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UNDERSTANDING INTENTION OF GENERATION Z TO REDUCE FOOD WASTE IN INDONESIA: A STUDY INTEGRATING THEORY OF PLANNED BEHAVIOR AND INDIGENOUS CULTURAL VALUES

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Abstract *– Food waste has become an urgent global concern, with Indonesia facing notable economic, environmental, and social consequences. The present study examined the determinants of Generation Z's intention to curb food waste in Indonesia using the Theory of Planned Behavior (TPB), which emphasizes attitudes, subjective norms, and perceived behavioral control. In addition, the research integrated indigenous cultural values, particularly religious and traditional values. Using a quantitative correlational approach, data were obtained from 200 respondents through purposive non-probability sampling. The analysis was performed using Structural Equation Modeling (SEM) via the Partial Least Squares (PLS) method. The results revealed that attitudes, perceived behavioral control, religious values, and traditional values significantly and positively influenced food waste reduction intention. Conversely, subjective norms were found to have no significant effect. These findings highlight that personal beliefs, self-regulation, and cultural values are more influential than social pressure in driving food waste reduction behaviors among Indonesian Generation Z.*

Keywords: *Generation Z, Food Waste, Intention, Theory of Planned Behavior, Indigenous Cultural Values*

INTRODUCTION

Food waste has emerged as an urgent issue for consumers, policymakers, and industry actors worldwide. According to the United Nations Environment Programme (UNEP, 2021), an estimated 931 million tonnes of food waste are generated annually from households, retail, and the food service sector, with households contributing approximately 569 million tonnes. On average, people waste about 74 kilograms of food annually, a figure that shows minimal difference across income groups. The disposal of food equates to the loss of crucial resources, including water, energy, soil, and financial capital, while also imposing notable environmental and economic costs (Seberini, 2020). Research by the Boston Consulting Group estimates that global food waste carries an economic burden of approximately $230 billion annually, impacting both supply chains and household finances.

In addition to financial losses, the environmental impact of food waste is substantial. From production to disposal, it contributes to greenhouse gas emissions, and in landfills, methane is emitted, a gas with a potential of climate impact 25 times higher than carbon dioxide (Mishra et al., 2020). Food waste also highlights social inequality, as billions of tonnes of edible food are discarded while an estimated 691 to 783 million people still suffer from hunger (FAO, 2023). In the Indonesian context, around 19.4 million people live with food insecurity, yet household food waste reaches 77 kilograms per capita per year, surpassing the global average (UNEP, 2021). Organic waste, predominantly food waste, represents approximately 40% of Indonesia's total waste (KLHK, 2021). For example, Jakarta generates over 7,000 tonnes of waste each day, much of which ends up piling up in already congested landfills such as Bantar Gebang. Meanwhile, regions such as East Nusa Tenggara still struggle with high rates of child stunting due to inadequate nutrition, reflecting the paradox between food abundance and persistent hunger (Suratri et al., 2022).

The Indonesian government has tackled the food waste issue from both environmental and humanitarian angles. Through the Ministry of National Development Planning (Bappenas), the nation is pursuing strategies consistent with Sustainable Development Goal 12.3.1, targeting a 50% decrease in global per capita food waste by the year 2030. Initiatives such as Foodbank of Indonesia, Mitra 100% Merdeka, Mentari Bangsaku, Sayap dari Ibu, Dapur Pangan FOI, and Kebun Pangan Keluarga focus on

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food redistribution, public awareness, and community empowerment to encourage sustainable consumption.

Nevertheless, ineffective food waste management persists across sectors, especially within households. This problem is largely driven by insufficient awareness and education about sustainable consumption practices. Notably, Indonesia's indigenous cultural frameworks, encompassing both religious and traditional values, may serve as positive drivers of consumer behavior (Chakraborty & Sadachar, 2023). Norms such as *gotong royong* (mutual cooperation), *tepa selira* (empathy), and the religious principle of avoiding *mubazir* (wastefulness) could serve an important purpose in supporting responsible food habits and ought to be integrated into plans for minimizing food waste.

The focus of sustainable consumption is on cultivating awareness and responsible resource usage. Generation Z, in particular, has the potential to significantly shape future consumption patterns due to their growing purchasing power and strong presence in the digital space (Jayatissa, 2023). While they are technologically advanced, this generation is also recognized for upholding values linked to environmental and social responsibility. Recognizing the psychological and cultural factors behind their consumption decisions is essential, particularly during the formation of lasting habits. Their role in promoting sustainability is affected by attitudes, social influence, PBC, and moral principles, notably in food waste context.

According to the Theory of Planned Behavior (TPB), behavior can be understood through a structured framework. As proposed by Ajzen (1991), the intention to carry out a specific behavior is determined by one's attitude toward it, the subjective norms surrounding it, and the perceived ease or difficulty of performing it (PBC). In the realm of food waste reduction, this translates to having a constructive attitude toward minimizing waste, perceiving encouragement or social pressure from family or community, and feeling capable of implementing waste reduction strategies. Nonetheless, TPB may overlook important cultural and ethical dimensions, particularly in Indonesia, where cultural identity strongly influences decision-making. To address this limitation, the present research incorporates indigenous cultural values, specifically religious and traditional dimensions, into the TPB framework for a more contextually accurate perspective.

