THESIS OF THE DOCTORAL (PhD) DISSERTATION

SUSTAINABLE FOOD CONSUMPTION OF GENERATION Z IN INDONESIA

KRISTIA KRISTIA

Supervisor:

Dr. Habil Kovács Sándor, PhD

Associate Professor, Leader

Coordination and Research Centre for Social Sciences

UNIVERSITY OF DEBRECEN

Doctoral School of Management and Business

Debrecen

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1. 1. THE BACKGROUND, OBJECTIVES AND HYPOTHESES OF THE RESEARCH

1.1. Research Background

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 (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., 2023). 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).

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. Research Objectives

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). Even though 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). 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 evaluates the discriminatory power of each indicator and 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). 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; Zhong, 2023). 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 (Muhajir et al., 2022; Populix, 2023). 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) (Databoks, 2024). 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 conceptual framework of the three studies in this dissertation is shown in Figure 1.

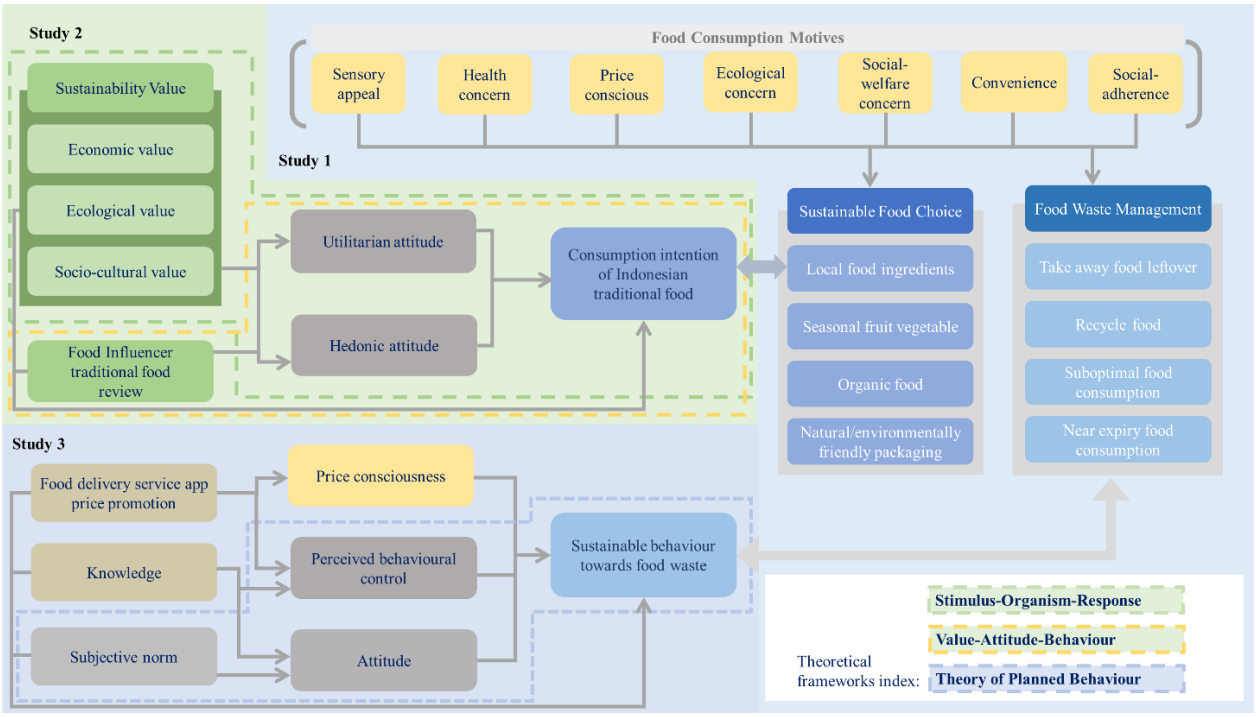

Figure 1 Summary of Conceptual Framework of Study 1, Study 2, Study 3

Sources: Author's own elaboration, 2026

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.

1.3. Research Gap

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 (Sethar et al., 2022). Study 1 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), 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), yet they often investigate those values in isolation rather than as an integrated construct that drives a person's consumption intention (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 supports 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. 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 (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 (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 1summarises 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	Most previous studies have proved the effect of consumption motives and sustainable behaviour only on the general population or the aggregate	Study 1 provides detailed insight into how various motives for sustainable food

sustainable food choice and food waste management at the customer segment level (empirical gap).	((Brunin et al., 2022; Lema-Blanco et al., 2023; Marty et al., 2022), which may neglect the heterogeneity of behaviour within the population.	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 (Schmidt, 2016; Setti et al., 2016; Silvennoinen et al., 2014), whereas others argue that price-conscious consumers manage food waste better due to financial incentives (Salem	Study 3 clarifies contradictory findings by investigating how price promotions influence sustainable food waste behaviour mediated by price

	& 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).	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 and database searches, 2025

1.4. Research Questions

This dissertation answers the following eight main research questions based on the problem statements 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?

1.5. 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.

