint (Westskog et al., 2024). Customer segments that prioritise convenience and food nutritional quality tend to be highly utilitarian, while those inclined towards exploration and swayed by the perspectives of others will be more driven by a hedonic attitude (Begho & Liu, 2024; Ge et al., 2024; Gligorić et al., 2024). Consumers prioritising environmental sustainability and personal health tend to perform a prominent utilitarian orientation, choosing food with fewer chemical additives and ethically sourced (Wu et al., 2024). Polish, Hungarian and Indonesian Gen Zers, especially those with financial limitations, are more inclined to choose their daily food because of utilitarian aspects. (Fodor et al., 2024; Makowska et al., 2024; Ulita et al., 2024). However, although they belong to the same generational cohort, a particular segment of Generation Z's consumption prioritises hedonic value, especially those who live in cities, are in an upper-middle-class economy, are culinary enthusiasts, or actively promote their culinary diaries on social media (Fisu et al., 2024; Fodor et al., 2024; Kovács et al., 2024). Accordingly, the following is Hypothesis 7 from Study 2,

H7: Utilitarian attitude mediates the relationship between sustainability values and consumption intention of traditional and locally produced food.

2.4.7. Utilitarian Attitude Reinforcement of Food Influencer That Shape Traditional Food Consumption Intention

Study 2 examined the mediating role of utilitarian attitude in the relationship between food influencers and intention in traditional food consumption among Generation Z of Indonesia. It is worth noting that not all social media influencers prioritise health benefits or functional aspects when reviewing food; some focus more on hedonic aspects such as taste and culinary experiences (Ingrassia et al., 2022). However, social media posts that provide clear information, such as location and how to purchase or compare prices, have increased purchase intention in the context of Instagram users in North America, emphasising the importance of influencers conveying the functional aspects of products (Farivar et al., 2023). Preference for clarity of information related to functional aspects is confirmed by experiments on young Chinese,

proving that individuals with a low social hierarchy position and limited control tend to be moved to do something when persuaded by direct, practical and easy-to-digest content (Yuan & Liu, 2023). In the context of the loyal audience of food vloggers in Vietnam, food consumption intention is driven significantly by food practical-related information (food ingredient composition, nutritional content, cooking techniques) and hedonic aspects (storytelling, jokes) presented by food vloggers (Luong & Ho, 2023). Studies on the role of hedonic and utilitarian attitudes in helping food influencers shape traditional food consumption intent are still limited, therefore the following is Hypothesis 8 in Study 2,

H8: The relationship between food influencers and the consumption intention of traditional and locally produced food is mediated by a utilitarian attitude.

2.5. Literature Review of Study 3

2.5.1. Theory of Planned Behaviour as a Study 3 Theoretical Framework

In studies of food waste management, researchers have frequently drawn on the Theory of Planned Behaviour (TPB) with the combination of other conceptual framework to explain why different groups, including Generation Z, adopt this sustainable behaviour (Akhter et al., 2024; Heidig et al., 2025). Slightly different from the Theory of Reasoned Action (TRA), the TPB framework extensively tests the influence of perceived behavioural control or perceptions regarding the level of ease of implementing food waste reduction, in addition to testing TRA anchored constructs such as attitude and subjective norms (Qi et al., 2025). In several studies, such as those in China and Korea, prominent collectivist cultural values, subjective norms, and perceived behavioural control have significantly influenced food waste reduction (Fischer & Karl, 2022; Ogiemwonyi & Jan, 2023). This social control does not always provide a good environmental impact. For example, in particular cultures, it is considered impolite for someone to finish their food when eating together, so it is necessary to leave a little bit to show respect and courtesy, satisfaction, and be a symbol of abundance (Aleshaiwi & Harries, 2021). The situation in Indonesia, a country that tends to adhere to collectivist cultural values, is somewhat unique. On the one hand, the social norm passed down from parents to children is to save and not throw away food (Tumuyu et al., 2024), but in reality, this country faces a severe food waste problem, which emphasises the urgency of testing the role of subjective norms within TPB framework in the context of Generation Z of Indonesia.

Although it is a robust underlying theory in predicting behaviour based on its three core predictors, the TPB is seen to have limitations, namely that it underestimates the influence of external stimuli and situational factors that may cause individuals to act impulsively or

inconsistently with their beliefs, attitudes or norms (Ananda et al., 2023). The behaviour of throwing away food is partly triggered by impulsive consumption patterns or unplanned spending, especially amid the various deals offered by digital food platforms (Leksono & He, 2025). Without financial limitations and careful consideration of their expenses, young people will buy the food they like without thinking about their consumption capacity (Gascoyne et al., 2024). Another factor that exacerbates food waste is the limited knowledge about effective ways to process food supplies or leftovers and the insufficient food waste impact-related insight (Antonescu, 2024; Gonçalves et al., 2023). Study 3 extends the TPB by involving the influence of price promotions offered by food delivery applications, knowledge, and price consciousness to enhance the model predictability.

2.5.2. The Relationship Between Price Promotion and Sustainable Behaviour Towards Food Waste

A common strategy, companies use to employ in order to gain and maintain a stable customer base, is through price promotions that involve reducing the cost of services or providing financial incentives to attract new customers, foster loyalty among existing ones, and encourage more frequent service use (Chang & Su, 2022). In order to boost short-term traffic and sales, food digital platforms regularly offer price deals that appeal to a young demographic, such as last-minute discount, buy one get one and free delivery vouchers (Meenakshi, 2023; Monroe, 2024). There is a growing concern that price and promotional incentives may inadvertently contribute to the generation of edible food waste and waste from food packaging to ensure food quality during delivery (Lin et al., 2023). Previous research has produced contradictory findings regarding the relationship between promotion and responsible food waste disposal behaviour. Some of the studies found that consumers who took advantage of promotions offered by sellers tended to waste more food or that there was a negative relationship between promotion and food waste reduction behaviour (Tsalis et al., 2021, 2024; Lin et al., 2023). Several qualitative studies also revealed that the underlying reason for this was that consumers who utilised promotions such as "buy one, get one free" (Silvennoinen et al., 2014) or buy in bulk (Farr-Wharton et al., 2014) would necessarily purchase more products than intended, thereby increasing the likelihood of food waste.

On the contrary, other research found that there was a significant and positive relationship between price promotions and responsible food waste behaviour (Aschemann-Witzel et al., 2017; Calvo-Porral et al., 2017; Wu & Honhon, 2023); namely, the more interested a group of consumers were in using promotions offered by sellers to purchase, the more responsible they were with the products they have purchased in terms of not wasting food. Consumers who

prioritised price tended to meticulously shop to identify the most cost-effective alternative that offered comparable quality. Individuals would refrain from purchasing excessive quantities of products, and during the post-consumption phase they would also be reluctant to discard unconsumed food if unable to consume it in a single instance (Ang et al., 2021; Aschemann-Witzel et al., 2017). Given the differences in the findings regarding the impact of promotions on food waste, the following is the ninth hypothesis,

H9: Price promotion has a significant effect on sustainable behaviour towards food waste.

2.5.3. The Influence of Knowledge on Sustainable Behaviour in Food Waste Management

Food waste reduction knowledge refers to an individual's awareness and comprehension of practical strategies to prevent food waste generation (Masdek et al., 2023). Insight-related food waste includes correctly storing and reusing edible surplus food, devising meal plans to avoid excess, regulating serving sizes, and composting food no longer fit for consumption (Zębek & Žilinskienė, 2021). Recent research among young Germans has found that knowledge of environmental conservation can encourage individuals to engage in sustainable behaviour related to food waste (Melnyk et al., 2025). Individuals who comprehended the environmental impacts caused by their consumption behaviour have been shown to decrease food waste and repurpose unconsumed food to avoid waste (Kennedy et al., 2024; Mago et al., 2024). However, it was also demonstrated by several studies that an individual's knowledge of environmental preservation and the consequences of the consumption habits might not directly impact the actual environmental protection behaviour (Simões et al., 2024). Knowledge related to food waste management needs to be supported by favourable attitudes regarding the importance of sustainable behaviour and self-efficacy in managing food leftovers to convert this insight into actual behaviour (Gao et al., 2024). The impact of a person's knowledge of the environment on environmentally friendly behaviour shows inconsistent results; therefore, here is the tenth hypothesis,

H10: Knowledge of food waste reduction has a significant effect on sustainable behaviours towards food waste.

2.5.4. Subjective Norms and Sustainable Behaviour Towards Food Waste Relationship.

As one of the TPB's primary constructs, subjective norms refer to the perceived social expectations of important referents such as family and close peers (Qi et al., 2025). In the context of individuals who respect the elderly as much as young people in Turkey, they will tend to follow the good example and advice of their parents, especially in terms of avoiding food waste, showing the prominent role of subjective norms (Filimonau et al., 2023). Subjective

norms cannot constantly influence a person's food waste reduction; as proved in an Indonesian context study, it was found that respondents were more driven by conscientiousness and religiosity in performing good deeds than by external parties (Chandra et al., 2024). The influence of subjective norms can also be overtaken by behavioural control and attitude, weakening or strengthening the resulting effect size (Çetin & Çetin, 2024; Heidig et al., 2025).

H11: Subjective norms significantly affect sustainable behaviours toward food waste.

2.5.5. Price Consciousness as a Mediator of Price Promotion and Sustainable Food Waste Behaviour.

Price consciousness refers to individual attention to a product's price level and the financial benefits that may be obtained from taking action (Winzer & Zhang, 2024). Those with a high degree of price consciousness were inclined to compare similar-quality products to seek more economical options (Stuber et al., 2024). When facing a marketing stimulus such as a price reduction, high-price-conscious individuals tend to respond reactively, show less brand loyalty and have high cognitive flexibility since slight price differences easily sway them (Inderst & Obradovits, 2023). Price consciousness combined with the anxiety of missing out on attractive promotional prices offered for a limited period to buy one's favourite products further amplifies impulsive and excessive purchasing patterns (Cheah et al., 2024). However, the reactions of individuals toward promotion were slightly different in the context of Turkish consumers, which shows that price-conscious consumers do not act impulsively and are more careful in spending money since they are committed to their long-term financial goals (Özyörük, 2022). Exposure to predictable price deals, which tend to be present regularly, leads price-conscious individuals not to be impulsive but instead make them buy only what is necessary (Cheng & Blank, 2022). It is still unclear in the context of Generation Z of Indonesia consumers how this price consciousness can be an obstacle or enabler of better food waste management behaviour in the context of exposure to the price promotion of food delivery applications; therefore, the following is the twelfth hypothesis,

H12: Price consciousness mediates the relationship between price promotion and sustainable behaviour towards food waste.

2.5.6. Attitude as a Mediator of Knowledge and Subjective Norms Towards Sustainable Food Waste Behaviour

The attitude toward food waste reduction reflects how individuals perceive that throwing food away violates internalised ethical standards, is not in accordance with conscience, is not a good deed, is against morals, and causes regret (Li et al., 2024). Within the TPB framework, an

attitude charged with morals often encourages individuals to avoid unsustainable behaviour and provides a firm reason to do what is believed to be virtuously proper (Kaiser et al., 2021; Winzer & Zhang, 2024). In the context of food waste, attitude can be a mediating factor, a catalyst for behaviour, and a lens through which to filter the stimulus a person receives (Gao et al., 2024; Shen et al., 2023). As a result, individuals are encouraged to engage in behaviours that can lessen the amount of food waste generated. Simply understanding the harmful consequences of food waste and having sufficient information about strategies to reduce it may not be enough to motivate individuals to behave responsibly. However, fostering a positive attitude will encourage translating this knowledge into practical action (Brotja Nee Oliver et al., 2024).

The influence of subjective norms, which are formed from family upbringing, behaviour considered good by close friends or modelling the behaviour of respected people, subsequently also able to form particular attitudes and shape behaviour (Qi et al., 2025). The more positive outlook someone had and the more someone adhered to personal norms of sustainable living, the more likely it was to act accordingly (Packard & Schultz, 2023). Social pressure could form an individual's perception of responsible behaviour towards food waste and elicit feelings of guilt when engaging in wasteful practices (Devos et al., 2023). Observing the behaviour of individuals in their immediate social circles about meal preparation, food storage and utilisation of leftovers had the potential to foster a constructive attitude towards food waste reduction (Essiz & Mandrik, 2022). This might result in a diminished sense of reluctance towards reheating and repurposing leftover food, and an engagement in innovative composting practices to salvage edibles that are no longer fit for consumption (Cheng et al., 2024; Zheng et al., 2023). Therefore, Study 3 explored how attitude mediated the connection between knowledge, subjective norms, and responsible food waste behaviour.

H13: Attitudes mediate the relationship between knowledge and sustainable behaviour towards food waste.

H14: Attitudes mediate the relationship between subjective norms and sustainable behaviour towards food waste.

2.5.7. Perceived Behavioural Control as a Mediator of Price Promotion and Knowledge Towards Sustainable Food Waste Behaviour.

Perceived behavioural control of food waste management reflects individual perception of their ability minimising food waste through controlling meal portions, storing food properly so that it does not spoil quickly, and processing leftovers (Etim et al., 2024). Prominent perceived behavioural control, which is formed through positive experiences and personal confidence,

supported by infrastructure or sufficient knowledge, can subsequently shape one's behaviour firmly. When facing price deals, perceived behavioural control towards leftover food management can act as an internal filter so that unsustainable behaviours such as over-purchasing and food waste do not occur (Van Lin et al., 2023). Recent study found that households that take advantage of multi-unit offer deals when accompanied by proper food storage ability, such as freezing excess food, report wasting less food than households that buy products at regular prices (Van Lin et al., 2023). Frequent food deal offers have the potential to lessen the financial weight of purchases, making consumers more likely to buy adequate portions and avoid excessive food spending (Chang et al., 2024; Leksono & He, 2025). Knowledge-induced perceived behavioural control, along with adequate storage infrastructure and creativity in food processing, has been proven to move someone to behave sustainably by minimising their food waste (Çetin & Çetin, 2024; Gao et al., 2024; Valentin et al., 2024). The more individuals have fair knowledge and ability to manage their food portions, store leftovers, and process leftovers, the more tangible effort to reduce food waste will also be realised (Galván-Mendoza et al., 2022). Based on the discussion, the following hypotheses were developed:

H15: Perceived behavioural control mediates the relationship between price promotion and sustainable behaviour towards food waste.

H16: Perceived behavioural control mediates the relationship between knowledge and sustainable behaviour towards food waste.

3. MATERIAL AND METHODS

3.1. Research Instrument

The research instruments employed in each study in this dissertation were adapted from established studies on the topics of food consumption motives, traditional food consumption, and food waste reduction behaviour. The three separate questionnaires were developed using a five-point Likert scale to analyse the level of respondent agreement regarding the questionnaire items. Each questionnaire was administered in Indonesian, the common language used by young Indonesians as the targeted respondent, and it was then translated into English in this dissertation. Before distributing to the targeted number of respondents, the validity and reliability of each questionnaire from these three studies were first tested on fifty respondents to ensure that all questionnaire items used were easy for respondents to understand. Details of the questionnaire items used in this dissertation are provided in Table 2, Table 3, Table 4, and Appendix.

Table 2 Latent Variables, Indicators, and Sources of Study 1

Latent variable	Code	Indicator	Sources
Sensory appeal motives	SA.1	Appearance	(Moshtaghian et al., 2024; Teng et al., 2022)
	SA.2	Aroma	
	SA.3	Texture	
	SA.4	Flavour	
Health concern motive	HEALTH.1	Good impact for health	(Moshtaghian et al., 2024; Prakash et al., 2019; Teng et al., 2022)
	HEALTH.2	Fibre	
	HEALTH.3	Protein	
	HEALTH.4	Vitamin	
Price conscious motive	PRICE.1	Affordability	(Teng et al., 2022; Yue et al., 2020)
	PRICE.2	Cheap	
	PRICE.3	Deal proneness	
Ecological concern motive	ECO.1	Environmentally friendly ingredients	(Aschemann-Witzel et al., 2022; Teng et al., 2022)
	ECO.2	Environmentally friendly production	
	ECO.3	Environmentally friendly packaging	
Social-welfare concern motives	SWC.1	Local retailers	(Kim & Huang, 2021; Lema-Blanco et al., 2023; Waehning & Filieri, 2022)
	SWC.2	Local producers	
	SWC.3	Local economic growth	
Convenience motive	CONV.1	Available in shop nearby	(Guina et al., 2020)
	CONV.2	Online availability	
	CONV.3	Ease of preparation	
	CONV.4	Cooking time	
Social-adherence motive	SOA.1	Follow the social media trend	(Guina et al., 2020)
	SOA.2	Follow closest circle behaviour	
	SOA.3	Follow influencer recommendation	
Sustainable food choice	SFC.1	Local food ingredients	(Gravelines et al., 2022)
	SFC.2	Seasonal fruit vegetable	
	SFC.3	Organic food	
	SFC.4	Natural/environmentally friendly packaging	

Food waste management	FWM.1	Take away food leftover	(Chang, 2023a; Gravelines et al., 2022; Liu & McCarthy, 2023)
	FWM.2	Recycle food	
	FWM.3	Suboptimal food consumption	
	FWM.4	Near expiry food consumption	

Source: Author's own elaboration based on the cited literature for Study 1 instrument development, 2025

The manifest variables, indicators, and their corresponding references, which served as the basis for the adaptation of the Study 1 instrument, are displayed in Table 2. The operational definition of sustainable food choice in this study is the behavioural habits of respondents in choosing various types of food that are believed to contribute to sustainability, such as buying local food ingredients, consuming seasonal fruits or vegetables, consuming organic food, and buying food products with environmentally friendly packaging such as using natural biodegradable materials or packaging with environmentally friendly labels (Gravelines et al., 2022). Food waste management refers to individual behaviour in processing food waste, such as taking leftovers from dining out, minimising food waste through reprocessing the leftovers and being willing to consume suboptimal and near-expired food (Chang, 2023b; Gravelines et al., 2022; Liu & McCarthy, 2023). Sensory appeal refers to the extent to which respondents consider the sensory aspects of food, such as the appearance, aroma, texture, and taste, in their daily food consumption decisions (Moshtaghian et al., 2024; Teng et al., 2022). The health concern is an individual's concern for the health impact of their food choices, which includes consideration of fibre, protein, vitamin content, and overall health benefits (Moshtaghian et al., 2024; Prakash et al., 2019; Teng et al., 2022). Price consciousness is the extent to which individuals consider the affordability of prices, tend to consume food at low prices, and take advantage of price reductions when buying food (Teng et al., 2022). Ecological concern refers to individual attention to the ecological elements of the food products they consume, including environmentally friendly raw materials, sustainable production processes, and ecological packaging (Aschemann-Witzel et al., 2022; Teng et al., 2022). Social welfare concern is the extent to which respondents consider the social impact of their daily food consumption, for example, how their food choices can benefit local retailers and producers and contribute to the growth of the local economy (Kim & Huang, 2021; Lema-Blanco et al., 2023). The indicators in the "convenience" construct measure the importance of the ease of accessing and preparing food, which includes availability at nearby shops, the ease of ordering food online, the ease of preparation, and the brevity of the cooking process (Guina et al., 2020). Social adherence measures the susceptibility of respondents to be influenced by social pressure in choosing food, such as being influenced by viral culinary trends from social media, being recommended by a favourite food influencer, or alignment with their closest social circle dietary preferences (Guina et al., 2020).

Study 1's questionnaire consists of three different sections; the first part provides an overview of the research's objectives, the age criteria requirement of the respondents, and an assessment of respondent's voluntary involvement in the study; the second part gathers the demographic characteristics information of the respondents; and the third part explores food motives and sustainable food consumption behaviour. After conducting a trial of the instrument used in this study, the author obtained research ethics approval from the Research Ethics Committee of Universitas Muhammadiyah Malang Indonesia, with the number E.6.m/115/KE-FPsi-UMM/IV/2024, to ensure that the research was conducted following ethical principles and safeguarding the rights of participants.

Table 3 Latent Variables, Indicators, and Sources of Study 2

Latent variable	Code	Indicator	Sources
Economic value	ECNV.1	Price affordability	(Apak & Gürbüz, 2023; Cavalleri et al., 2023)
	ECNV.2	Local economy contribution	
	ECNV.3	Job creation opportunity	
	ECNV.4	Support local farmer & micro, small, medium enterprises	
	ECNV.5	Fair Trade	
Ecological value	ECLV	Ecological value	(Apak & Gürbüz, 2023; Cavalleri et al., 2023)
	ECLV.1	Eco-friendly production	
	ECLV.2	Eco-friendly packaging materials	
	ECLV.3	Carbon emissions reduction	
	ECLV.4	Use minimal or no harmful chemicals	
	ECLV.5	Environmental sustainability and biodiversity	
Socio-cultural value	SCV.1	Cultural Preservation	(Apak & Gürbüz, 2023; Cavalleri et al., 2023)
	SCV.2	Offers authentic experience	
	SCV.3	Strengthen connection with local culture	
	SCV.4	Fosters sense of unity	
Food Influencer	FI.1	Traditional food related content exposure	(Ashraf et al., 2023; Kuncoro & Kusumawati, 2021; Sultan et al., 2021)
	FI.2	Sufficient traditional food information provided	
	FI.3	Exciting influencer engagement	
	FI.4	Appealing traditional food related content	
Hedonic attitude	HA.1	Delicious taste appreciation	(Kusumawardani et al., 2023; Sultan et al., 2021; Zamil et al., 2023)
	HA.2	Pleasant consumption experience	
	HA.3	Dietary variety	
	HA.4	Culinary adventure	
	HA.5	Culinary Passion	
Utilitarian attitude	UA.1	Nutritional value	(Kusumawardani et al., 2023; Sultan et al., 2021; Zamil et al., 2023)
	UA.2	Convenience food availability	
	UA.3	Affordability	
	UA.4	Satiety portion	
	UA.5	Daily energy provision	
Consumption intention of traditional foods	TF.1	Purchase intention	(Hewei & Youngsook, 2022; Rha et al., 2022)
	TF.2	Traditional taste preference	
	TF.3	Traditional processing preference	
	TF.4	Local spices-based food preference	
	TF.5	Traditional recipe preference	

Source: Author's own elaboration based on the cited literature for Study 2 instrument development, 2024

In Study 2, which examined the influence of value and food influencer review stimuli, the research instruments were derived from earlier research and refined to align with the research context, with the variable references outlined in Table 3. In measuring the sustainability values of traditional food consumption, this study involved three first-level construct variables: economic, ecological, and socio-cultural. The economic value measures the perceived financial benefits, financial impact on local communities, job creation opportunities, and support for fair trade for local communities. Ecological value measures the perceived environmental benefits of traditional food consumption, including environmentally friendly production, natural packaging, reduced carbon footprint through locally sourced ingredients, minimal use of chemical additives, and positive environmental impact. Socio-cultural values measure the perceived role of traditional food in preserving cultural heritage, strengthening social ties, providing authentic experiences, and promoting unity when shared with family and friends (Apak & Gürbüz, 2023; Cavalleri et al., 2023). The food influencer variable measures the level of appeal of their traditional food reviews through the frequency of related content, the quality of information, the appeal of the experience, and the presentation of the content (Ashraf et al., 2023). A hedonistic attitude is the perceived enjoyment and sensory satisfaction aspects of traditional food consumption as measured by opinions about taste, experience, food variety, culinary adventure, and passion (Kusumawardani et al., 2023; Zamil et al., 2023). Traditional food consumption intention assesses respondents' intention to buy these foods, focusing on preferences for future purchases and preferences for consuming foods that are locally sourced, authentic, use local spices, and are produced using traditional recipes (Rha et al., 2022).

The Study 2 questionnaire comprised three primary sections. The first section provided an introduction that outlined the research topic, criteria and operational definitions of specific terms such as “food influencer” and “traditional and locally-produced food” and ethical considerations. Additionally, in the first part of the questionnaire, there is also the respondent's approval regarding the anonymous nature of the respondent's involvement, a guarantee that there are no specific identity questions, the use of confidential data, and a statement regarding the voluntary participation of the respondent. The second section contained the main questionnaire items focused on the study's constructs. The third and final segment consisted of demographic queries about sex assigned at birth, observed food influencers, known traditional Indonesian foods, frequently used social media platforms and monthly expenditure levels inquiries. The information consent and research instrument delineated in the present document have duly obtained ethics approval from the Research Ethics Committee of the Faculty of Business and Economics of the University of Debrecen, bearing registration number GTK-KB 002/2023 on April 4th, 2023.

Table 4 Latent Variables, Indicators, and Sources of Study 3

Latent variable	Code	Indicator	Sources
Price promotion of food delivery service application	PR1	Discount	(Prasetyo et al., 2021; Sharma et al., 2023)
	PR2	Free delivery advantage	
	PR3	Delivery cost discount	
	PR4	Time-limited discount	
	PR5	Bundling promotion	
Knowledge related responsible food waste	K1	Knowledge on reducing food waste	(Aydin & Yildirim, 2021; Burlea-Schiopoiu et al., 2021; Jarjusey & Chamhuri, 2017)
	K2	Knowledge on environmental impact	
	K3	Knowledge on food storage	
	K4	Food waste-environment linkage knowledge	
Price consciousness	PC1	Cheap price preference	(Attiq et al., 2021)
	PC2	Price comparison habit	
	PC3	Price checking	
	PC4	Value for money orientation	
Attitude	ATT1	Guilt about wasting food	(Aktas et al., 2018; Aydin & Yildirim, 2021)
	ATT2	Conscience conflict	
	ATT3	Negative feelings toward food waste	
	ATT4	Moral disapproval of wasting food	
	ATT5	Regret about food waste	
	ATT6	Upbringing against food waste	
Perceived behavioural control	PBC1	Ease in minimizing waste	(Al Amin et al., 2021; Talwar et al., 2023)
	PBC2	Ease in storing food	
	PBC3	Ease in reprocessing	
	PBC4	Portion control ability	
	PBC5	Ease in finishing food	
Subjective norms	SN1	Perceived approval	(Talwar et al., 2023)
	SN2	Family encouragement to reduce food waste	
	SN3	Friend disapproval of food waste	
	SN4	Social modelling	
Sustainable Food Waste Behaviour	FWB1	Portion control behaviour	(Burlea-Schiopoiu et al., 2021)
	FWB2	Waste minimization	
	FWB3	Reheating leftovers	
	FWB4	Leftover consumption	
	FWB5	Consume food before spoil	

Source: Author's own elaboration based on the cited literature for Study 3 instrument development, 2023

The research instrument of Study 3 regarding the effect of price promotions offered by food delivery applications, food waste-related knowledge, and the Theory of Planned Behavior on sustainable food waste management behaviour was adapted from previous related studies (shown in Table 4). Sustainable behaviour towards food waste is defined as individual actions taken to reduce food waste, starting from controlling meal portions, minimising food waste generated from personal consumption, being willing to process and reuse leftover food supplies, and making efforts to process food ingredients or supplies before they are no longer fit for consumption (Burlea-Schiopoiu et al., 2021; Talwar et al., 2021). Food delivery platform price

promotions refer to various forms of marketing strategies related to short-term price reductions, including food product discounts, cheap food delivery promotions, free delivery vouchers, flash sales or limited-time discount offers, and food bundling packages, with the aim of attracting users to order food through this platform (Suhartanto et al., 2023). Knowledge related to responsible food waste encompasses an individual's understanding of how to reduce food waste, adequate food storing methods to preserve its freshness, the negative consequence of food waste on the environment, and the importance of food waste reduction to preserve ecological health (Aydin & Yildirim, 2021). Price consciousness is the tendency of individuals to consider the price when buying food, including the intention in buying food at a low price, comparing prices before making a purchase, and trying to get food choices of the same sound quality but at a lower price (Aktas et al., 2018; Aschemann-Witzel et al., 2017; Attiq et al., 2021). Subjective norms support social norms for the formation of behaviour that minimises food waste in individuals, where the closest social circle, such as family and (Elhoushy & Jang, 2021b; Talwar et al., 2023). The questionnaire items on perceived behavioural control measure how easy an individual finds to manage and reduce food waste, including managing appropriate food portions, storing leftovers properly, and having the capacity and ability to process leftovers to remain suitable for consumption. Attitude towards food waste refers to an individual's perspective towards wasting food, including guilt, moral discomfort, or remorse when throwing food away, and believing that food should not be wasted (Aktas et al., 2018; Aydin & Yildirim, 2021; Talwar et al., 2022).

3.2. Population and Sampling

Across the three studies conducted in this dissertation, the standard sample characteristic is Generation Z of Indonesia, individuals born between 1997 and 2006. According to a national demographic survey, Generation Z of Indonesia population is approximately 75.5 million (BPS - Statistics Indonesia, 2021). The minimum sample size targeted in Study 1 on the segmentation of Generation Z of Indonesia based on food consumption motives and Study 2 on the influence of sustainability values and food influencer reviews towards traditional food consumption intention is 1112 respondents, calculated using a (Gomez & Jones III, 2010) formula with a margin of error of 3%. For Study 3, with a focus on the subset of Generation Z in Indonesia who are active users of delivery food applications, estimated at around 19.85 million users (Rakuten Insight, 2023a), the minimum sample size was set at 400 respondents, calculated using a Gomez & Jones III (2010) formula with a margin of error of 5%. In Study 1, the questionnaire was administered through Quision, a professional survey distribution platform with a verified respondent pool. The platform enables precise targeting of demographic characteristics,

including age and domicile, and was set to recruit only Indonesian individuals within the Generation Z age range from the intended regions. The questionnaire distribution period for Study 1 was from March to May 2024. For Studies 2 and 3, the questionnaires were distributed through paid enumerators affiliated with student bodies and organizations at several universities located in the targeted regions. These enumerators shared the survey link exclusively within internal student groups, such as class and cohort groups, through WhatsApp and Instagram channels. As the distribution was limited to enrolled university students, the respondents were assured to fall within the Generation Z age range and to represent the student population of the respective regions. The questionnaire distribution period for Study 2 was from May 2023 to January 2024. Meanwhile, the questionnaire completion period for Study 3 was from February to March 2023. In practice, the final number of respondents collected in each study exceeded the minimum sample threshold to anticipate incomplete or invalid responses and maintain representativeness. After rigorous data screening, the valid sample used in the analysis of Study 1, Study 2, and Study 3 was 1160 respondents, 1292 respondents, and 561 respondents, respectively. Figure 5 shows the geographical distribution of respondents from each study, with dark green circles representing Study 1 respondents, very dark green circles representing Study 2 respondents, and bright green circles representing Study 3 respondents.

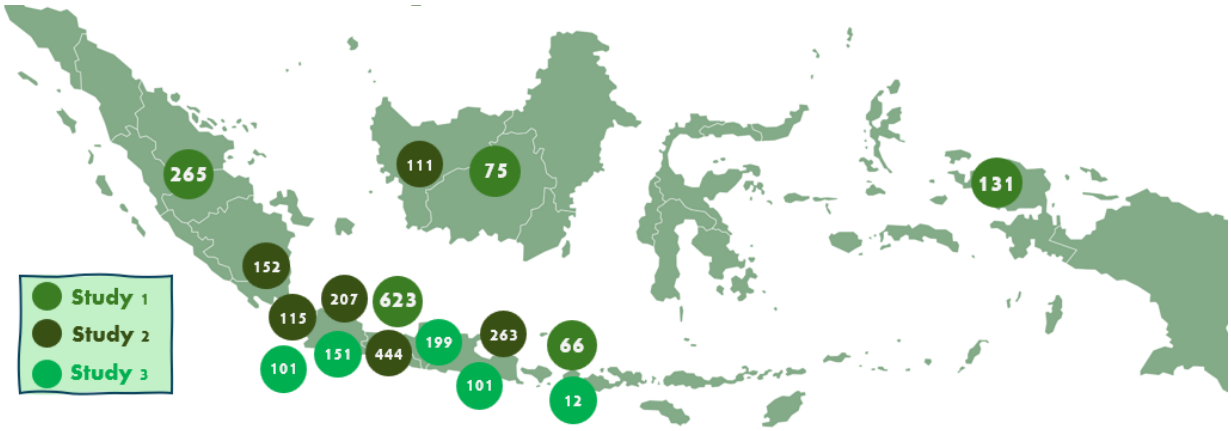

Figure 5 Map of Respondents' Geographical Distribution Across Indonesia

Source: Author's own elaboration based on Study 1, Study 2, and Study 3 survey data, 2026

Study 1 employed a quota and purposive sampling approach, targeting a predetermined number of respondents from five primary regions across Indonesia. In order to enhance data integrity and mitigate response bias resulting from the carelessness of participants, straight-line responses to 32-item questionnaires were eliminated and not used for further analysis (Jaeger & Cardello, 2022). The distribution of the proportion of valid samples per region used in Study 1 was 623 (53.7%) respondents from Java, 265 (22.8%) respondents from Sumatra, 75 (6.5%) respondents from Kalimantan, 66 (5.7%) respondents from Bali and Nusa Tenggara, 131

(11.3%) respondents from Sulawesi, Maluku, Papua, which is adjusted to the actual ratio of the geographical distribution of Generation Z of Indonesia (see Table 5). To enhance the representativeness of the dataset, an equal gender quota was applied, with 580 male and 580 female respondents. The majority of Study 1's respondents lived in provincial capitals (526 respondents) and big cities (418 respondents); were able to meet basic needs and have a little money to buy non-basic items (441 respondents); with Instagram as the most accessed social media (560 respondents).