Earlier studies have shown varying results. Evidence indicates that attitude and PBC are strong determinants of the intention to minimize food waste, though the influence of subjective norms is not consistently observed. For instance, Sia Niha et al. (2022) reported that attitude and PBC had a substantial effect, but subjective norms did not. Wajon et al. (2019) also reported similar results. Conversely, Soorani and Ahmadvand (2019) and Wong et al. (2021) concluded that all TPB constructs, including subjective norms, play a meaningful role. Such divergent findings point to the necessity of re-examining the TPB model by integrating socio-cultural dimensions to capture behavioral intention more comprehensively.

This study adds to the literature by embedding culturally rooted beliefs within a well-established behavioral theory. Unlike earlier studies, it emphasizes the role of both religious and traditional values, thereby offering an innovative approach tailored to Indonesia's socio-cultural context. The research is expected to provide theoretical contributions by demonstrating how indigenous values enrich the psychological constructs of TPB, as well as practical contributions for designing culturally relevant food waste reduction strategies. This study seeks to investigate the impact of attitude, subjective norms, PBC, as well as religious and traditional values on the food waste reduction intentions of Indonesian Generation Z.

LITERATURE REVIEW

Sustainable Development Goals

The purpose of this research is to explore how individuals intend to minimize food waste, supporting Sustainable Development Goal (SDG) 12 focused on sustainable consumption and production. Target 12.3, in particular, aspires to achieve a 50% reduction in per capita food waste worldwide at both consumer and retail stages by 2030 (United Nations, 2023). This work analyzes the factors affecting individuals' willingness to curb food waste, yielding insights into consumer behavior that are essential for meeting reduction targets. By integrating constructs such as attitudes, subjective norms, PBC, and both religious and traditional values, the research intends to uncover the complex mechanisms guiding choices related to minimizing food waste.

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Moreover, by addressing food losses along the production and supply chain, this study advances the goals set forth in SDG 12. Understanding the key drivers behind food waste behavior provides valuable insights for designing effective interventions and policies that promote sustainable consumption. By uncovering both the reasons behind food wastage and the drivers for its reduction, this study supports the development of policies capable of addressing food waste issues and advancing progress toward SDG 12.

Although the main focus is on understanding and encouraging actions that minimize food waste, this research also connects with SDG 2: *Zero Hunger* and SDG 13: *Climate Action.* First, reducing food waste enables the redirection of resources to alleviate hunger and malnutrition, thereby reinforcing the aims of SDG 2. Enhancing the efficiency of food systems by cutting waste ensures that available resources are better utilized to meet nutritional needs. Second, limiting food waste supports climate action by lowering greenhouse gas emissions tied to wasted food, which aligns with SDG 13 (Iriyadi et al., 2023). Food waste not only generates methane emissions in landfills but also results in the loss of resources like water and energy that were utilized in producing food. Accordingly, this research on food waste reduction intention addresses consumption patterns while simultaneously promoting global efforts to eradicate hunger and mitigate climate change, contributing to the overarching goals of the SDGs.

Triple Bottom Line

This research is strongly linked to the triple bottom line (TBL) framework, which emphasizes the integration of social (people), economic (profit), and environmental (planet) dimensions of sustainability. As highlighted by Alhaddi (2015), TBL provides a framework for assessing organizational and business performance across these three dimensions. From a social perspective, minimizing food waste contributes to reducing hunger and malnutrition while fostering greater awareness and behavioral change among consumers, businesses, and policymakers. On the economic side, food waste reduction enables cost savings and improved profitability throughout the food supply chain, as companies enhance production efficiency and explore new opportunities in waste management. Reducing food waste aids in preserving vital natural resources like water and energy, while also lowering greenhouse gas emissions associated with food production and disposal. By adhering to the principles of the TBL, this research ensures that waste reduction efforts simultaneously deliver social benefits, strengthen economic sustainability, and support environmental protection.

Theory of Planned Behavior

Ajzen (1991) explained that TPB integrates key concepts from social and behavioral sciences, allowing for prediction and understanding of behavior in specific contexts, proposing that people make intentional decisions based on three key factors: attitudes, subjective norms, and perceived behavioral control. Ramli et al. (2023) explained that the TPB assumes individuals typically behave rationally, making decisions by evaluating the information available and considering the possible outcomes of their actions, whether consciously or unconsciously. Similarly, Graham-Rowe et al. (2015) described TPB as a framework for understanding motivation, emphasizing that the stronger a person's intention, the stronger their tendency to carry out the behavior.

First, individuals reflect on their personal attitudes toward a behavior, evaluating whether they see it in a favorable or unfavorable light, which in turn affects their tendency to adopt it. Second, they take into account subjective norms, which refer to the influence of perceived social expectations on individuals, which can strongly guide their intentions. Alongside this, individuals evaluate their PBC, encompassing their sense of ability to perform the behavior in light of both personal and environmental restrictions. This perception of control influences their confidence in executing the action. Collectively, these three elements enhance the explanatory and predictive capacity of TPB in relation to human behavior across diverse settings. Schrank et al. (2023) applied TPB to demonstrate how rational decision-making processes help explain actions, especially offering insights into how various factors interact to shape behaviors concerning wasting food. In this research, the effects of the TPB constructs along with two additional variables will be examined to better understand intentions to reduce food waste.