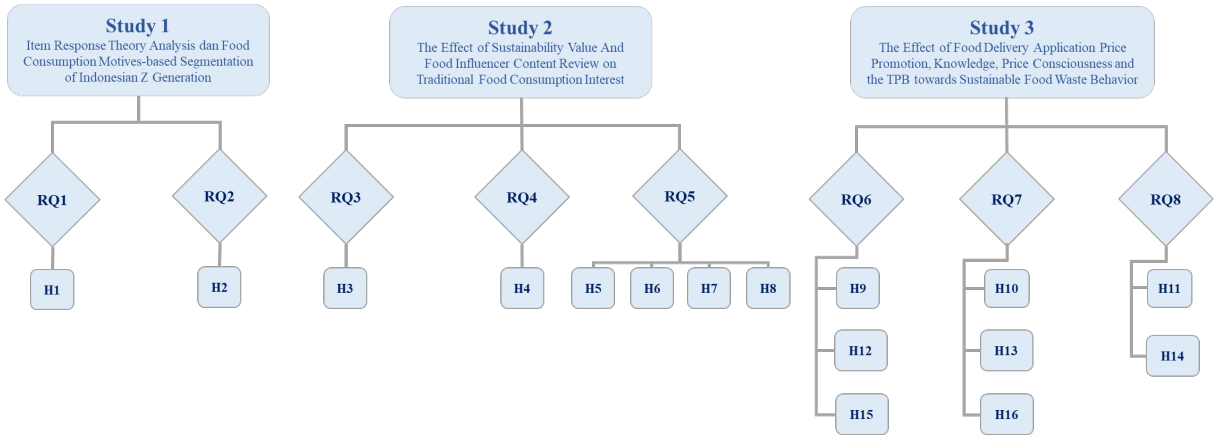

Figure 2 Research Questions and Hypotheses Structure

Sources: Author's own elaboration, 2026

2. MATERIAL & METHOD

2.1. 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. Study 1 attempts to reflect Indonesia's main regional distribution by utilising quota sampling. The valid sample used in this study was 1,160 respondents, and the distribution of the proportion of valid samples per region was: Java (53.7%), Sumatra (22.8%), Kalimantan (6.5%), Bali and Nusa Tenggara (5.7%), and Sulawesi-Maluku-Papua (11.3%), which is adjusted to the actual ratio of the geographical distribution of Indonesian Generation Z. Study 2 used purposive and quota sampling with two inclusion criteria: (1) respondents must have watched traditional food review content presented by food influencers, and (2) must have experience consuming traditional Indonesian food. A total of 1,311 responses were collected, and after screening, 1,292 valid responses were retained for analysis. Study 3 used purposive sampling, targeting Indonesian Generation Z, who have food ordering experience and are aware of promotions on food delivery platforms. The final valid sample used in the analysis was 561 respondents, which exceeded the minimum requirement. Figure 3 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.

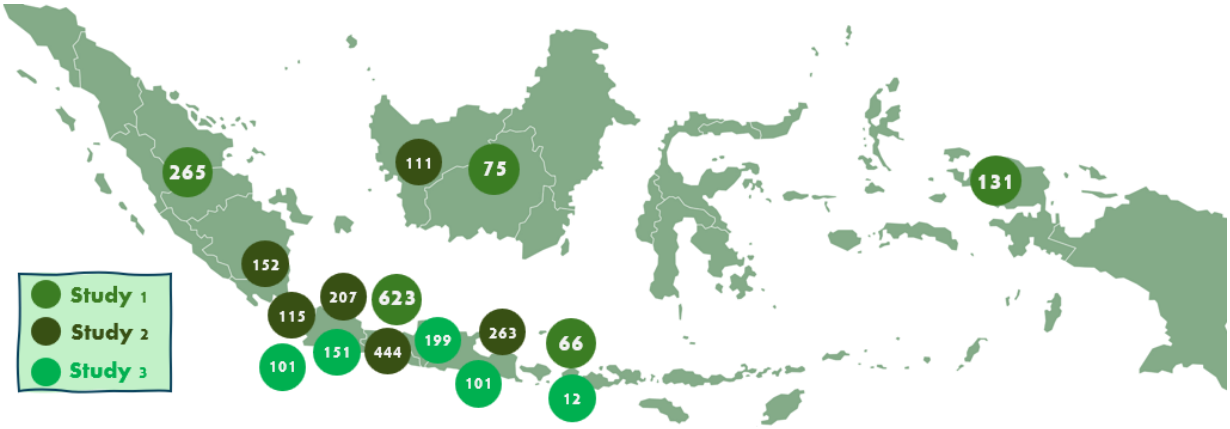

Figure 3 Map of Respondents' Geographical Distribution Across Indonesia

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

The gender composition of the Study 1 respondents was equal (50% male and 50% female) and the respondents' financial situations were mainly in the moderate (441 respondents) and strong (322 respondents) categories, as shown in Figure 4. In terms of geographical distribution, most of the respondents lived in provincial capital areas (526 persons), followed by big cities (418), small cities (153), and rural areas (63). The most frequently used social media platforms among the respondents were Instagram (48%) and TikTok (31%). Amongst all respondents in Study 1, the type of sustainable food consumption that shows the highest mean value of sustainable food consumption across clusters is shown by local food ingredients consumption. On the other hand, the lowest consumption frequency across all segments is the consumption of organic food. In terms of food waste management, the most frequently performed food waste management behaviour is taking away leftover and recycling food. Conversely, suboptimal and near-expiry food consumption is the food with the least consumption frequency amongst all clusters.