Table 5 Respondents' Demographic Profile of Study 1

Demographic characteristics		Number of Respondent	Percentage
Sex	Male	580	50%
	Female	580	50%
Type of living area	Provincial Capital (A city that is the administrative centre of a province, usually where various provincial government institutions are located).	526	45%
	Big City (A place of residence with many residents and complete facilities, but not the Provincial Capital).	418	36%
	Small City (A place of residence that is smaller than a big city and has limited facilities).	153	13%
	Village/Rural Area (A place of residence outside the city, usually with fewer residents and simple facilities).	63	5%
Region	Java	623	54%
	Sumatera	265	23%
	Bali	66	6%
	Kalimantan	75	6%
	Sulawesi, Maluku, Papua	131	11%
Financial situation	Often have difficulty meeting my basic needs.	59	5%
	Can meet my basic needs, but have difficulty with other expenses outside of that.	198	17%
	Can meet my basic needs and still have a little extra to buy non-basic items that I want.	441	38%
	Can meet my basic needs and other needs that I want quite comfortably.	322	28%
	Can meet all my needs and desires quite comfortably and still have extra funds to save or invest.	140	12%
The most frequent social media used	TikTok	364	31%
	Instagram	560	48%
	YouTube	96	8%
	X (Twitter)	97	8%
	Facebook	20	2%
	WhatsApp	23	2%

Source: Author's own elaboration based on Study 1 survey data, 2025

The sampling method used in Study 2 was purposive sampling, namely Generation Z of Indonesia, with the following criteria: 1) watching traditional food review content presented by

food influencers; 2) having experience consuming traditional Indonesian food. Two open verification questions were included in the questionnaire to validate the eligibility of the respondents. Participants had to write down the username or account of the food influencer whose traditional food content they had watched on social media and the name of at least one type of traditional Indonesian food they had consumed. Responses that did not meet these aforementioned criteria, such as mentioning irrelevant content creators who did not specialise in reviews of traditional Indonesian food or listing non-Indonesian traditional foods (e.g. *topokki, burgers, pasta, kebabs,* etc.), were not included in the dataset. In addition to purposive sampling, a quota method approach was also applied, which targeted a balanced distribution of 51% male and 49% female respondents, reflecting the actual gender proportions of Indonesia's Generation Z. A total of 1311 respondents were initially collected, but only 1292 valid responses were retained for analysis. Reasons for eliminating 19 survey responses from the dataset included failure to meet purposive sampling criteria, incomplete answers, or providing straight-line answers across 33 questionnaire items, indicating respondent lack of engagement.

Geographically, most Study 2 respondents came from Java, the most populous island in Indonesia and the island with the highest level of internet user penetration in Indonesia at 83.64% compared to internet users throughout Indonesia (Databoks, 2024b). Furthermore, the Java region provided an ideal environment where food influencers have a substantial presence and rich culinary heritage. Specifically, 34% (444) of Study 2 respondents came from the Special Region of Yogyakarta and Central Java, 16% (207) from Jakarta, 9% (115) from West Java, and 20% (263) from East Java (see Table 6). The remaining respondents were from regions outside Java, 12% (152) from North Sumatra and 9% (111) from East Kalimantan. The social media of choice for most respondents was TikTok (602), followed by Instagram (348), YouTube (307), X (22) and Facebook (13). Respondents' most frequently mentioned food influencers were *Ria SW* (560 mentions), known for her international and authentic traditional food reviews, and *Nex Carlos* (328 mentions), who focuses on regional cuisine specialities and works with Indonesian food and beverage companies as its main sponsor. Respondents also mentioned other food influencers such as Ken & Grat (348 mentions), *Mgdalenaf* (306 mentions), *The Food Ranger* (139 mentions) and *Separuh Aku Lemak* (132 mentions). Regarding respondents' monthly budget, most respondents (664) reported spending less than the regional minimum wage standard on food, indicating a cautious approach to spending. In addition, 435 respondents spent around the regional minimum wage, and 193 respondents reported spending above the regional minimum wage, indicating varying levels of financial commitment and involvement in spending money, including on traditional food.

Table 6 Respondents' Demographic Profile of Study 2

Demographic Characteristics		Number of Respondent	Percentage
Gender	Male	659	51%
	Female	633	49%
Most used social media	Instagram	348	27%
	YouTube	307	24%
	TikTok	602	47%
	Twitter (X)	22	2%
	Facebook	13	1%
Frequency of buying food outside	Rarely/only at special events	83	6%
	Once a week	116	9%
	2-3 times a week	430	33%
	4-6 times a week	596	46%
	Everyday	67	5%
Monthly food budget	Lower than regional minimum wage	664	51%
	Around regional minimum wage	435	34%
	Higher than regional minimum wage	193	15%
Region	Jakarta	207	16%
	West Java	115	9%
	Special Region of Yogyakarta and Central Java	444	34%
	East Java	263	20%
	North Sumatera	152	12%
	East Kalimantan	111	9%

Source: Author's own elaboration based on Study 2 survey data, 2024

The sampling method in Study 3 was purposive sampling, using the criteria of Generation Z of Indonesia who have shopping experience and are aware of the promotions offered by food delivery service applications such as Go Food, Grabfood, Shopee Food, and other food delivery applications. Geographically, the largest quota of respondents was sourced from various provinces on the island of Java. This strategic focus derives from Java's situation as the region with the highest concentration of culinary businesses compared to other islands in Indonesia (Statistics Indonesia, 2024a). Most culinary entrepreneurs on the island of Java have also collaborated with food delivery platforms as third parties to help them sell their culinary products online, leading to a higher concentration of food delivery service application users, particularly in urban areas. Five 561 valid responses were obtained after data filtering by reviewing the completeness of the participant's answers. Regionally, research respondents came from Yogyakarta and Central Java (35%/197), Jakarta and its surroundings (27%/151), West Java (18%/101), East Java (18%/101), and other areas outside of Java (2%/11) (see Table 7). While official census data detailing the exact gender demographics of food delivery application users in Indonesia is currently unavailable, a survey from (Rakuten Insight, 2023b) with a sample size of 9874 active food delivery application users in Indonesia found that the gender

classification of food delivery application users in Indonesia is almost balanced between female and male users with slightly more female users (57%). Study 3 attempts to obtain a representative gender ratio of respondents following the reality of the gender ratio of food delivery application users in Indonesia, namely with 316 (56.3%) female and 245 (43.6%) male respondents. Chi-square testing confirmed no significant difference between the gender ratio of study 3 and the previous survey (Rakuten Insight, 2023b). A Pearson's Chi-square value of 0.280 was obtained with an Asymptotic Significance (2-sided) of 0.597, surpassing the 5% significance level. The continuity correction method, likelihood ratio, linear-by-linear association, and Fisher's exact test also produced similar findings, with p-values greater than 0.05, confirming no significant difference in gender proportion between Study 3 and previous similar surveys. The types of food delivery applications most frequently used by respondents included ShopeeFood (43.4%), followed by GoFood (38.8%) and GrabFood (17.6%).-The data show that most respondents live in boarding houses (64.1%), highlighting the student-dominated profile of the sample.

Table 7 Respondents' Demographic Profile of Study 3

Demographic characteristics		Respondent	Percentage
Gender	Male	245	44%
	Female	316	56%
Most frequently used food delivery online platform	GoFood	218	39%
	ShopeeFood	244	43%
	GrabFood	99	18%
Monthly spending on food delivery online platform	< IDR 300.000 (EUR 15.72) *	411	73%
	IDR 300.000 - 599.000 (EUR 15.72 – 31.39) *	99	18%
	IDR 600.000 - 899.000 (EUR 31.45 – 47.12) *	18	3%
	> IDR 900.000 (EUR 47.17) *	33	6%
Type of current residence	Home with parents/family	159	28%
	Boarding house	360	64%
	Rented house	5	1%
	Apartment	37	7%
Region	Yogyakarta & Central Java	199	35%
	Jakarta	150	27%
	West Java	100	18%
	East Java	100	18%
	Bali & Nusa Tenggara	12	2%

*1 IDR = 0.00005241 EUR

Source: Author's own elaboration based on Study 3 survey data, 2023

3.3. Data Analysis Techniques

The data analysis procedure in each study in this dissertation was tailored according to its respective research objectives, though certain methodological approaches, such as Structural

Equation Modeling, were carried out in all three studies to test the significance of various exogenous variables on the tested endogenous variables. The following explanation will provide data analysis techniques employed in each study.

Study 1 utilised statistical software such as JAMOVI 2.3.28, RStudio 2024.04.2 version, and SMART PLS 4 to analyse the data. A comprehensive analysis approach used to validate the psychometric instruments used to measure various food consumption motives and sustainable food consumption, which involves exploratory factor analysis (EFA), the initial process of exploring the implied structure of a group of variables; confirmatory factor analysis (CFA) to confirm the suggested structure from EFA, theoretical expectations, and the model's fit; Item Response Theory (IRT) which provides detailed information regarding the discrimination and difficulty characteristics of the indicators (Dias et al., 2023; Wu et al., 2023). Based on Zein & Akhtar (2025), item difficulty refers to the threshold level (b1, b2, b3, b4) of the underlying trait at which respondents are likely to move from a lower to its subsequent category, indicating how much of the latent construct is required for an item to be endorsed at a stronger level. In exploratory analysis, the extraction method used is maximum likelihood with Nobel rotation, considering the number of fit indices available for this method (Goretzko et al., 2021). The data from the respondents' responses were confirmed to be suitable for factor analysis by reviewing the p-value from Bartlett's Test of Sphericity, which was less than 0.05, and the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy value of each manifest variable in this study was more than 0.70 which indicated adequate data fit (Shrestha, 2021). If the EFA factor loading value is above 0.4, it can be concluded that the questionnaire item can explain the intended unobserved variable (Sürücü et al., 2024). To ensure that the data does not experience Common Method Bias (CMB), such as specific patterns that appear not because of actual opinion but because of method bias, Harman's One-Factor Test is performed, and it is necessary to ensure that the first-factor value can explain more than 50% of the total variance. Harman's One-Factor Test is performed under the principal component analysis feature in JAMOVI with unrotated solution extraction.

Subsequently, CFA was then conducted to check that the data had a good fit with the proposed model as well as the structure generated from EFA analysis by evaluating the CFI (>0.95), TLI (>0.95), SRMR (<0.08), and RMSEA (<0.08) indicators. Convergent validity is good if latent variables can describe more than half of the manifest variable’s variance (Average Variance Extracted > 0.50). The reliability of each latent variable is evaluated by ensuring that the hierarchical omega is more than 0.80, which indicates strong internal reliability (Kalkbrenner, 2023). Each of the constructs used in this study was confirmed to be different and unique from

each other when the Heterotrait-Monotrait Ratio value did not exceed 0.85 (Sarstedt et al., 2022).

Item Response Theory analysis is employed to understand various latent variables in greater depth and to assess the quality of manifest variable items in more detail. The indicators of the manifest variables are considered informative in distinguishing individuals with various consumption motivation preferences or levels of sustainable consumption behaviour if the discrimination parameter (α) is above 1.7 (Stănculescu, 2022). Each manifest variable's threshold parameters (b1, b2, b3, b4) are reported to explain the transition point at which respondents move from one response category to another (Shaw et al., 2021). A low threshold value of parameter b1 indicates that a particular indicator is "easier" for respondents to choose or perform (Terluin et al., 2023). On the other hand, the higher threshold value of b4 reflects that the action tends to be chosen by respondents with a higher trait level (having higher motivation or exhibiting more frequent latent behaviour).

Study 1 utilised the K-Means clustering method, suitable for large datasets (Tang et al., 2019), to determine the consumer segment based on the variation of respondents' answers related to the seven types of food consumption motives. Various tests were employed to determine the optimal cluster number that can be used to perform K-Means clustering, including the Gap Statistic method, Hubert Index/D Index, Connectivity, Dunn Index, and Silhouette Index. The gap statistics graph in this study was generated using the snowCluster package JAMOVI, which can provide an estimate of the optimal number of clusters by comparing changes within clusters without requiring the data to have a normal distribution so that it is suitable to be applied to any clustering method including K-Means (Yang et al., 2019). Hubert Index and D Index (second differences Hubert Index) graphs, generated using the NbClust package R Studio, display the recommended optimal number of clusters, with the highest point (knee point) in each graph indicating the division of clusters with the optimal quality (Son & Cho, 2022). Validation metrics by comparing three types of validation methods, including connectivity, Dunn Index, and Silhouette Index, are generated using the clValid package in R Studio. The highest value in each Dunn and Silhouette Index indicates the optimal number of clusters with the best separation and clarity. Meanwhile, in the connectivity validation method, the lowest value indicates the best compactness or connectedness of data within clusters (Sagala & Gunawan, 2022; Voicu et al., 2020). From the various recommendations for the optimal number of clusters, the researcher then justifies choosing how many clusters to use while still paying attention to the research context related to segmentation based on consumer behaviour and avoiding over-simplifying or over-clustering (Shi et al., 2021). K-means clustering was

conducted based on 24 indicators from 7 types of food consumption motives with the Hartigan-Wong algorithm, which is known to produce stable clusters, have optimal partitions and achieve faster convergence than other algorithm methods (Kumar et al., 2024). Welch's ANOVA was used to test for differences in food consumption motives and sustainable consumption behaviours indicators across clusters, as the data distribution in each cluster is detected to be non-normally distributed and non-homogeneous. The Games–Howell post-hoc test was then applied to identify the specific cluster pairs with significant differences.

After identifying the respondent clusters based on their food consumption motives, the following step involves modelling structural equations across and within clusters to provide insights into inter-group heterogeneity and how different motivations in implementing sustainable behaviour drive each cluster. The prerequisites for testing path relationship significance are that each construct already has good convergent validity (AVE $\geq$ 0.50), passes the discriminant validity test (review HTMT $<$ 0.85 and Fornell-Larcker criterion) and is reliable (composite reliability $\geq$ 0.70) (Sarstedt et al., 2022).The results of path coefficient testing can be interpreted and said to be valid if the construct has good convergent validity and reliability or does not have measurement error, so it does not cause misleading path significance results (Cheung et al., 2024). The significance of the path relationships of Study 1 was assessed through a bootstrapping procedure with 5000 resamples and a two-tailed test at the 5% level. Exogenous variables are categorized to significantly affect endogenous variables if the p-value is below 0.05 and the t-statistics is more than 1.96 (Sarstedt et al., 2022).

The data analysis method used in Study 2 to test the effect of sustainability values as a high-level construct and food influencer content on intention in traditional food consumption is partial least squares structural equation modelling (PLS-SEM) with SMART-PLS 4 (version 4.0.9.5). Unlike the path analysis testing of Studies 1 and 3, Study 2 involved sustainability values as higher-order construct. Consequently, the data validation process is performed using an embedded two-stage approach method, which is carried out on the first-order construct before being integrated into the second-order construct. The initial step in the two-stage embedded approach, akin to the repeated indicator approach, involves evaluating the measurement model of all first-order constructs in the investigation. These constructs include economic value, ecological value, socio-cultural value, hedonic attitude, utilitarian attitude, and consumption intention. Internal consistency was tested by evaluating Cronbach's Alpha ($\alpha \geq$ 0.7) and Composite Reliability (CR $\geq$ 0.7) (Sarstedt et al., 2022). Convergent validity of first-order constructs was assessed by evaluating the Average Variance Extracted (AVE $\geq$ 0.50) and loading factor (LF $\geq$ 0.70) of each first-order construct (Sarstedt et al., 2022). Discriminant

validity analysis is applied by evaluating the Fornell-Larcker Criteria and the heterotrait-monotrait ratio of correlations (HTMT < 0.9) (Sarstedt et al., 2022). Once all the first-order construct measurement model evaluation has met the requirement, the next step is to generate latent variable scores for each dimension: economic value, ecological value, and socio-cultural value, and subsequently to test the internal consistency, convergent, and discriminant validity of the higher-order construct. The Study 2 latent variables were confirmed to be free of multicollinearity issues by ensuring that the VIF value of each construct is less than 5. The direct and mediating effects of Study 2 were tested using bootstrapping with 5000 resamples and a two-tailed test. The hypothesis related to the direct influence and mediation effect was proved by evaluating the t-statistics (significant effect if the value exceeds 1.96), p-values (significant effect if the value is less than 0.05) (Hair Jr et al., 2021). The strength of influence of the mediating variables, utilitarian and hedonistic attitudes, is evaluated by reviewing the value of the upsilon (0.01 indicates a low effect, 0.075 indicates a medium effect, 0.10 indicates a high mediating effect) (Ogbeibu et al., 2021). The model quality evaluation in Study 2 involved reviewing the f-square, R-squared, Q-square, SRMR, NFI, and PLS predict indicators. PLS Predict used to assess the model's predictive ability by looking at error values (RMSE and MAE) from the PLS-SEM model and comparing them with those from a simpler linear model (LM). The LM acts as a baseline model, so that the predictive accuracy of PLS-SEM can be evaluated relative to a straightforward regression benchmark. When the PLS model shows smaller values than the linear model, it can be considered to have stronger predictive accuracy (Sarstedt et al., 2022).

In Study 3, hypothesis testing of the direct relationship and mediating effect of price consciousness perceived behavioural control, and attitude was performed using SEM-PLS performed on SMART-PLS 4 software, which is suitable for analysing complex relationships of multiple variables (Teoh et al., 2022). Similar to Study 2, the validity and reliability of the research instrument in Study 3 were assessed by ensuring that the loading factor, composite reliability and Cronbach's alpha values were not less than 0.7, the AVE value was more than 0.5, the HTMT did not exceed 0.9, the Fornell-Larcker criterion demonstrated good discriminant validity, and there are no multicollinearity problems with a VIF value not exceeding 5 (Sarstedt et al., 2022). Bootstrapping with 5000 resamples and a two-tailed test at the 5% level was applied to generate t-statistics and p-values that determined the significance of the proposed relationships in Study 3. The significance of the direct influence of each price promotion of food delivery application, food waste-related knowledge, and subjective norm on sustainable food waste behaviour was tested by evaluating the p-value (<0.05) and t-statistics (>1.96). Suppose the mediation effect of a variable is proven to be significant (p-value<0.05; t-

statistics>1.96) while the direct effect is not significant; it indicates that the mediation variable fully mediates the relationship between the two connected variables (Hair Jr et al., 2021). The strength of the influence of the price consciousness, attitude, and perceived behavioural control as mediating variable is analysed by reviewing the value of the upsilon ($\boldsymbol{\upsilon}$), with a value of around 0.01 considered low strength, 0.075 indicates a medium effect, and 0.10 indicates a high mediating effect (Ogbeibu et al., 2021). The influence of endogenous variables on price consciousness, perceived behavioural control, attitude, or sustainable food waste behaviour is reviewed by looking at the f-square value, with a value of around 0.02 considered a low effect, 0.15 a moderate effect, and 0.35 a strong effect (Sarstedt et al., 2022). The research model used in Study 3 is confirmed to align well with empirical data by ensuring that the SRMR indicator value does not exceed 0.1. The level of variance that can be explained by various exogenous variables in the endogenous variable (price consciousness, perceived behavioural control, attitude, or sustainable food waste behaviour) is seen from the R-adjusted square value, with the higher the value, the better fit. The Q2 value of each endogen variable must be higher than zero to ensure that the current study's conceptual framework can also predict similar patterns in future studies (Sarstedt et al., 2022).

4. RESEARCH FINDINGS AND THEIR EVALUATIONS

Chapter 4 presents data analysis and results from three related studies. Section 4.1 discusses 1) Item Response Theory analysis of seven variables: food consumption motives, sustainable food choice and food waste management 2) segmentation of Generation Z of Indonesia based on food consumption motives and characteristics of sustainable food consumption behaviour. Section 4.2 proves the effect of sustainability values and food influencer content review on the intention in traditional food consumption and the mediating effect of utilitarian and hedonic attitudes. Section 4.3 proves the effect of food delivery application price promotion, food waste-related knowledge, and subjective norm on sustainable food waste behaviour mediated by price consciousness, attitude, and perceived behavioural control.

4.1. Study 1: Item Response Theory Analysis and Food Consumption Motives-based Segmentation of Generation Z of Indonesia

4.1.1. Exploratory Factor Analysis

To identify the number of latent variables, uncover the underlying structure of all variables tested, and also see if there is a possibility of reducing variables without losing meaningful information, exploratory factor analysis was utilized in this study. Factor determination using eigenvalue, scree plot, and parallel analysis successfully identified nine factors of seven food consumption motives and two forms of sustainable consumption practices behaviour. The results of the overall diagnostic test or assumption test can indicate that the available data are suitable for factor analysis (KMO overall: 0.908; Bartlett's Test of Sphericity χ^2: 20.864, $p < 0.001$). As shown in Table 8, the factor loadings of all manifest variables are more than 0.3, with CONV.1 showing the lowest factor loading (0.540) and HEALTH.4 as the highest (0.901), which indicates that all manifest variables explain their respective latent variables well (Howard, 2023). Overall, the lowest uniqueness value belongs to HEALTH.4 with a value of 0.178, which indicates that this indicator has high relevance to the model and that only 17.8% of the variance cannot be explained by the manifest variable (Navarro & Foxcroft, 2019). The highest uniqueness value is 0.549, which belongs to SFC.3, indicating that organic food consumption has a moderate quality indicator variable contribution to the model. The nine latent variables in this study have a cumulative variance of 63.54%, which shows that this research model can explain most of the variance. Based on the results of Harman's One Test Factor analysis, it was found that the percentage of variance in the first factor of this research data is 29.92%, which is far below the 50% threshold (Harman, 1976). This indicates that the data does not experience common method bias, such as excessively consistent answers, which may be

caused by respondents' reluctance to fill out the questionnaire or the influence of mood (Sharma & Goyal, 2022; Szakály et al., 2024).

Table 8 Summary of EFA, CFA, and Reliability for Latent Variables

Latent variable	Manifest variable	EFA				CFA	Reliability indices		
		Factor Loading	Uniqueness	SS Loadings	% of Variance	Loading estimate	α	ω_2	AVE
Health concern (HEALTH)	Good impact for health (HEALTH.1)	0.691	0.420	2.92	9.12	0.618	0.80	0.83	0.55
	Fibre (HEALTH.2)	0.806	0.277			0.698			
	Protein (HEALTH.3)	0.892	0.211			0.729			
	Vitamin (HEALTH.4)	0.901	0.178			0.729			
Food waste management (FWM)	Take away food leftover (FWM.1)	0.688	0.486	2.37	7.41	0.657	0.90	0.91	0.72
	Recycle food (FWM.2)	0.648	0.509			0.602			
	Suboptimal food consumption (FWM.3)	0.846	0.267			0.797			
	Near expiry food consumption (FWM.4)	0.796	0.371			0.779			
Ecological concern (ECO)	Environmentally friendly ingredients (ECO.1)	0.810	0.258	2.33	7.28	0.686	0.90	0.90	0.75
	Environmentally friendly preparation (ECO.2)	0.885	0.211			0.737			
	Environmentally friendly packaging (ECO.3)	0.855	0.271			0.762			
Social-welfare concern (SWC)	Local retailer (SWC.1)	0.777	0.282	2.38	7.42	0.673	0.90	0.91	0.76
	Local producers (SWC.2)	0.897	0.202			0.724			
	Local economic growth (SWC.3)	0.841	0.223			0.767			
Convenience (CONV)	Available in shop nearby (CONV.1)	0.540	0.503	2.34	7.31	0.518	0.90	0.85	0.59
	Online availability (CONV.2)	0.620	0.493			0.605			
	Ease of preparation (CONV.3)	0.892	0.221			0.660			
	Cooking time (CONV.4)	0.786	0.361			0.659			
Sensory appeal (SA)	Appearance (SA.1)	0.681	0.440	2.19	6.85	0.580	0.80	0.81	0.58
	Aroma (SA.2)	0.774	0.333			0.578			
	Texture (SA.3)	0.627	0.491			0.541			
	Flavour (SA.4)	0.720	0.479			0.439			
Sustainable food choice (SFC)	Local food ingredients (SFC.1)	0.718	0.406	2.16	6.76	0.575	0.80	0.83	0.62
	Seasonal fruit & vegetables (SFC.2)	0.787	0.382			0.616			
	Organic food (SFC.3)	0.635	0.549			0.536			
	Natural/environmentally friendly packaging (SFC.4)	0.662	0.478			0.597			
Social-adherence (SOA)	Follow the social media trend (SOA.1)	0.828	0.306	1.87	5.84	0.900	0.80	0.82	0.53
	Follow closest circle behaviour (SOA.2)	0.617	0.478			0.658			

	Follow influencer recommendation (SOA.3)	0.786	0.358			0.891			
Price conscious (PRICE)	Affordability (PRICE.1)	0.818	0.339	1.77	5.55	0.596	0.80	0.85	0.59
	Cheap (PRICE.2)	0.751	0.365			0.666			
	Deal proneness (PRICE.3)	0.627	0.522			0.521			

Source: Author's own elaboration based on Jamovi outputs, 2025

4.1.2. Confirmatory Factor Analysis

Model fit testing on the factor model used in this study proved to have a good fit with the data indicated by the RMSEA value of 0.036 (below the threshold value of 0.05), TLI of 0.965 (higher than the threshold value of 0.950), CFI of 0.971 (higher than the threshold value of 0.950), and SRMR of 0.0310 (lower than 0.08) (Navarro & Foxcroft, 2019). All manifest variables tested in this study were found to significantly contribute to their respective latent variables, as indicated by the p values, which were all below 0.001. No manifest variables were excluded in this study since they all have an estimated value above the threshold value of 0.400, ranging from 0.439 (SA.4) to 0.900 (SOA.1) (see Table 8).

4.1.3. Item Response Theory Analysis of Food Consumption Motives, Sustainable Food Choices, and Food Waste Management

Table 9 and Figure 6 show the results of IRT, especially the discrimination parameter (α) and threshold parameters (b1-b4) for each manifest variable. All manifest variables in Study 1 showed discrimination values (α) greater than 1.7, indicating the adequate quality of each questionnaire item in distinguishing respondents' answers (Sethar et al., 2022; Stănculescu, 2022). On this basis, Hypothesis 1 is supported. Study 1 demonstrated satisfactory discrimination, the measurement instrument can be considered reliable in differentiating the levels of motivation and behaviour among Generation Z of Indonesia, addressing the methodological gap identified in the research questions and objectives. The discriminant parameter values range from the lowest (1.904) on the organic food consumption indicator to the highest (6.258) on the vitamin-containing food motives. The more detail interpretation of the strongest discriminant indicators within each motive and behaviour, as well as the tendency of certain indicator to be endorsed at lower or higher latent trait levels, will be discussed in Sections 4.1.4 - 4.1.12.

Table 9 Item Response Theory Parameter Estimates

Latent & Manifest Variable	α	b1	b2	b3	b4
Sensory appeal					
Appearance (SA.1)	2.423	-3.724	-2.491	-0.932	0.624
Aroma (SA.2)	3.431	-3.943	-2.651	-1.199	0.316
Texture (SA.3)	2.294	-4.404	-2.752	-1.122	0.467
Flavour (SA.4)	2.324	-3.302	-1.762	-0.188	
Health concern					
Good impact for health (HEALTH.1)	2.599	-2.547	-1.003	0.073	
Fibre (HEALTH.2)	3.910	-2.132	-0.648	0.476	
Protein (HEALTH.3)	4.751	-1.980	-0.824	0.272	
Vitamin (HEALTH.4)	6.258	-3.571	-2.133	-0.817	0.253
Ecological concern					
Environmentally friendly ingredients (ECO.1)	3.955	-3.520	-2.191	-0.507	0.732
Environmentally friendly production (ECO.2)	5.084	-2.784	-1.920	-0.505	0.691
Environmentally friendly packaging (ECO.3)	3.826	-2.714	-1.639	-0.278	0.804
Social-welfare concern					
Local retailers (SWC.1)	3.819	-2.289	-0.685	0.547	
Local producers (SWC.2)	5.211	-3.507	-1.943	-0.590	0.576
Local economic growth (SWC.3)	4.508	-2.704	-1.854	-0.578	0.557
Convenience					
Available in shop nearby (CONV.1)	2.103	-3.134	-1.150	0.501	
Online availability (CONV.2)	2.189	-3.858	-2.379	-0.691	0.642
Ease of preparation (CONV.3)	4.968	-3.287	-2.285	-0.806	0.432
Cooking time (CONV.4)	3.003	-3.331	-2.129	-0.680	0.587
Price conscious					
Affordability (PRICE.1)	3.547	-3.613	-2.619	-0.956	0.251
Cheap (PRICE.2)	2.929	-3.382	-2.183	-0.457	0.792
Deal proneness (PRICE.3)	2.118	-3.844	-3.117	-1.260	0.213
Social-adherence					
Follow the social media trend (SOA.1)	3.100	-1.867	-0.941	0.115	1.024
Follow closest circle behaviour (SOA.2)	2.240	-2.724	-1.743	-0.369	1.140
Follow influencer recommendation (SOA.3)	2.863	-1.829	-0.875	0.133	1.118
Sustainable food choice					
Local food ingredients (SFC.1)	2.644	-4.041	-2.568	-1.003	0.595
Seasonal local vegetables and fruits (SFC.2)	2.809	-3.527	-2.165	-0.719	0.759
Organic food (SFC.3)	1.904	-4.383	-1.979	-0.102	1.507
Natural/environmentally friendly packaging (SFC.4)	2.216	-3.577	-2.018	-0.291	1.194
Food waste management					
Take away food leftover (FWM.1)	2.178	-3.053	-1.989	-0.558	0.691
Recycle food (FWM.2)	2.066	-3.549	-2.093	-0.618	0.882
Suboptimal food consumption (FWM.3)	3.706	-2.558	-1.201	-0.099	1.041
Near expiry food consumption (FWM.4)	2.688	-2.362	-1.110	-0.011	1.168

Source: Author's own elaboration based on Study 1 IRT outputs, 2025

Threshold parameters b1-b4 represent the latent motive or behaviour points where the probability of endorsing a higher response category equal that of the adjacent lower one

(Stănculescu, 2022; Zein & Akhtar, 2025). Figure 6 illustrates the distribution of threshold parameters (b_1–b_4) and discrimination values (α) across all indicators used in Study 1, providing insight into how different food consumption motives, sustainable food choice, and food waste management behaviours are endorsed at varying latent trait levels (θ). The horizontal axis represents the latent motivation or behavioural continuum, where indicators located further to the left are easier to endorse, while those positioned to the right require higher levels of motivation. The indicators can be broadly classified into four interpretative groups based on their lower and upper difficulty thresholds and their discrimination capacity. First, "Baseline expectations" consist of indicators that are already endorsed at very low latent levels, reflected by highly negative b_1 values combined with strong discrimination parameters. These items are rarely rated at the lowest category even among respondents with very low motivation, indicating that they represent minimum expectations within Generation Z of Indonesia. Conceptually, they resemble Herzberg's "hygiene factors", basic conditions that are typically taken for granted when present, yet may trigger dissatisfaction when absent rather than generating additional motivation on their own (Chan & Baum, 2007). Indicators such as aroma, affordability, and ease of preparation fall into this group.