Indigenous Cultural Values

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Indigenous cultural values encompass the fundamental beliefs, traditions, moral principles, and practices rooted in the local wisdom of a community or society. In Indonesia, a nation characterized by cultural and religious plurality, these values are strongly shaped by *adat* (local customs), communal ethics, and religious teachings. Illustrative examples include *gotong royong* (mutual cooperation), *tepa selira* (empathy and respect for others), and the Islamic principle of avoiding *mubazir* (wastefulness), all of which highlight collective responsibility, sustainability, and ethical restraint. Such values not only guide interpersonal relations but also influence individual perspectives on environmental care, particularly in matters of food consumption and waste reduction.

Incorporating indigenous cultural values into the TPB enriches the attitudinal and subjective norm components of the framework. Subjective norms, which are often driven by peer influence or social expectations, may be further reinforced by cultural and religious imperatives that view food waste as morally and spiritually objectionable. Similarly, attitudes toward minimizing food waste can be anchored in traditional and religious notions that regard food as *rezeki* (a blessing) and emphasize the moral duty to avoid waste. Moreover, PBC extends beyond personal capability, as it may also be shaped by collective practices and household norms that either enable or hinder behavior. For instance, families that habitually share surplus food or engage in composting foster environmental cues that strengthen the perceived ease of reducing waste. Hence, embedding indigenous cultural values into TPB offers a context-specific enhancement of the model, providing a deeper insight into the factors influencing Generation Z's intention to minimize food waste in Indonesia. This approach supports the development of a culturally attuned behavioral framework that better captures the socio-cultural dynamics influencing environmental actions in the country.

Intention

A person's intentions reflect their underlying motivation, as they represent the conscious effort to perform certain actions (Conner & Armitage, 1988). Attitudes, subjective norms, and PBC (perceived behavioral control) shape these intentions, and stronger intentions typically indicate a greater likelihood of performing the behavior. Empirical research has highlighted the direct link between TPB and intention across different contexts, including food waste reduction. In this context, Visschers et al. (2016) highlighted TPB has a significant influence on intentions of individuals to limit food waste. Through their postal survey in Switzerland examining household food waste drivers, origins, and challenges, it was found that the desire to limit food waste is a key predictor of the actual food waste generated

Attitude

Attitude of an individual may be either positive or negative, depending on their self-perception, and it is one of the key factors influencing behavior (Ramli et al., 2023). Attitudes are determined by what people believe will result from a behavior and how significant they consider those results to be. Therefore, an individual's attitude reflects their stance on environmental issues, as they may lean either in favor of or against a behavior imposed on them. In the context of food waste, attitudes encompass individuals' views on the significance of minimizing waste, their understanding of its environmental impacts, and the ethical aspects of conserving resources (Herdian & Puspitasari, 2022). Even when someone wishes not to waste food, a negative attitude may persist. Conversely, when a person demonstrates a favorable attitude toward preventing food waste, their intention to act accordingly tends to strengthen.

Subjective Norm

Subjective norms describe an individual's understanding of the social pressures regarding whether they ought to engage in a specific behavior (Ajzen, 1991). Put differently, they reflect a person's perception of how much significant others support or endorse their participation in that behavior (Soorani & Ahmadvand, 2019). This construct highlights the role of influential figures, such as family, friends, or broader cultural values, in shaping a person's choices. When individuals sense strong encouragement or support from their social circle, individuals are more inclined to intend to carry out a behavior when they perceive that important others expect or approve it, even if their personal attitudes toward the behavior are neutral or negative. Subjective norms in the context of food waste pertain to the perceived social pressure from family, friends, or society about the acceptability of wasting food.

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Perceived Behavioral Control

According to Ajzen (1991), perceived behavioral control (PBC) is an individual's judgment regarding how manageable or challenging it is to execute a certain behavior, considering both internal and external elements that might support or impede it. PBC captures perceptions of how simple or challenging the action is, taking into account past experiences as well as potential obstacles (Soorani & Ahmadvand, 2019). Internal aspects may include a person's knowledge, skills, and available resources, while external aspects may involve situational restrictions or environmental barriers. When PBC is higher, individuals tend to develop stronger intentions to perform the behavior (Himawan & Puspitasari, 2023). In food waste reduction context, PBC can involve elements such as one's cooking expertise, ability to plan meals, availability of food storage facilities, and limitations of time.

Connection with Religious Values

Individuals' attitudes and behaviors toward food, including their intention to cut down on wasting food, are strongly shaped by religious values. The concept of "religious value in food" is based on the belief that food is a divine blessing from God (Filimonau et al., 2022). This belief cultivates an attitude of gratitude and reverence for food, motivating individuals to handle it with respect and accountability in both consumption and waste management. Moreover, religious teachings and customs also impose restrictions on certain food practices (Imtiyaz et al., 2021). For example, in Islam, the consumption of pork is strictly prohibited, leading Muslims to avoid products that contain or are derived from pork. Such religious principles directly influence food choices and purchasing behaviors, as they ensure compliance with dietary laws prescribed by faith.