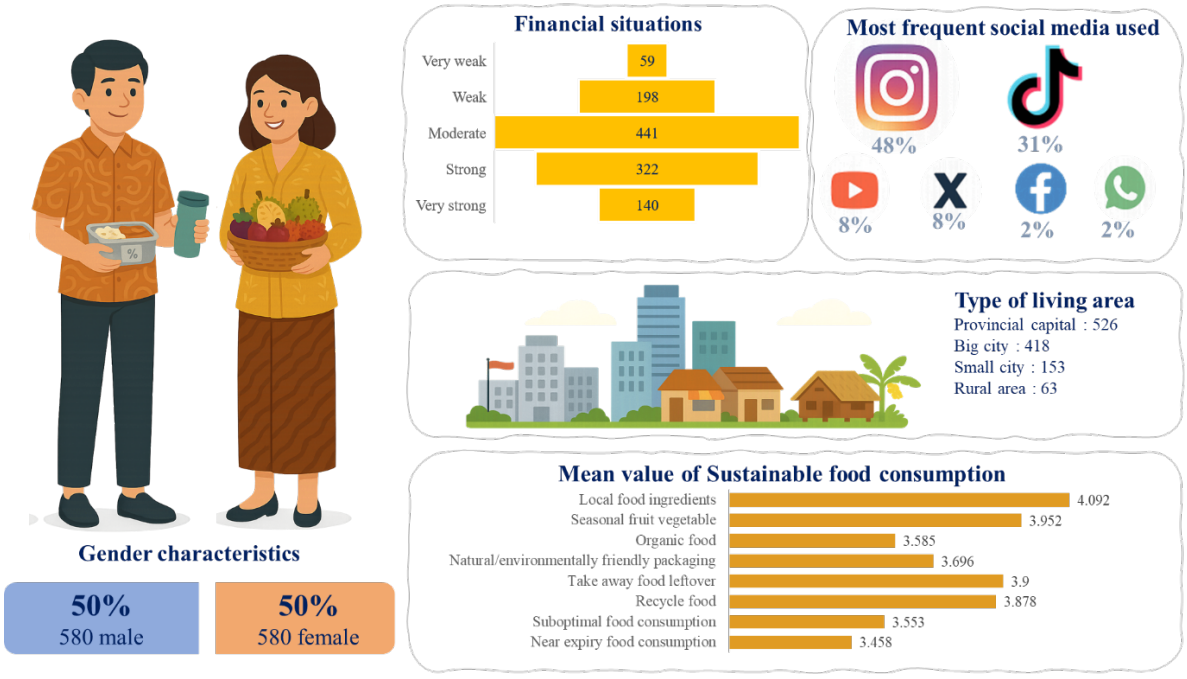

Figure 4 Respondents' Profile of Study 1

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

For Study 2, the valid data consisted of 1,292 respondents, with 51% male and 49% female (see Figure 5). The monthly budget for food spending was grouped into three levels, with 51% of the respondents falling into the low-level budget category, 34% in the middle level, and 15% in the high category. Study 2 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. The social media of choice for most of Study 2 respondents was TikTok (602), followed by Instagram (348), YouTube (307), X (22) and Facebook (13).

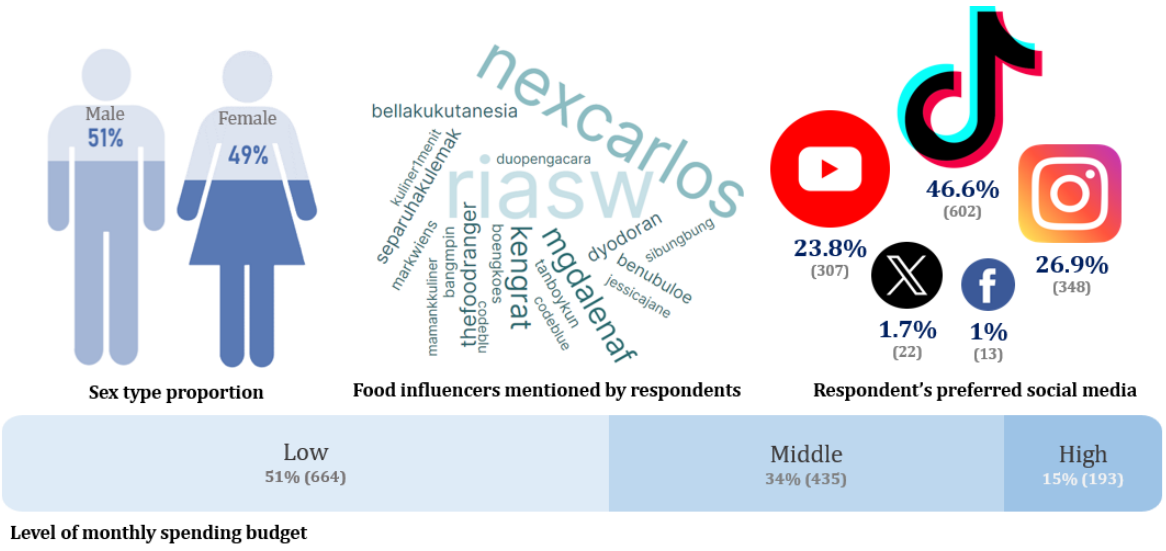

Figure 5 Respondents' profile of Study 2

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

For Study 3, the data included 561 valid responses (see Figure 6), with a slightly higher proportion of female respondents (56.3%) than male (43.6%). Most of the respondents in Study 3 lived in boarding houses (64.1%) and were predominantly female (56.3%). Regarding food delivery consumption behaviour, the majority (73.2%) spent less than 300,000 rupiahs per month. The three most frequently used delivery applications were ShopeeFood (43.4%), GoFood (38.8%), and GrabFood (17.6%).

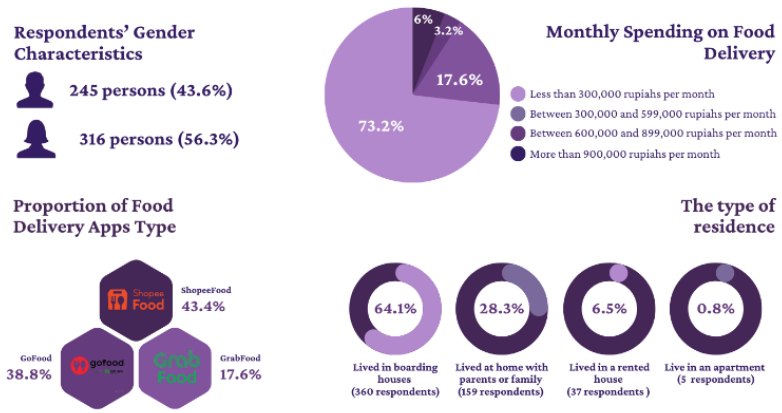

Figure 6 Study 3 respondents' demographic characteristics

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

2.2. Research Instruments

The research instruments employed in each study of this dissertation were adapted from established studies on food consumption motives, traditional food consumption, and food waste reduction behaviour. All three studies used separate questionnaires, developed using a five-point Likert scale to assess respondent agreement. The instruments were administered in Bahasa Indonesia and later translated into English. 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.

The research instrument of Study 1, examining segmentation based on food consumption motives, was adapted, compiled, and modified from various prior studies (shown 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 (Liu & McCarthy, 2023). Constructs measured include sensory appeal, health concern, price consciousness, ecological concern, social welfare concern, convenience, and social adherence, with indicators drawn from existing validated studies. Study 1's questionnaire consists of three sections: introduction and ethical clarification, demographic characteristics, and core items related to food motives and sustainable behaviour. The instrument was pre-tested on fifty respondents, and research ethics approval was granted by the Indonesian research ethics committee (E.6.m/115/KE-FPsi-UMM/IV/2024).

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 Study 1. 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. The Study 1 data were suitable for factor analysis (KMO: 0.908; Bartlett's Test of Sphericity χ^2: 20.864, $p < 0.001$). All manifest variables had factor loadings above 0.3, with the lowest at 0.540 and the highest at 0.901. The cumulative variance of the nine latent variables was 63.54%. Harman's One Test Factor showed the first factor explained 29.92% of variance, indicating no common method bias. Confirmatory factor analysis demonstrated good model fit (RMSEA = 0.042, TLI = 0.951, CFI = 0.958, SRMR = 0.0366). All manifest variables of Study 1 significantly contributed to their respective latent variables ($p < 0.001$), with standardized loadings ranging from 0.439 to 0.900.