Second, "Emergent engagement" items are characterised by b_1 values located closer to zero, indicating that endorsement only begins once a low to moderate level of motivation or behaviour is reached. Indicators such as protein and fibre reflect attributes that are not universally prioritised by very low latent motives consumer but become relevant as respondents develop greater awareness and engagement with health-related food motives. This pattern can be interpreted through Maslow's hierarchy of needs, in that consumers with very low consumption motivation tend to prioritise more immediate, deficit-oriented concerns, so nutrition-specific attributes such as protein and fibre become harder to endorse (Zięć et al., 2025).

Third, "High-barrier signals" represent indicators that are exclusively supported by those with very high latent motives, as evidenced by high thresholds b_3 and b_4 combined with high discrimination values. These items distinguish strongly between respondents with moderate and very high motivation. Examples include prioritizing environmentally friendly production product and suboptimal food consumption, suggesting that these behaviours function as advanced expressions of sustainability commitment rather than baseline practices. This pattern aligns with Expectancy-Value Theory, which posits that individuals engage in demanding behaviours only when the perceived value of the outcome is sufficiently high (S. H. N. Lee et al., 2023). The elevated b_3 and b_4 thresholds suggest that these sustainability

behaviours are endorsed primarily when respondents attribute strong personal value to environmental outcomes, making them distinguishing markers of high motivational commitment. "Shared ideals" include indicators that also require higher latent levels for endorsement but exhibit relatively lower discrimination parameters. Items such as consuming organic food and using environmentally friendly packaging products are behaviours that are quite difficult to support, and they are less effective in distinguishing levels of motivation. This pattern suggests that these indicators reflect shared normative ideals rather than sharp behavioural distinctions.

Figure 6 Difficulty Threshold Map (b1–b4)

Source: Author's own elaboration based on Study 1 IRT outputs, 2025

Category Response Function (CRF) curves in (Figure 7-Figure 15) present the probability of Generation Z of Indonesia respondents (displayed on the Y-axis) choosing each response

category (P1, P2, P3, P4, P5) at various levels of latent trait (θ) (X-axis). The slope of each curve on the CRF is a visualisation of its discrimination parameter value. Indicators with high discrimination parameter values, such as "vitamin" (α of HEALTH 4 = 6.258), "environmentally friendly production" (α of ECO.2 = 5.084), and "local producers" (α of SWC.2 = 5.211) are identical to each shape of the CRF curve, which has three high intermediate peaks and narrow bell curve shape. The peak of a category curve marks the latent motives or behaviour (θ) region where that category has the highest probability. Curve colours denote the ordered response categories and the typical latent-trait motives or behaviour where each category is most probable, with P1 blue for very low θ, P2 pink for low θ, P3 green for mid-range θ, P4 red for high θ, and P5 yellow for very high θ. The intersection point between adjacent curves usually appears close to the estimated threshold, for example, the intersection points of curves P1 and P2 has a θ value close to the b1 threshold value (Zein & Akhtar, 2025). Unlike the bell-shaped intermediate categories, the boundary curves (P1 and P5) tend to 'plateau' near the top at the extreme ends of θ, because in the graded response model they represent cumulative probabilities of selecting the most extreme responses, making individuals with very low or very high θ almost certain to choose those options (Zein & Akhtar, 2025).

4.1.4. IRT Results for Sensory Appeal Motive

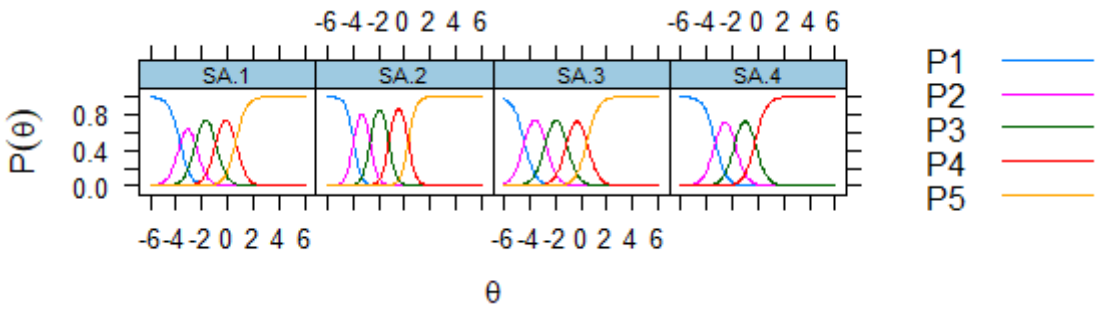

Figure 7 Category Response Function (CRF) Curve for Sensory Appeal

Source: Author's own elaboration based on Item Response Theory analysis visualised in RStudio, 2025

The item "aroma" demonstrated the highest discrimination parameter (α of SA.2 = 3.431) among all sensory appeal indicators, which implies that this item is highly effective in differentiating respondents with varying levels of latent aroma motives. The steep and narrow CRF curve of SA.2 (Figure 7) reflects the discriminating power of the aroma indicator, where the response probability for categories 2 and 3 peaks at just above 0.8, while category 4 approaches 0.9. The first threshold parameter for aroma (b1 of SA.2 = –3.943), one of the lowest among all items surpassed only by Texture (SA.3, b1 = –4.404), and the leftward P1–P2 crossing on the SA.2 CRF curve, indicate that aroma is less likely to be rated as 'not important

at all,' even by respondents at the extreme low end of sensory motives, making it comparatively harder to dismiss than appearance or flavour. Aroma is the initial trigger of flavour expectation, which may influence consumer's appetite, even without visual stimuli (Broge et al., 2023). In the Indonesian context, food aromas are a peripheral cue that is almost universally recognised by young consumers, as appetising food scents such as the smoky aroma of grilled satay and the garlic aroma of fried rice sold by street vendors, to the sweet and creamy aroma of coconut and pandan in traditional cakes, are prevalent in everyday food (Fauza et al., 2023). Against this backdrop, it is unsurprising that aroma serves as an early evaluative signal, with weakly motivated consumers rarely dismissing it outright and highly motivated ones readily affirming its central role in food choice.

Texture shows the lowest discrimination within the sensory-appeal set (α of SA.3 = 2.294), yet still above the acceptable threshold. Its broad SA.3 CRF curve (Figure 7), with three flattened peaks around 0.7, indicates diffuse judgments that distribute across categories rather than optimally segmenting respondents. In practical terms, texture may provoke rejection when expected qualities are absent (such as food that has a soggy texture and no longer crispy) even among consumers with weak sensory motives. The needs of various segments related to pleasant food textures are in line with evidence that Indonesia ranks above the global average in terms of food neophobia, which may indicate that unfamiliar textures can easily interfere with acceptance (Rangka et al., 2023). Flavour (SA.4) has two intermediate CRF curve peaks with their curve intersections occurring at negative θ values (Figure 7), indicating that the item is relatively easy to endorse positively but provides limited differentiation among individuals at higher trait levels. In contrast, appearance (SA.1) shows the highest upper threshold (b4 = 0.624), highlighting that highly sensory-driven consumers selectively prioritise visual presentation. Prior Generation Z context study supports this notion, demonstrating that those who are sensory-focused and highly share their culinary journey on social media are also shown to pay close attention to the aesthetic aspect of the food consumed (Sutia & Fahlevi, 2024).

To translate these sensory-appeal insights to the online food-ordering context used by many urban Indonesian youth, where pre-delivery cues are predominantly visual, platforms can convey aroma and texture via cross modal inference (visual, audio proxies, vivid sensory language) and reinforce them through omnichannel priming (offline sampling and self-pickup touchpoints). The food delivery platform design can add an "Texture and Aroma" panel with interactive user interface, for example, when users tap on a menu item, it shows visual proxies (surface gloss, crumb/flake structure, close-up tear/fracture) that trigger olfactory and textural imagery; short micro-audio clips (sizzle, crunch) and concrete sensory descriptors (smoky,

spicy, garlicky) reinforce mental simulation and perceived diagnostic (Koubaa & Eleuch, 2021; Nakano et al., 2023). Food delivery platforms could integrate online promotions with offline food sampling or offering discounts for self-pickup to provide a more holistic sensory experience (Liao et al., 2024). The omnichannel promotion strategy, combining in-app discounts with offline activation, has been implemented in Indonesia by some food-delivery platforms: booths in busy food courts offer self-pickup discounts to spur application installs and repeat orders, while vendor partnerships for on-site sampling let consumers directly experience aroma, texture, and taste before ordering (Grab ID, 2025; Liao et al., 2024).

4.1.5. IRT Results for Health Concern Motive

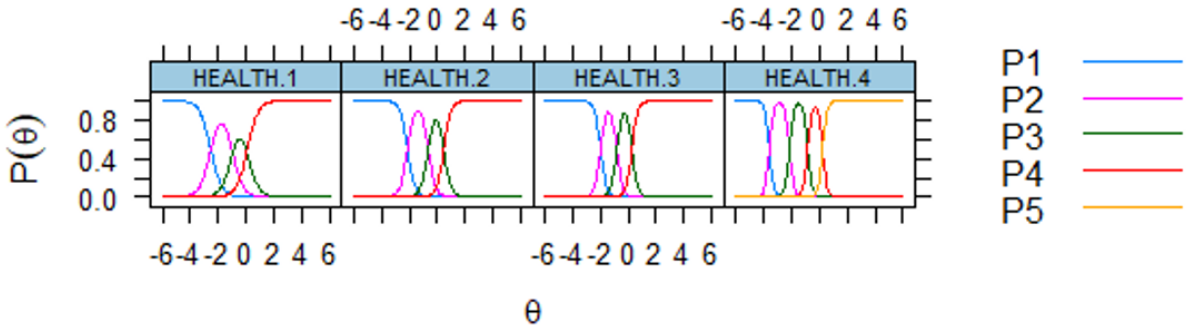

Figure 8 Category Response Function (CRF) Curve for Health Concern

Source: Author's own elaboration based on Item Response Theory analysis visualised in RStudio, 2025

Among the four health-related consumption motives, vitamin content shows the sharpest discrimination (α of HEALTH.4 = 6.258), as visualised by three intermediate CRF peaks (Figure 8), indicating that this item effectively separates respondents across low, moderate, and high health motivation levels. The lowest b1 vitamin value (-3.571) compared to other health indicators and the achievable b4 (0.253) indicate that the motivation to consume vitamin-rich foods resonates broadly with Indonesia's Generation Z and triggers strong endorsement without requiring extreme health concerns. Despite the salient vitamin motives endorsement, previous research findings by Aprianti et al. (2023) with respondents from one of Indonesia's major cities showed that their nutrition literacy is still limited and uneven, with only 6.7% of respondents paying attention to nutrition labels. The understanding of vitamin content in food among those with limited nutrition literacy may still be based on intuitive practice, such as associating oranges with vitamin C, carrots with vitamin A, or brown rice with vitamin B, rather than reading the label (Sanlier et al., 2024). In the Indonesian regulatory context, disclosure of nutritional content on the back of processed food packaging is mandatory, yet still faces compliance issues, especially from small-scale food producers (Purwaningsih & Hardiyati, 2021). Currently, in order to help consumers more easily recognise the nutritional content of

food, the Indonesian government has already begun to encourage food producers to place Nutrilevel information (similar to Singapore's Nutrigrade and the European Union's Nutriscore labelling mechanism) on their front-of-packaging (Center for Indonesian Policy Studies, 2024; Cerf et al., 2024).

Protein intake emerges as another significant health-related motive, with a high discrimination parameter (α of HEALTH.3 = 4.751), but the endorsement of this motive is less common at lower motivation levels, as indicated by the highest b1 value and the crossing point of CRF curves P1 and P2 (Figure 8) being furthest to the right compared to other health motive indicators. Protein endorsement only becomes more likely once health motivation exceeds the third threshold (b3 = 0.272), showing that protein intake is mainly favourable among respondents with above-average health motives. The low tendency to consume protein daily among non-health motivated groups reflects barriers to consumption in this segment, namely the relatively high cost of animal-based protein foods, lack of health knowledge, and the existence of protein-related public misconceptions, such as that eating more than one egg a day can cause eye stye problems or that consuming red meat can lead to high uric acid and cholesterol levels (Kamil et al., 2025; Khoiriyah et al., 2024). On the other hand, countries with rising GDP are experiencing an upward trend in protein consumption, as is the case in Hungary. Prominent protein consumption is rooted in society's strong cultural preference for meat-based dishes and is also supported by increased health awareness in line with improving disposable income (AlOudat et al., 2024; Prochazka et al., 2025). The affordability of commonly consumed protein sources, such as pork and poultry, is also maintained through Hungarian government price cap policies amid rapid inflation (Maró et al., 2025).

4.1.6. IRT Results for Ecological Concern Motive

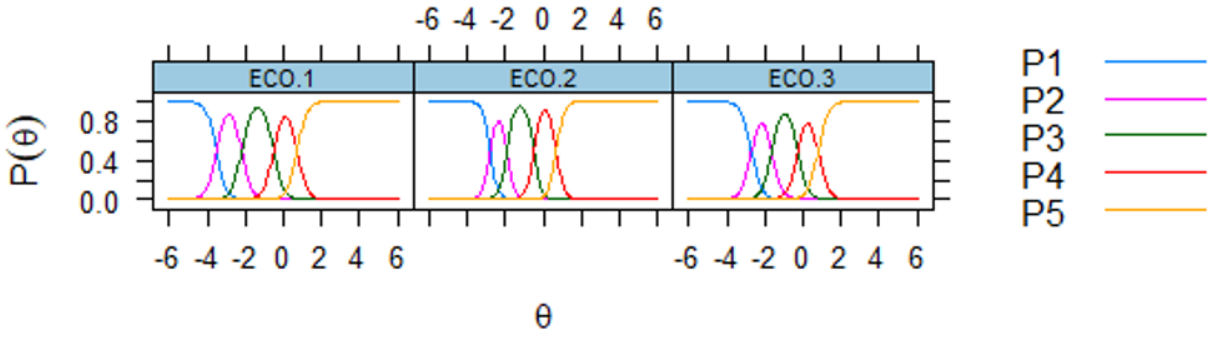

Figure 9 Category Response Function (CRF) Curve for Ecological Concern

Source: Author's own elaboration based on Item Response Theory analysis visualised in RStudio, 2025

The environmentally friendly production has the strongest discriminating and diagnostic power (α of ECO.2 = 5.084) within ecological concern consumption motives with a CRF curve (Figure

9) that is sharply peaked and shows three well-defined intermediate curves. The ECO.2 indicator provides a clear divide, as respondents with very low environmental concern tend to rate it as unimportant, whereas those with truly high ecological concern almost always rate it as very important. In the Indonesian context, the evaluation of sustainable production is shaped by both formal and informal cues. Formal label-based signals, such as organic certification, fair trade, or halal green labels, are available but primarily circulate in premium supply chains and modern retail. Previous research by Siagian et al. (2024) on Indonesian consumers found that 72.5% of the total respondents reported being unfamiliar with the concept of eco-label, yet they were actually intent on purchasing sustainable products. When a label is absent, consumers may recognise sustainable production aspects (such as short supply chains and low energy cycle) through informal cues by purchasing directly from small producers or local farmers (Cook et al., 2023). For future strategies to promote sustainability, the environmental dimension of food production should be emphasised through cues that are both credible and accessible, whether by formal certification or visible practices that young consumers in Indonesia can easily recognise.

The lowest b1 value (-3.520) of environmentally friendly ingredients (ECO.1) among ecological motives, suggesting that even respondents with very low ecological concern are less likely to dismiss this indicator outright compared to sustainable production or packaging. Eco-friendly ingredients are often associated with health benefits (Thankappan, 2024), offering direct personal advantages that make this indicator harder to reject completely. On the other hand, environmentally friendly packaging (ECO.3) has the highest b4 value (0.804), suggesting that it requires a higher underlying level of ecological motives before it becomes a very important choice factor, compared with choosing food with sustainable ingredients and production methods. The possible reasons why sustainable packaging is more rigid to be rated as a very important factor in daily food choices are that young Indonesian consumers often consider the disposable aspect as less essential, are constrained by budget considerations, and are sceptical (Gunawan et al., 2024).

4.1.7. IRT Results for Social Welfare Concern Motive

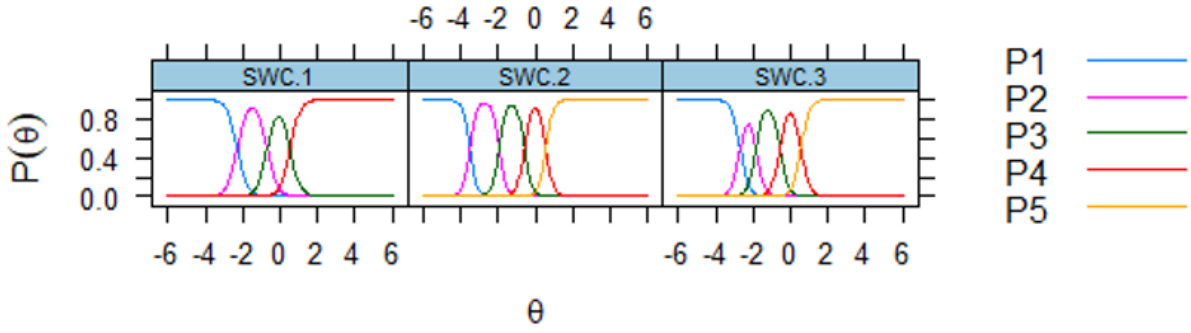

Figure 10 Category Response Function (CRF) Curve for Social Welfare Concern

Source: Author's own elaboration based on Item Response Theory analysis visualised in RStudio, 2025

All three indicators of social welfare concern show strong discriminating power ($\alpha > 3.8$). Both SWC.2 (supporting local producers) and SWC.3 (supporting local economic growth) display three well-defined peaks in their CRF curves (Figure 10) and a broad range of b1 to b4. It indicates even those with relatively low concern do not reject these aspects, while higher-concern individuals consider it very important to take action by buying food from local producers and supporting economic growth. By contrast, the discriminatory power of indicators related to motivation to buy from local retailers appears to be slightly less capable of distinguishing responses among those with high and very high social welfare concerns, as seen from the absence of a yellow curve on CRF SWC.3 (Figure 10). Among respondents with high social welfare concerns, some may view buying from retailers or intermediaries as less directly impactful than purchasing directly from producers, while others see it as essential for sustaining local livelihoods, as farmers cannot always reach consumers on their own. Taken together, food marketers should emphasise direct producer-consumer connections and explain how their purchases can impact the local economy in order to resonate with consumer segments that share collective cultural values (Johnston et al., 2023), especially Generation Z in Indonesia.

4.1.8. IRT Results for Convenience Motive

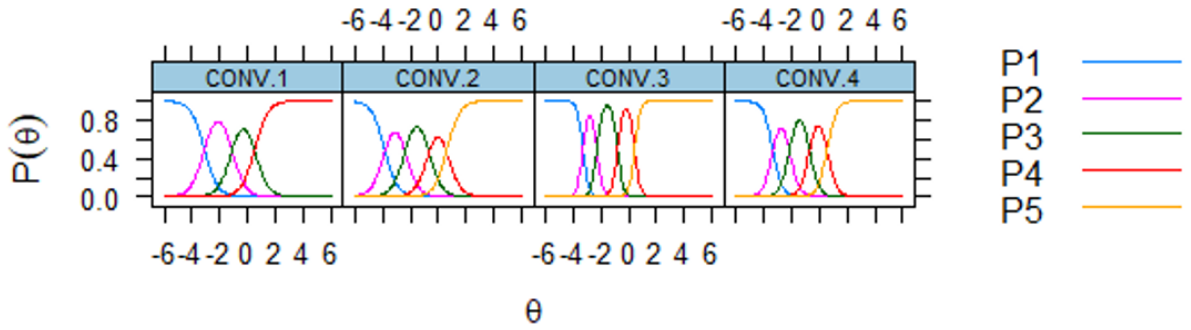

Figure 11 Category Response Function (CRF) Curve for Convenience

Source: Author's own elaboration based on Item Response Theory analysis visualised in RStudio, 2025

Convenience emerged as a consistently important motive and functioned adequately within the graded response model (α ranging from 2.10 to 4.968). Among the convenience motive indicators, ease of preparation (CONV.3) showed the highest discrimination parameter, with three well-defined intermediate curves and high peaks (Figure 11), indicating that the item is highly effective in distinguishing respondents across different levels of convenience motivation, with each response category reaching a relatively high probability of occurrence. Quick cooking time (CONV.4) also demonstrated adequate discrimination and displayed three intermediate category peaks, but with lower probability levels compared to ease of preparation. The firm preference of the highly convenience-motivated segment for food that is easy to prepare and quick to cook poses a threat to health, since ready-to-eat foods are often highly processed and loaded with preservatives (Ettienne & Rose, 2025). Addressing this challenge requires producers to respond by offering minimally processed alternatives, such as pre-cut fruits and vegetables or nutritionally balanced frozen meals. Indonesian policymaker can contribute to reducing junk food consumption among young people by banning the sale of foods that are low in nutritional value and high in salt, sugar and fat around schools and universities, as has been successfully implemented in Brazil (Assis et al., 2023).

In terms of availability, consumers responded differently to proximity and online access. Nearby availability (CONV.1) was broadly valued, but the absence of a b4 threshold shows that consumers tend to treat local access as a shared ideals rather than a feature that differentiates higher levels of convenience orientation. Online availability (CONV.2) has the lowest b1 value among all convenience indicators, suggesting that even individuals with low convenience orientation were unlikely to reject this attribute. At the same time, it yielded the highest b4, implying that only respondents with very high convenience motives strongly prioritised online access as a decisive factor. This combination highlights that digital availability is increasingly accepted as a baseline attribute among Generation Z of Indonesia, and it also functions as a discriminating element only among those with the strongest orientation toward convenience. Findings on previous studies on young Indonesian indicate that convenience shapes their eating habits, with many favouring online foods ordering and ready to eat options (Rahayu et al., 2023). However, food providers also need to promote good causes among young people, such as providing just-in-time digital nudges to consume healthy food or invitations not to buy excessive food, thus exacerbating food waste, a concern in the Indonesian food landscape.

4.1.9. IRT Results for Price Conscious Motive

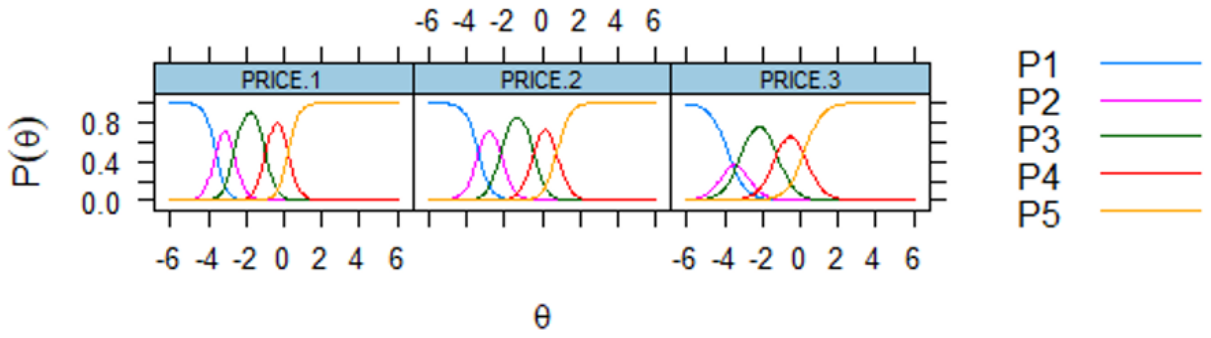

Figure 12 Category Response Function (CRF) Curve for Price Conscious

Source: Author's own elaboration based on Item Response Theory analysis visualised in RStudio, 2025

Affordability (PRICE.1) is the indicator with the highest discriminant parameter on the price consciousness variable, which shows that this attribute is the most effective in distinguishing individuals with different levels of price sensitivity. Interestingly, respondents with a very low-price consciousness motive were less likely to refuse affordability over cheapness, as reflected by the more left-shifting intersection of P1 (blue) and P2 (pink) curves in PRICE.1 compared to PRICE.2 (see Figure 12). Those who are not price-conscious are likely to be a potential segment that prefers reasonably priced food that suits their financial capabilities, tastes, nutritional needs, or sustainable benefits (depending on their other dominant motives). Since meal with health benefits or with sustainability claims may still be affordable but not necessarily cheap (Cohen et al., 2024). At the upper end, strong agreement with "cheapness" (PRICE.2) required higher latent price motives (b4 = 0.792), suggesting that only those with very high price consciousness clearly prioritised cheap food over affordable food. Previous research on United Kingdom respondents shows that groups that are truly price-oriented tend to exclusively choose cheaper food alternatives, even if it means compromising on quality, including taste and nutritional content (Revoredo-Giha et al., 2020). Discount-seeking behaviour (PRICE.3) showed the weakest discrimination (α = 2.118) and the lowest b1 (-3.844), with a pink CRF curve that is low (peak probability around 0.4) and wide, indicating that price cuts appeal broadly and are not firmly rejected by those with low price consciousness. A similar pattern of discount utilisation in shopping among Generation Z in Indonesia was also found in previous research on young Greeks, who enjoy shopping for food during sales and frequently use discount coupons (Kalyva et al., 2024).

4.1.10. IRT Results for Social Adherence Motive

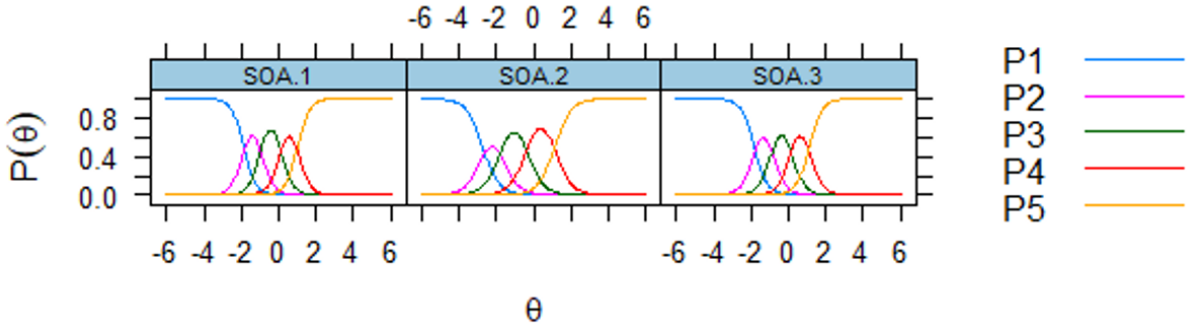

Figure 13 Category Response Function (CRF) Curve for Social Adherence

Source: Author's own elaboration based on Item Response Theory analysis visualised in RStudio, 2025

In the social-adherence construct, following social media trends (SOA.1) is the most discriminating indicator, α = 3.100, and its CRF shows three mid-range peaks near 0.6 (see Figure 13), indicating the sharpest separation across the latent social-adherence continuum. Following closest circle behaviour (SOA.2) has the lowest b1 (-2.724), and the highest b4, (1.140) among the indicators. Respondents who show low reliance on social cues in food choice tend to be more receptive to the idea that their diet is motivated by those closest to them rather than following social media trends or influencer advice. Strong-tie cues from family and friends carry more credibility and repeated exposure than platform trends or influencer posts, so even low social-adherence respondents move off strong disagreement when inner-circle norms are present, consistent with the low b1 of SOA.2. On the other hand, respondents with moderate social adherence tended to remain at "moderately agree" that food choices follow the inner circle, and required stronger latent encouragement to reach "strongly agree". Influence recommendation (SOA.3) shows a moderate discriminative parameter (2.863), implying that although this indicator is relevant to the social adherence latent variable, it does not segment consumers as effectively as the social-media trend indicator (SOA.1).

4.1.11. IRT Results for Sustainable Food Choice

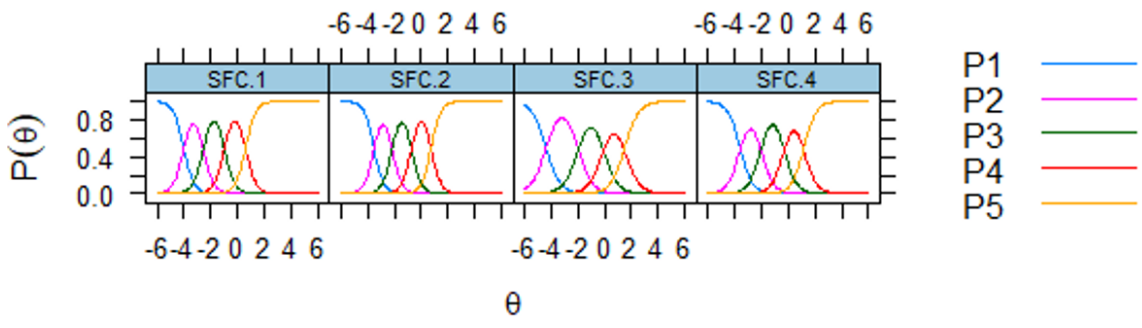

Figure 14 Category Response Function (CRF) Curve for Sustainable Food Choice

Source: Author's own elaboration based on Item Response Theory analysis visualised in RStudio, 2025

Among sustainable food choices, the consumption of seasonal fruits and vegetables (α SFC.2 = 2.809) and the consumption of local foods (α SFC.1 = 2.644) have the highest discriminant parameters, making these indicators the most sensitive for distinguishing individuals with different levels of sustainable food consumption. For natural and environmentally friendly packaging, SFC.4 shows moderate discrimination, α = 2.216, and its CRF has mid-range category peaks of similar height, each near 0.6. Organic food consumption has the lowest discriminant parameter (α SFC.3 = 1.904) and is close to the threshold value of 1.7, indicating that organic food consumption has sufficient discrimination ability but is less reliable in distinguishing individual behaviour than other SFC indicators. The pink band from the CRF of SFC.3 curve (organic food) has a tall and broad curve (see Figure 14), indicating a steady group that stays at a rarely frequency of consumption. However, the organic food indicator has the highest upper threshold (b4 = 1.507), so only high-trait respondents tend to endorse "always" option. This niche segmented pattern aligns with Indonesian evidence on price premiums, limited retail coverage, and low awareness that dampen regular purchase (Rosyid et al., 2023; Wijaya et al., 2022).

4.1.12. IRT Results for Food Waste Management

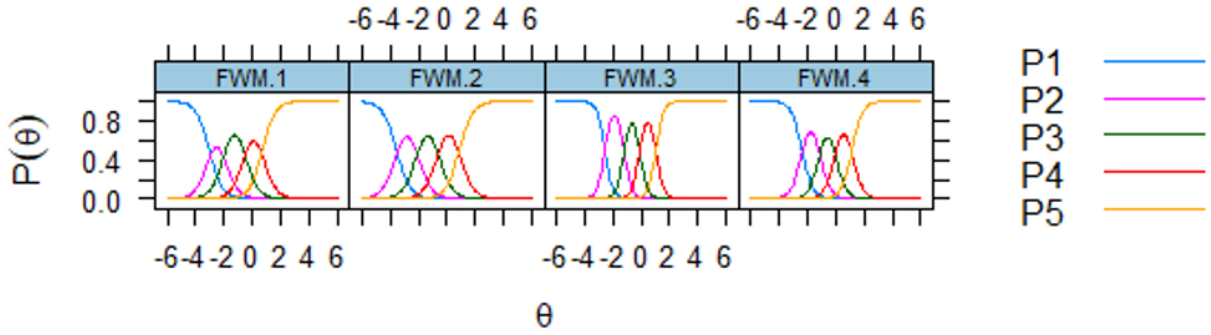

Figure 15 Category Response Function (CRF) Curve for Food Waste Management

Source: Author's own elaboration based on Item Response Theory analysis visualised in RStudio, 2025

Suboptimal food consumption (FWM.3) emerges as the most discriminative indicator among food waste management behaviour, with a discriminant parameter of 3.706. This shows that young Indonesians with an overall low trait of food waste management have very different behaviour from individuals with a high trait, especially in terms of suboptimal food consumption. People with very low concern for managing food waste are more likely to make efforts to reduce food waste, such as taking home their leftovers and processing them again, as indicated by the low value of those indicator b1 thresholds (b1 FWM.2 = -3.549; b1 FWM.1 = -3.053), compared to being willing to consume suboptimal or near-expired food. The confidence and trust of young Indonesian consumers in the safety of suboptimal and near-

expired food consumption is likely to be low, with the rise of illegal food adulteration practices such as mixing non-fresh meat or fish with formalin in traditional markets (Rosiana Putri et al., 2024). Concerns about food safety, a poor impression, lack of freshness, unpleasant taste, or low nutritional value of suboptimal and near-expired food products may discourage young people from consuming these foods (Giménez et al., 2021).