Connection with Traditional Values

Traditional values are the foundation of a country, and self-confidence in a national culture signifies an individual's wholehearted endorsement and proactive engagement with their country's cultural values (Zong et al. 2023). Traditional values are passed down from previous generations to the next generation through cultural texts, folklore, rituals, and practices, fostering a sense of continuity and belonging while contributing to the formation of national identity (Chakraborty & Sadachar, 2023). When individuals have confidence in their national culture, they fully embrace and take pride in their cultural heritage, reflecting a strong connection to their roots and a commitment to maintaining and celebrating their identity.

Hypotheses Development and Research Framework

According to Sia Niha et al. (2022), an individual's attitude represents their assessment of a particular issue, such as food waste in this study, either positively or negatively. The findings indicated that attitude positively influences intentions on food waste reduction, suggesting that a person's perspective on food can promote behaviors that help minimize waste. Similarly, Ramli et al. (2023) reported that pro-environmental commitments, such as waste separation, are strongly shaped by individual attitudes. They further noted that a favorable attitude fosters stronger intentions toward recycling and reducing food waste. In line with this, Soorani and Ahmadvand (2019) highlighted that attitudes toward food waste exert the most substantial influence on food waste management practices. Consequently, perceiving food waste reduction as a valuable and virtuous action increases the likelihood that individuals will intend to practice behaviors that reduce food waste. Thus, below is the hypothesis.

H1: Attitudes significantly and positively impact person's food waste reduction intention.

Subjective norms involve the social influences that affect an individual's decision to perform or refrain from specific behaviors (Ajzen, 1991). In the context of food waste, these norms can appear as the encouragement or discouragement from family, friends, or wider societal expectations regarding wasteful actions. While Sia Niha et al. (2022) found that subjective norms did not have a significant impact on the intention to reduce food waste; however, Soorani and Ahmadvand (2019) noted that these norms, along with other factors, are important in influencing behaviors related to food consumption. The perception of strong societal expectations to minimize food waste encourages individuals to form intentions consistent with these practices, due to the pressure to comply with prevailing norms. Thus, below is the hypothesis.

H2: Subjective norms significantly and positively impact person's food waste reduction intention.

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Perceived Behavioral Control (PBC) refers to a person's personal assessment of their ability to perform a behavior, along with their perception of external factors that might help or obstruct the behavior (Ajzen, 1991). It indicates not only the perceived competence to carry out a given action but also the presence of suitable opportunities to do it efficiently. Previous studies present mixed results, while Anjaka (2022) reported that PBC does not significantly influence the intention to reduce food waste, Soorani and Ahmadvand (2019) presented opposing findings, emphasizing that PBC is the strongest predictor of behavior, especially in translating intention into actual practice. Similarly, Wajon et al. (2019) emphasized the crucial role of PBC, noting its strong significance. Thus, below is the hypothesis.

H3: Perceived behavioral control significantly and positively impacts person's food waste reduction intention.

Previous studies on food waste identify several established factors that affect individuals' intentions to minimize waste and motivate them to reduce the amount of food they discard. Among these, religious values are found to be strongly associated with decision-making related to food waste reduction (Elshaer et al., 2021). This study suggests that religiosity significantly influences attitudes toward food waste, exerting both direct and indirect effects. A person's degree of religiosity shapes their values, which in turn impact their cognitive processes. Moreover, through a mediating cognitive connection, religious values are suggested to shape behavioral patterns regarding food waste. Abdelradi (2018) also identified environmental awareness is positively associated with religious values, which, in turn, shapes people's intentions to minimize food waste. Thus, below is the hypothesis.

H4: Connection with religious values significantly and positively person's food waste reduction intention.

Traditional values represent the cultural norms, customs, and social practices that have been inherited across generations within indigenous communities. A connection to indigenous cultural values indicates that individuals prioritize traditions, moral principles, localism, and harmony with nature (Chakraborty & Sadachar, 2023). Given that the intention to minimize food waste encompasses elements of tradition, morality, localism, and sustainability, it can be inferred that a strong attachment to indigenous cultural values positively shapes attitudes toward food waste. Furthermore, a deeper attachment to indigenous cultural values, encompassing both religious and traditional dimensions, is expected to encourage more positive attitudes toward food waste can, in turn, enhance the intention to reduce it (Chakraborty & Sadachar, 2023). Thus, below is the hypothesis.

H5: Connection with traditional values significantly and positively impact person's food waste reduction intention.

Based on the literature review, the researcher developed the conceptual framework, which is presented in Figure 1.