Table 2 Summary of Study 1 Instrument, 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) (Moshtaghian et al., 2024; Prakash et al., 2019; Teng et al., 2022)	Good impact for health (HEALTH.1)	0.691	0.420	2.92	9.12	0.58	0.80	0.83	0.55
	Fibre (HEALTH.2)	0.806	0.277			0.578			
	Protein (HEALTH.3)	0.892	0.211			0.541			
	Vitamin (HEALTH.4)	0.901	0.178			0.439			
Food waste management (FWM) (Gravelines et al., 2022; Liu & McCarthy, 2023)	Take away food leftover (FWM.1)	0.688	0.486	2.37	7.41	0.618	0.90	0.91	0.72
	Recycle food (FWM.2)	0.648	0.509			0.698			
	Suboptimal food consumption (FWM.3)	0.846	0.267			0.729			
	Near expiry food consumption (FWM.4)	0.796	0.371			0.729			
Ecological concern (ECO) (Aschemann-Witzel et al., 2022; Teng et al., 2022)	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) (Lema-Blanco et al., 2023; Waehning & Filieri, 2022)	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) (Guina et al., 2020)	Available in shop nearby (CONV.1)	0.54	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			0.66			
	Cooking time (CONV.4)	0.786	0.361			0.659			
Sensory appeal (SA) (Moshtaghian et al., 2024; Teng et al., 2022)	Appearance (SA.1)	0.681	0.440	2.19	6.85	0.596	0.80	0.81	0.58
	Aroma (SA.2)	0.774	0.333			0.666			
	Texture (SA.3)	0.627	0.491			0.521			
	Flavour (SA.4)	0.72	0.479			0.9			
Sustainable food choice (SFC) (Gravelines et al., 2022)	Local food ingredients (SFC.1)	0.718	0.406	2.16	6.76	0.658	0.80	0.83	0.62
	Seasonal fruit & vegetables (SFC.2)	0.787	0.382			0.891			
	Organic food (SFC.3)	0.635	0.549			0.575			
	Natural/environmentally friendly packaging (SFC.4)	0.662	0.478			0.616			
Social-adherence (SOA)	Follow the social media trend (SOA.1)	0.828	0.306	1.87	5.84	0.536	0.80	0.82	0.53
	Follow closest circle behaviour (SOA.2)	0.617	0.478			0.597			

(Guina et al., 2020)	Follow influencer recommendation (SOA.3)	0.786	0.358			0.657			
Price conscious (PRICE) (Teng et al., 2022; Yue et al., 2020)	Affordability (PRICE.1)	0.818	0.339	1.77	5.55	0.602	0.80	0.85	0.59
	Cheap (PRICE.2)	0.751	0.365			0.797			
	Deal proneness (PRICE.3)	0.627	0.522			0.779			

Source: Author's own elaboration, 2025

In Study 2 on the influence of the value and stimulus of digital external promotional content, the research instruments used were adapted from prior studies and modified according to the research context. This study involved three first-level construct variables of sustainability value: economic, ecological, and socio-cultural. Economic value measures the perceived financial benefits and support for local livelihoods, ecological value captures environmental benefits such as eco-friendly production and packaging, and socio-cultural value reflects the role of traditional food in cultural preservation and social unity (Cavalleri et al., 2023). The food influencer variable includes frequency, quality, appeal, and presentation of traditional food content (Ashraf et al., 2023). Hedonistic attitude assesses enjoyment and sensory satisfaction, while consumption intention measures future preferences for traditional food (Kusumawardani et al., 2023; Zamil et al., 2023). The questionnaire comprised three sections: introduction (with definitions, ethical info, and consent), main constructs, and demographics (e.g., gender, influencers followed, food known, social media usage, monthly spending). Ethics approval was granted by the University of Debrecen's Faculty of Business and Economics (GTK-KB 002/2023).

All indicators of Study 2 showed factor loadings > 0.7, with Cronbach Alpha and Composite Reliability values below 0.95 across all variables, confirming reliability and non-redundancy (Sarstedt et al., 2022) (see Table 3). The sustainability value second-order construct, composed of economic, ecological, and socio-cultural dimensions, also met the reliability threshold. All AVE values were > 0.5, indicating good convergent validity. Discriminant validity was also satisfactory based on both Fornell-Larcker criteria and HTMT ratio; all constructs were distinct and measured separate dimensions.

Table 3 Study 2 Instrument's Outer Loading, Convergent Validity, Reliability, Multicollinearity Assessment

Variable & Indicators		Loading Factor		Cronbach Alpha	Composite Reliability	Average Variance Extracted
		Stage 1	Stage 2			
SV	Sustainability value			0.856	0.913	0.777
ECNV	Economic value (Apak & Gürbüz, 2023; Cavalleri et al., 2023)		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 (Apak & Gürbüz, 2023; Cavalleri et al., 2023)		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 (Apak & Gürbüz, 2023; Cavalleri et al., 2023)		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 (Ashraf et al., 2023)			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 (Kusumawardani et al., 2023; Zamil et al., 2023)			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 (Kusumawardani et al., 2023; Zamil et al., 2023)			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 (Hewei & Youngsook, 2022; Rha et al., 2022)			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 own elaboration, 2024

The research instrument of Study 3, regarding the effect of price promotions, food waste-related knowledge, and the Theory of Planned Behaviour on sustainable food waste management behaviour, was adapted from prior studies. Sustainable behaviour towards food waste includes controlling meal portions, reusing leftovers, and processing near-expired food (Burlea-Schiopoiu et al., 2021; Talwar et al., 2021). Promotion of food delivery services captures motivation driven by discounts, free delivery vouchers, flash sales, and bundling (Suhartanto et al., 2023). Knowledge covers food waste reduction, storage methods, environmental impacts, and ecological preservation (Aydin & Yildirim, 2021; Burlea-Schiopoiu et al., 2021). Price consciousness reflects interest in low prices, price comparisons, and value-seeking (Aktas et al., 2018; Attiq et al., 2021). Subjective norms measure the influence of family and peers in supporting food

waste reduction (Elhoushy & Jang, 2021). Perceived behavioural control includes managing food portions, storing leftovers, and processing them. Attitude towards food waste captures feelings like guilt and moral discomfort when discarding food (Aydin & Yildirim, 2021).