Consistent consumption of near-expired food tends to occur primarily among respondents with very high tendencies towards food waste management behaviour. FWM.4 shows the highest upper threshold, b4 = 1.168, exceeding the upper threshold of other indicators. On the CRF curve of FWM.4 (Figure 15), the P4 to P5 crossing for FWM.4 lies farthest to the right, confirming the need for higher latent behaviour to move from often to always. Those who frequently consume aesthetically imperfect food may be individuals with frugal characteristics, low levels of food disgust sensitivity, have good awareness of the need to reduce food waste, or have a good understanding of choosing nutritious suboptimal food that is safe and not harmful to their health (Neubig et al., 2022). Public campaigns should educate consumers that cosmetically imperfect food still retains the same nutritional value as ideally looking food, provided it is stored properly, so that this behaviour can be endorsed by more people (Petrescu-Mag et al., 2024; Yılmaz & Pehlivan, 2024). To increase consumer trust in suboptimal foods sold in traditional markets, government enforcement must move beyond a formaldehyde ban and inspections that are only carried out ahead of major Indonesian holidays (i.e., Eid al-Fitr or Eid al-Adha). Local authorities need to train traditional producers on safe ways to extend shelf life, conduct more frequent market checks, and impose penalties for repeat violations.

4.1.13. K-Means Clustering

To address Hypothesis 2, which tests whether Generation Z of Indonesia can be divided into distinct segments based on their food consumption motives, Study 1 first examined the optimal number of clusters. Several validation methods were used, including the Gap Statistics and Hubert Index/D Index and evaluating Connectivity, Dunn Index, and Silhouette Index. In Figure 16 (upper side), the Gap Statistics graph generated by JAMOVI shows a plateau occurring at points 4 and 7 and then a flatter pattern afterwards, indicating that these points are the optimal number of clusters suggested (Yang et al., 2019). In Figure 16 (bottom), both the D index curve and its second differences show the clearest elbow at k = 4, after which the decline is small and the second differences approach zero, indicating little structural gain from adding more clusters.

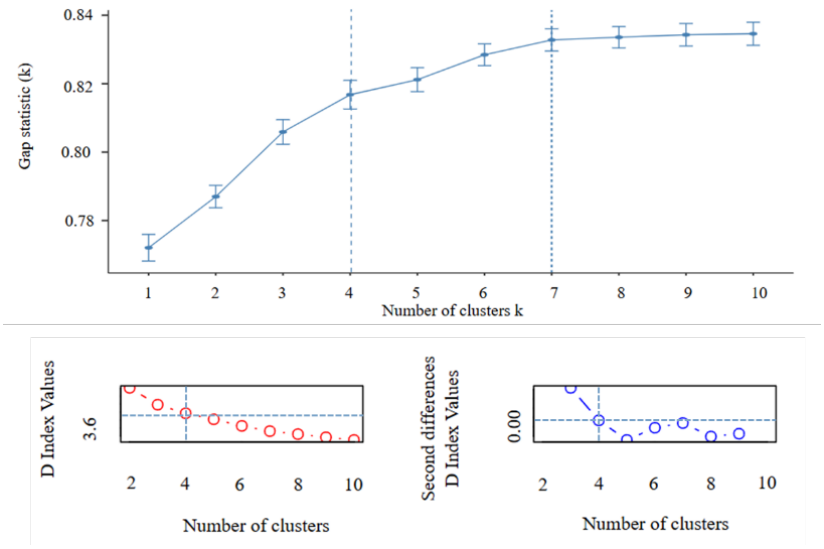

Figure 16 Optimal Number of Clusters Based on Gap Statistics (Top) and D Index (Bottom)

Source: Author's own elaboration, 2025

Based on the connectivity validation method and the Silhouette Index (Table 10), it is shown that the cluster with the best structure of data arrangement within the cluster and clarity is the division of 2 clusters, with the lowest Connectivity value (330.1679) and the highest Silhouette index (0.1872) (Sagala & Gunawan, 2022). The Dunn Index recommends 6 clusters with the best separation and compact elements within the clusters, indicated by the highest Dunn value (0.0839) (Voicu et al., 2020).

Table 10 Comparison of Various Validation Measures for Different Cluster Sizes

Validation method	Cluster sizes					
	2	3	4	5	6	7
Connectivity	330.1679	524.523	632.0921	753.244	771.029	917.9103
Dunn	0.0816	0.0819	0.0839	0.1208	0.1226	0.0867
Silhouette	0.1872	0.1349	0.1184	0.1093	0.1117	0.0992

Source: Author's own elaboration, 2025

Despite the discrepancy in the optimal number of clusters given by various indicators, ranging from 2, 4, 6, to 7 clusters, Study 1 uses 4 clusters to divide the existing segments. The division of 4 clusters is a good moderate solution since the connectivity value in the division of 4 clusters is classified as having a moderate value (632.0921), a reasonably high Dunn Index value indicating adequate cluster separation (0.0839), and a Silhouette Index of 0.1184 which is lower than the division of 2 clusters but still acceptable. In research related to segmentation based on food consumption motives indicators, the division into 4 clusters provides a more detailed grouping than dividing respondents into 2 or 3 clusters, maintaining interpretability while avoiding over-clustering, which makes segments too granular (Shi et al., 2021). In the cluster division comparison (see Figure 17), the consumer groups with low and moderate food

consumption motives previously combined into a yellow cluster (cluster 2) in the division of 2 clusters can be further clarified and divided into different clusters. To avoid oversimplifying the segment, the big yellow cluster can be divided again into different groups, as in the division of 4 clusters, into clusters 1 (blue) and 4 (green), which exhibit different characteristics. On this basis, Study 1 adopts a four-cluster solution, which confirms the existence of distinct consumer segments and thereby supports Hypothesis 2. The distinction of these clusters will be further analyzed through Welch ANOVA and Games Howell tests (shown in Table 12), and the characteristics of each cluster are discussed in Section 4.1.15

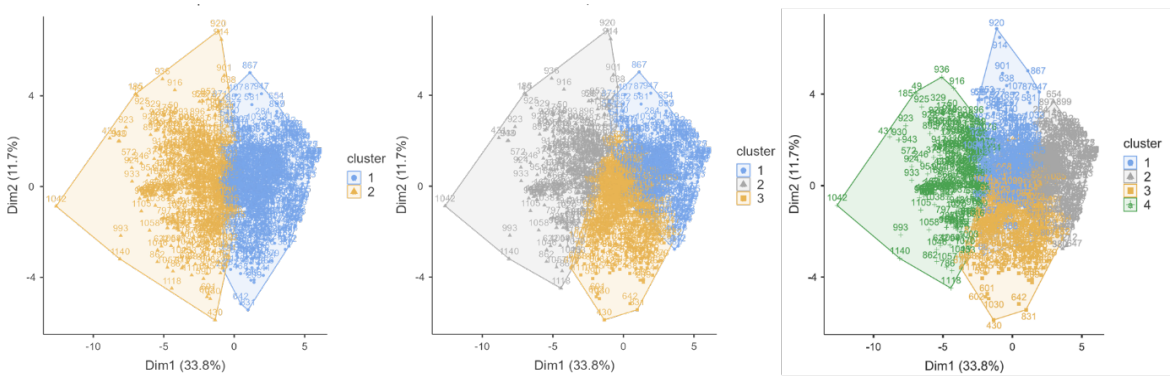

Figure 17 Scatter Plot Comparison on 2 Clusters (left), 3 Clusters (centre), 4 Clusters (right)

Source: Author's own elaboration, 2025

Table 11 Within-Cluster Sum of Squares and The Number of Members of Each Clustershows the within-cluster sum of squares (value), which indicates the closeness of the data to its centroid within the cluster and the number of members of each cluster. Cluster 1 has the lowest value (4061) compared to the other clusters, indicating the most compact cluster, while the cluster with relatively more dispersed data belongs to Cluster 4 with the highest value (5597). Cluster 1 has the least count with 211 members, and Cluster 4 is the cluster with the most members with 365 data points.

Table 11 Within-Cluster Sum of Squares and The Number of Members of Each Cluster

Cluster	Value	Count
1	4062	211
2	4532	245
3	4631	339
4	5597	365
Between clusters	8994	
Total	27816	

Source: Author's own elaboration, 2025

Figure 18 shows four clusters with mean values of 24 food consumption motive indicators at different levels. Cluster 1 (blue) scores relatively low on almost all food consumption motives

indicators except for the price-conscious indicator. This indicates that they are consumers whose food consumption is motivated by affordability but not so demanding for other factors, such as the impact of food on their health or the impact of their consumption on social welfare. Cluster 2 (grey) has above-average mean scores on certain variables such as health, motivation to have a good impact on environmental sustainability and good consumption impact on social welfare but scores relatively low on convenience, price, and motivation to follow their social consumption patterns. Cluster 3 (yellow) has positive mean scores for all variables, indicating that this group is enthusiastic, demanding, and highly motivated consumers who want their food consumption to be good for the environment. Cluster 4 (green) scored above average for specific indicators such as social adherence motivation, getting food at an affordable price, and also prioritising convenience. While this cluster has low motivation to consume healthy food, it impacts the environment or social welfare.

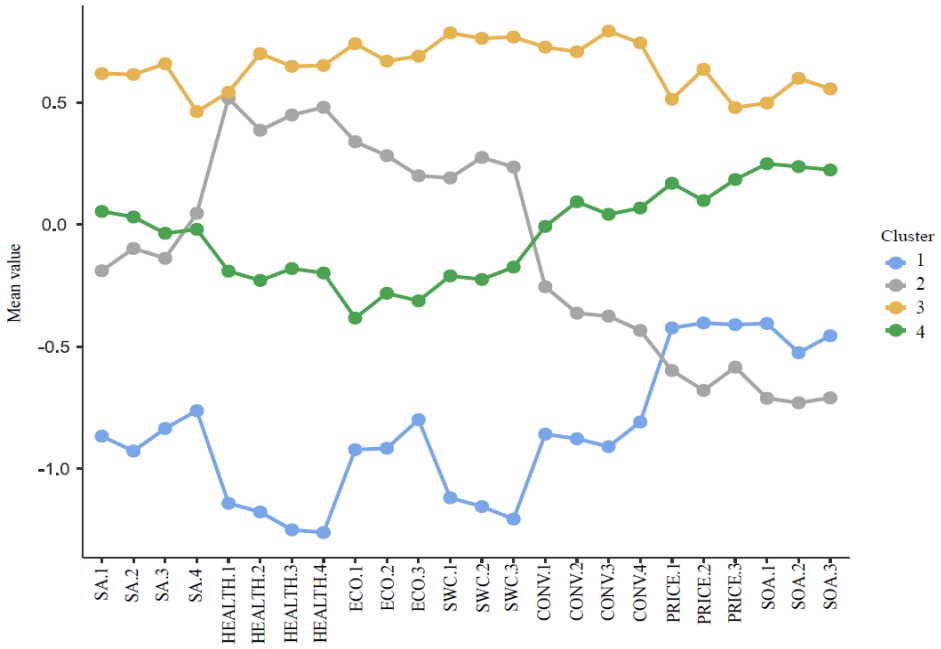

Figure 18 Means Plot of 24 Indicators of 7 Food Consumption Motive Variables in Each Cluster

Source: Author's own elaboration, 2025

The four clusters formed based on the level of motivation in consumption have different demographic characteristics, as shown in Table 12. In Cluster 1, the gender of respondents tends to be balanced and slightly more female (51.18%), the majority live in the provincial capital (38.98%), come from Java (49.76%) and Bali (21.80%), with perceived financial condition can fulfil basic needs and have little ability to buy non-basic items they want (41.23%), and use Instagram the most (51.66%). Cluster 2 consists mainly of male respondents (51.84%), living in the provincial capital (44.08%) on the island of Java (52.65%), able to fulfil basic needs with little ability to purchase desired items (46.53%), and are users of Instagram (50.20%) and

TikTok (28.57%). Members of Cluster 3 are predominantly male (52.80%), live in the provincial capital (45.72%) and big city (38.35%), and come from Java (56.34%) and Sumatra (22.71%). Members from Cluster 3 are respondents with a better perceived financial condition than other clusters, which can fulfil their necessities and extra needs freely (32.45%). Cluster 4 predominantly consists of female members residing in capital cities from the Java and Kalimantan regions, the most compared to other clusters. The perceived financial condition of the members of Cluster 4 consists of various abilities; most are the moderate ability who can fulfil their necessities and only have a slight capability to buy the items they want (36.44%), followed by respondents who can fulfil their basic and extra needs comfortably (25.75%). Most of the respondents from total sample who have the highest perceived financial condition, those who can fulfil their basic and extra needs comfortably and still have some left over to invest, are members of Cluster 4.

Table 12 Demographic characteristics of each cluster member

Cluster's Demographic Profile	Amount (person)				Percentages (%) within cluster			
	Cluster 1 (n = 211)	Cluster 2 (n = 245)	Cluster 3 (n = 339)	Cluster 4 (n = 365)	Cluster 1 (n = 211)	Cluster 2 (n = 245)	Cluster 3 (n = 339)	Cluster 4 (n = 365)
Sex								
Male	103	127	179	171	48.82	51.84	52.8	46.85
Female	108	118	160	194	51.18	48.16	47.2	53.15
Type of living area								
Provincial Capital	81	108	155	182	38.39	44.08	45.72	49.86
Big City	79	85	130	124	37.44	34.69	38.35	33.97
Small City	36	34	45	38	17.06	13.88	13.27	10.41
Village/Rural Area	15	18	9	21	7.11	7.35	2.65	5.75
Region								
Java	105	129	191	198	49.76	52.65	56.34	54.25
Sumatera	33	78	77	77	15.64	31.84	22.71	21.1
Bali	46	1	5	14	21.8	0.41	1.47	3.84
Kalimantan	7	17	19	32	3.32	6.94	5.6	8.77
Sulawesi, Maluku, Papua	20	20	47	44	9.48	8.16	13.86	12.05
Financial situation								
Very weak	18	12	12	17	8.53	4.9	3.54	4.66
Weak	39	24	66	69	18.48	9.8	19.47	18.9
Moderate	87	114	107	133	41.23	46.53	31.56	36.44
Strong	49	69	110	94	23.22	28.16	32.45	25.75
Very strong	18	26	44	52	8.53	10.61	12.98	14.25
The most frequent social media used								
TikTok	62	70	107	125	29.38	28.57	31.56	34.25
Instagram	109	123	165	163	51.66	50.2	48.67	44.66
YouTube	21	29	20	26	9.95	11.84	5.9	7.12
X (Twitter)	11	16	31	39	5.21	6.53	9.14	10.68
Facebook	3	2	9	6	1.42	0.82	2.65	1.64
WhatsApp	5	5	7	6	2.37	2.04	2.06	1.64

Notes:

Type of living area detail: Provincial Capital (A city that is the administrative centre of a province, usually where various provincial government institutions are located); Big City (A place of residence with many residents and complete facilities, but not the Provincial Capital); Small City (A place of residence that is smaller than a big city and has limited facilities); Village/Rural Area (A place of residence outside the city, usually with fewer residents and simple facilities).

Financial situation detail: Very weak (Often have difficulty meeting basic needs); Weak (Can meet basic needs, but have difficulty with other expenses outside of that); Moderate (Can meet basic needs and still have a little extra to buy non-basic items); Strong (Can meet basic needs and other needs quite comfortably); Very strong (Can meet all needs and desires quite comfortably and still have extra funds to save or invest).

Source: Author's own elaboration, 2025

In the total sample, the food consumption motive indicators with the highest mean are SA.4 (4.476), PRICE.3 (4.258), HEALTH.1 (4.258), and SA.2 (4.233) (Table 13). This shows that overall, young Indonesians in choosing their food prioritise the aspects of good taste (SA.4), getting discount promotion (PRICE.3), having a good impact on their health (HEALTH.1), and having a pleasant aroma (SA.2). The sustainable food choice that has the highest average choice of respondents overall is the consumption of food with local raw materials (SFC.1 = 4.092). In contrast, organic food consumption gets the lowest average (SFC.3 = 3.585). For food waste management behaviour, the most common behaviour of the respondents was wrapping up their leftovers if they did not run out when eating out (FWM.1 = 3.900), and the least popular was the consumption of food that was close to expiration (FWM.4 = 3.458). Furthermore, each cluster's average level of indicators will be described in the segment's characteristics section (4.1.6).

The results of the Welch ANOVA test show that all indicators are significantly different ($p < 0.05$), indicating a difference in at least one pair of clusters. Furthermore, the Games-Howell post hoc test detected that most clusters had significant differences in the indicators of food consumption motives and sustainable consumption behaviour (see Table 13). However, there were some similarities in characteristics between clusters; for example, Cluster 2 and Cluster 4 showed similar preferences in terms of sensory appeal, health concerns, and sustainable food choices. Nevertheless, Cluster 4 had significantly higher average scores than Cluster 2 in terms of social welfare concerns, convenience, and price, as well as in indicators related to near-expiry and suboptimal food consumption. Thus, Cluster 4 can be perceived as a more practical segment, sensitive to price and food waste conservers. Meanwhile, Cluster 1 and Cluster 2 share similarities in terms of price motives (affordability and deal proneness) and willingness to consume suboptimal and near-expiry food. In general, Cluster 2 exhibits significantly higher scores than Cluster 1 in terms of sensory appeal motives, health, environmental friendliness, convenience, and sustainable food choice.

Table 13 Cluster Means and Significant Differences with Games-Howell Test

Indicator	Mean					Games-Howell Post-hoc Test	
	Total sample	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster with significant differences	Non-significant differences
SA.1	4.046	3.370	3.898	4.528	4.088	(1-2), (1-3), (1-4), (2-3), (2-4), (3-4)	
SA.2	4.233	3.573	4.163	4.670	4.255	(1-2), (1-3), (1-4), (2-3), (3-4)	(2-4)
SA.3	4.145	3.517	4.041	4.640	4.118	(1-2), (1-3), (1-4), (2-3), (3-4)	(2-4)
SA.4	4.476	3.976	4.506	4.779	4.463	(1-2), (1-3), (1-4), (2-3), (3-4)	(2-4)
HEALTH.1	4.258	3.322	4.682	4.702	4.101	(1-2), (1-3), (1-4), (2-4), (3-4)	(2-3)
HEALTH.2	4.029	3.062	4.347	4.605	3.841	(1-2), (1-3), (1-4), (2-3), (2-4), (3-4)	
HEALTH.3	4.152	3.118	4.522	4.687	4.003	(1-2), (1-3), (1-4), (2-3), (2-4), (3-4)	
HEALTH.4	4.168	3.152	4.555	4.693	4.008	(1-2), (1-3), (1-4), (2-3), (2-4), (3-4)	
ECO.1	3.905	3.171	4.176	4.496	3.600	(1-2), (1-3), (1-4), (2-3), (2-4), (3-4)	
ECO.2	3.900	3.137	4.135	4.457	3.666	(1–2), (1–3), (1–4), (2–3), (2–4), (3–4)	
ECO.3	3.759	3.038	3.939	4.381	3.477	(1–2), (1–3), (1–4), (2–3), (2–4), (3–4)	
SWC.1	4.024	3.137	4.176	4.646	3.858	(1–2), (1–3), (1–4), (2–3), (2–4), (3–4)	
SWC.2	3.971	3.024	4.196	4.596	3.786	(1–2), (1–3), (1–4), (2–3), (2–4), (3–4)	
SWC.3	3.954	2.905	4.159	4.622	3.803	(1–2), (1–3), (1–4), (2–3), (2–4), (3–4)	
CONV.1	4.153	3.526	3.967	4.684	4.148	(1–2), (1–3), (1–4), (2–3), (2–4), (3–4)	
CONV.2	3.971	3.232	3.665	4.566	4.049	(1–2), (1–3), (1–4), (2–3), (2–4), (3–4)	
CONV.3	4.099	3.393	3.808	4.714	4.132	(1–2), (1–3), (1–4), (2–3), (2–4), (3–4)	
CONV.4	3.982	3.308	3.620	4.602	4.038	(1–2), (1–3), (1–4), (2–3), (2–4), (3–4)	
PRICE.1	4.202	3.877	3.743	4.596	4.332	(1–3), (1–4), (2–3), (2–4), (3–4)	(1–2)
PRICE.2	3.859	3.526	3.298	4.383	3.940	(1–2), (1–3), (1–4), (2–3), (2–4), (3–4)	
PRICE.3	4.258	3.948	3.816	4.619	4.397	(1–3), (1–4), (2–3), (2–4), (3–4)	(1–2)
SOA.1	3.380	2.929	2.588	3.935	3.658	(1–2), (1–3), (1–4), (2–3), (2–4), (3–4)	
SOA.2	3.708	3.237	3.053	4.245	3.921	(1–3), (1–4), (2–3), (2–4), (3–4)	(1–2)
SOA.3	3.330	2.820	2.535	3.953	3.581	(1–2), (1–3), (1–4), (2–3), (2–4), (3–4)	
SFC.1	4.092	3.502	4.118	4.499	4.038	(1-2), (1-3), (1-4), (2-3), (3-4)	(2-4)
SFC.2	3.952	3.389	3.988	4.366	3.868	(1-2), (1-3), (1-4), (2-3), (3-4)	(2-4)
SFC.3	3.585	3.109	3.620	3.947	3.501	(1-2), (1-3), (1-4), (2-3), (3-4)	(2-4)
SFC.4	3.696	3.109	3.682	4.142	3.630	(1-2), (1-3), (1-4), (2-3), (3-4)	(2-4)
FWM.1	3.900	3.507	3.763	4.289	3.858	(1-2), (1-3), (1-4), (2-3), (3-4)	(2-4)
FWM.2	3.878	3.521	3.739	4.227	3.855	(1-2), (1-3), (1-4), (2-3), (3-4)	(2-4)
FWM.3	3.553	3.261	3.261	3.920	3.575	(1–3), (1–4), (2–3), (2–4), (3–4)	(1–2)
FWM.4	3.458	3.246	3.110	3.814	3.482	(1–3), (1–4), (2–3), (2–4), (3–4)	(1–2)

Note: The meaning of each indicator can be seen in Table 8

Source: Author's own elaboration, 2025

4.1.14. Path Analysis Evaluation on All and Each Cluster

Across total sample, all latent variables tested had Cronbach's Alpha (α) and hierarchical Omega (ω_2) values greater than 0.8, with the variable PRICE (α=0.801; ω_2=0.805) having the lowest indicator reliability value, to the highest HEALTH (α=0.910; ω_2=0.912), indicating all latent variables in this study have excellent internal reliability (Bell et al., 2024; Greco et al., 2018). The lowest Average Variance Extracted value is owned by SOA (0.532), and the highest is owned by SWC (0.762), which means that most proportion of the variance (more than 0.5) of each latent variable can be explained well by its constructs compared to the variance caused by errors (see Table 8). However, in testing per cluster (see Table 14), it was found that there were several constructs with composite reliability values below 0.7 and AVE below 0.5, such as those owned by construct SA in Cluster 2; construct SA and CONV in Cluster 3; implying there are problems with reliability and convergent validity (Sarstedt et al., 2022). Furthermore, from the results of path coefficient testing (Table 16), the constructs per cluster with convergent validity and reliability problems also do not significantly affect endogenous variables. The role of SA constructs in Clusters 2 and 3, as well as CONV in Cluster 3, in the model is not substantial enough to significantly influence SFC nor FWM. On a more positive note, other constructs, besides the previously mentioned constructs, have good convergent validity and reliability, leading to credible results and reliable path relationship significance test interpretation (Cheung et al., 2024).

Table 14 Construct Validity and Reliability across Clusters

Construct	Cluster 1		Cluster 2		Cluster 3		Cluster 4	
	CR	AVE	CR	AVE	CR	AVE	CR	AVE
CONV	0.865	0.618	0.837	0.563	0.677	0.381	0.817	0.531
ECO	0.888	0.726	0.922	0.797	0.863	0.681	0.883	0.716
FWM	0.920	0.743	0.860	0.607	0.872	0.630	0.888	0.666
HEALTH	0.893	0.676	0.873	0.636	0.811	0.518	0.843	0.578
PRICE	0.894	0.739	0.807	0.588	0.804	0.583	0.824	0.611
SA	0.875	0.636	0.012	0.125	0.063	0.202	0.814	0.526
SFC	0.865	0.619	0.833	0.557	0.840	0.568	0.848	0.583
SOA	0.852	0.657	0.826	0.616	0.856	0.664	0.828	0.618
SWC	0.903	0.757	0.892	0.733	0.843	0.643	0.850	0.656

Note: Acceptable if CR (composite reliability) ≥ 0.700 and AVE (average variance extracted) ≥ 0.500

Source: Author's own elaboration, 2025

For discriminant validity test, shown in Table 15, all HTMT values of each construct in total sample as well as in each cluster do not exceed the threshold value of 0.90, indicating that all latent variables are genuinely different from other constructs in this research model.

Table 15 Heterotrait-Monotrait Ratio across Clusters

Construct Pair	Total sample	Cluster 1	Cluster 2	Cluster 3	Cluster 4
ECO - CON	0.421	0.201	0.186	0.121	0.156
FWM - CONV	0.416	0.292	0.378	0.163	0.196
HEALTH - CONV	0.415	0.234	0.087	0.226	0.202
PRICE - CONV	0.462	0.317	0.122	0.162	0.115
SA - CONV	0.574	0.229	0.163	0.413	0.250
SFC - CONV	0.451	0.176	0.163	0.161	0.158
SOA - CONV	0.405	0.129	0.119	0.207	0.106
SWC - CONV	0.505	0.097	0.124	0.317	0.168
FWM - ECO	0.256	0.085	0.113	0.040	0.234
HEALTH - ECO	0.497	0.072	0.063	0.083	0.128
PRICE - ECO	0.233	0.178	0.256	0.232	0.078
SA - ECO	0.375	0.240	0.107	0.070	0.216
SFC - ECO	0.441	0.296	0.074	0.127	0.128
SOA - ECO	0.186	0.139	0.043	0.127	0.113
SWC - ECO	0.566	0.171	0.285	0.079	0.101
HEALTH - FWM	0.193	0.117	0.193	0.110	0.120
PRICE - FWM	0.436	0.525	0.210	0.286	0.200
SA - FWM	0.166	0.113	0.124	0.146	0.152
SFC - FWM	0.372	0.190	0.267	0.373	0.151
SOA - FWM	0.391	0.252	0.124	0.371	0.273
SWC - FWM	0.257	0.105	0.165	0.117	0.072
PRICE - HEALTH	0.182	0.117	0.178	0.143	0.135
SA - HEALTH	0.455	0.136	0.114	0.263	0.149
SFC - HEALTH	0.486	0.159	0.226	0.156	0.109
SOA - HEALTH	0.180	0.066	0.065	0.123	0.073
SWC - HEALTH	0.666	0.481	0.109	0.273	0.077
SA - PRICE	0.336	0.198	0.133	0.112	0.128
SFC - PRICE	0.268	0.171	0.136	0.077	0.122
SOA - PRICE	0.396	0.173	0.298	0.296	0.143
SWC - PRICE	0.259	0.135	0.175	0.083	0.039
SFC - SA	0.379	0.156	0.131	0.193	0.127
SOA - SA	0.298	0.215	0.172	0.188	0.164
SWC - SA	0.470	0.131	0.182	0.135	0.190
SOA - SFC	0.361	0.171	0.213	0.357	0.238
SWC - SFC	0.536	0.319	0.328	0.132	0.165
SWC - SOA	0.283	0.086	0.163	0.110	0.075

Note: The meaning of each indicator can be seen in Table 8

Source: Author's own elaboration, 2025

As shown in Table 16, through path relationship testing on total samples, it can be identified that the types of food consumption motives that significantly affect sustainable food choice (SFC) include social welfare concern (SWC), health concern (HEALTH), social adherence (SOA), ecological concern (ECO), and convenience (CONV), mentioned from the highest

influence to the lowest based on the original sample (O) value. This study's findings regarding the significant influence of health concerns and social adherence on sustainable food choice are similar to those of previous studies in the context of young Hungarians, who consume local food primarily for nutritional value and adhere to social customs (Kovács et al., 2022). Sensory appeal and price concern-related indicators, which highly motivate young people's daily food consumption, as shown by their high mean value (Table 13), do not appear to influence sustainable food consumption in the context of all respondent clusters, indicates no clear pattern exists between sensory appeal motives and price towards the consumption of local, seasonal, organic food or various types of food with environmentally friendly packaging. Prior studies in the context of young French people found that although sensory appeal and price are the dominant motivators for young people in their daily food choices, they are not significant drivers for adopting specific meal patterns, such as becoming vegetarian (Dahmani et al., 2024). The disconnection between sensory pleasure-seeking motives and the adoption of more sustainable food consumption reflects the diverse attitude of young Indonesians toward sustainable food choices, with some finding them pleasurable and others not (Bătuşaru et al., 2024). Individuals with high sensory preferences and price sensitivity often resist adopting sustainable food consumption habits since they perceive sustainable food options as less delicious and expensive, even though this perception is not necessarily accurate (Salas-García et al., 2025). Attitudes related to the unappetising taste of sustainable food options can be explained by the Expectation-Confirmation Theory, which posits that a person's consumption decision can be generated due to confirmation or disconfirmation of pre-consumption expectations with their actual experience (Lee & Kim, 2020). It is plausible that certain respondents have had negative experiences with sustainable food that do not align with their taste preferences.

Food consumption motives that significantly and positively influence the food waste management (FWM) of all Generation Z of Indonesia respondents include price conscious (PRICE), convenience (CONV), social-adherence (SOA), and ecological concern (ECO). Young Indonesian individuals who exhibit high food price sensitivity show consistent food waste reduction behaviour to avoid financial losses when they throw food away in vain. Similarly, households in the United Kingdom who engage in food waste reduction efforts are primarily motivated to save money and usually take advantage of price deals when buying foodstuffs, such as product bundles (Begho & Fadare, 2023). In Western countries such as the United Kingdom, France, and the United States, consumers who conveniently drive shopping often generate more food waste because their purchasing decisions are often impulsive, and they buy more food portions than they can consume due to financial abundance (Hengi &

House, 2022). However, in the context of Indonesia's Generation Z in this study, it was found that those who prioritise convenience in their food purchases, such as buying food online and choosing fast food, actually demonstrate good food waste management by being willing to wrap up their leftovers and then either process or consume the food again. The difference in the impact of convenience on food waste management between Western consumers and Generation Z of Indonesia is that although convenience is important, young Indonesians are still restrained by financial constraints, assertive social norms, and ecological concern.