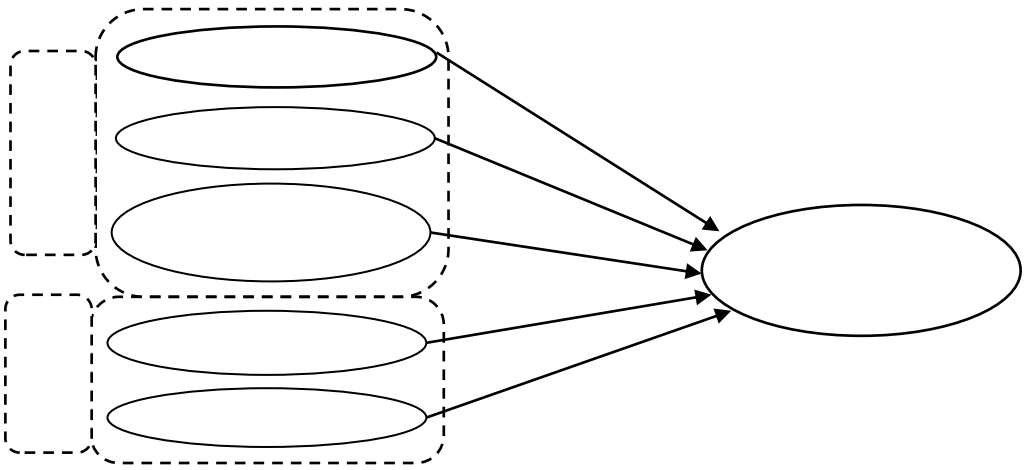

Figure 1. Research Framework

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METHODS

Method

This study utilized a quantitative research approach, focusing on gathering, analyzing, and interpreting numerical data to identify patterns and relationships (Henning, 1986). The primary research design used was a correlational survey, which is appropriate for examining the connections among several variables in a natural setting with minimal researcher interference (Sekaran & Bougie, 2016). This research sought to examine the impact of behavioral and cultural influences on Generation Z's intention to reduce food waste in Indonesia.

Research Planning and Instrument Development

The instrument used was a structured questionnaire, developed to assess variables based on the TPB, namely attitude, subjective norms, and PBC, along with two additional constructs, connection with religious values and traditional values, to measure agreement, a seven-point Likert scale was administered, enabling participants to rate their responses to multiple statements (Joshi et al., 2015). The scale ranged from 1 ("strongly disagree") to 7 ("strongly agree"), providing greater granularity and reliability compared to a 5-point scale.

Population and Sampling

The research population consisted of Generation Z in Indonesia, defined by BPS (2020) as individuals born between 1996 and 2012. Respondents who fulfilled certain criteria were chosen using purposive sampling, a type of non-probability sampling method, in this case, individuals aged 12 to 27 residing in Jakarta, Bandung, Bogor, Surabaya, and Malang. Accordingly, respondents were required to answer two screening questions: "I am... years old" with an acceptable range between 16 and 23, and "Domicile" with options including Jakarta, Bandung, Bogor, Surabaya, Malang, or Other. If a respondent indicated an age below 16 or above 23, or selected a domicile outside the specified cities, they were directed to the final section of the questionnaire and did not proceed further.

Data Collection and Analysis

Data collection was carried out over four weeks using Google Forms, a practical platform for broad and accessible online survey distribution. The survey was distributed in Jakarta, West Java, and East Java, as these provinces represent the largest concentration of food providers and exhibit the highest levels of internet penetration (BPS, 2023; APJII, 2023). These conditions made them particularly suitable for reaching digitally active members of Generation Z. The required sample size was calculated using G*Power software to guarantee predictive accuracy, with parameters set at effect size = 0.15, α error = 5%, power = 0.95, and five predictors (Hair Jr et al., 2022). The calculation indicated a minimum sample of 138 respondents, and therefore 200 questionnaires were distributed.

Descriptive statistics were employed to outline respondent demographics and survey results, utilizing measures such as mean, median, standard deviation, and frequency distributions to present a summary of the dataset (Sekaran & Bougie, 2016). For hypothesis testing, the main analytical technique employed was PLS-SEM, carried out using SmartPLS software. This approach is particularly appropriate for predictive purposes and for contributing to theoretical development, especially when working with complex conceptual frameworks and small to medium sample sizes (Hair et al., 2022). The analytical procedure consisted of two major steps: assessing the measurement model (outer model) and evaluating the structural model (inner model). In the measurement model assessment, the focus was on indicator loadings, internal consistency reliability measured by Composite Reliability (CR) and Cronbach's Alpha, convergent validity via Average Variance Extracted (AVE), and discriminant validity using the Heterotrait-Monotrait (HTMT) ratio. For the structural model, the analysis concentrated on determining the coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), collinearity through the Variance Inflation Factor (VIF), model fit via the Standardized Root Mean Square Residual (SRMR), and hypothesis testing using a bootstrapping method (Hair et al., 2022). The use of a thorough methodological strategy improved the reliability and validity of the findings, facilitating a clearer understanding of the cultural and psychological determinants behind Generation Z's intention to reduce food waste in Indonesia.