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) (see Table 4). The Cronbach's alpha and composite reliability values of all latent variables in Study 3 ranged between 0.70 to 0.90 (Table 4), indicating internal homogeneity and good consistency (Aburumman et al., 2023). VIF values ranged from 1.315 (PC2) to 3.382 (ATT3), with no indicators above the threshold of 5 (Becker et al., 2023). All latent constructs showed AVE values above 0.50, indicating good convergent validity (Sarstedt et al., 2022). There were no issues with discriminant validity, as confirmed by Fornell-Larcker and HTMT criteria.

Table 4 Study 3 Instrument's Outer Loading, Convergent Validity, Reliability, Multicollinearity Assessment

Constructs	Questionnaire Items	Factor loadings	Cronbach's Alpha	Composite Reliability	AVE	VIF
Price promotion of food delivery service application (Sharma et al., 2023)	Food price discount promos make me interested in ordering food immediately. (PR1)	0.846	0.868	0.905	0.656	2.203
	I feel that the free delivery vouchers offered on the application make me interested in ordering food immediately. (PR2)	0.853				2.621
	Promos that offer cheap delivery costs have made me interested in ordering food on the online food delivery service application. (PR3)	0.842				2.426
	Time-limited discount promos (for example, daily discounts or price discounts only at certain hours) make me interested in ordering food on the online food delivery service application. (PR4)	0.761				1.738
	The food bundling promo (e.g., buy one get one free) offered by the online food delivery service application made me interested in ordering food. (PR5)	0.74				1.561
Knowledge related responsible food waste (Aydin & Yildirim, 2021; Burlea-Schiopoiu et al., 2021)	I know how to lessen the amount of food that goes to waste. (K1)	0.813	0.829	0.886	0.661	1.786
	I have knowledge on the bad impact on the environment caused by food waste. (K2)	0.842				2.026
	I have knowledge on how to store excess food so it doesn't spoil easily. (K3)	0.793				1.647
	I have the knowledge that reducing food waste is one of the efforts to preserve the environment. (K4)	0.803				1.718
Price consciousness (Attiq et al., 2021)	I am interested in buying food when it is cheap. (PC1)	0.734	0.712	0.822	0.54	1.366
	When I go shopping for food, I check prices of similar items and buy the ones that are the least expensive. (PC2)	0.707				1.315
	I always check the price before buying food. (PC3)	0.732				1.409
	I always try to get the best quality food at the most affordable price. (PC4)	0.756				1.406
	Wasting food makes me feel guilty. (ATT1)	0.828	0.923	0.94	0.72	2.783

Attitude (Aydin & Yildirim, 2021; Talwar et al., 2022)	Wasting food is against my conscience. (ATT2)	0.869				3.224
	Wasting food makes me feel bad. (ATT3)	0.889				3.382
	Wasting food is against my morals. (ATT4)	0.841				2.742
	Wasting food in vain makes me feel regretful. (ATT5)	0.87				2.931
	I was brought up to think that food shouldn't go to waste, and I still believe this. (ATT6)	0.798				2.018
Perceived behavioural control (Al Amin et al., 2021; Talwar et al., 2023)	I do not find it difficult to minimise the amount of food I waste. (PBC1)	0.747	0.848	0.891	0.62	1.681
	I do not experience problems in the process of storing the excess food that I have. (PBC2)	0.811				2.234
	I have no problems reprocessing the excess food that I have. (PBC3)	0.798				2.048
	I don't experience problems determining my portion of food so that later there is no food left. (PBC4)	0.792				1.887
	I have no problem finishing the food that I have bought. (PBC5)	0.792				1.886
Subjective norms (Talwar, Kaur, Yadav, et al., 2023)	The people closest to me think minimising food waste is good. (SN1)	0.804	0.814	0.877	0.64	1.791
	My family encourages me to minimise the amount of food I waste. (SN2)	0.795				1.751
	My closest friends think that wasting food is a bad thing. (SN3)	0.805				1.931
	The people closest to me try not to waste food in vain. (SN4)	0.801				1.9
Sustainable food waste behaviour (Burlea-Schiopoiu et al., 2021; Chen, 2019)	I try to control the portion of food so as not to waste food. (FWB1)	0.773	0.85	0.893	0.63	2.345
	I try to minimise wasted food. (FWB2)	0.814				2.637
	I will reheat the excess food from the previous meal and consume it later if it is still fit for consumption. (FWB3)	0.853				2.483
	I consume my own leftovers to save. (FWB4)	0.764				2.211
	I try to process excess food before it spoils. (FWB5)	0.747				2.001