Table 16 Path Coefficient Relationship Across Clusters

Path Relationship	Total sample		Cluster 1		Cluster 2		Cluster 3		Cluster 4	
	(O)	T statistics	(O)	T statistics	(O)	T statistics	(O)	T statistics	(O)	T statistics
CONV → FWM	0.208	5.715***	0.191	3.072**	0.279	4.166***	0.033	0.466	0.193	2.894**
CONV → SFC	0.105	3.293**	0.090	0.968	0.089	1.176	0.074	0.972	0.107	1.400
ECO → FWM	0.087	2.509*	-0.010	0.141	-0.014	0.178	0.036	0.508	0.161	3.039**
ECO → SFC	0.124	4.203***	0.175	2.241*	-0.056	0.715	0.165	2.128*	0.077	1.371
HEALTH → FWM	0.015	0.434	-0.011	0.080	0.061	0.800	0.067	1.038	-0.071	0.977
HEALTH → SFC	0.164	4.691***	0.033	0.327	0.133	2.017*	0.123	1.961*	0.093	1.274
PRICE → FWM	0.223	7.171***	0.402	6.754***	0.148	1.724	0.204	3.590***	0.159	2.269*
PRICE → SFC	0.028	1.020	0.119	1.636	0.060	0.632	-0.017	0.309	0.021	0.204
SA → FWM	-0.116	3.510***	-0.169	2.014*	0.113	0.958	-0.152	1.046	-0.103	1.602
SA → SFC	0.039	1.310	0.082	1.018	0.035	0.385	-0.126	0.978	-0.057	0.920
SOA → FWM	0.191	6.204***	0.154	2.161*	0.030	0.348	0.231	4.069***	0.197	3.096**
SOA → SFC	0.148	5.450***	-0.033	0.253	0.147	1.730	0.266	4.546***	0.153	2.460*
SWC → FWM	0.031	0.756	-0.055	0.679	0.073	1.009	0.075	1.245	0.068	1.078
SWC → SFC	0.197	5.449***	0.261	3.539***	0.223	3.232**	0.033	0.510	0.149	1.980*

*Note: The */**/*** symbol indicates a statistically significant influence at the level of *p < 0.05; **p < 0.01; ***p < 0.001*

Source: Author's own elaboration, 2025

In total sample and Cluster 1, sensory appeal (SA) significantly affects FWM but with a negative original sample (O) value (see Table 16). The interpretation of the negative effect of sensory appeal on food waste management is that when a food does not match the respondent's desirable sensory characteristics, such as an unappetising taste, unpleasant texture or poor appearance, this can make respondents especially Cluster 1 not to participate in food waste management especially for the consumption of suboptimal products, near expiry food, or re-consuming their food leftovers. In Cluster 1, food consumption motives that drive this segment to choose sustainable food include social welfare concern (SWC) and ecological concern (ECO). Motives that significantly and positively drive this segment's desire for food waste management are convenience (CONV), price and financial considerations (PRICE), and food preferences of people and social environment (SOA). Social welfare and health concerns are the main motives influencing Cluster 2 to choose sustainable food, especially food with local

ingredients. Cluster 2 is driven mainly by convenience in food waste management. The sustainable food consumption behaviour of Cluster 3, mainly driven by the influence of this group's desire to adhere to their social environment (SOA), has the motivation to have a good impact on the environment (ECO), and also want to consume food that has a good health impact on their bodies (HEALTH). In implementing food waste management, Cluster 3 is also influenced by their social environment (SOA) and their concern for financial consideration (PRICE). The food waste management behaviour of Cluster 4 is influenced by aspects of convenience (CONV), social adherence (SOA), their concern to have a good impact on the environment (ECO), and because of financial benefit considerations (PRICE). Meanwhile, their sustainable food choice behaviour is influenced by social adherence (SOA) and social welfare (SWC).

4.1.15. Food Consumption Motives-Based Segmentation of Generation Z of Indonesia and Sustainable Food Consumption Characteristics

The following is a refined description of the profile characteristics of the four existing clusters, which include Cluster 1 (Frugal indifferent foodies), Cluster 2 (Health-focused independent locavores), Cluster 3 (Holistic demander and eco-friendly enthusiasts), and Cluster 4 (Epicureans pragmatist waste-conserver). The characteristics of each cluster are described based on the average level of each indicator of food consumption motives and sustainable consumption behaviour (Table 13), alongside how various consumption drives influence respondents' sustainable food choices and food waste management (Table 16).

Cluster 1 – Frugal indifferent foodies

The label “Frugal indifferent foodies” reflects consumers who are pragmatic and less demanding in their food choices, focusing mainly on taste and affordability rather than sustainability concerns and social contribution to the local economy. Cluster 1 is characterised by giving medium to low scores across all food consumption motives attributes. Generally, it is the cluster with the lowest level of consumption motives compared to other segments (see left side of Figure 19). Cluster 1 is more flexible and pragmatic in choosing their food as seen from the main priorities in choosing food they prioritise the taste aspect, are interested in discount promotions, and also choose affordable food.

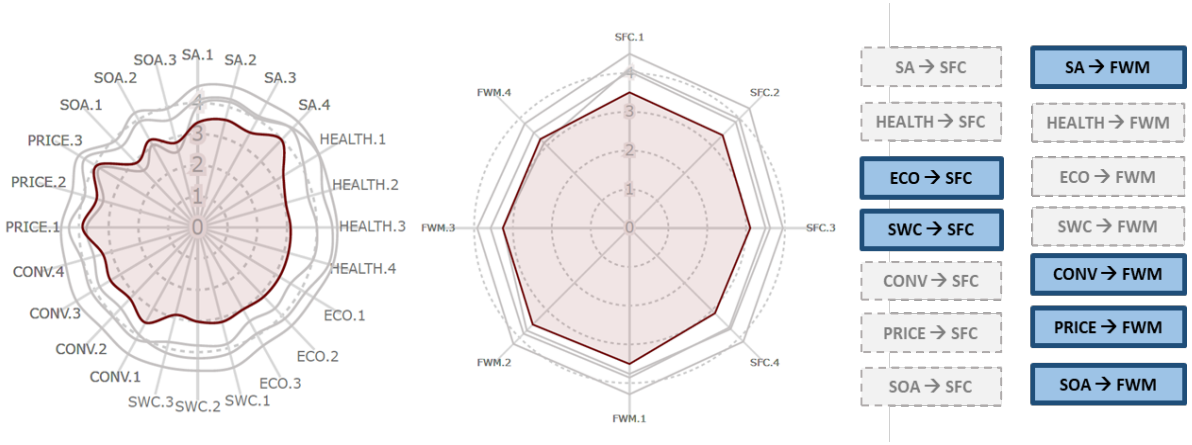

Figure 19 Average of Indicators of Food Consumption Motives and Sustainable Consumption Behaviour and Significance of Path Relationships in Cluster 1

Source: Author's own elaboration, 2025

Sustainable food purchasing patterns were low among Cluster 1 consumers, the lowest of all segments, especially in purchasing organic products and selecting food products with environmentally friendly packaging. This is in line with the findings of segmentation study on young consumers in the Czech Republic and Switzerland, where price-sensitive consumers tend not to care about the sustainability attributes of a product, such as ethical treatment for animals (Yue et al., 2024). Despite the lowest sustainable consumption behaviour of consumers in this cluster compared to other clusters, it turns out that the most sustainable forms of behaviour done within the cluster are recycling their leftovers, being willing to take their leftover food home if they eat out and do not run out, and choose to buy local food. However, it turns out that other forms of food waste management, such as choosing to buy suboptimal and near-expiry food, are also not widely done by this segment. This may be because consumers in this segment still prioritise the taste of good food, so they are reluctant to choose less aesthetic or near-expired food that is interchangeable with the spoiled taste and not fresh (S. Pandey et al., 2024). The primary motivation for consumers of this cluster to take home their leftovers and reprocess the food is because they tend not to want to make waste by wasting the food they have bought in vain, so it must be utilised to the fullest. The convenience aspect also significantly drives this segment to do food waste management since it may be assumed that taking home and reprocessing their food will be more practical than going out to eat later. Social influence proved to be a drive of food waste management in Cluster 1, indicating that they do not waste food because they are influenced by those closest to them, such as their friends and family, who also support such behaviour (Kristia et al, 2023b).

Based on the analysis of food consumption motives and their relationship with food waste management in this segment, the most effective way to motivate these consumers to be more

sustainable is to offer potential economic benefits such as making savings while prioritising good food taste. Figure 19 (right side) shows that in Segment 1, food waste management is significantly shaped by sensory appeal, price consciousness, social adherence, and convenience, with the bold blue boxes indicating the significant paths. This segment is potentially willing to buy less aesthetic grocery products and expired products that are heavily discounted as long as consumers can be assured that the taste of the food is still the same. Retailers can share samples of suboptimal or near expired food to prove that the quality of the product is still the same and also provide education through 'taste maintained' labels on suboptimal food packaging or posters displayed in stores that explain how their products remain safe and have similar taste quality to fresh and aesthetic products. The call to eat healthier, be more environmentally friendly, and minimise food waste must come from the people closest to them and figures who are followed by young consumers, such as influencers or celebrities (Giaccherini et al., 2021; Ong et al., 2023).

Since Cluster 1 consumers prioritise convenience in their consumption, to keep this segment willing to do food waste management, there needs to be a strategy that makes it easier for them to do so. Nudging strategies that restaurants can do to increase the behaviour of carrying uneaten food is to provide doggy bags or packaging with attractive designs so that consumers can self-service when wrapping their food or train the restaurant employees to offer to wrap food when they see edible food left (Cheng et al., 2023; Ergul et al., 2023; Giaccherini et al., 2021; Nguyen et al., 2023). Shopping applications that offer discounts on unsold food from restaurants or retailers at the end of the day can provide facilities such as notification systems and crowd-shipping to make it easier for this segment to rescue the food. This group seems to be used to consuming local food since, in Indonesia, local and traditional food is affordable and easy to find. Intervention from schools and universities in shaping a healthy diet, especially for this sceptical youth segment, is critical, for example, by only providing local food options, not using excessive plastic packaging, and having a low carbon footprint in school canteens (De Canio et al., 2024).

Cluster 2 - Health-focused independent locavores

The name "health-focused independent locavores" reflects a group of young consumers who place strong emphasis on the nutritional value of their food, particularly its vitamin, protein, and fibre content, while also preferring to source food locally (Figure 20). In addition, consumers in this segment prioritise great taste and preference in their daily food choices. The label "independent" reflects the way this group relies on internal motivations about health and social welfare. They do not prioritise social trends and prices in their food choices, which is the

lowest compared to other segments. This self-driven characteristic of the Cluster 2 in health-related food consumption is similar to the findings of previous research in the context of Generation Z in India, who also prioritise internal cognitive considerations regarding health care (Nagarajan, 2024). Moreover, another similar study also found that the food consumption patterns of the Bangladesh youth segment are less formed due to external opinions, including influencers, but more formed due to their internal motivation to maintain health (Kabir, 2023). Food consumption motives related to price affordability, whose average value is much lower than other types of food consumption motives, signal that this segment is not too price sensitive in paying for food that is considered to bring good benefits to health and impact social welfare through consuming local ready to eat foods as well as local fruits and vegetables (Bayraktar et al., 2023).

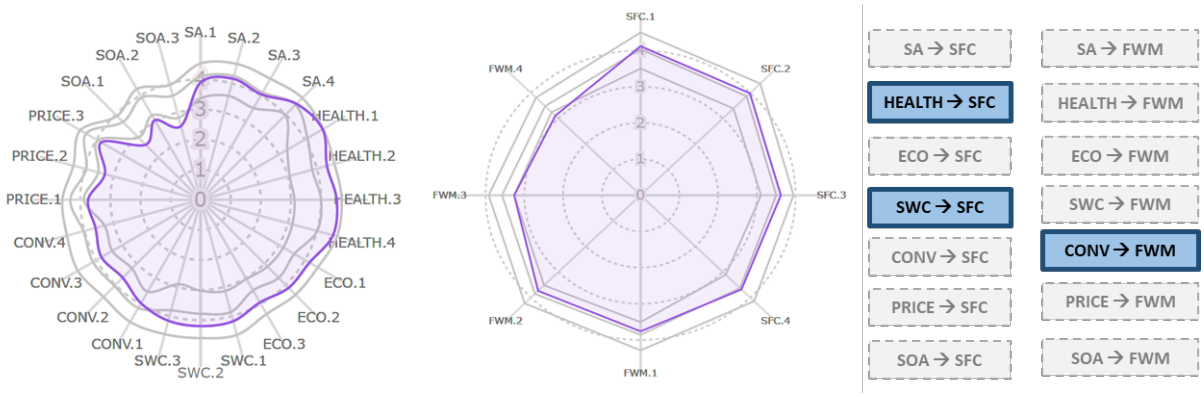

Figure 20 Average of Indicators of Food Consumption Motives and Sustainable Consumption Behaviour and Significance of Path Relationships in Cluster 2

Source: Author's own elaboration, 2025

Regarding sustainable food consumption behaviour, this segment shows a high frequency of choosing local food (4,118) and seasonal fruits and vegetables (3,988). Apart from seeking health benefits, the concern for the social welfare of food producers is also proven to drive sustainable food consumption in Cluster 2. The younger generation is proven to be motivated by eudaimonia values, which act based on personal moral values that are considered meaningful, one of which is contributing to the welfare of their social environment (Polisetty et al., 2024). As shown in Figure 20 (right side), with bold blue boxes marking the significant paths, sustainable food choice is strongly influenced by social welfare concern motives. Social adherence motives do not significantly affect Cluster 2's sustainable food choice and food waste management behaviour, assuring the independent traits of this segment that prioritise inner drives over external persuasions. This characteristic of Cluster 2 is similar to the research on Generation Z in the United States, which found that they are not influenced by collectivist values when consuming sustainable products (Kara & Min, 2024). Surprisingly, this segment

is not driven by an ecological concern to choose sustainable food or to manage food waste. This segment seems more motivated to consume local and organic food because of the direct impact of this consumption process, which can improve the economic level of local farmers and producers, compared to the environmental impact, which is non-tangible and takes a more extended period to be apparent (Peral-Peral et al., 2022).

Concerning food waste management practices, the average behaviour in this segment is still below the average of food waste management behaviour in Cluster 3 and Cluster 4. Even for the frequency of consumption of suboptimal food or near-expired products in this group, it has the lowest average behaviour compared to all existing clusters. Consumers who prioritise health values in their food consumption tend to choose fresh and aesthetically pleasing food that is identified with superior food quality and rich nutrients (Elimelech et al., 2024).This judgement bias related to appearance and health value is one of the reasons that can explain why Segment 2 has a low acceptance of suboptimal products and tends to consume foods near the expiry date rarely. The convenience aspect of their actions is the main factor that significantly influences Cluster 2 to carry out food waste management. Similar to Cluster 1, this cluster segment may perceive that taking home leftovers and re-cooking their food at home is a practical action that makes it more manageable for them than having to buy food again later when they are about to eat.

Consumers in Cluster 2 are a potentially profitable target market for sustainable food producers since consumers in this segment already have a good awareness of health benefits, have social concerns about their food consumption, and have price sensitivity that tends to be lower than other clusters. Promotional strategies by displaying health benefits on local food packaging or with ethical branding such as including the fair-trade logo, will make it easier for consumers in Cluster 2 to make purchasing decisions. In this cluster, organic food consumption and the preference for food with environmentally friendly packaging are still relatively lower than local food consumption. Like local food, organic food also offers health benefits and the potential to improve the local economy as long as the organic products are domestic, not imported. To increase the consumption of organic products in Cluster 2, which is concerned about health, there needs to be education and campaigns to increase the trust of young consumers that organic food has strict and reliable production standards and evaluation of nutritional content; the standards may be more closely monitored than non-organic local food in general since organic food uses chemical free composition and does not use artificial ingredients (Guru et al., 2024; Yang et al., 2023). The low consumption of food with environmentally friendly packaging in Cluster 2 may be due to the lack of insight and awareness of young people about the importance

of paying attention to their food packaging waste, also possibly because using environmentally friendly packaging is considered less practical among young people (Lin, 2024; Liu et al., 2024). Promotion of the health benefits of using environmentally friendly packaging, such as natural materials or innovative biodegradable packaging similar to plastic but made from algae or cassava, needs to be highlighted by marketers and manufacturers (Guo et al., 2024). More environmentally friendly packaging can reduce health problems by preventing the consumption of harmful chemicals and microplastics that may occur in foods that use conventional plastic as packaging (Cruz & Varzakas, 2023).

The only food consumption motive that significantly affects food waste management behaviour in Cluster 2 is convenience motives. A potential strategy to grow the willingness of this segment to devour imperfect but nutritious food is by leveraging the convenience factors, especially increasing the availability of this type of food and making the choice of this type of food more manageable to consume (Lavelle et al., 2023). Retailers can make product innovations such as processing vegetables or fruits that do not meet aesthetic standards into ready-to-eat foods, such as in the form of juice, chips, fruit bars, bread, tater tots, or other types of upcycle practical food innovations and following the tastes of young Indonesians (Janowicz et al., 2023; Markowska et al., 2022). Technological innovations in the form of mobile applications can also help young people manage food waste more conveniently through features for sharing leftover food, recipe recommendations for processing leftover food, and reminders regarding the expiration date of their food stocks (Castro et al., 2023; Mastorakis et al., 2024).

Cluster 3 - Holistic demander and eco-friendly enthusiasts

The name “holistic demander and eco-friendly enthusiasts” reflects a group of young consumers who score highly across nearly all food consumption motives, showing that their choices are shaped by a broad set of considerations (Figure 21). They are “holistic demanders” because they care simultaneously about values good taste (4.779), ease of preparation (4.714), and attention to the health impact of their food consumption (4.702), influencer recommendations (3.953) and social media trends (3.935), making them the most comprehensive in their expectations compared to the other clusters. At the same time, they are “eco-friendly enthusiasts” since their decisions also reflect strong ecological concern and a willingness to align with social and environmental values when choosing and consuming food. Regarding sustainable consumption practices, Cluster 3 shows the highest average behaviour for local food consumption, seasonal fruit and vegetable consumption, and taking away their leftovers. However, consumers in Cluster 3 exhibit less enthusiasm for organic food consumption and

their willingness to consume suboptimal food and near expiry compared to other types of sustainable food consumption behaviour within the cluster.

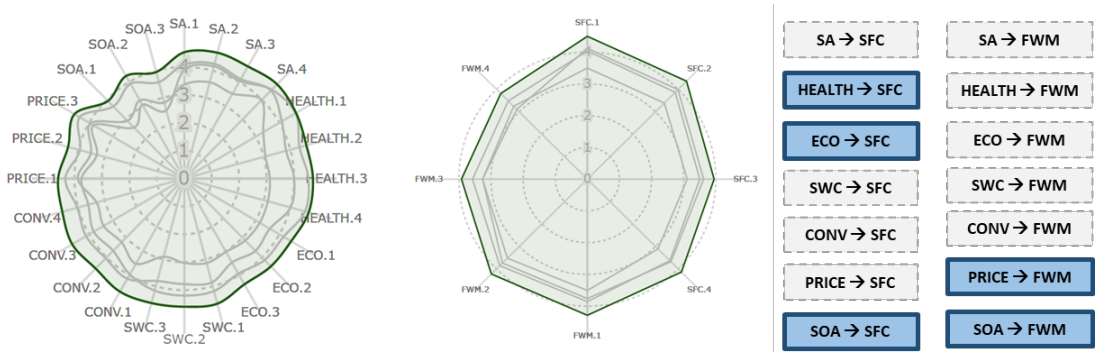

Figure 21 Average of Indicators of Food Consumption Motives and Sustainable Consumption Behaviour and Significance of Path Relationships in Cluster 3

Source: Author's own elaboration, 2025

Food consumption motives proven to drive Cluster 3 consumers to perform sustainable food consumption significantly include ecological concern and health consciousness, and similar consumption patterns from the immediate environment and social media also influence them (see the bold blue box part of Figure 21). The difference between Cluster 3 and 2, which are also enthusiastic about performing sustainable food consumption behaviour, is that Cluster 3 is proven to be social-influence-driven in their consumption and also affected by their concern for the environmental impact of their consumption. However, Cluster 2 is more unaffected by their social environment's eating patterns and their ecological concern is not consistently reflected in their sustainable food consumption behaviour. An effective marketing strategy to promote sustainable food consumption, which includes local food, seasonal food, organic food, and food with environmentally friendly packaging, is to highlight those foods' health and environmental benefits through food influencers as communication channels and through viral strategies on social media (Synodinos et al., 2023).

Food influencers who promote sustainable food consumption behaviour as well as encourage young people to do food waste management need to have characteristics that match young people's preferences, have good credibility, present their messages genuinely, and often engage with their followers so that the message can well-resonate with the Generation Z audience (Confetto et al., 2023; Ruzgys & Pickering, 2024a). In addition, young people need to be convinced that their friends and social environment also practice sustainable consumption behaviour, for example, by inviting young people to be involved in experiential events in the form of exhibitions and cooking classes for healthy and eco-friendly food on campus (Grinberga-Zalite et al., 2024). Promotion of food products with co-benefit priming, namely highlighting the various benefits of product consumption, for example, combining health

benefits such as pesticide-free, environmental such as low carbon emissions, social such as supporting the welfare of local farmers, is a strategy that is suitable for Cluster 3 consumers and is proven to increase product attractiveness compared to only highlighting a single benefit (Baylan & Ozilgen, 2025).

In line with previous research in the context of Generation Z Indonesia, the behaviour of Cluster 3 consumers in managing food waste is driven by their motivation to save money, adhere their behaviours to those closest to them, and follow trends on social media (Kristia et al, 2023b). A creative strategy to promote better food waste management among young consumers is to gamify through food rescue applications or integrate with existing applications, such as food delivery platforms, to give points for all food waste management efforts, such as buying suboptimal food and near-expiry products. The points can be redeemed for future food purchases to make food waste management efforts more fun and financially rewarding (Haas et al., 2022; Mastorakis et al., 2024).

Cluster 4 – Epicurean pragmatist waste-conserver

Epicurean pragmatist waste-conserver captures the way this group balances enjoyment and practicality in their food choices. They are called “epicureans” because they strongly value taste (SA.4 = 4.463) as sensory satisfaction (Figure 21). The pragmatist nature of this segment is reflected in the preference of Cluster 4 consumers who are highly motivated to take advantage of food price promotion deals, prioritising affordability, aspects of ease of accessing food, and prioritising the practicality of serving food, compared to providing a good environmental impact. This shows that this segment prioritises self-interest and immediate benefits over abstract ideals. The character of prioritising good-tasting food balanced with attractive prices in Cluster 4 is similar to that of Generation Z in Greece from a previous study, who also have similar preferences when choosing their food (Kalyva et al., 2024).

Cluster 4 described as “waste-conservers” since, despite being selective about sustainable purchases like organic food, they actively manage food waste by bringing leftovers home (3.858) and reprocessing excess food (3.855). This is due to the pragmatist characteristics of Cluster 4, who highly prioritised the affordability and convenience aspects of their food choices, so that although they have a sense of concern for the environment, they choose to express it in a more low-budget way by doing food waste management, and they do not choose pricy types of sustainable food such as organic food (Mehdi et al., 2024). Like Cluster 1 and Cluster 2, convenience is also proven to significantly drive Cluster 4 consumers to perform food waste management behaviour (see the bold blue box shown in Figure 22). In addition to ecological value drives, which are intrinsic values, Cluster 4 consumers' motivation to adhere to social

norms and the behaviour of their closest friends is proven to drive this segment to perform food waste management significantly. The aspect of food waste management that needs to be further improved from Cluster 4 is related to their acceptance of less aesthetically pleasing food close to expiry, as the average of both behaviours is scored low by this segment. To promote both forms of food waste management, there needs to be education from various stakeholders, one of which is through food influencers, to promote the consumption of suboptimal and near-expired food as a way for young people to contribute to the natural environment, which is easy, trendy, admirable, and still budget-friendly. In the context of Arab university students, authentic, relatable, and attractive influencers who are non-traditional celebrities have proven effective in mobilising young people to reduce their anticipated food waste (Ajina et al., 2024). Support from retailers to promote food waste reduction is by providing bundling discount promotions for near-expired items and appetising ready-to-eat meals made from suboptimal vegetable or fruit ingredients, making it easier for young consumers to consume these types of items and providing financial benefits (Chang et al., 2024).

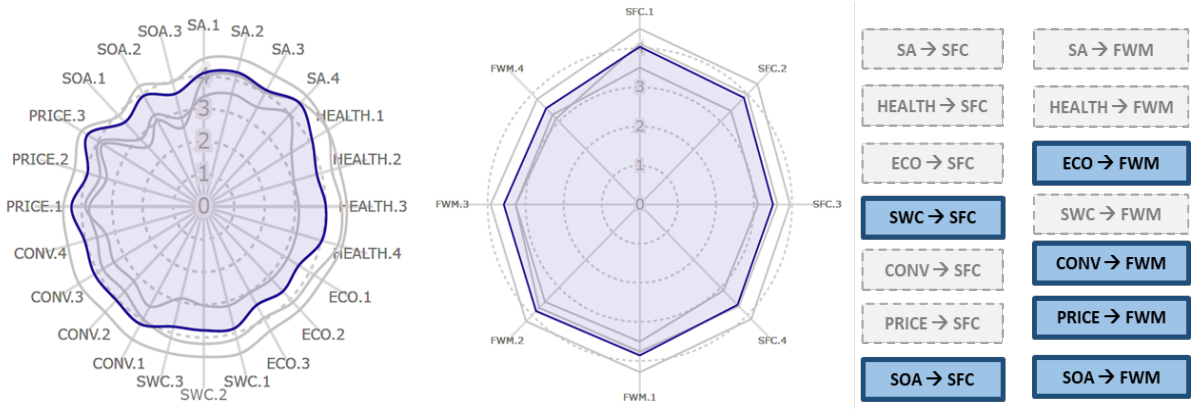

Figure 22 Average of Indicators of Food Consumption Motives and Sustainable Consumption Behaviour and Significance of Path Relationships in Cluster 4

Source: Author's own elaboration, 2025

In terms of performing sustainable behaviour, Cluster 4 shows selective commitment, such as prioritising eating local food (4.038) and consuming seasonal food (3.868) while consuming less organic food (3.501). Although Cluster 2 is as much a fan of local food as Cluster 2, consumers in Cluster 4 are significantly influenced by their peers' behaviour and also trends on social media. In contrast, Cluster 2 is more independent regarding their food choices. Another food consumption motive that significantly drives Cluster 4 to consume sustainable food is their concern for the social welfare concerns of the food producers they consume rather than their concern for ecological welfare. Given the significant influence of the motivation to socially adhere and contribute to social welfare on Cluster 4 consumers to undertake sustainable food consumption, a viral campaign strategy that focuses on community impact is expected to

increase sustainable food consumption in this segment. In detail, for example, the government can collaborate with popular young influencers to create a campaign to consume local and seasonal food from local micro and small businesses. Young consumers can be invited to actively participate in this campaign by joining a challenge where they need to share their experience of eating more sustainable food and how good it tastes and need to tag people they know; then, the one who gets the most views and likes will win the challenge. Campaigns and exposure regarding messages to sustainable food consumption are expected to be a catalyst for young people at the contemplation stage or early adopters of sustainable consumption but have not yet fully and consistently carried out this behaviour (Ruzgys & Pickering, 2024a). Empirically, the campaign conducted on social media has been proven effective in increasing the awareness and self-efficacy of Generation Z in Italy to perform more sustainable behaviours (Confetto et al., 2023; Ruzgys & Pickering, 2024a).

4.2. Study 2: The Effect of Sustainability Values and Food Influencer Content Review on Traditional Food Consumption Intention

4.2.1. Study 2 Measurement Model Evaluation

In order to ensure the reliability of the indicators and the accurate measurement of their respective constructs, it was necessary to obtain factor loadings greater than 0.7 for all indicators (Sarstedt et al., 2022). Figure 23 and Table 17 (Loading factor Stage 1) showed that all indicators belonging to first order constructs were reliable measures of their respective constructs. Table 17 shows that all Cronbach Alpha and Composite Reliability values generated in stage 1, which were found to be higher than 0.70 and lower than 0.95, have proven to be reliable for the variables of economic value, ecological value, socio-cultural value, food influencer, hedonic attitude, utilitarian attitude, and consumption intention of traditional and locally produced food. Therefore, it can be concluded that each item on the scale is reliable and not redundant (Sarstedt et al., 2022).

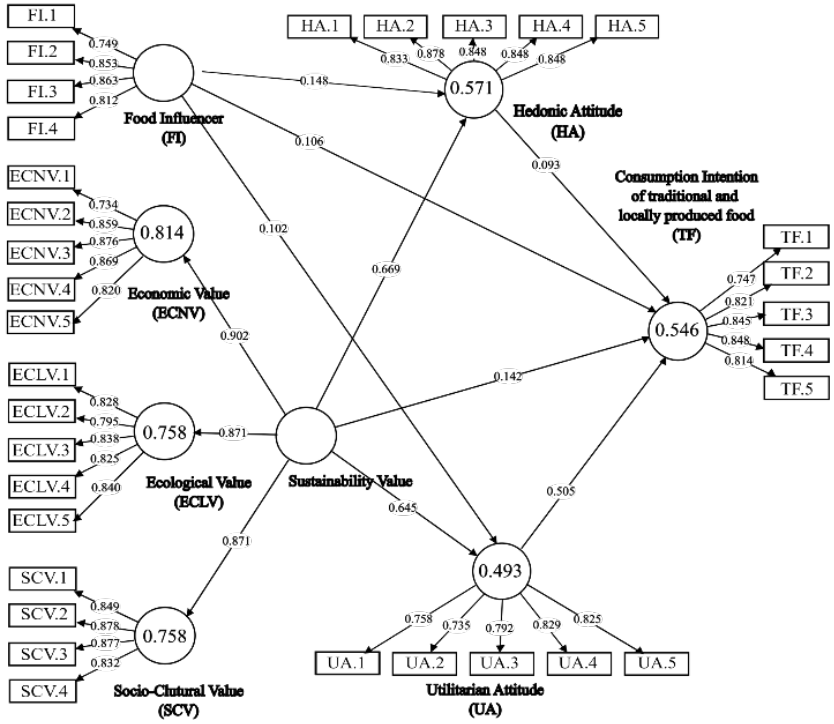

Figure 23 First stage: measurement model of first-order components

Source: Author's own elaboration based on Study 2 PLS-SEM results, 2024

Similarly, the Cronbach Alpha and Composite Reliability values of the sustainability values variable generated from Stage 2 were reliable and considered satisfactory. This means that the economic, ecological and socio-cultural value variables together were reflective measures of the sustainability value variable. All variables have an AVE value greater than 0.5, indicating good convergent validity.

Table 17 Study 2 Instrument's Outer Loading, Convergent Validity, Reliability

Variable & Indicators		Loading Factor		Cronbach Alpha	Composite Reliability	Average Variance Extracted
		Stage 1	Stage 2			
SV	Sustainability values			0.856	0.913	0.777
ECNV	Economic value		0.892	0.889	0.919	0.695
ECNV.1	Price affordability	0.734				
ECNV.2	Local economy contribution	0.859				
ECNV.3	Job creation opportunity	0.876				
ECNV.4	Support local farmer & MSME*	0.869				
ECNV.5	Fair Trade	0.820				
ECLV	Ecological value		0.869	0.883	0.914	0.681
ECLV.1	Eco-friendly production	0.828				
ECLV.2	Eco-friendly packaging materials	0.795				
ECLV.3	Carbon emissions reduction	0.838				
ECLV.4	Use minimal or no harmful chemicals	0.825				

ECLV.5	Environmental sustainability and biodiversity	0.840				
SCV	Socio-cultural value		0.883	0.881	0.918	0.738
SCV.1	Cultural Preservation	0.849				
SCV.2	Offers authentic experience	0.878				
SCV.3	Strengthen connection with local culture	0.877				
SCV.4	Fosters sense of unity	0.832				
FI	Food Influencer			0.837	0.892	0.673
FI.1	Traditional food related content exposure	0.749	0.749			
FI.2	Sufficient traditional food information provided	0.853	0.853			
FI.3	Exciting influencer engagement	0.863	0.863			
FI.4	Appealing traditional food related content	0.812	0.812			
HA	Hedonic attitude			0.904	0.929	0.723
HA.1	Delicious taste appreciation	0.833	0.833			
HA.2	Pleasant consumption experience	0.876	0.876			
HA.3	Dietary variety	0.848	0.848			
HA.4	Culinary adventure	0.848	0.848			
HA.5	Culinary Passion	0.848	0.848			
UA	Utilitarian attitude			0.847	0.891	0.622
UA.1	Nutritional value	0.758	0.758			
UA.2	Convenience food availability	0.735	0.735			
UA.3	Affordability	0.792	0.792			
UA.4	Satiety portion	0.829	0.829			
UA.5	Daily energy provision	0.825	0.825			
TF	Consumption intention of traditional foods			0.874	0.908	0.665
TF.1	Purchase intention	0.747	0.747			
TF.2	Traditional taste preference	0.821	0.821			
TF.3	Traditional processing preference	0.845	0.845			
TF.4	Local spices-based food preference	0.848	0.848			
TF.5	Traditional recipe preference	0.814	0.814			

**: Micro, Small and Medium Enterprises (MSME)*

Source: Author's calculations based on Study 2 PLS-SEM model results, 2024

In the first stage, discriminant validity was checked to ensure that all first-order constructs were distinct from other constructs by evaluating the Fornell-Larcker criterion and the HTMT ratio of correlations (Table 18). All square roots of the AVE values of each construct shown diagonally correlation result have higher values than the correlation with other constructs (off-diagonal items), indicating that all first-order constructs were discriminant and had good discriminant validity according to the Fornell-Larcker criteria. Similarly, using the HTMT ratio, it was evident that all constructs had an HTMT ratio below the threshold of 0.9 (Table 18), indicating adequate discriminant validity (Sarstedt et al., 2022).