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RESULTS and DISCUSSION

Respondents' Demographic

A total of 192 valid responses were obtained from Generation Z participants aged 18 to 23. With most respondent ages ranging from 21 to 23, the respondents were mostly in the final years of their undergraduate education. Regarding gender distribution, the sample showed a slight predominance of females, comprising 54.17%, compared to 45.83% males. Most respondents (89.06%) identified as Muslim, reflecting Indonesia's dominant religious demographic. The majority were students (73.44%), and the rest included freelancers, entrepreneurs, and a small number of employed individuals, illustrating the sample's academic and early-career orientation. Geographically, respondents were primarily from Jakarta (43.75%), followed by Malang (27.60%), with others from Bogor, Surabaya, and Bandung, ensuring representation from both urban and educational hubs. Income-wise, 64.58% of participants reported earning less than 3 million rupiah per month, consistent with their student status, while no respondents reported high-income brackets. Educationally, most held or were pursuing a Bachelor's degree (78.13%), further supporting the relevance of this group to studies on sustainability and food waste behavior.

Table 1. Respondents' Demographic

Demographic Profile		Frequency	Percentage (%)
Age	18	5	2,60%
	19	6	3,13%
	20	29	15,10%
	21	51	26,56%
	22	54	28,13%
	23	47	24,48%
Gender	Male	88	45,83%
	Female	104	54,17%
Religion	Islam	171	89,06%
	Christian	13	6,77%
	Catholic	6	3,13%
	Hindu	2	1,04%
Occupation	Student	141	73,44%
	State-Owned Company Employee	6	3,13%
	Private Company Employee	6	3,13%
	Entrepreneur	13	6,77%
	Freelance	20	10,42%
	Housewife	6	3,13%
Domicile	Jakarta	84	43,75%
	Bandung	9	4,69%
	Bogor	31	16,15%
	Surabaya	15	7,81%
	Malang	53	27,60%
Monthly Income	Less than IDR 3.000.000	124	64,58%
	IDR 3.000.000 – IDR 8.000.000	62	32,29%
	IDR 9.000.000 – IDR 13.000.000	6	3,13%
Education	High School	31	16,15%
	Diploma	10	5,21%
	Bachelor Degree	150	78,13%

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Master Degree	1	0,52%

Outer Model Evaluation (Measurement Model)

The outer model was evaluated to determine the reliability and validity of the constructs, considering factor loadings, internal consistency, convergent validity, and discriminant validity. The analysis, carried out with the PLS-SEM algorithm in SmartPLS, demonstrated that outer loading values across all constructs met acceptable standards: Attitude (0.665–0.782), Subjective Norm (0.679–0.809), PBC (0.730–0.853), Religious Value (0.620–0.801), Traditional Value (0.658–0.855), and Intention (0.718–0.821). Although most items met the required thresholds, several indicators, namely ATT6, ATT7, PBC4, RV1, RV3, RV7, RV11, and TV1, were removed due to insufficient loading values. The reliability assessment further supported the consistency of the constructs, as Cronbach's Alpha and Composite Reliability values were mostly above the recommended cutoff points. Even though Cronbach's Alpha for PBC (0.685) and Intention (0.650) fell slightly below 0.7, they are considered satisfactory. All constructs showed strong reliability, including Attitude (α = 0.787, CR = 0.854), Subjective Norm (α = 0.848, CR = 0.873), PBC (α = 0.685, CR = 0.827), Religious Value (α = 0.833, CR = 0.874), Traditional Value (α = 0.764, CR = 0.848), and Intention (α = 0.650, CR = 0.808). The measurement of convergent validity using Average Variance Extracted (AVE) yielded satisfactory findings, as each construct had an AVE greater than 0.5. This demonstrates that the indicators are adequate reflections of their respective latent constructs, confirming the model's reliability and validity and allowing further analysis to proceed.

Table 2. Outer Model Evaluation

Construct	Items	Loadings	Cronbach's Alpha	Composite Reliability	AVE
ATT	ATT1	0,739	0,787	0,854	0,540
	ATT2	0,782			
	ATT3	0,665			
	ATT4	0,739			
	ATT5	0,744			
SN	SN1	0,784	0,848	0,873	0,534
	SN2	0,686			
	SN3	0,809			
	SN4	0,710			
	SN5	0,679			
	SN6	0,707			
PBC	PBC1	0,766	0,685	0,827	0,615
	PBC2	0,853			
	PBC3	0,730			
RV	RV2	0,620	0,833	0,874	0,500
	RV4	0,698			
	RV5	0,801			
	RV6	0,640			
	RV8	0,695			
	RV9	0,721			
	RV10	0,761			
TV	TV2	0,747	0,764	0,848	0,585
	TV3	0,786			
	TV4	0,658			
	TV5	0,855			
INT	INT1	0,718	0,650	0,808	0,584
	INT2	0,750			
	INT3	0,821			

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Discriminant Validity

The following analysis concentrated on evaluating the discriminant validity of all constructs. Discriminant validity confirms that each construct reflects a unique concept and does not significantly overlap with other constructs (Hair et al., 2022). If discriminant validity is not adequately confirmed, it can result in redundancy and potential inaccuracies in the analysis of the structural model. To ensure discriminant validity, the Heterotrait–Monotrait (HTMT) ratio was applied in this study, comparing average correlations of indicators between constructs against correlations within constructs. As noted by Hair et al. (2022), a value under 0.90 for each construct pair is advised to guarantee adequate discriminant validity. The evaluation found that every HTMT value fell within acceptable limits, demonstrating that the constructs are clearly differentiated and that the model has satisfactory discriminant validity. The comprehensive results are provided in Table 3.