Source: Author's own elaboration, 2023

2.3. Data Analysis Techniques

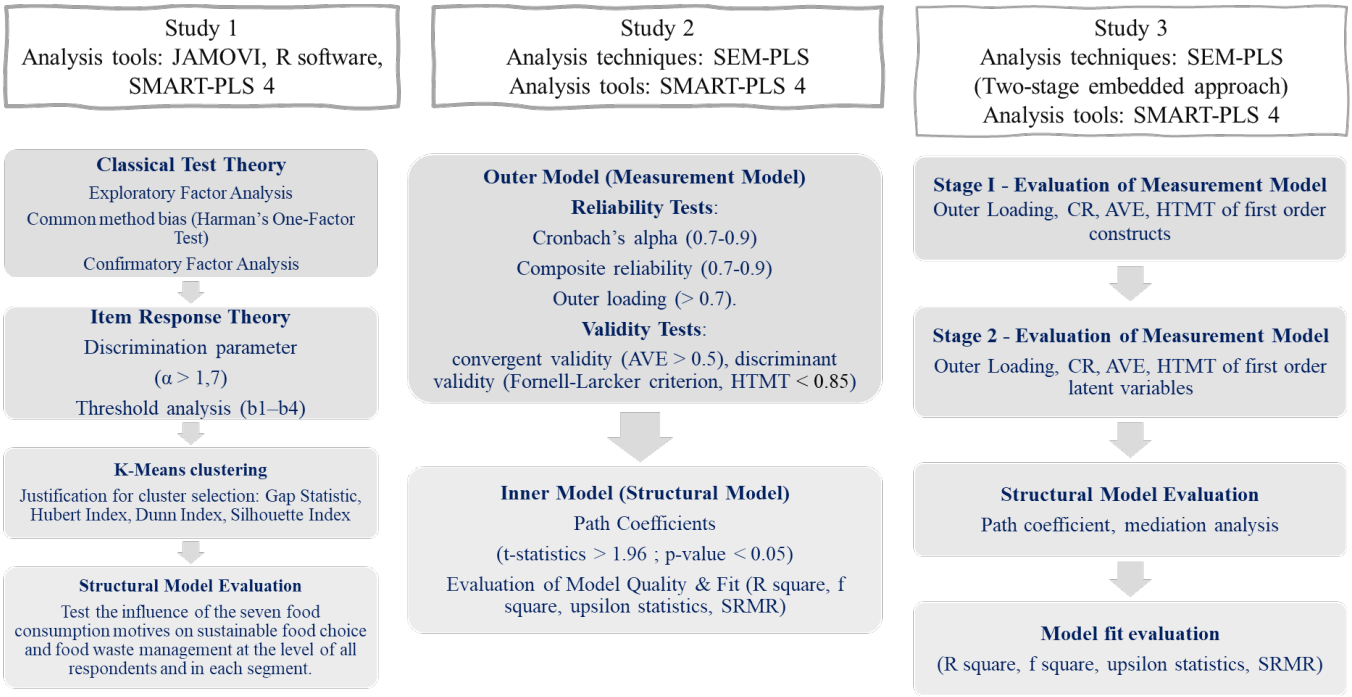

Figure 7 Summary of Data Analysis Techniques

Source: Author's own elaboration, 2025

The statistical software utilised to process the data in this dissertation includes RStudio 2024.04.2 (Study 1), JAMOVI 2.3.28 (Study 1), and SMART PLS 4 (Studies 1,2,3) (see Figure 7). Study 1 followed a rigorous psychometric validation process involving Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Item Response Theory (IRT) to assess item reliability, discrimination, and threshold levels across constructs such as food consumption motives and sustainable consumption behaviours. Harman's One-Factor Test was conducted to ensure the data was free from common method bias. The EFA used maximum likelihood extraction with Nobel rotation, and the factor structure was validated through CFA fit indices such as CFI (>0.95), TLI (>0.95), RMSEA (<0.08), and SRMR (<0.08). IRT further refined the measurement quality by evaluating item parameters, where indicators with discrimination values above 1.7 were considered effective, and threshold parameters (b1–b4) revealed the response category transitions (Stănculescu, 2022).

Study 1 employs Gap Statistic, Hubert Index, Dunn Index, and Silhouette Index techniques in considering the number of clusters, which will then be processed in the K-Means Clustering stage. Finally, structural model evaluation was applied to examine the influence of seven food consumption motives on sustainable food choice and food waste management at both the aggregate and segment levels. Constructs were required to demonstrate convergent validity (AVE ≥ 0.50), discriminant validity (HTMT < 0.85), and composite reliability (≥ 0.70) before interpretation of path coefficients (Sarstedt et al., 2022). The variable antecedent can be confirmed to have a significant effect on the endogenous variable when the p-value is less than 0.05, and the t-statistic is higher than 1.96 (Hair Jr et al., 2021). Studies 2 and 3 employed SEM-PLS with SMART PLS 4, where Study 2 involved higher-order constructs assessed through a two-stage embedded

approach, while Study 3 examined complex relationships among price promotions, knowledge, norms, and sustainable food waste behaviour.

3. MAIN FINDINGS OF THE DISSERTATION

This dissertation offers a multi-theoretical investigation of how Indonesian Generation Z adopts sustainable food consumption behaviours by integrating psychometric validation of Item Response Theory and consumption motives-based segmentation (Study 1), value and stimuli-based modelling towards traditional food consumption interest (Study 2), and expansion of planned behaviour theory in digital environment context specifically for managing food waste (Study 3). 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.

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

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. Table 5 shows the results of IRT, especially the discrimination parameter (α) and threshold parameters (b1-b4) for each manifest variable. All manifest variables show a discrimination value (α) higher than 1.7, reflecting each item's satisfactory quality in differentiating respondents' answers (Stănculescu, 2022). The values range from the lowest (1.904) on the organic food consumption indicator to the highest (6.258) on the vitamin-containing food motives.

Table 5 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 preparation (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
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 calculations based on IRT outputs (RStudio), 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 (Zein & Akhtar, 2025). Figure 8 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.