Table 18 First stage: Fornell-Larcker criterion (left) & heterotrait-monotrait ratio (right)

	ECLV	ECNV	FI	HA	SCV	TF	UA
ECLV	**0.830**						
ECNV	0.660	**0.830**					
FI	0.440	0.430	**0.820**				
HA	0.600	0.640	0.490	**0.850**			
SCV	0.630	0.710	0.490	0.750	**0.860**		
TF	0.630	0.510	0.440	0.570	0.490	**0.820**	
UA	0.670	0.590	0.430	0.640	0.580	0.710	0.790

	ECLV	ECNV	FI	HA	SCV	TF	UA
ECLV							
ECNV	0.750						
FI	0.510	0.490					
HA	0.660	0.710	0.560				
SCV	0.710	0.800	0.560	0.840			
TF	0.710	0.580	0.510	0.640	0.560		
UA	0.770	0.680	0.510	0.730	0.670	0.820	

Note: ECLV: Ecological value; ECNV: Economic Value; FI: Food Influencer; HA: Hedonic Attitude; SCV: Socio-cultural value TF: Consumption Intention of traditional and locally produced food; UA: Utilitarian Attitude

Source: Author's calculations based on Study 2 PLS-SEM measurement model results, 2024

In the second analysis stage, the constructs analysed for discriminant validity were sustainability values with food influencers, hedonic attitude, utilitarian attitude and consumption intention of traditional and locally produced food. The Fornell-Larcker criteria (Table 19 left side) showed that all correlation values between constructs were greater than the correlation of these constructs with other constructs, indicating good discriminant validity. The HTMT values in the second stage ranged from 0.510 to 0.850, all of which were still below the threshold of the HTMT, indicating that all constructs had good discriminant validity and measured different underlying dimensions (Table 19 right side).

Table 19 Second stage: Fornell-Larcker criterion (left) & heterotrait-monotrait ratio (right)

	TF	FI	HA	SV	UA
TF	**0.816**				
FI	0.441	**0.821**			
HA	0.573	0.489	**0.850**		
SV	0.616	0.511	0.750	**0.881**	
UA	0.709	0.430	0.638	0.696	0.789

	TF	FI	HA	SV	UA
TF					
FI	0.510				
HA	0.640	0.560			
SV	0.710	0.600	0.850		
UA	0.820	0.510	0.730	0.810	

Note: FI: Food Influencer; HA: Hedonic Attitude; TF: Consumption Intention of traditional and locally produced food; SV: Sustainability value; UA: Utilitarian Attitude

Source: Author's calculations based on Study 2 PLS-SEM measurement model results, 2024

In examining the multicollinearity relationship between variables (Table 20), it is found that the lowest VIF indicator value is 1,354 (the relationship between FI to HA; SV to HA and UA), which indicates that there is no multicollinearity problem between these variables. Meanwhile, the VIF value between SV and TF is 2,902, slightly above the VIF value between other independent variables but still below 5. The VIF value between SV as a higher-order construct and TF reflects that, theoretically, these two constructs might share some alikeness regarding

what is measured, such as values related to sustainability and the intention to consume traditional food based on sustainability values. Although SV and TV may show some degree of correlation, the degree of collinearity is not a problem, suggests no overlap in the two constructs, and does not pose a problem for the model's reliability.

Table 20 Inner VIF

	TF	HA	UA
FI	1.411	1.354	1.354
HA	2.495		
SV	2.902	1.354	1.354
UA	2.075		

Source: Author's own elaboration based on Study 2 PLS-SEM results, 2024

4.2.2. Study 2 Structural Model Evaluation

After ensuring the validity and reliability aspects of the higher-order construct, namely sustainability values, the second stage of the embedded two-stage method could proceed with the structural model evaluation to prove the research hypotheses (Figure 24).

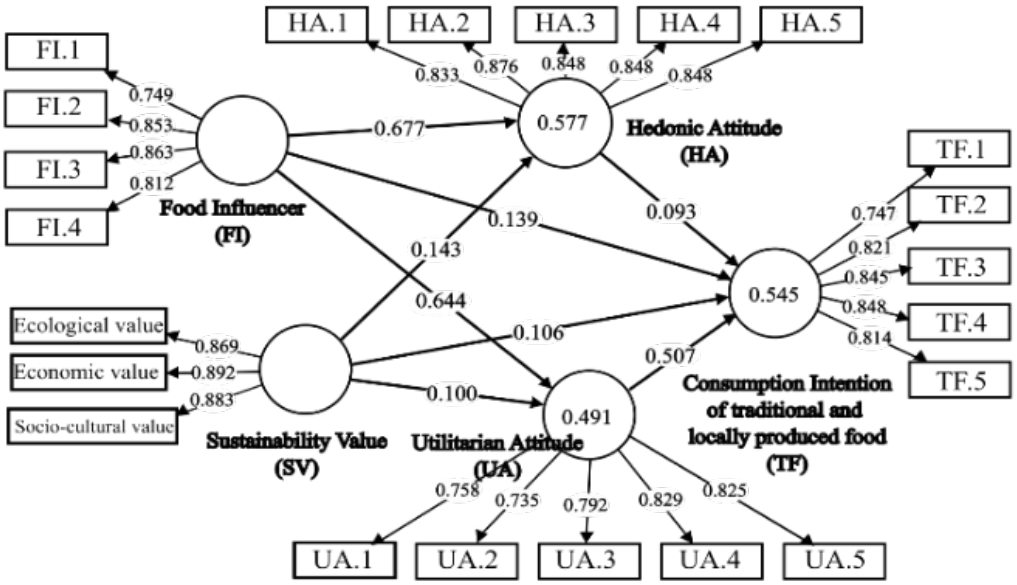

Figure 24 Second stage: evaluation of measurement models with second-order component

Source: Author's own elaboration, 2024

All Study 2 hypotheses were supported (Table 21), with p-values below 0.05 and t-statistics above 1.96 at the 95% confidence level, based on a bootstrapping procedure with 5000 resamples and a two-tailed test at the 5% level. Sustainability values as higher-order construct and food influencers are proven to significantly affect Generation Z's intention in consuming traditional food (supporting Hypotheses 3 and 4). In addition, the study showed that both

hedonic (Hypotheses 5 and 6) and utilitarian attitudes (Hypotheses 7 and 8) significantly mediate between sustainability values and food influencers to consume locally produced food. The study also concluded that the mediation effect of hedonic and utilitarian attitudes was partial, as sustainability values and food influencers influenced the intention on traditional food consumption, regardless of the presence of the mediating variables (Hypotheses 3 and 4). It was found that the mediation effect of utilitarian attitude on the relationship between sustainability values and intention to consume traditional and locally produced food had a medium to high mediation effect, as the Upsilon value was 0.106 (between medium to high upsilon range 0.075 and 0.175). Meanwhile, each mediation effect tested in Hypothesis 5, Hypothesis 6 and Hypothesis 8 had a relatively small mediation effect. The original sample values in each hypothesis test were positive, indicating a unidirectional relationship between the exogenous and endogenous variables. Original sample indicates the coefficient estimated directly from the data, showing how strongly and in what direction the variables are related (Sarstedt et al., 2022). For example, in Hypothesis 3, the stronger the sustainability value was, the more intent respondents were in consuming traditional and locally produced food.

Table 21 Results of Study 2 Hypothesis Testing

Hypothesis	Original sample	t-statistic	p-value	(υ)	Conclusion
H3: SV → TF	0.139	3.567	0.000	-	Supported
H4: FI → TF	0.106	4.425	0.000	-	Supported
H5: SV → HA → TF	0.063	2.457	0.014	0.003	Supported
H6: FI → HA → TF	0.013	2.313	0.021	0.000	Supported
H7: SV → UA → TF	0.326	13.787	0.000	0.106	Supported
H8: FI → UA → TF	0.051	3.962	0.000	0.002	Supported

Source: Author's own elaboration based on Study 2 PLS-SEM results, 2024

The explanatory power, evaluated by the adjusted R^2 value, of the variable of traditional and local food consumption intention was 0.544, which showed that the proportion of variance of this variable from all exogenous variables was 54.4% (Table 22). The exogenous variables of the two mediating variables in this research model, namely hedonic attitude and utilitarian attitude, had an explanatory power of 57.6% and 49%, respectively. Predictive relevance statistics, assessed by evaluating the Q^2 value of each endogenous variable, measured how well the model predicted the data for each construct. The Q^2 value for each variable of traditional and local food consumption intention, hedonic attitude, and utilitarian attitude was more than zero, indicating that the constructs had good predictive relevance and that the model effectively predicted its indicators (Sarstedt et al., 2022).

Table 22 Adjusted R^2 and Q^2

Code	Adjusted R^2	Q^2
TF	0.544	0.358
HA	0.576	0.414
UA	0.490	0.302

Source: Author's own elaboration based on Study 2 PLS-SEM results, 2024

Table 23 showed the f^2 value or effect size of each exogenous variable in explaining the endogenous variable, calculated by measuring the change in R^2 when the exogenous variable was removed from the model (Sarstedt et al., 2022). Based on the values, it can be concluded that sustainability values had a large effect size on both hedonic and utilitarian attitudes, as the effect sizes were greater than 0.35. In Study 2, although statistically, the sustainability values and food influencers have a significant relationship in influencing intention in traditional food consumption, practically both those previously mentioned exogenous variables have a minor effect size, which indicates limited practical influence. The utilitarian attitude contributes more to young people's intention in traditional food consumption, with a medium-sized effect, compared with the influence of sustainability values and food influencers' influence as an external stimulus. Negligible and small effect sizes provide opportunities for model improvement in subsequent studies to include other variables that may increase consumer intention in traditional food consumption.

Table 23 Effect Sizes (f2)

Path	Effect size (f^2)	Conclusion
SV → TF	0.015	negligible
SV → HA	0.799	large
SV → UA	0.603	large
FI → TF	0.018	negligible
FI → HA	0.036	small
FI → UA	0.015	negligible
HA → TF	0.008	negligible
UA → TF	0.272	medium

Source: Author's own elaboration based on Study 2 PLS-SEM results, 2024

The Normed Fit Index (NFI) of this research model has a value of 0.872, slightly below the threshold of 0.9, indicating that the model fitted the data adequately but not optimally. However, another important model fit indicator, SRMR as an absolute fit index, shows an estimated model value of 0.060 below the threshold value (0.080) which means that the data and the model have a good fit (Hu & Bentler, 1998; Sarstedt et al., 2022). The prediction accuracy of the models shown in Table 24 indicates that almost all RMSE and MAE values in the PLS model are higher than those in the linear model except for item UA.2, which means that the PLS model has low prediction accuracy (Sarstedt et al., 2022).

Table 24 PLS Predict

Code	PLS-SEM_RMSE	PLS-SEM_MAE	LM_RMSE	LM_MAE
TF.1	0.775	0.618	0.762	0.603
TF.2	0.756	0.623	0.744	0.604
TF.3	0.760	0.623	0.732	0.587
TF.4	0.663	0.524	0.657	0.510
TF.5	0.731	0.580	0.722	0.566
HA.1	0.591	0.444	0.584	0.434
HA.2	0.562	0.422	0.551	0.407
HA.3	0.600	0.445	0.587	0.428
HA.4	0.605	0.447	0.596	0.430
HA.5	0.609	0.450	0.601	0.442
UA.1	0.692	0.551	0.662	0.514
UA.2	0.760	0.573	0.757	0.575
UA.3	0.664	0.515	0.661	0.503
UA.4	0.681	0.511	0.680	0.510
UA.5	0.723	0.551	0.713	0.544

Source: Author's own elaboration based on Study 2 PLS-SEM results, 2024

4.2.3. The Effect of Three-Dimensional Sustainability Values on Traditional Food Consumption Intention

Study 2 proves that sustainability values, which consists of economic, socio-cultural, and ecological dimensions, significantly influences Generation Z's intention in consuming traditional food in Indonesia. Among the three dimensions of sustainability values, economic value emerges as the most important sub-dimension (see outer loading values in Figure 24). The prominent relationship in economic-sustainability value is primarily driven by the price sensitivity of young consumer who prioritises affordability in their daily food consumption (Kalyva et al., 2024; Verdeau & Monnery-Patris, 2024). Generation Z of Indonesia perceives traditional foods as possessing significant economic value since these foods are typically sold at low prices and are tangible, compared to the effect of environmental sustainability, which is more difficult to quantify and may not be immediately observable (Cook et al., 2024; Samaddar & Mondal, 2024). Beyond affordability, in a more altruistic way, Indonesian young people are also confirmed to consider traditional food consumption to contribute to the welfare of farmers and local micro-entrepreneurs and create jobs. For instance, in the Gunung Kidul area of Central Java, casava-based food products such as *tiwul* and *getuk* serve as popular comfort food and key outlets for distributing the abundant cassava harvest. To be competitive, Indonesian local food producers strive to be more innovative in marketing their products and emphasise the use of unique local ingredients that highlight the specific identity of a region (Retnaningsih et al., 2024).

Socio-cultural is the dimension with the second highest contribution to sustainability value as a higher-order construct, confirming identity, authenticity, community bond, and emotional resonance of traditional Indonesian food consumption. In the context of research in various countries, traditional food is considered a food commodity and a cultural artefact that strengthens social relations and becomes a symbol of identity (Apak & Gürbüz, 2023; Cavalleri et al., 2023). For instance, in communities in southern Italy, domestic and foreign tourists can taste local foods such as mozzarella and wine as a form of participation in the value of the community (Dimitrovski et al., 2024). Young Indonesians also frequently consume traditional foods on various social occasions, ranging from informal gatherings with friends to more ceremonial special celebrations with family. Informally, *seblak*, a traditional spicy street food popular in West Java, is frequently consumed by teenage girls when hanging out. On more ceremonial occasions such as birthday celebrations, young people in areas from Central Java to East Java still consume *tumpeng* rice (yellow rice shaped like a cone and served with various side dishes on banana leaves) with their families as a form of gratitude and fostering unity.

Although ecological value contributes significantly to the formation of the sustainability values of traditional food consumption, its contribution was found to be the least salient. This indicates that some respondents are already aware of the ecological value of eating traditional food, such as having a reduced carbon footprint due to its short supply chain, utilisation of natural ingredients that minimise chemical usage, and inclusion of indigenous spices, perhaps due to their prior knowledge and interpretation (Rha et al., 2022). On the other hand, some respondents may not associate ecological value with traditional food, which results in this value contributing less than economic or socio-cultural value. In urban areas, sustainable food is often sold in modern retail and identified as a product with organic-labelled packaging or explicitly claiming that the product is fairly traded (Yang et al., 2024). Traditional Indonesian foods sold by roadside stalls or informal micro and small traders rarely brand themselves as environmentally friendly or green products even though their carbon footprint is minimal due to the sellers' relatively low sustainable literacy. The communication gap suggests that Indonesian traditional food is still underleveraged in terms of sustainable branding even though production practices align with ecological practices. This situation highlights an opportunity for traditional food marketers to brand the ecological benefits of this meal and attract the intention of young consumers who resonate with the message. The lack of sustainability claim labelling that addresses the economic, social, and environmental benefits of food products is not only happening in Indonesia but is also a global problem. Even in high-label visibility countries such as Italy and France, some consumers are still confused by the meaning of technical terms on packaging and are clueless (Tiboni-Oschilewski et al., 2024).

4.2.4. The Effect of Food Influencers on Indonesian Traditional Food Consumption Intention

Data analysis Study 2 proves that food influencers can influence Indonesian youth to consume traditional food. Traditional food reviews by food influencers, which are widely watched on TikTok, Instagram, and YouTube, can convey flavours, provide important information, and be an engaging spectacle for young audiences. The food influencers most watched by respondents, such as Ria SW and Nex Carlos, are not simply content creators but also cultural representatives who present Indonesian traditional dishes from an entertainment perspective, the content of which is informative and in line with Generation Z preferences. Although directly, food influencers statistically influence the intention of young Indonesian people in consuming traditional food, the strength of their influence is relatively weak. This suggests that when making food consumption decisions, young people may consider recommendations from food influencers, but this is not the primary determinant factor. One plausible reason lies in the nature of social media content, which young people widely regard as entertainment content rather than prescriptive advice. Consistent with the Elaboration Likelihood Model, social media content is typically digested by young people through peripheral processing routes where interesting content may generate short-term attention but does not necessarily lead to long-term behavioural change (Sun & Xie, 2024). Another reason for the low effect size of food influencers lies in the existence of prior food preferences and a strong identity towards traditional food among young Indonesians. Traditional food consumption is a habit passed down from generation to generation in families, and economically, this food is affordable and easily found everywhere, so consumers may not need further convincing to consume it. A similar situation of the low influence of influencers on well-informed audiences has also been found in research on German and United States consumers (König & Maier, 2024).

4.2.5. Mediation of Hedonic and Utilitarian Attitudes in Linking Sustainability Values and Food Influencer towards Indonesian Traditional Food Consumption Intention

Study 2 advances theoretical discourse by empirically validating the dual mediation role of utilitarian and hedonic attitudes within Value-Attitude-Behaviour (VAB) and Stimulus-Organism-Response (SOR) frameworks. The data analysis result demonstrates that the value of sustainability reviewed by food influencers as an external stimulus, in addition to directly affecting young people's intention in traditional food consumption, is also channelled through utilitarian and hedonic evaluative mechanisms. In the VAB framework, sustainability values act as a guiding principle in shaping affective and rational internal responses. Utilitarian attitude shows a more dominant mediating role than hedonic attitude in the relationship between

sustainability values and intention in traditional food consumption. Indonesian youth with firm beliefs about the sustainability value of traditional food tend to rationalise the meals as an affordable, filling, nutritious, and easily accessible food alternative, and subsequently more intended in consuming traditional food. Such utilitarian alignment illustrates how value is rationalised into consumer intention via functional consumption logic, especially in demographic cohorts with constrained purchasing power. Findings regarding the significance of utilitarian value mediation in the weak relationship between sustainability values and consumption intention, confirms that instrumental related aspects of consumption such as functional reasoning, nutritional benefits, price and ease of access exert a more prominent influence on behavioural intention than terminal values such as preserving nature and making a social impact (Kautish et al., 2023). In the context of functional food consumption in South Africa, young people were strongly driven by utilitarian attitudes regarding nutritional aspects and health benefits being key factors (Maziriri et al., 2023). The findings in Study 2 are slightly different from those of previous studies, which found that hedonic attitude is the dominant factor that can drive consumption in the context of ethical food tourism or consuming luxurious dining experiences, where consumers prioritise seeking emotional stimulus and enjoyment (Caruana et al., 2020).

When turning to the role of food influencers, the SOR framework becomes particularly evident. Both utilitarian and hedonic attitudes were confirmed to be significant mediators in the relationship between food influencers and traditional food consumption intention, with a relatively low mediation effect. Although influencer marketing is often viewed as a hedonic stimulus trigger, analysis of Study 2 data suggests that influencers also contribute to evaluating functional aspects of traditional foods. The effect size of food influencers on the formation of hedonic attitudes toward traditional food in consumers' perception shows an influential effect, but the effect is weakened to drive consumption intention. This confirms that food influencers can effectively increase audience emotional engagement about traditional food through content that emphasises sensory experiences and pleasant culinary experiences. Food influencers usually highlight the entertainment and enjoyment aspects of subjective experience in enjoying a product, which effectively enhances the hedonic attitude in the audience (Jeyhan & Pangaribuan, 2024; Ji & Hee, 2024). In Indonesia, food influencers use social media to promote traditional cuisine and organise festivals that showcase medium-sized culinary businesses. Respected food influencers, such as Mgdalenaf, Anak Kuliner, and Boengkoes, organise community food bazaars that bring together culinary businesses from various regions of Indonesia. They encourage their followers to indulge in the wonderful flavours of traditional foods that may shape the emotional experience aspect and form a positive hedonic attitude of

the young audience towards traditional food (Rosa et al., 2023). However, entertaining content alone may not be sufficient to drive audience behaviour intention unless amplified by pragmatic reasoning. When food influencers provide sufficient functional information and promote the aspects of affordability, accessibility, nutritional content, and fulfilling portion, and framing these food choices as practical choices, young audiences will be more moved to consume the promoted traditional foods. Prior studies in the context of Southeast Asian and Italian users also found that influencer posts on social media can effectively trigger consumption desires and complement the information needed by the audience (Confetto et al., 2023; Silveira et al., 2024).

4.3. Study 3: The Effect of Food Delivery Application Price Promotion, Knowledge, Price Consciousness and the Theory of Planned Behavior towards Sustainable Food Waste Behavior

4.3.1. Study 3 Measurement Model Evaluation

The psychometric soundness of the measurement instrument in Study 3 was tested by evaluating the outer loading value (≥ 0.7) to ensure that the indicators used could explain at least 50% of the variance of the latent construct (Sarstedt et al., 2022). All indicators with acceptable outer loading are shown in Table 25, while two questionnaire items were omitted from further analysis since their values were less than 0.70: 'I am aware when there is an increase in the price of the food that I often buy' from the price consciousness construct; and 'I will share my excess food with friends or loved ones, rather than throwing it away' from the sustainable food waste behaviour construct. Although these items have demonstrated construct validity in earlier studies on research related to price sensitivity in the context of Qatar consumers (Aktas et al., 2018) and food waste behaviour in young Romanians (Burlea-Schiopoiu et al., 2021), they show less validity in the context of Generation Z of Indonesia. The Cronbach's alpha and composite reliability values of all latent variables on Study 3 ranged between 0.70 to 0.90 (Table 25), indicating internal homogeneity of each construct and good consistency. All manifest variables in Study 3 are confirmed to be free from multicollinearity issues that can interfere with the stability of indicator estimates, indicated by VIF values ranging from 1.315 (PC2) to a high of 3.382 (ATT3), and none of the indicators are above the threshold of 5 (Becker et al., 2023). Additionally, each latent construct's Average Variance Extracted value (Table 25) has exceeded the 0.50 threshold, indicating good convergent validity (Sarstedt et al., 2022).

Table 25 Study 3 Instrument's Outer Loading, Convergent Validity, Reliability, Multicollinearity Assessment

Item Code	Questionnaire Items	Factor loadings	Cronbach's Alpha	Composite Reliability	AVE	VIF
PR1	Food price discount promotions make me intended in ordering food immediately.	0.846	0.868	0.905	0.656	2.203
PR2	I feel that the free delivery vouchers offered on the application make me intended in ordering food immediately.	0.853				2.621
PR3	Price promotions that offer cheap delivery costs have made me intended in ordering food on the online food delivery service application.	0.842				2.426
PR4	Time-limited discount promotions (for example, daily discounts or price discounts only at certain hours) make me intended in ordering food on the online food delivery service application.	0.761				1.738
PR5	The food bundling promotions (e.g., buy one get one free) offered by the online food delivery service application made me intended in ordering food.	0.740				1.561
K1	I know how to lessen the amount of food that goes to waste.	0.813	0.829	0.886	0.661	1.786
K2	I have knowledge on the bad impact on the environment caused by food waste.	0.842				2.026
K3	I have knowledge on how to store excess food so it doesn't spoil easily.	0.793				1.647
K4	I have the knowledge that reducing food waste is one of the efforts to preserve the environment.	0.803				1.718
PC1	I am intended in buying food when it is cheap.	0.734	0.712	0.822	0.54	1.366
PC2	When I go shopping for food, I check prices of similar items and buy the ones that are the least expensive.	0.707				1.315
PC3	I always check the price before buying food.	0.732				1.409
PC4	I always try to get the best quality food at the most affordable price.	0.756				1.406
ATT1	Wasting food makes me feel guilty.	0.828	0.923	0.94	0.72	2.783
ATT2	Wasting food is against my conscience.	0.869				3.224
ATT3	Wasting food makes me feel bad.	0.889				3.382
ATT4	Wasting food is against my morals.	0.841				2.742
ATT5	Wasting food in vain makes me feel regretful.	0.870				2.931
ATT6	I was brought up to think that food shouldn't go to waste, and I still believe this.	0.798				2.018
PBC1	I do not find it difficult to minimise the amount of food I waste.	0.747	0.848	0.891	0.62	1.681
PBC2	I do not experience problems in the process of storing the excess food that I have.	0.811				2.234
PBC3	I have no problems reprocessing the excess food that I have.	0.798				2.048
PBC4	I don't experience problems determining my portion of food so that later there is no food left.	0.792				1.887
PBC5	I have no problem finishing the food that I have bought.	0.792				1.886
SN1	The people closest to me think minimising food waste is good.	0.804	0.814	0.877	0.64	1.791
SN2	My family encourages me to minimise the amount of food I waste.	0.795				1.751
SN3	My closest friends think that wasting food is a bad thing.	0.805				1.931
SN4	The people closest to me try not to waste food in vain.	0.801				1.900
FWB1	I try to control the portion of food so as not to waste food.	0.773	0.85	0.893	0.63	2.345

FWB2	I try to minimise wasted food.	0.814				2.637
FWB3	I will reheat the excess food from the previous meal and consume it later if it is still fit for consumption.	0.853				2.483
FWB4	I consume my own leftovers to save.	0.764				2.211
FWB5	I try to process excess food before it spoils.	0.747				2.001

Note: PR (Promotion of food delivery service application); K (Knowledge related responsible food waste); PC (Price consciousness); ATT (Attitude); PBC (Perceived behavioural control); SN (Subjective norms); FWB (Sustainable behaviour towards food waste)

Source: Author's own elaboration, 2023

Study 3 latent variable discriminant validity is confirmed by ensuring that all of the AVE square root values of the same construct are greater than the correlation with different constructs (Fornel-Larcker criterion in Table 26) and ensuring that all HTMT values are below the 0.85 threshold (heterotrait-monotrait ratio in Table 26) (Sarstedt et al., 2022). Based on this information, it can be ascertained that the constructs used in Study 3 represent different concepts and that there is no redundancy.

Table 26 Study 3 Fornell-Larcker criterion (left) & heterotrait-monotrait ratio (right)

	ATT	FWB	K	PBC	PC	PR	SN
ATT	0.722						
FWB	0.458	0.626					
K	0.255	0.270	0.661				
PBC	0.301	0.415	0.360	0.622			
PC	0.231	0.276	0.143	0.116	0.536		
PR	0.067	0.101	0.088	0.098	0.163	0.656	
SN	0.388	0.448	0.231	0.308	0.210	0.094	0.642

	ATT	FWB	K	PBC	PC	PR
ATT						
FWB	0.758					
K	0.577	0.619				
PBC	0.618	0.753	0.714			
PC	0.591	0.673	0.488	0.434		
PR	0.288	0.366	0.349	0.365	0.507	
SN	0.718	0.796	0.584	0.666	0.598	0.364

Note: PR (Promotion of food delivery service application); K (Knowledge related responsible food waste); PC (Price consciousness); ATT (Attitude); PBC (Perceived behavioural control); SN (Subjective norms); FWB (Sustainable behaviour towards food waste)

Source: Author's own elaboration based on PLS-SEM results, 2023

4.3.2. Study 3 Structural Equation Model Evaluation

Testing using bias-corrected and accelerated (BCa) bootstrapping with 5000 samples and a two-tailed test (5% significance level) on SmartPLS 4.0 software was conducted to prove eight hypotheses in Study 3 (see Figure 25 and

Table 27). The bootstrapping procedure generated t-statistics and p-values for each path coefficient, which were then used to determine whether the hypothesised relationships were supported by the data.

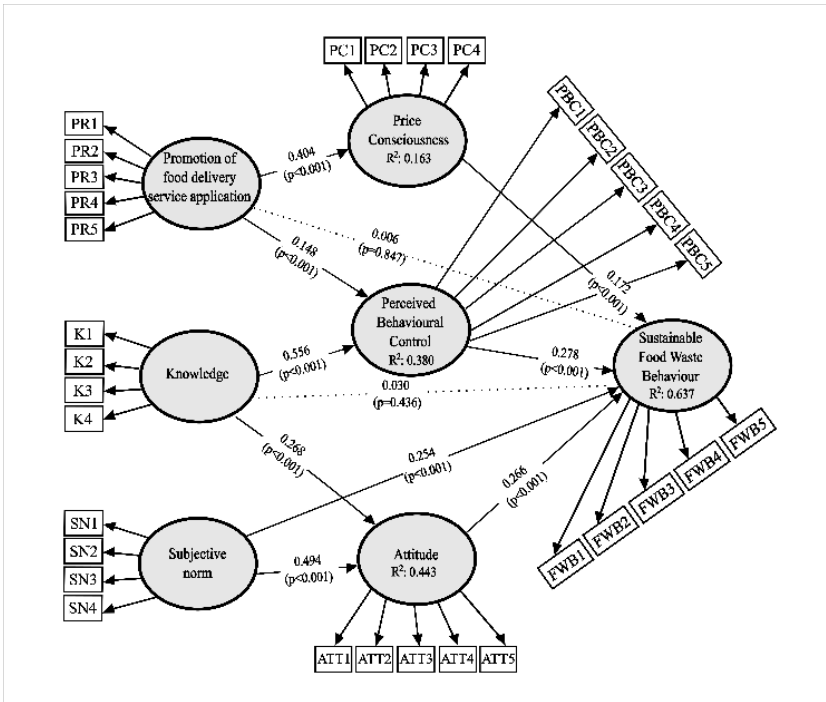

Figure 25 Study 3 Path Model and Coefficients from The Bootstrapping

Source: Author's own elaboration based on PLS-SEM bootstrapping results, 2023

The Hypotheses 9 and 10 were rejected since the path analysis showed that food delivery application price promotion and food waste-related knowledge did not directly influence sustainable behaviour towards food waste, as indicated by t values less than the threshold value of 1.96 and p values greater than 0.05. In contrast, subjective norms (Hypothesis 11) positively and significantly influence sustainable behaviour towards food waste management among Generation Z of Indonesia.

Table 27 Results of Study 3 Hypothesis Testing

Hypotheses	Path	Path coefficient	t-statistics	Upsilon (**υ**)	Conclusion
H9	Price promotion → Sustainable Food Waste Behaviour	0.006	0.195	-	Not supported
H10	Knowledge → Sustainable Food Waste Behaviour	0.030	0.749	-	Not supported
H11	Subjective norms → Sustainable Food Waste Behaviour	0.254	6.104*	-	Supported
H12	Price promotion → Price consciousness → Sustainable Food Waste Behaviour	0.069	3.724*	0.004	Supported – full mediation
H13	Knowledge → Attitude → Sustainable Food Waste Behaviour	0.071	4.893*	0.005	Supported - full mediation
H14	Subjective norms → Attitude → Sustainable Food Waste Behaviour	0.131	5.525*	0.017	Supported - partial mediation
H15	Price promotion → Perceived Behavioural Control → Sustainable Food Waste Behaviour	0.041	3.415*	0.001	Supported - full mediation
H16	Knowledge → Perceived Behavioural Control → Sustainable Food Waste Behaviour	0.155	5.578*	0.023	Supported - full mediation

*Note: *significant at p-value ≤ 0.001*

Source: Author's own elaboration based on PLS-SEM bootstrapping results, 2023

The mediating effect of price consciousness (Hypothesis 12), attitude (Hypothesis 13 and 14), and perceived behavioural control (Hypothesis 15 and 16), all show a significant effect as indicated by t-values greater than 1.96 and p-values less than or equal to 0.001. Price consciousness fully mediates the relationship between the price promotions offered by food delivery applications and the food waste behaviour of young Indonesians. An attitude towards food waste reduction efforts fully mediates the relationship between knowledge and sustainable food waste behaviour and partially mediates the relationship between subjective norms and sustainable food waste behaviour. Perceived control in food waste prevention behaviour fully mediates the relationship between the price promotions offered by food delivery applications and knowledge towards sustainable food waste behaviour. The upsilon coefficient in Table 27 shows that the mediating power of price consciousness and attitude is relatively small (Ogbeibu et al., 2021). However, the perceived behavioural control in the knowledge-behaviour pathway shows a slightly higher mediating effect than the other mediators.