Table 3. Discriminant Validity: HTMT Ratio

Construct	ATT	SN	PBC	RV	TV	INT
ATT						
SN	0,333					
PBC	0,091	0,267				
RV	0,312	0,574	0,256			
TV	0,248	0,183	0,382	0,220		
INT	0,454	0,365	0,444	0,465	0,400	

Based on the HTMT ratio results, discriminant validity has been successfully confirmed in this study. This result suggests that each construct is theoretically distinct and represents a unique dimension of the model. With discriminant validity established, the analysis can move forward to the next phase, evaluating the structural model. Figure 2 illustrates the measurement model produced using the PLS algorithm.

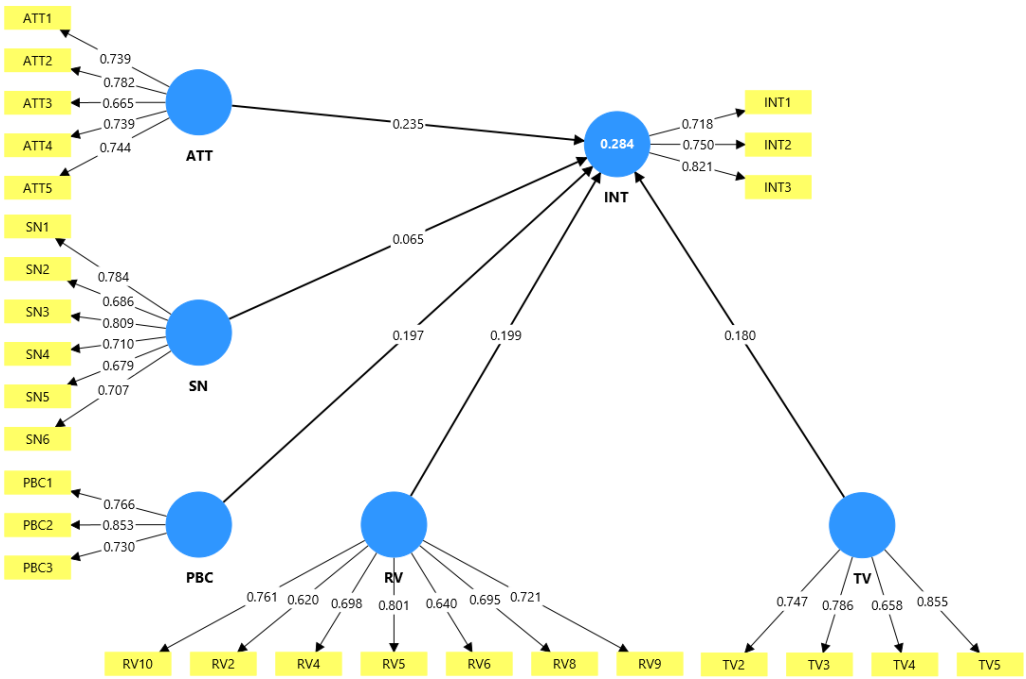

Figure SEQ Figure * ARABIC 2 - PLS Algorithm Measurement

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Inner Model Evaluation (Structural Model)

The structural model assessment aims to evaluate the predictive accuracy of the proposed model by examining key parameters, including R^2, f^2, and Q^2. These indicators provide insight into how well the model explains and predicts the endogenous constructs. The analysis further involves examining collinearity statistics to identify any potential multicollinearity among the predictor variables, alongside evaluating the model fit to assess how accurately the model represents the observed data. The assessment of the structural model ultimately concludes with testing the proposed hypotheses (Hair et al., 2022).

Predictive Model Assessment

The predictive model was initially assessed using the R^2 statistic, which indicates how much of the variance in the dependent variable can be accounted for by the independent variables. Hair et al. (2022) suggest that R^2 values of 0.25, 0.50, and 0.75 represent weak, moderate, and strong explanatory power, respectively. In consumer behavior research, even an R^2 of 0.20 is regarded as significant (Hair et al., 2017). In this study, the model's R^2 of 0.284 indicates that it accounts for roughly 28.4% of the variance, reflecting a satisfactory explanatory power. The effect size (f^2) was then analyzed to evaluate the individual contributions of independent variables. Hair et al. (2022) classify f^2 values of 0.02, 0.15, and 0.35 as small, medium, and large. In this research, the f^2 values for the paths ATT→INT (0.066), SN→INT (0.004), PBC→INT (0.047), RV→INT (0.041), and TV→INT (0.040) range from negligible to small, suggesting that each predictor has a modest effect on intention. To further assess the predictive relevance of the model, the Q^2 value is calculated through a blindfolding method, which systematically omits parts of the data to evaluate prediction performance. A Q^2 value greater than zero indicates that the model is predictive. In this research, the Q^2 value of 0.198 suggests the model can effectively forecast the target construct. The variance inflation factor (VIF) is used to detect multicollinearity among predictor variables, with values above 1 indicating moderate but acceptable correlations. Additionally, model fit is evaluated with the SRMR (Standardized Root Mean Square Residual), a crucial indicator in Structural Equation Modeling that measures the average discrepancy between observed and predicted correlations. Values of SRMR below 0.08 generally indicate a good fit, and a value of zero denotes a perfect fit (Hair et al., 2022). Taken together, the R^2, f^2, Q^2, VIF, and SRMR results suggest that the model achieves satisfactory predictive accuracy, effect size, and overall fit. A summary of these results is shown in Table 4