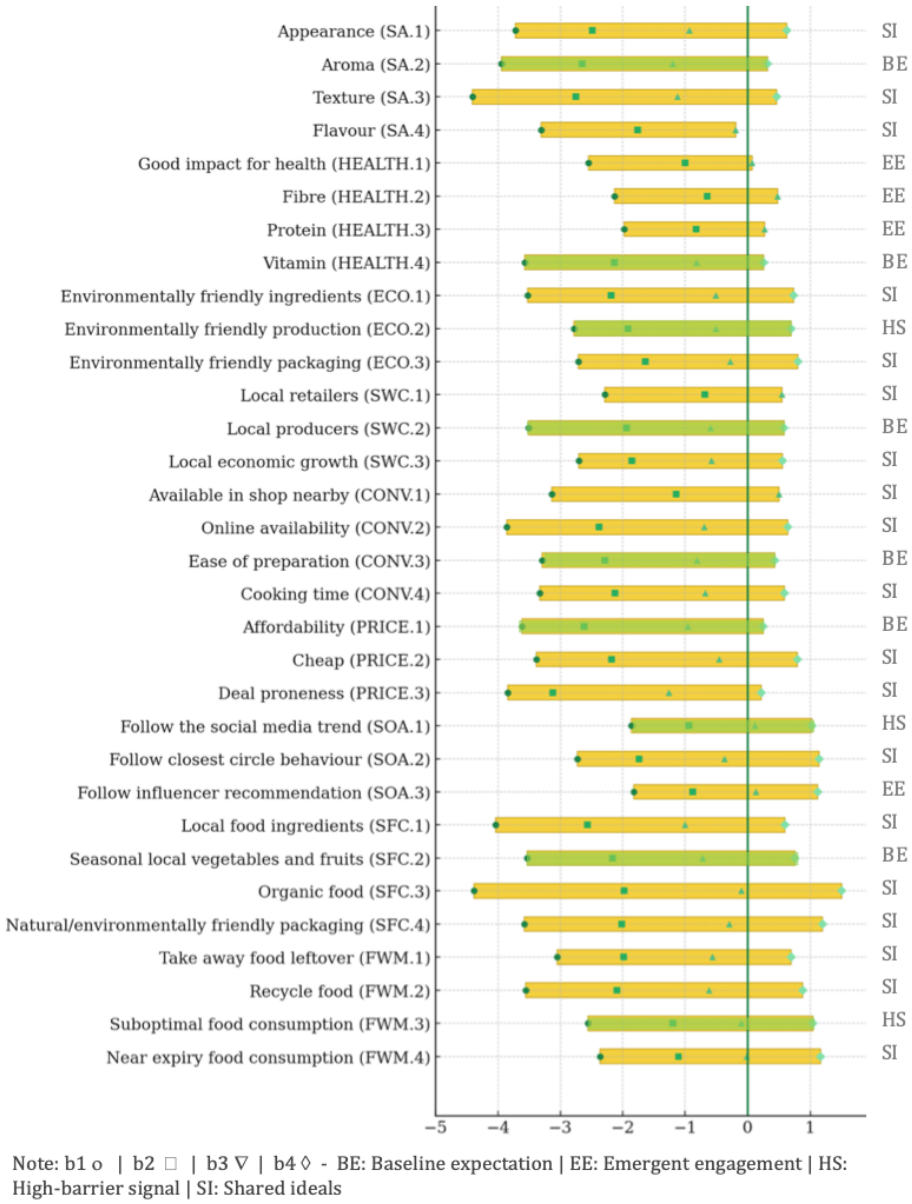

Figure 8 Difficulty Threshold Map (b1–b4)

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

3.2. Study 1: Segmentation of Generation Z Indonesia Based on Food Consumption Motives

The second objective in Study 1, which is to define the customer segment among Generation Z Indonesians based on their food consumption motives, found four distinct consumer segments (see Figure 9), 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 of Indonesia's' top three overall motivations in their food choices include taste, pursuit of food deals, and desire to maintain overall health. In all clusters, 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 9). Overall, the higher the respondents' sensory appeal motivation, the lower their food waste management.

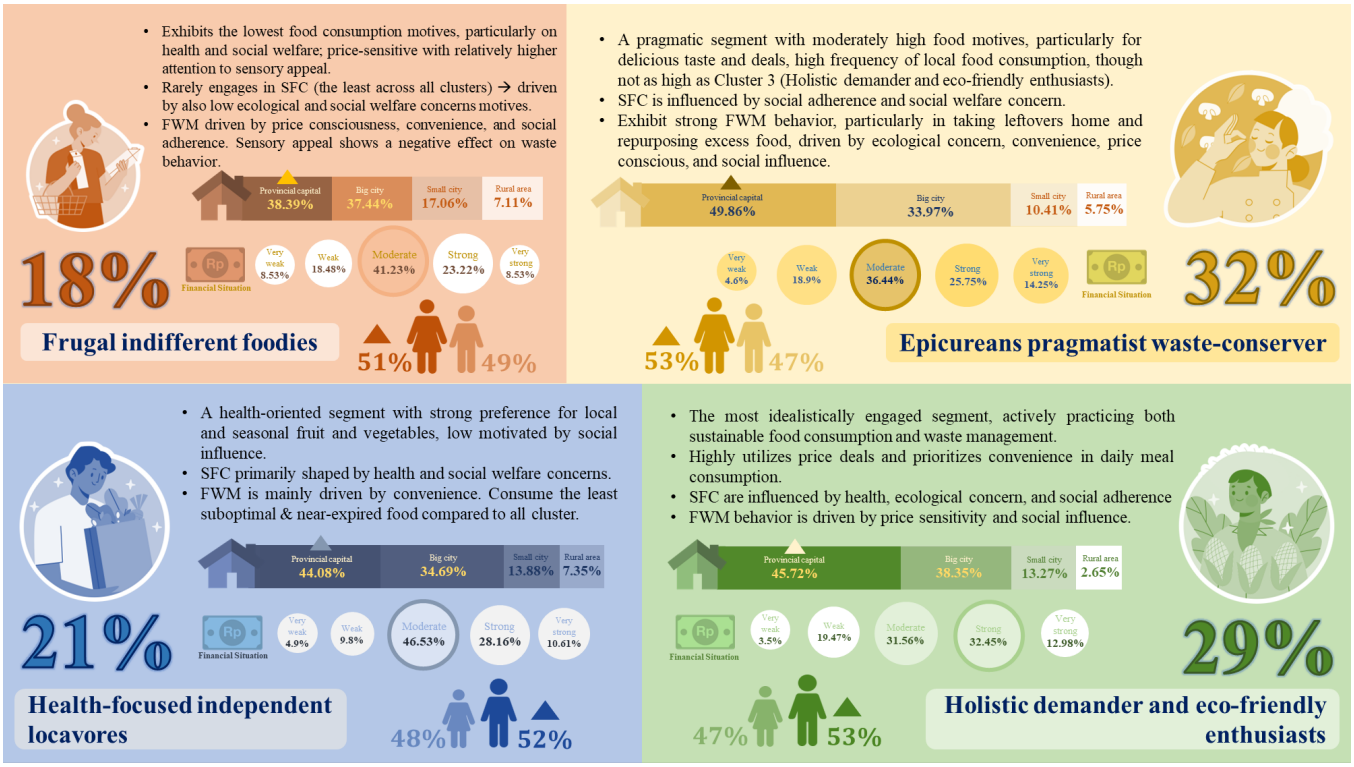

Figure 9 Four Distinct Segments of Generation Z Indonesia Based on Food Consumption Motives

Source: Author's own elaboration, 2025

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.

3.3. Study 2: The Effect of Sustainability Value and Food Influencer Content Review on Traditional Food Consumption Interest

Study 2 provides empirical evidence of the integrated application of the Value-Attitude-Behaviour and Stimulus Organism Response frameworks in explaining the formation of interest in traditional food consumption in Indonesian young digital societies. Study 2 proves that sustainability value, which consists of economic, socio-cultural, and ecological dimensions, significantly influences Generation Z's interest in consuming traditional food in Indonesia. Among the three dimensions of sustainability value, economic value emerges as the most important sub-dimension. 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). 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). 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. 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 (Cavalleri et al., 2023). While statistically valid, the ecological dimension of traditional food, which is widely recognised in the context of Western context customers (Rha et al., 2022), turns out to be the least salient value associated with the concept of sustainability of traditional Indonesian food.