Table 28 Study 3 Structural Model Assessment (R^2 and Q^2 measures)

Constructs	R^2	R^2 Adjusted	Q^2
Price consciousness	0.163	0.162	0.084
Perceived Behavioural Control	0.380	0.377	0.233
Attitude	0.443	0.441	0.316
Sustainable behaviour towards food waste	0.637	0.633	0.390

Source: Author's own elaboration based on PLS-SEM results, 2023

Table 28 shows that the adjusted R^2 value of price consciousness is 0.162, which means that the price promotion offered by food delivery applications can explain 16.2% of the variance in price consciousness. Combining food waste-related knowledge and price promotion can explain 37.7% of the variance in perceived behavioural control (moderate explanatory power). Attitude, which reflects young consumers' overall evaluation of food waste reduction, is explained at 44.1% of its variance by knowledge and subjective norm. The highest variance explanation occurs in sustainable food waste behaviour, where all independent and mediating variables together explain 63.3% of the variance. All endogenous variables in Study 3 show Q^2 values greater than zero (Table 28), confirming that the conceptual framework used has good predictive validity. The Q^2 value for sustainable food waste behaviour is 0.390, indicating that this model has the potential to produce similar results not only in the context of the current study but also in the context of new data in future research. The Standardised Root Mean Square Residual of Study 3 is 0.10, which indicates a good fit of the model used with the empirical data obtained (McNeish & Wolf, 2023).

Table 29 Study 3 Effect sizes (f^2 measure)

Path	f^2	Effect Size
Price promotion → Sustainable behaviour towards food waste	0.001	No effect
Price promotion → Price consciousness	0.195	Medium
Price promotion → Perceived Behavioural Control	0.032	Small
Knowledge → Attitude	0.099	Small
Knowledge → Sustainable behaviour towards food waste	0.001	No effect
Knowledge → Perceived behavioural control	0.455	Large
Subjective norms → Attitude	0.337	Medium
Subjective norms → Sustainable behaviour towards food waste	0.092	Small
Attitude → Sustainable behaviour towards food waste	0.098	Small
Perceived Behavioural Control → Sustainable behaviour towards food waste	0.110	Small
Price consciousness → Sustainable behaviour towards food waste	0.053	Small

Source: Author's own elaboration based on PLS-SEM results, 2023

Table 29 presents the f^2 metric of the influence of each exogenous variable on the endogenous variable. The measure of the influence of knowledge on behavioural control shows the most substantial influence with an f^2 value of 0.455, which is categorised as a substantial influence. The influence of price promotion on price consciousness and subjective norm on attitude is categorised as moderate, with an f^2 value between 0.15 and 0.35.

4.3.3. The Effect of Food Delivery Applications Price Promotion, Price Consciousness, Perceived Behavioural Control, towards Sustainable Food Waste Behaviour

Study 3 provides empirical evidence related to a recently debated sustainability topic: whether promotional prices in the context of food delivery can alleviate or even exacerbate the food waste problem in Indonesia. Price promotions are statistically proven unable to influence food waste-conscious behaviour directly but need to be mediated by two key psychological mechanisms: price consciousness and perceived behavioural control. The findings of the third study differ from previous studies, which show that price promotions on consumers in the United Kingdom led them to overconsumption, which leads to food waste (Watt et al., 2023). The external enticing price reduction influence does not necessarily make young Indonesians throw away more food or make them more mindful but rather engage in more complex decision-making involving economic rationality and perceived behavioural control. Research on consumers in Indonesian restaurants confirms that food bundling promotions effectively reduce food waste among consumers with low impulsivity when accompanied by an educational approach from sellers, recommendations to consume appropriate portions and the provision of eco-friendly menus (Leksono & He, 2025).

Exposure to price promotional campaigns, such as flash discounts, free shipping, or food bundling offered by food delivery applications, trains young people to scrutinise pricing more

deliberately and prioritise value-optimising spending. The high level of price consciousness among young people functions as a cognitive filter in responding to the temptation of attractive price promotions and prevents them from engaging in financial waste through food waste. Price discounts can be designed more effectively to reduce food waste by targeting consumer segments with high price consciousness (Vries et al., 2025), such as by providing AI driven digital nudges such as offers to buy suboptimal food or discounted surplus food at the end of the day.

Self-efficacy in managing young customer's food and preventing it from becoming waste is vital. In the context of Study 3 respondents, price promotions can only be translated into sustainable action when supported by consumer confidence in accurately portioning their food, storing leftovers, and being able to process their food leftovers. In Denmark, consumers who take advantage of discounted prices when shopping for food often produce minimal food waste, particularly those good at food storage strategies (Melgaard et al., 2024). Conversely, when the perceived behavioural control of young Indonesians is low, for example, in those who live in boarding houses and do not have access to a refrigerator or do not have adequate food storage infrastructure, they will find it challenging to carry out good food waste management (Damanik et al., 2024).

4.3.4. The Effect of Knowledge, Perceived Behavioural Control, Attitude towards Sustainable Food Waste Behaviour

Study 3 evaluated the influence of knowledge, perceived behavioural control and attitude on the formation of sustainable food waste behaviour of Generation Z in Indonesia. It was proven that merely having insight into food waste does not necessarily lead young people to take sustainable action. Its influence emerged through two primary variables: a positive attitude towards food waste management activities and perceived behavioural control. There is cognitive dissonance among young Indonesians. Although they know that food waste harms the environment and have the knowledge to reduce it, if they do not personally feel that it is relevant, they may not be motivated to take action to be part of the solution. The non-significant direct effect of knowledge related to food waste aligns with previous research on the knowledge-behaviour gap in the context of young consumers in Italy and Portugal (Simões et al., 2024; Viccaro et al., 2023). Confirming the Theory of Planned Behaviour, behaviour formation requires more than cognitive awareness; it requires emotional salience and enabling factors, including self-confidence, infrastructure support and adequate skills (Morkunas et al., 2024).

Food waste reduction-related attitudes emerged as a significant mediator between knowledge and sustainable food waste behaviour. Insights into Generation Z Indonesia need to be internalised as a personal belief system to motivate them to act. Young Indonesians who consider food waste an act that makes them feel guilty, regretful, and morally violated are likelier to practice good food waste management. Consistent with previous studies on Chinese Generation Z, individuals with deep internal values and who realise the value of food tend to be careful in determining their food portions and avoiding food waste (Qi et al., 2025). Cognitive insights regarding food waste that young people gain from formal education and social campaigns on the internet can shape their attitudes when combined with the packaging of messages that touch on the audience's personal values and affective aspects, such as emphasising social inequalities and the harmful effects of food waste (Liu & Lapinski, 2024).

Among all mediating variables in Study 3, perceived behavioural control proved to be the mediator with the most significant effect size on the knowledge-behaviour relationship. In Italy, young people gain insight into the impact of food waste and are taught practical information such as how to store food so that it does not spoil quickly, food expiry knowledge, and how to process leftovers, one of which is through civics subjects, thus strengthening students' capacity to engage in sustainable behaviour (Palmieri & Palmieri, 2023). To boost the confidence and self-efficacy of Indonesian young people in tackling food waste, educational institutions need to provide curriculum-integrated education and initiate a movement among young people, especially those who do not have adequate food storage or food waste processing infrastructure, starting from simple things such as building awareness to control food portions and social campaigns on the habit of finishing food that has been taken, to training that requires special skills but with equipment that is still economical, such as drying technique or fermentation to extend shelf life and composting food waste (Jerie et al., 2024). Study 3 finding underscores that intervention strategies to drive young people to minimise food waste need to go beyond knowledge dissemination but reinforce moral engagement and help young people to take actionable solutions.

4.3.5. The Effect of Subjective Norms and Attitude towards Sustainable Food Waste Behaviour

In Indonesian young people, the social expectations of family and close friends are internalised into moral values such as guilt, regret, and discomfort when food is wasted (Ardi et al., 2024; Novanda et al., 2025). The link between subjective norms, attitudes, and behaviour suggests that such norms are not only external pressures but also deeply embedded in personal values (Van Tonder et al., 2023). The findings of study 3 align with studies of Chinese respondents, whose

society is also dominated by a collectivist culture, which found that subjective norms influence food waste reduction behaviour more powerfully, especially when combined with moral and religious reasoning, compared to consumers in the more individualistic United States (Liu & Lapinski, 2024). Individuals with a high level of religiosity and who live in a predominantly religious community are also proven to have more conscientious food consumption since they consider food a blessing and should not be thrown away in vain (Damanik et al., 2024). Injunctive norm messages such as 'Throwing away food are not only wasteful but disregards blessings' or narratives that emphasise descriptive norms such as 'Your friends always finish their food, you can too!' can be placed in places where young people eat, such as school canteens, social media, or as the digital nudge on food-ordering platform.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Item Response Theory Evaluation of Food Consumption Motives and Sustainable Food Behaviours Research Instrument

Study 1, which evaluated the discriminating power of seven types of food consumption motives, sustainable food choices and food waste management using Item Response Theory, confirmed that all the variable indicators exhibit adequate discriminatory power in distinguishing various individual levels of motivation and behaviour. The most distinctive indicators for each latent variable include the motivation to consume food with vitamin content in health concern-related motives; the aspect of food aroma in sensory appeal; environmentally friendly production aspect in ecological concern; contribution to local producers in social welfare concern; ease of preparation indicator in convenience latent variable; affordability aspect in price-conscious variable; follow social media trend aspect in social adherence variable; level of seasonal fruit and vegetable consumption in sustainable food choice; and suboptimal food consumption in food waste management (see the elliptical shape in dark blue with an asterisk in Figure 26). Identifying the discriminatory power of each indicator of the food consumption motives and sustainable consumption behaviour variables could improve the precision and validity of the instrument. Threshold and discrimination estimates point to four item patterns: Baseline Expectations (tends not to be totally rejected or is easily endorsed by the very low latent motive group), Emergent Engagement (somewhat difficult to endorse by the very low latent group), High-Barrier Signals (only endorsed exclusively by those with very high latent motives with high discriminatory power), and Shared Ideals (tends to be difficult to endorse but has low to moderate discriminatory power). Empirically, insights into this discriminatory power can help marketers identify and emphasise which motivational traits are effective in enticing the intention of consumers at various levels of sustainable food consumption engagement.

5.2. Segmentation of Generation Z of Indonesia Based on Food Consumption Motives

The second objective in Study 1, which is to define the customer segment among Generation Z of Indonesia based on their food consumption motives, found four distinct consumer segments, namely: Cluster 1 Frugal indifferent foodies (the segment with the fewest members); Cluster 2 Health-focused independent locavores; Cluster 3 Holistic Demanders and eco-friendly enthusiasts (the segment with the second most members); Cluster 4 Epicurean pragmatist waste-conservers (the segment with the most members). Generation Z Indonesians' top three overall motivations in their food choices include flavour, pursuit of food deals, and desire to maintain overall health. In total sample, food consumption motives that significantly influence

sustainable food choice include convenience, ecological concern, social welfare concern, health concern, and social adherence motives, while those that significantly drive food waste management include convenience, ecological concern, social adherence, drive to save their finances, and sensory appeal preference (see Figure 26). Overall, the higher the respondents' sensory appeal motivation, the lower their food waste management.

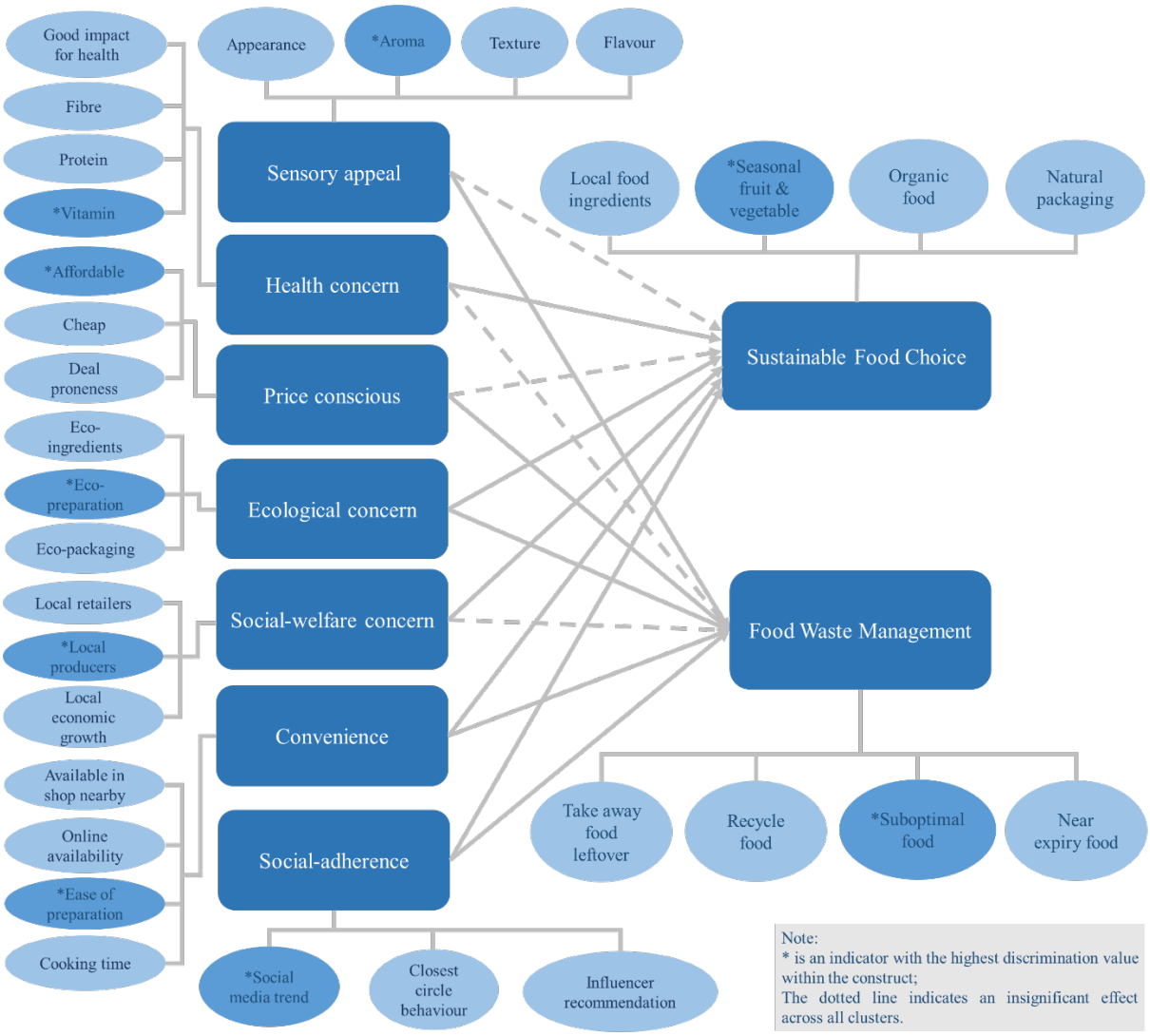

Figure 26 Visualisation of The Most Distinct Indicators and Food Consumption Motives Significance Effect Across Total Sample (Study 1)

Source: Author's own elaboration, 2026

Cluster 1 shows moderate to low motivation in almost all food consumption motives but a high mean score in price-conscious related motives, indicating a pragmatic, undemanding, yet price-sensitive in their daily food choices. Sustainable food choice in Cluster 1 is significantly driven by environmental concern and social welfare concerns, although generally, this segment tends to consume this food less frequently, and their motivation is also low. Food waste management behaviour is positively influenced by convenience, price consciousness, and social adherence

and negatively influenced by sensory appeal motives. While not consistently consuming sustainable food, Cluster 1 demonstrates some waste-conscious behaviour, mainly being keen to take home leftovers and recycling their meal. Cluster 1 is more likely to reduce their food waste when it is practical, has the potential to save money, and is socially encouraged. However, their low engagement in consuming suboptimal and near-expired food suggests a reluctance to compromise on food aesthetics, texture, and freshness.

Cluster 2 is a segment that prioritises health benefits such as the vitamin and protein content of its sustainable food consumption and strongly supports local food producers. Consumers in this segment are less influenced by social pressure or social media trends in their consumption patterns. Despite this segment's high engagement with sustainable food consumption, they show an aversion to consuming suboptimal and near-expired food as they may consider it to be less healthy. Convenience and practical solutions are the key to this segment's food waste management, as demonstrated by the behaviour of taking home their food leftovers.

Cluster 3 is a segment that places the highest importance on health and sensory appeal in its daily food choices. Cluster 3's consumption of sustainable food is significantly driven by both external stimuli in the form of social influence and their internal motives to consume healthy food and ecological concerns. For food waste management behaviour, Cluster 3 is driven mainly by price consciousness and social adherence, suggesting that incentives such as discounts and social movement challenge strategies to reduce food waste may be effective.

Cluster 4 is a segment that emphasises sensory appeal, affordability, and convenience in its daily food choices. However, for sustainable food consumption, the motives that have been proven to influence them significantly are following the behaviour of their social environment and concern for social welfare. Cluster 4 engages in food waste management when it is easy, convenient, financially beneficial, and socially encouraged.

5.3. The Role of Sustainability Values as Higher-Order Construct, Food Influencer, and Dual Attitude Response in Shaping Traditional Food Consumption

Study 2 provides empirical evidence of the integrated application of the Value-Attitude-Behaviour and Stimulus Organism Response frameworks in explaining the formation of intention in traditional food consumption in Indonesian young digital societies. Sustainability values validly formed by economic, socio-cultural and ecological values were shown to significantly influence the intention in traditional food consumption, with the economic aspect most closely correlated to the concept of higher order construct. This confirms that Generation Z of Indonesia frames traditional food as a rational and pragmatic choice, primarily due to

affordable prices and the ability to sustain the local economy. The socio-cultural dimension emerges as the second most substantial value of the concept of sustainability of traditional food. Young Indonesians have recognised the benefits of traditional food in maintaining cultural identity and strengthening social relations with family and friends. While statistically valid, the ecological dimension of traditional food, which is widely recognised in the context of Western context customers, turns out to be the least salient value associated with the concept of sustainability of traditional Indonesian food.

In the relationship between sustainability values and traditional food consumption intention, although equally significant, the utilitarian attitude emerged as a more prominent mediator than the hedonic attitude. Sustainability values in young people will shift more firmly into consumption intention if traditional food is perceived to have utilitarian benefits such as meeting nutritional needs, having fulfilling portions, being affordable, and being easy to access. As an external stimulus that frequently exposes the digital life of Indonesian youth, traditional food review content has a significant but relatively weak influence on increasing traditional food consumption intention. The influence of culinary content creators is significantly mediated by utilitarian and hedonic attitudes towards intention, with utilitarian attitudes having a more substantial mediation effect. Young audiences are more inclined to consume traditional food when they are exposed to functional information related to traditional food rather than merely entertainment content.

5.4. The Role of Price Promotions on Food Delivery Platforms, Knowledge, Price Awareness, and the Theory of Planned Behaviour in Shaping Sustainable Food Waste Behaviour

Study 3 provided comprehensive evidence of how the complex psychological mechanism underlying Generation Z of Indonesia makes food waste-related decisions in the digital food ordering environment. Contrary to prior studies, which found that price promotions can lead consumers to overconsumption and worsen the food waste situation, Study 3 found that external stimuli such as discounts, free delivery, food bundling, or flash sales offered have no direct effect on wasteful behaviour. Instead, the impact of promotions needs to be mediated by internal mechanisms in the form of price consciousness and perceived behavioural control in encouraging sustainable behaviour towards food waste. In the significant relationship between price promotion, price consciousness, and sustainable behaviour related to food waste management, Generation Z of Indonesia demonstrated an economically grounded form of sustainability, where not wasting food also means saving financially. Thus, food delivery platforms can play a supportive role in reducing food waste, not by price promotions alone, but

when these strategies are designed to foster young consumers' price consciousness and sense of control, helping everyday deals become a trigger for more responsible and sustainable food choices. Simply knowing the impact of harmful food waste on the environment or how to prevent it is not enough to motivate sustainable action. The effectiveness of knowledge becomes important when translated into positive internal values and attitudes towards food waste reduction and firm behavioural control. In addition, subjective norms, especially the influence of family and peers, emerge as internalised constructs that shape attitudes and reinforce the sustainable behaviour of young Indonesians. Overall, Study 3 enriches existing behavioural models by proving that sustainable food waste management behaviour is not just the result of external stimuli such as price promotions and knowledge but is the interconnected result of factors from the Theory of Planned Behaviour and price consciousness.

5.5. Practical Recommendation

5.5.1. Study 1 Practical Recommendation

Improving sustainable food choice and food-waste management among Indonesian Generation Z should follow a cluster-sensitive approach, using the item patterns identified in Study 1. For Cluster 1, overall motivation is low, so persuasion should begin with Baseline expectations, simple cues that feel familiar and easy to agree with. In practice, sustainable options need to perceived as affordable, convenient, and enjoyable, supported by promotions that reduce the sense of sacrifice. For Cluster 2, health motives matter more, the message can move one step up to Emergent engagement by stressing practical health payoffs and making protein- and fibre-rich choices easier to spot and obtain, both in everyday food environments and on delivery applications. For Clusters 3 and 4, stakeholders can shift to stronger commitments, such as use High-barrier signals to activate advanced sustainability behaviour (e.g., prioritising environmentally friendly production and normalising suboptimal food consumption through credibility cues and safety assurance), while Shared ideals can be reinforced through social proof and availability cues (e.g., organic food and eco-friendly packaging presented as attainable norms rather than niche choices).

5.5.2. Study 2 Practical Recommendation

Sustainability value, which is confirmed to function as a higher-order construct comprised of economic, socio-cultural, and ecological value, provides practical guidance for marketers, producers, and policymakers to promote traditional food consumption among Indonesian youth. Given that economic value is the most prominent first-order construct linked to sustainability value, communication strategies on traditional food need to emphasise affordability and the

economic impact on farmers, micro and small enterprises, and employment for local communities. Practical examples include branding how buying *tiwul*, a traditional snack from Gunung Kidul, can support cassava farmers or how consuming *tempe mendoan* can help women microbusinesses from Purwokerto. Through these strategies, young people's daily food consumption choices can contribute to economic solidarity. The ecological dimension, as an undervalued dimension of traditional food sustainability, should not be disregarded, and an effort needs to be made to increase the awareness of young consumers regarding this aspect. Traditional food producers need to maintain natural and environmentally friendly production practices such as sourcing raw materials from local farmers, using seasonal fruits and vegetables, using banana leaves, teak leaves or other Indigenous plants that grow in the vicinity to package food, using energy-efficient stoves for cooking their food, and recycling leftover ingredients that are still nutritionally valuable to reduce food waste.

In Study 2, it was proven that sustainability values and food influencers are significantly mediated by utilitarian and hedonic attitudes in increasing intention in traditional food consumption. Therefore, to emphasise the sustainability values of traditional food, there needs to be a rebranding effort and collaboration from the local government, food producers, sustainability-conscious communities, and food influencers through social campaigns on various social media platforms that young people widely access. Besides evoking the sensory richness and enjoyment of a culinary adventure, content reviews of traditional food by food influencers should also accentuate practical and functional aspects such as filling portions, good nutritional content, affordability and convenience. This strategy will draw the intention of Generation Z in Indonesia who love to explore food but have financial limitations in purchasing it. Offline social events such as curated culinary festivals in universities or pop-up traditional food markets can be expected to increase visibility, foster experience, and create positive affective associations with local cuisine.

5.5.3. Study 3 Practical Recommendation

To foster more sustainable food waste management behaviour among young Indonesians, policymakers, educators, food retailers, digital food platforms, and related stakeholders must jointly design initiatives that reflect the behavioural insights derived from Study 3. First, food delivery applications as digital platforms that young people widely use in their daily food consumption can alleviate the Indonesian food waste problem by using an integrated digital nudging strategy along with their promotion strategy. Instead of giving one-size-fits-all promotions, food delivery providers can implement personalised and artificially intelligent-driven offers to suit users' consumption behaviour. For example, dynamic discounts such as

bundles of surplus food products from producers who still have much stock at the end of the day can be offered to consumers who historically make frequent purchases at a reduced price, showing high price sensitivity. A digital nudge strategy that displays messages such as reminders and tips for storing leftovers on the food delivery application is also expected to transform price-driven consumers into eco-friendly ones. In this way, food delivery platforms contribute to lessening the food waste problem at the producer level, providing financial savings for consumers and improving food management behavioural control among them.

The second strategy is to enhance the perceived behavioural control of young Indonesian food waste management; the government and educational institutions need to come together to provide education, build skills, and provide practical solutions. Food sustainability modules need to be integrated into school and college curricula to provide environmental preservation-related insights and build relevant competencies such as portioning, storing food, food processing techniques such as fermentation or drying, and food waste composting practices. The combination of cognitive provisioning and experiential learning is expected to shape a positive attitude and strengthen self-efficacy among young people to manage their food waste.

Third, there is a need for a movement campaign that evokes emotion and is massively supported by the social environment targeting the attitudinal shift of Generation Z of Indonesia. This movement can be initiated by educational institutions that have direct contact with young people, religious institutions that can influence family behaviour, and even involve social media influencers to normalise sustainable behaviour such as always finishing food, not being reluctant to take home and reprocess food, and regularising the consumption of suboptimal and near-expired food. This social movement is expected to exert social pressure, internalise the importance of food waste management, and consequently drive Indonesia's Generation Z to consume more mindfully.

5.6. Research Limitations and Future Research Recommendation

Across all three studies conducted in this dissertation, a shared methodological limitation in data collection is related to self-reporting survey data. Although each study has made efforts to ensure data quality by conducting pilot surveys and eliminating straight-line responses and irrelevant answers to preliminary questions, the survey format still has the potential to cause response bias. The answers of some respondents may not show their actual behaviour while answering according to their mood, situational condition, or response according to answers that are considered socially acceptable. Future studies can complement and investigate the influence of antecedent variables of sustainable food consumption behaviour with the results of behavioural observation, digital consumption logs, and interviews. In addition, the socio-

demographic profile did not include variables such as education, occupation, and marital status, which limits the scope for more detailed subgroup analysis. A further limitation concerns the determination of sample size, which used the Gomez & Jones III (2010) formula designed for random sampling, while the studies relied on quota and purposive approaches. For this reason, the reported sample figures should be regarded as practical benchmarks rather than precise estimates of statistical error.

Study 1's limitation is related to the respondents' responses, mainly from those with adequate digital access in urban areas, so Generation Z with less digital access and living in rural areas may be underrepresented. Study 1 is also a cross-sectional study that may not be able to capture the contextual fluidity of Generation Z consumption motives, which may change due to the transition into different life stages, such as during employment or starting a family. In light of the achievements of the Generation Z of Indonesia segmentation based on various food consumption motives, future research is encouraged to go beyond internal motivational drivers. More specifically, future research suggested exploring how situational factors, such as consumption occasion or digital food environment, can mediate or moderate the relationship between food consumption motives and actual sustainable behaviour.

Study 2 research limitation is related to the geographical representation of the respondents of this study, which is mainly dominated by respondents from urban areas on the islands of Java and parts of Sumatra and Kalimantan, thus limiting the generalisability of results across rural respondents and young people living in eastern Indonesia with lower digital access. The following limitation of the research is that although Study 2 confirms the significant influence of sustainability values and food influencers, the contribution of the influence of antecedent variables affecting behavioural intention can still be improved, so future research is recommended to involve other constructs such as the sensory appeal aspect of food, health-concern, culinary nostalgia, cultural pride, food security concern, or social norm. In addition, qualitative research on good practices and obstacles from producers can support achieving sustainability goals through traditional food since there needs to be a solid collaboration between consumers and producers. Future research is also encouraged to create experimental studies related to message framing of branding and content regarding traditional food on social media to evaluate the impact of different messages in shaping attitudes and more sustainable behaviour.

Study 3 limitations include the model's moderate explanatory power, which implies room for improvement for future research, such as testing constructs relevant to forming internal value and sustainable behaviour, such as religiosity, digital food literacy, appetite regulation, and

level of disgust for consuming leftover food. Testing various external stimuli close to young people's lifestyles also needs to be done, such as the influence of effective digital cues to drive food waste reduction among young people or the role of influencers in driving their sustainability behaviour. In addition, the focus of Study 3 respondents is Generation Z, the majority of whom are still limited by financial constraints in shopping. Testing using a similar conceptual framework needs to be tested on other generational cohorts that are also dominant in Indonesia, such as the Millennial Generation, or tested on the same Generation Z but across time, which may detect changes in their price sensitivity as their financial conditions improve.

6. MAIN CONCLUSIONS AND NOVEL FINDINGS OF THE DISSERTATION

6.1. Main Conclusion of the Dissertation

Accomplishing sustainable consumption goal (UN SDG 12) in Indonesia requires a clear understanding of how Generation Z, the largest consumer cohort, makes everyday food choices. This dissertation investigates the multidimensional drivers of their sustainable food consumption and food waste behaviour through three complementary studies that integrate Item Response Theory, Value-Attitude-Behaviour and Stimulus-Organism-Response frameworks, and an extended Theory of Planned Behaviour in the digital food environment. Across the three complimenting studies, a reoccurring pattern emerges in which sustainable behaviour is most compelling when it demonstrates functionality, cost-effectiveness, emotional resonance and social acceptance. The strategy to shape sustainability will become possible and scalable when environmentally friendly food choices with social benefits are tailored to young people's taste preferences and restricted economic means.

The application of Item Response Theory confirmed that all indicators of food motives, sustainable food choice, and food waste management function as valid measures with adequate discriminant capacity. This strengthens the methodological base for studying Generation Z of Indonesia in future work. More importantly, IRT analysis identified practical entry points (Baseline expectations): some behaviours (such as being drawn to appealing food aromas, vitamin content, affordability, support for local producers, and ease of preparation) were not rejected outright even by respondents with low latent motives and behaviour. Emergent engagement reflects attributes that gain traction as motivation increases, particularly protein and fibre intake. High-barrier signals sit at the top end and separate moderate from highly motivated respondents most clearly, such as prioritising environmentally friendly production, following social media trend, and consuming suboptimal food. Shared ideals category is also demanding but less distinctive, which include organic food consumption and choosing food with environmentally friendly packaging. Recognising these discriminant parameters and thresholds allows policymakers and marketers to tailor interventions precisely across the motivation spectrum, rather than relying on one size fits all strategies.

Segmentation analysis underscores that Generation Z in Indonesia is not homogeneous. Four distinct clusters emerge: Frugal Indifferent Foodies, Health-Focused Independent Locavores, Holistic Demanders and Eco-Friendly Enthusiasts, and the largest group, the Epicurean Pragmatist Waste-Conservers. This majority segment is characterised by strong sensory appeal, a readiness to use discount deals, and a clear preference for local foods and seasonal produce, often shaped by social adherence and social welfare concern. Their food waste management is

reinforced by simple routines such as taking home leftovers. These insights highlight that sustainable strategies need to differentiate: while some clusters respond strongly to ecological or health concerns, the largest group is primarily moved by pragmatic and functional appeals.

Locally sourced foods emerged from the dissertation as the most widely accepted form of sustainable food choice among Generation Z of Indonesia, with this type of meal receiving higher acceptance than other sustainable food choice options. Their consumption intention is shaped by sustainability values defined as a higher-order construct, where economic value linked to affordability and support for local livelihoods is the strongest, followed by socio-cultural value related to identity and community, while ecological benefits play a smaller role. Food influencers increase interest in traditional foods consumption, but their influence is modest unless mediated by utilitarian attitudes that emphasise practicality, nutrition, and affordability, while hedonic appeals alone are weaker in sustaining intention. These findings suggest that strategies to promote traditional foods as part of sustainable consumption should highlight functional and economic benefits, include cultural identity, and involve digital voices trusted by youth so the messages align with their everyday consumption patterns.

Taken together, the dissertation results converge on a nuanced but actionable message. Indonesian youth do not reject sustainability, but their engagement is uneven, segmented, and mediated by functionality, affordability, and social context. Shaping Generation Z's everyday food choices in these ways does not in itself resolve Indonesia's paradox of food waste and nutritional insecurity, but it provides a clearer map of where to begin, how to differentiate strategies, and how to work with the pragmatic realities of young consumers in pursuit of more sustainable food futures.

6.2. Novel Contribution of the Dissertation

This dissertation contributes novel insights at the methodological, empirical, and theoretical levels to the study of sustainable food consumption in Generation Z of Indonesia (summarized in Table 30). Methodologically, it pioneers the use of Item Response Theory in the context of Generation Z of Indonesia respondents to validate food-related psychometric instruments, capturing discriminant capacity and behavioural thresholds that classical approaches cannot. Empirically, it offers the first segmentation of Generation Z of Indonesia food consumers based on multi-consumption motives, revealing four distinct clusters that explain why sustainable choices vary across youth subgroups. Theoretically, it establishes sustainability value as a higher-order construct, with economic value as the dominant driver, integrating the Stimulus-Organism-Response (SOR) and Value-Attitude-Behaviour (VAB) frameworks to show how external influencer content and internalised values jointly shape food intentions, with utilitarian

attitudes proving stronger than hedonic ones. Further, it provides clarity on the mixed role of food influencers in promoting traditional food. Extending behavioural theory, the dissertation adapts the Theory of Planned Behaviour to digital contexts, demonstrating that online price promotions, when filtered by price consciousness and perceived control, can actually foster sustainable food waste behaviour rather than hinder it. Finally, it clarifies the knowledge–behaviour gap, showing that knowledge of food waste affects practice only indirectly, mediated by attitudes and control.

Table 30 Summary of Novel Contributions

Novelty	Description of Novelty	Answered through Hypothesis
Methodological contribution	First application of IRT for Generation Z of Indonesia to validate instruments and to uncover item-level threshold structures, allowing indicators to be grouped into four difficulty/easiness profiles along the latent continuum, information not obtainable through Classical Test Theory.	H1
Empirical contribution on segmentation	Provides the first segmentation of Generation Z of Indonesia based on comprehensive food consumption motives, identifying four clusters with distinct motivational and behavioural patterns.	H2
Empirical and theoretical contribution on sustainability values:	Establishes sustainability value as a higher-order construct (economic, socio-cultural, ecological), with economic value emerging as the most central dimension, shaping intention to consume traditional foods.	H3, H5, H7
Theoretical integration of SOR and VAB	Theoretical integration of SOR and VAB: Demonstrates how internalised sustainability values and external stimuli interact, with food influencer content shaping intention through utilitarian and hedonic attitudes, utilitarian mediation being dominant.	H3, H4, H5, H7, H8
Empirical clarification of food influencer impact	Provides evidence on how food influencers affect sustainable traditional food consumption of Generation Z of Indonesia, addressing previously inconclusive findings.	H4, H6, H8
Extension of TPB in digital consumption and sustainable food waste behaviour context	Expands the Theory of Planned Behaviour by incorporating digital price promotions, knowledge, and price consciousness, clarifying that promotions can support food waste management behaviour only when mediated by price consciousness and PBC.	H9, H10, H11, H12, H13, H14, H15, H16
Clarification of knowledge - behaviour link	Shows that knowledge of food waste only affects behaviour indirectly through attitudes and perceived behavioural control, offering a more realistic pathway than assuming direct influence.	H10, H13, H16

Source: Author's own elaboration, 2026

SUMMARY

This dissertation analyses how Generation Z of Indonesia makes food-related decisions with implications for sustainability, by identifying and segmenting their consumption motives, testing how sustainability values and influencer content shape intentions toward traditional foods, and analysing how digital drivers such as price promotions of food delivery applications and knowledge influence food waste management. It contributes to consumer behaviour research through three studies that validate food motive, sustainable food consumption, and food waste management with Item Response Theory (IRT) and segment Generation Z of Indonesia by consumption motives, link sustainability values and influencer-driven promotion to traditional food consumption intention, and extend the Theory of Planned Behaviour (TPB) to digital food setting of price promotion, knowledge, and food waste management.

Chapter one frames Indonesia's paradox of excessive food waste and costly diets as a national urgency aligned with UN SDG 12, and positions Generation Z, the largest consumer cohort, as a decisive driver of sustainable consumption. It highlights three major research gaps: the absence of precise segmentation of Indonesian youth food motives, the lack of integrated analysis linking sustainability values and influencer-driven promotion to traditional food consumption, and unresolved contradictions in the effect of digital price promotions and knowledge on food waste behaviour. To address these, the Study 1 applies IRT to identify which food motives and sustainable behaviour indicators differentiate low versus high engagement and to segment Generation Z accordingly; Study 2 models sustainability values as a higher-order construct interacting with influencer content and mediated by hedonic and utilitarian attitudes to predict traditional food intention; and Study 3 extends the TPB by testing how price promotion, knowledge, price consciousness, perceived behavioural control, attitudes, and subjective norms explain sustainable food waste management in the digital environment. Eight research questions and sixteen hypotheses are proposed, addressing empirical, theoretical, and methodological gaps, and positioning this dissertation to advance sustainable food consumption in Indonesia.

Chapter two reviews the literature, mapping global and Indonesian studies on sustainable food consumption. The review traces the development of scholarly work on Generation Z's sustainable consumption, using bibliometric mapping to highlight dominant research themes. While these contributions advance the discussion, they also reveal persistent gaps. Studies on food motives have relied on classical test theory without using IRT to distinguish between indicators and segment Indonesian youth in ways that connect motives with sustainable food behaviours. Research on sustainability values has treated economic, socio-cultural, and

ecological dimensions in isolation, without conceptualising them as a higher-order construct or linking them to digital exposure through influencers. The literature also shows limited application of combined frameworks, particularly the Value-Attitude-Behaviour (VAB) and Stimulus-Organism-Response (SOR) models, to explain how values and influencer exposure shape traditional food consumption through hedonic and utilitarian attitudes. In parallel, the rapid growth of food delivery applications and their heavy reliance on price promotions raise new questions for sustainable food waste management, making the TPB a relevant framework to examine how these digital drivers interact with knowledge, price consciousness, attitudes, perceived behavioural control, and subjective norms among Generation Z of Indonesia. This logic ties the literature to Hypothesis 1–16 and sets clear tests for Studies 1–3.

Chapter three sets out the materials and methods across three survey-based studies with Generation Z of Indonesia. All instruments were adapted and modified from prior research on food motives, traditional foods, and food-waste behaviour, translated into Indonesian, piloted for clarity, and administered on a five-point Likert scale, with data quality checks (e.g., straight-lining) preceding analysis. Study 1 (n=1160; quota sampling across regions, balanced gender) validated constructs via Classical Test Theory, then applied IRT to estimate discrimination and threshold parameters, before deriving consumer segments using K-Means (with multiple validity indices) and testing segment-specific pathways with Structural Equation Modelling. Study 2 (n=1292; purposive sampling of Generation Z who watch food-influencer content and consume traditional foods) modelled sustainability values as a higher-order construct (economic, socio-cultural, ecological) and examined hedonic and utilitarian attitudes as mediators using a two-stage PLS-SEM approach with bootstrapping and out-of-sample predictive checks. Study 3 (n=561; purposive sampling of active food-delivery users) employed PLS-SEM to assess how price promotions and food-waste knowledge relate to sustainable food-waste behaviour through price consciousness, attitude, and perceived behavioural control, evaluating fit, effect sizes, and mediation strength. Across studies, analyses were conducted in JAMOVI, R Studio, and SmartPLS with standard reliability, validity, multicollinearity, and goodness-of-fit criteria.

Chapter four reports the empirical results of the three studies in sequence. Study 1 uses IRT (via item difficulty thresholds and discrimination parameter) to validate the measures and map which indicators of food consumption motives, sustainable food consumption, and food waste management are easiest versus hardest to endorse by Generation Z of Indonesia across low-high latent levels. Study 1 then applies cluster analysis to identify motive-based consumer segments and examine how these motive profiles relate to sustainable food choices and food

waste behaviours within and between segments. The IRT results further organised into four indicator's categories: Baseline expectations, Emergent engagement, High-barrier signals, and Shared ideals, which together show a gradient from items that are easy to endorse to those that prominently appear among respondents with higher latent levels. The cluster solution identifies four motive-based segments with distinct combinations of consumption drivers and uneven uptake of sustainable food choices and food-waste practices: Frugal indifferent foodies, Health-focused independent locavores, Holistic demanders and eco-friendly enthusiasts, and Epicurean pragmatist waste-conservers. Study 2 examines how sustainability values and exposure to food influencer content shape the intention to consume traditional foods. The findings indicate that sustainability values, covering economic, ecological, and socio-cultural dimensions, shape intention to consume traditional foods both directly and through mediating pathways, with utilitarian reasoning playing a more prominent role. Food influencers also shape intention indirectly, as their content stimulates both emotional and functional evaluations of traditional foods. The results of Study 3 indicate that price promotions delivered through delivery applications have no direct effect, but they become meaningful when mediated by price consciousness and perceived behavioural control. Knowledge about food waste contributes indirectly through attitudes and control, while subjective norms influence behaviour both directly and through attitudinal pathways. Taken together, the three studies offer supportive evidence for the framework and point to different entry points for interventions that address Indonesian youth's food choices and waste practices.

Chapter five synthesises the overall contributions of this dissertation, showing how the three studies collectively advance understanding of sustainable food consumption among Generation Z of Indonesia. IRT offers sharper insights into food motives and segmentation, sustainability values and influencer content shape traditional food intentions through utilitarian and hedonic attitudes, and extending the TPB clarifies how digital price promotions, knowledge, and social norms affect food waste management. The findings provide guidance for policymakers, educators, and food delivery platforms to design strategies that reflect diverse consumer motives, emphasise functional, economic, and socio-cultural values in promoting traditional foods through digital influencers, and encourage more responsible use of digital food services. The chapter also acknowledges limitations such as reliance on self-reported survey data, urban-focused sampling, and cross-sectional design, and calls for future research using behavioural or digital trace data, broader motivational constructs, and comparative cohorts to strengthen generalisability.

Chapter six concludes the dissertation by showing that sustainable food behaviour among Generation Z of Indonesia is driven more by practical and economic concerns, with social context reinforcing choices, while ecological ideals and abstract knowledge play a weaker or indirect role. Methodologically, the research advances the field by applying IRT to food-related measures. Empirically, it provides the first segmentation of Indonesian youth based on multiple consumption motives. Theoretically, this dissertation refines consumer behaviour research by applying IRT to food motives, conceptualising sustainability values as a higher-order construct, integrating SOR and VAB frameworks to explain how values and influencer content shape traditional food intentions through dual attitudes, and extending the TPB to clarify how digital drivers like price promotion and knowledge influence food-waste behaviour. Together, these contributions offer a more grounded understanding of how to align sustainable food strategies with the everyday realities of Indonesia's young consumers.

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LIST OF PUBLICATIONS

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Subject: PhD Publication List

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Doctoral School: Doctoral School of Management and Business
MTMT ID: 10085749

List of publications related to the dissertation

Articles, studies (5)

1. **Kristia, K.**, Kovács, S., Nádasi, L.: From Baseline Expectations to High-Barrier Signals: Mapping Indonesian Generation Z's Sustainable Food Consumption through Item Response Theory and Motive-Based Segmentation.
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2. **Kristia, K.**, Kovács, S., Erdey, L.: Generation Z's appetite for traditional food: unveiling the interplay of sustainability values as higher order construct and food influencers in Indonesia.
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3. **Kristia, K.**, Kovács, S., Bács, Z., Rabbi, M. F.: A Bibliometric Analysis of Sustainable Food Consumption: Historical Evolution, Dominant Topics and Trends.
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List of other publications

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7. Deswita, Y. F. S., Rahmawati, C. H. T., **Kristia, K.**: The Influence of Electronic Word of Mouth and Price Sensitivity on Sustainable Food Consumption Intentions: Environmental Concern Mediation.
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8. **Kristia, K.**: Connecting with Future Talent :A Review of Employer Value Propositions and Digital Media Channels for Sustainable Companies Targeting Generations Y and Z.
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9. **Kristia, K.**: The Effect of Perceived Greenwash on Green Trust with Green Perceived Risk and Green Perceived Value as Mediating Variables: Study on Danone-Aqua Indonesia.
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DOI: http://dx.doi.org/10.46229/msdj.v4i2.522

Total IF of journals (all publications): 18,6
Total IF of journals (publications related to the dissertation): 18,6

The Candidate's publication data submitted to the Tudóstér have been validated by DEENK on the basis of the Journal Citation Report (Impact Factor) database.

14 January, 2026

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APPENDIX

Study 1 Questionnaire

Part 1

Respondent Information and Consent Sheet (Study 1)

Research Title: Generation Z's Diverse Spectrum of Food Consumption Motives Align and Sustainable Food Consumption.

Researcher in charge and contact person: Kristia, MBA (PhD student of University of Debrecen, Hungary & Assistant Professor of Sanata Dharma University, Indonesia)

Research Participation Consent Form
Thank you for your interest in participating in our research. Before you proceed, please read and understand the following information regarding your participation in this study.

Purpose of the Study: This study aims to define the segmentation of Generation Z in Indonesia based on their food consumption motives and to determine the choice of sustainable food and the food waste management behaviour of each segment. The results of this study potentially enrich the insights related to motivation and behaviour studies and practically allow for the utilisation by related stakeholders concerned with establishing sustainable food consumption among young Indonesians.

Respondent Criteria: Generation Z (born between 1997 and 2006) residing in Indonesia.

Participation Description and confidentiality: As a respondent, you will be asked to answer five demographic characteristic-related questions (gender, type of living area, island of residence, perceived financial ability, most frequently used social media) and 28 closed-ended questions relating to your daily food consumption motives and the frequency with which you consume or take specific actions in managing food waste. No personal identifier (name, contact number, or specific address) will be asked in this survey to maintain your privacy as a respondent and your independence in responding to the questionnaire items. An aggregate analysis of the research data will be used to complete the dissertation and research publication purposes. This study's design and questionnaire items adhere to the Indonesian ethical research standards (authorised under letter No: E.6.m/115/KE-FPsi-UMM/IV/2024). If you have any concerns or inquiries regarding this research or you want to withdraw your response at any time, please contact Kristia (081235248310).

Consent:
By ticking the box below, you declare that you have read the information regarding this survey, are voluntarily willing to continue filling out the questionnaire and comply with the required respondent profile. Please do not tick the box below if you do not wish to continue filling out the questionnaire.

- □ **I agree and would like to proceed with the questionnaire**

Part 2
Demographic characteristics:

Gender:
□ Male
□ Female

Current place of residence
□ Provincial Capital (The city that is the administrative centre of a province, usually where various provincial government institutions are located).
□ Big City (A place of residence with a large population and complete facilities, but not the Provincial Capital).
□ Small Towns (Residences that are smaller than big cities and have limited facilities).
□ Village/Rural Area (A place to live outside the city, usually with fewer inhabitants and simple facilities).

Province of residence:
…….

Which statement best describes your financial situation?
□ I often have difficulty meeting my basic needs.
□ I can meet basic needs, but have difficulty with other expenses beyond that.
□ I can meet my basic needs and there is still a little more for shopping for non-essential goods that I want.
□ I can meet my basic needs and other requirements quite comfortably.
□ I can fulfil all my needs and desires quite comfortably and still have more funds to save or invest.

The type of social media you use most often
□ TikTok
□ Instagram
□ YouTube
□ X (Twitter)
□ Facebook
□ Other (please mention it) …….

Part 3

Questionnaire Item		Likert Scale				
When choosing food for daily consumption it is important to me that		Not important at all	Not important	Somewhat important	Important	Very important
Appearance	... Has an appetising appearance					
Aroma	... Has a pleasant aroma					
Texture	... Has a pleasant texture when consumed					
Flavour	... Has a good flavour					
When choosing food for daily consumption it is important to me that		Not important at all	Not important	Somewhat important	Important	Very important
Good impact for health	… has a good impact on my health.					
Fibre	… is high in fibre.					
Protein	… is high in protein.					
Vitamin	… is high in vitamin and nutrition.					
When choosing food for daily consumption,		Strongly disagree	Moderately disagree	Agree	Moderately agree	Strongly agree
Affordability	… Price affordability is my main consideration.					
Cheap	… I will choose food options that are cheap.					
Deal proneness	… as much as possible I take advantage of discount promotions or price cuts.					
When choosing food for daily consumption it is important to me that the food		Not important at all	Not important	Somewhat important	Important	Very important
Environmentally friendly ingredients	... made from environmentally friendly raw materials					
Environmentally friendly production process	... produced in an environmentally friendly way					
Environmentally friendly packaging	... use environmentally friendly packaging					
When choosing food for daily consumption it is important to me that		Not important at all	Not important	Somewhat important	Important	Very important
Local retailers	... my food purchases contribute to the welfare of local micro and small retailers.					
Local producers	... my food purchases contribute to the welfare of local producers (farmers, ranchers or other local producers).					
Local economic growth	... my food purchases contribute to the overall growth of the local economy.					
When choosing food for daily consumption it is important to me that		Not important at all	Not important	Somewhat important	Important	Very important
Available in shop nearby	... the food can be easily bought in shops, stalls, restaurants around where I am.					
Online availability	... I can order the food online.					
Ease of preparation	... the food is simple in preparation.					
Cooking time	... the cooking process is quick.					
Follow the social media trend	I eat certain foods because the food is a social media trend and viral.					
Follow closest circle behaviour	I eat certain foods because the food is also consumed by my friends and family.					
Follow influencer recommendation	I eat certain foods because trusted influencers recommend them.					
How often do you buy food as follows		Almost never	Rarely	Sometimes	Often	Always

Local food ingredients	Local groceries (from traditional markets, stalls, grocery stores or farmers).					
Seasonal fruit vegetable	Seasonal local vegetables and fruits (orange, mango, rambutan, durian, mangosteen, etc.).					
Organic food	Organic food.					
Natural/environmentally friendly packaging	Food with natural (such as banana leaves, teak leaves, etc.) and environmentally friendly packaging.					
How often do you engage in this behaviour		Almost never	Rarely	Sometimes	Often	Always
Take away food leftover	If I am eating out and cannot finish my meal, I pack the leftovers for later consumption.					
Recycle food	I process any excess food in a way that it can be consumed again.					
Suboptimal food consumption	When buying food or groceries, I do not mind choosing products that are not perfect, as long as they are still edible.					
Near expiry food consumption	I am willing to eat food that has almost reached its expiry date, as long as it is still in good condition and suitable for consumption.					

Ethical approval of Study 1

UNIVERSITAS MUHAMMADIYAH MALANG

FAKULTAS PSIKOLOGI

KOMISI ETIK PENELITIAN PSIKOLOGI

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SURAT KETERANGAN PERSETUJUAN ETIKA PENELITIAN

RESEARCH ETHICS APPROVAL

Nomor: E.6.m/115/KE-FPsi-UMM/IV/2024

Setelah mengkaji dengan teliti proposal dan protocol pelaksanaan penelitian yang berjudul:

Upon careful review on research proposal and protocol of study entitled:

"Motivasi Pemilihan Makanan dan Perilaku Konsumsi Makanan Berkelanjutan pada Generasi Z Indonesia"

"Food Selection Motivations and Sustainable Food Consumption Behaviour in Generation Z Indonesia"

Peneliti *Investigator*	:	1. Kristia 2. Habil Kovács Sándor
Institusi *Institution*	:	Universitas Sanata Dharma - University of Debrecen

Komite Etik Penelitian Fakultas Psikologi Universitas Muhammadiyah Malang menyatakan bahwa penelitian tersebut di atas telah MEMENUHI 3 (tiga) prinsip, yaitu Baik (*non-maleficence dan beneficence*), Adil (*Justice*), Hormat (*Respect for Person*), 7 (tujuh) standar dan 25 pedoman CIOMS-WHO (nilai sosial/klinis, pemerataan risiko-manfaat, desain, seleksi, bujukan, privasi dan kerahasiaan, dan persetujuan responden), serta sesuai dengan standar etika penelitian psikologi, kode etik Himpunan Psikologi Indonesia dan tidak melanggar peraturan pemerintah.

The Research Ethics Committee of the Faculty of Psychology, Muhammadiyah University of Malang states that the above research has FULFILLED the 3 (three) principles, namely Good (non-maleficence and beneficence), Fair (Justice), Respect for Person, 7 (seven) standards and 25 CIOMS-WHO guidelines (social/clinical value, risk-benefit equity, design, selection, inducement, privacy and confidentiality, and informed consent), and been in accordance with the ethical standards of psychological research, the code of ethics of the Indonesian Psychological Association and does not violate government regulations.

Malang, 20 April 2024
Ketua,
Chair,

Dr. Istiqomah, M. Si
NIP-UMM. 150813071976

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Study 2 Questionnaire

Part 1

Data collection through this survey is carried out to confirm the effect of sustainability values and content review of traditional food Indonesian food influencers on the intention in traditional food consumption. Indonesian traditional food refers to dishes and beverages that are typical of your local region and part of Indonesia's broader culinary heritage, such as rendang (spicy beef dish from West Sumatra), nasi tumpeng (ceremonial cone-shaped yellow rice with side dishes), ayam betutu (Balinese seasoned steamed and roasted chicken), gudeg (young jackfruit stew from Yogyakarta), pempek (fishcake from Palembang), rawon (East Javanese beef soup with black keluak broth), and many other traditional foods from across Indonesia that represent local culture and identity. The findings of this research are expected to support relevant stakeholders in designing strategies to increase the traditional food consumption of young Indonesians. The analysed research data will be presented in scientific publications and dissertations.

Respondent Criteria: 1) Individuals aged 17 to 26 years residing in Indonesia; 2) active social media users who have watched traditional food review content presented by social media influencers; 3) have experience consuming traditional Indonesian food.

Participation Description: As a respondent, you will be asked to answer 33 closed-ended statements concerning your perceptions of sustainability values, evaluation of influencer content, attitudes (hedonic and utilitarian), and intention to consume Indonesian traditional foods. At the end of the questionnaire, there will be five short questions asking about your demographic characteristics such as sex type, type of social media that is frequently accessed, range of level of monthly spending budget for food, the name of the food influencer account you watch the most, and the types of traditional Indonesian food you have or frequently consumed. No personal identifier (name, contact number, or specific address) will be asked in this survey to maintain your privacy as a respondent and your independence in responding to the questionnaire items. An aggregate analysis of the research data will be used to complete the dissertation and research publication purposes. This study's design and questionnaire items adhere to the international ethical research standards (authorised under letter No: GTK-KB 002/2023). If you have any concerns or inquiries regarding this research or want to withdraw your response, please contact the researcher in charge (Kristia - 081235248310).

Consent:
By ticking the box below, you declare that you have read the information regarding this survey, are voluntarily willing to continue filling out the questionnaire and comply with the required respondent profile. Please do not tick the box below if you do not wish to continue filling out the questionnaire.

- ☐ **I agree and would like to proceed with the questionnaire.**

Part 2

	Strongly disagree	Moderately disagree	Agree	Moderately agree	Strongly agree
	1	2	3	4	5
Economic value					
Prices for traditional and local foods are affordable					
Consuming traditional and local foods can strengthen the local economy					
Eating traditional and local foods potentially support job creation					
Buying traditional and local foods supports food farmers and Micro, Small and Medium Enterprises					
Purchasing traditional and local foods supports fair and sustainable food production and distribution due to its shorter supply chains					
Ecological value					
Traditional and local foods are produced using environmentally friendly methods					
Traditional and local foods are packaged using environmentally friendly materials					
The ingredients utilised in creating traditional and local foods are sourced locally, reducing carbon emissions from transport					
Traditional and local foods use minimal or no harmful chemicals					
Consuming traditional and local foods is an effort to contribute to environmental sustainability and biodiversity					
Socio-cultural value					
Consuming traditional and local foods is a way to preserve culture					
Consuming traditional and local foods offers an authentic experience					
Traditional and local foods can strengthen consumers' connection with local culture					
Eating traditional and local foods with loved ones fosters a sense of intimacy and unity					
Food influencer					

Influencers often feature traditional and local foods in their content on social media					
Influencers provide sufficient information about the traditional and local foods they promote					
Influencers describe their experiences of tasting traditional and local foods in exciting ways					
Influencers present traditional and local foods in an appealing way					
Hedonic attitude					
I appreciate traditional and local foods because of its delicious taste					
Tasting traditional and local foods is a pleasant experience for me					
Traditional and local foods add variety and character to my diet					
Tasting various traditional and local foods can be a culinary adventure					
Traditional and local culinary tours are my passion					
Utilitarian attitude					
Traditional and local foods provide the nutrients that my body needs					
Traditional and local foods are readily available in my area					
I choose traditional and local foods because of their affordability					
Eating traditional and local foods can provide a satisfying satiety					
I choose traditional and local foods because they provide sufficient energy for daily activities					
Consumption intention of traditional and locally produced foods					
I intend to purchase traditional and local foods in the future					
I choose food that has local and traditional taste					
I intend to purchase locally and traditionally processed food					
I intend to purchase food with special local spices					
I intend to purchase food from producers using traditional recipes					

Part 3

Demographic characteristics of the respondent

Sex assigned at birth

- Male
- Female
- Prefer not to say

Frequent social media choices for watching food-related reviews

- TikTok
- Youtube
- Instagram
- Twitter / X
- Facebook
- Other …

Frequency of buying food outside

- Rarely /only at special events
- Once a week
- 2-3 times a week
- 4-6 times a week
- Everyday

Your monthly food spending budget:

- lower than the regional minimum wage level in your area
- around the regional minimum wage in your area
- above the regional minimum wage level in your area

Province of residence:

……

Who is your favourite food influencer promoting traditional Indonesian cuisine?

……

Which traditional Indonesian dish have you consumed or do you most frequently consume?

……

Ethical approval of Study 2

UNIVERSITY of DEBRECEN

Faculty of Economics and Business
Research Ethics Committee
H-4032 Debrecen, Böszörményi út 138.
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Resolution of the Research Ethics Committee of the Faculty of Business and Economics of the University of Debrecen

The Faculty Research Ethics Committee (from now on referred to as the Committee) is responsible for the ethical review and assessment of scientific work carried out at the UD FBE and for issuing research ethics approvals.

The Committee carries out its work by the university and scientific and professional, national, and international codes of ethics and, if necessary, by the ethical standards of the narrow field of specialization—experts in the field of ethical ethics.

Research topic: „Generation Z's Appetite for Traditional Food: Unveiling the Interplay of Sustainability Values as a Higher Order Construct and Food Influencers in Indonesia."

The Commission reviewed the research design and heard a presentation by the research team on the purpose and content of the planned questionnaire survey and the ethical rules of the survey process.

The head of the research team explained the ethical rules to be applied during the interview process. The study aims to understand the influence of Indonesian food influencers and sustainability values on the interest in traditional food consumption among Generation Z in Indonesia. The findings are expected to contribute to academic research and offer practical recommendations for promoting traditional food among the youth. The questionnaire will cover approximately 1300 respondents, with a gender ratio of 50-50%. By age group 17-26 years, by geographical area, 34% Central Java region, 25% West Java, 12% North Sumatra, 9% East Kalimantan. The questionnaire will be anonymized, no personal or sensitive data will be collected, no direct contact will be made with respondents, and responses will be voluntary. In all cases, participants will be informed of the purpose of the survey and required to answer voluntarily and anonymously. They are free to choose whether or not to respond. In this way, the survey process was conducted in an ethically correct manner.

The Commission approved the research design by decision GTK-KB 002/2023, about which no ethical objections were raised.

Debrecen, 04 04 2023

Prof. Hc. Prof. Dr. András Nábrádi

The chair of the Committee

Study 3 Questionnaire

Part 1

The survey aims to examine the influence of price promotions offered by food delivery service applications on Indonesian young consumers' food waste management behaviour. The research findings are expected to support relevant stakeholders in shaping more sustainable behaviour toward food waste management. The analysed research data will be presented in scientific publications and dissertations.
Respondent Criteria: 1) Generation Z of Indonesia (born between 1997 and 2006) 2) Have experience using food delivery service applications such as GoFood, ShopeeFood, or GrabFood.
As a respondent, you will be asked to answer 35 closed-ended questions about your opinion, attitude, and behaviour towards the price promotions offered by food delivery applications and the food waste management you carry out. In addition, at the beginning of the questionnaire, there are four short questions regarding your demographic characteristics and type of current residence. No personal identifier (name, contact number, or specific address) will be asked in this survey to maintain your privacy as a respondent and your independence in responding to the questionnaire items. An aggregate analysis of the research data will be used to complete the dissertation and research publication purposes. By ticking the box below, you declare that you have read the information regarding this survey, are voluntarily willing to continue filling out the questionnaire and comply with the required respondent profile. Please do not tick the box below if you do not wish to continue filling out the questionnaire.

- ☐ **I agree and would like to proceed with the questionnaire.**

Part 2

Gender
☐ Male
☐ Female
The most frequently used Food Order Online application:
☐ GoFood
☐ ShopeeFood
☐ GrabFood
Your monthly budget for buying food through the Food Order Online Application (IDR)
☐ < 300.000
☐ 300.000 - 599.000
☐ 600.000 - 899.000
☐ > 900.000
Type of current residence
☐ Home with parents/family
☐ Boarding houses
☐ Rented house
☐ Apartment
Province of residence:
……

Part 3

Statements	Strongly disagree	Moderately disagree	Agree	Moderately agree	Strongly agree
Food price discount promotions make me intended in ordering food immediately.					
I feel that the free delivery vouchers offered on the application make me intended in ordering food immediately.					
Price promotions that offer cheap delivery costs have made me intended in ordering food on the online food delivery service application.					
Time-limited discount promotion (for example, daily discounts or price discounts only at certain hours) make me intended for ordering food on the online food delivery service application.					

The food bundling promotion (e.g., buy one get one free) offered by the online food delivery service application made me want to ordering food.					
I know how to lessen the amount of food that goes to waste.					
I have knowledge on the bad impact on the environment caused by food waste.					
I have knowledge on how to store excess food so it doesn't spoil easily.					
I have the knowledge that reducing food waste is one of the efforts to preserve the environment.					
I am intended in buying food when it is cheap.					
When I go shopping for food, I check prices of similar items and buy the ones that are the least expensive.					
I always check the price before buying food.					
I always try to get the best quality food at the most affordable price.					
Wasting food makes me feel guilty.					
Wasting food is against my conscience.					
Wasting food makes me feel bad.					
Wasting food is against my morals.					
Wasting food in vain makes me feel regretful.					
I was brought up to think that food shouldn't go to waste, and I still believe this.					
I do not find it difficult to minimise the amount of food I waste.					
I do not experience problems in the process of storing the excess food that I have.					
I have no problems reprocessing the excess food that I have.					
I don't experience problems determining my portion of food so that later there is no food left.					
I have no problem finishing the food that I have bought.					
The people closest to me think minimising food waste is good.					
My family encourages me to minimise the amount of food I waste.					
My closest friends think that wasting food is a bad thing.					
The people closest to me try not to waste food in vain.					
I try to control the portion of food so as not to waste food.					
I try to minimise wasted food.					
I will reheat the excess food from the previous meal and consume it later if it is still fit for consumption.					
I consume my own leftovers to save.					
I try to process excess food before it spoils.					
I will share my excess food with friends or loved ones, rather than throwing it away					

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