The results of Study 2 hypothesis testing, presented in Table 6 supported all the hypotheses, as the p-values were below 0.05, and the t-statistic values were above 1.96 at a 95% confidence interval (Sarstedt et al.,

2022). 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.

Table 6 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

Notes: SV: Sustainability 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 own elaboration, 2024

In the relationship between sustainability value and traditional food consumption interest, although equally significant, the utilitarian attitude emerged as a more prominent mediator than the hedonic attitude. Sustainability value in young people will shift more firmly into consumption interest 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 interest. 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. 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). Summary of the findings of Study 2 shown in Figure 10.

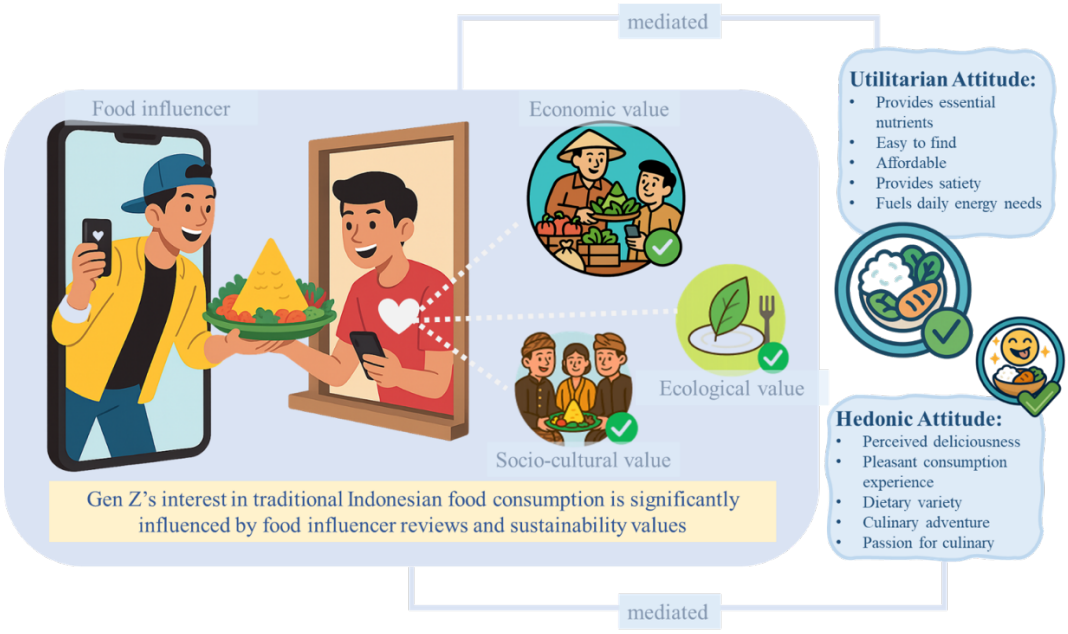

Figure 10 Summary of Study 2 Findings

Source: Author's own elaboration, 2025

3.4. Study 3: The Effect of Food Delivery Application Price Promotion, Knowledge, Price Consciousness and the Theory of Planned Behaviour towards 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. The results of Study 2 hypothesis testing, presented in Table 7. 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. 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.

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 (Watt et al., 2023). 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 (de Vries et al., 2025). This suggests that food delivery platforms can be food waste supportive tools through price promotions, especially targeting youth.

Table 7 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, 2023

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 salient 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. Summary of the findings of Study 3 shown in Figure 11.

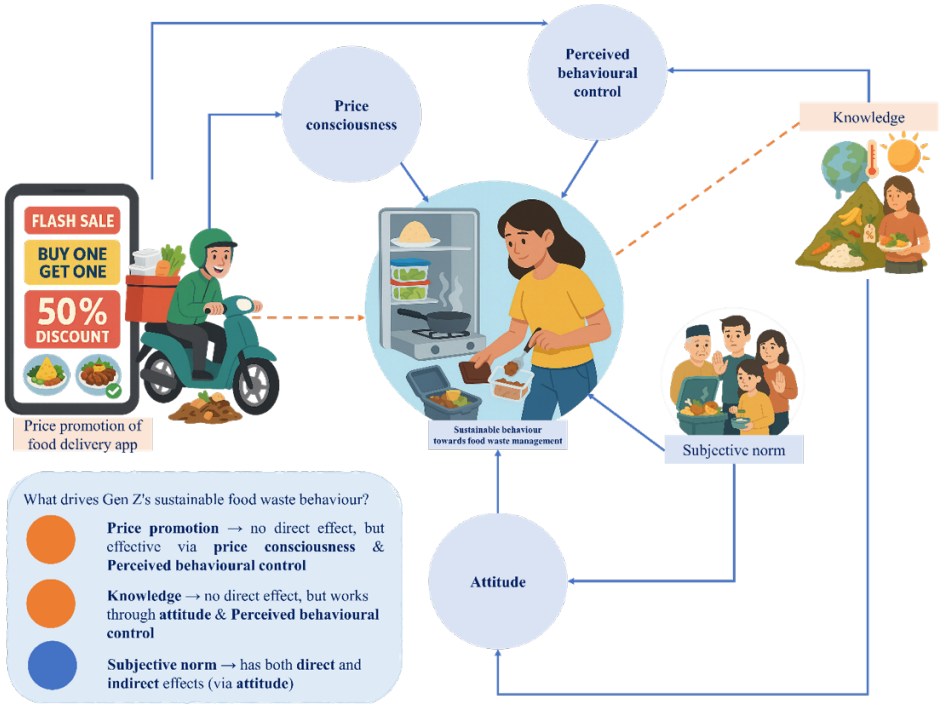

Figure 11 Summary of Study 3 Finding

Source: Author's own elaboration, 2025

4. NEW AND NOVEL RESULTS 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 8).

Table 8 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

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.

5. PRACTICAL RECOMMENDATION

5.1. Study 1 Practical Recommendation

Improving sustainable food choice and food-waste management among Generation Z of Indonesia 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).

5.2. 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. 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 value and food influencers are significantly mediated by utilitarian and hedonic attitudes in increasing interest in traditional food consumption. Therefore, to emphasise the sustainability value 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.

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. 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. 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.

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7. LIST OF PUBLICATIONS

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Subject: PhD Publication List

Candidate: Kristia Kristia
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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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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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.

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