Table 4. Predictive Model Assessment

Relationship	R^2	Q^2	f^2	Effect Size	VIF	Model Fit (SRMR)
ATT → INT			0,066	Small Effect	1,175	
SN → INT			0,004	No Effect	1,450	
PBC → INT	0,284	0,198	0,047	Small Effect	1,160	0,076
RV → INT			0,041	Small Effect	1,346	
TV → INT			0,040	Small Effect	1,132	

Hypotheses Testing

The hypothesis testing results of this study indicate that one hypothesis, H2 (SN→INT), was not supported: H2 (SN→INT; t = 0,894, p = 0,372). In contrast, the remaining four hypotheses were supported by the data: H1 (ATT→INT; t = 3,742, p = 0,000); H3 (PBC→INT; t = 2,695, p = 0,007); H4 (RV→INT; t = 2,441, p = 0,015); H5 (TV→INT; t = 2,696, p = 0,007). A summary of these findings is presented in Table 5.

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Table 5. Hypotheses Testing Result

Hypotheses	Relationship	Path Coefficient	T Statistics	P Values	Supported
H1	ATT → INT	0,235	3,742	0,000	Yes
H2	SN → INT	0,065	0,894	0,372	No
H3	PBC → INT	0,197	2,695	0,007	Yes
H4	RV → INT	0,199	2,441	0,015	Yes
H5	TV → INT	0,180	2,696	0,007	Yes

The hypothesis testing results demonstrate that four out of five proposed relationships significantly influence Generation Z's intention to minimize food waste. Attitude plays a key role, indicating that when individuals view food waste reduction as meaningful; financially, ethically, and environmentally; they are more likely to commit to such behavior, reinforcing findings from prior studies. PBC also has a strong influence, suggesting that a person's confidence in their capability to handle food buying, storing, and consumption is associated with stronger intentions to reduce food waste, and may even inspire entrepreneurial action within the circular economy. Moreover, connections with religious and traditional values significantly shape food waste reduction intentions, showing that when Gen Z internalizes teachings of moderation, gratitude, and resource respect, whether rooted in faith or cultural heritage, they tend to be more willing to engage in sustainable behaviors within their household. In contrast, subjective norm was found to be non-significant, implying that peer or social pressure has little effect on their behavior in this context. This may reflect a lack of strong normative cues or collective expectations regarding food waste reduction within their immediate social environments. Collectively, these results underscore the significance of personal beliefs and value systems, rather than external social influences in driving sustainable consumption behaviors among Indonesia's urban Gen Z population.

CONCLUSION

According to the findings of this study, which analyzed data from 192 valid respondents through the PLS-SEM method, under the title *"Understanding the Intention of Generation Z to Reduce Food Waste in Indonesia: A Study Integrating the Theory of Planned Behavior and Connection with Indigenous Cultural Values"*, The study explores how both psychological and cultural elements affect Generation Z's intentions on food waste reduction, which remain a key factor in worldwide food loss. Results reveal that attitude, perceived behavioral control (PBC), and the integration of religious and traditional values significantly promote intentions to curb food waste. These results highlight how both personal motivation and culturally embedded norms contribute to sustainable behavioral choices.

From the standpoint of attitude, individuals who view reducing food waste as significant tend to develop stronger intentions to engage in such behavior, as this behavioral tendency emerges from their conscious awareness of the broader consequences of wasting food. For many Generation Z households, this translates into financial awareness, since food waste directly equals monetary loss, thereby motivating improved meal planning, mindful purchasing, and effective storage. In addition to economic factors, ethical considerations like fairness and empathy, especially regarding global hunger, also reinforce their dedication to minimizing waste. Their environmental awareness also serves as a major factor, as they recognize that food waste drives greenhouse gas emissions, excessive water consumption, and resource depletion. This awareness encourages practices such as composting, reusing leftovers, and supporting sustainable food systems. A positive mindset not only influences household-level behaviors but also inspires entrepreneurial innovation in handling sub-optimal products like near-expired items. Generation Z can transform these into redistributed or value-added goods, such as dried foods, fermented products, or compost, through collaborations with retailers, hotels, and restaurants. These initiatives align with the principles of the circular economy and contribute to all three dimensions of sustainability: economic, social, and environmental. Furthermore, these practices align with national strategies, including Bappenas' food waste reduction agenda, through the strengthening of redistribution

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efforts and community-driven programs, such as Dapur Pangan FOI and Kebun Pangan Keluarga (KEPAK).

Regarding PBC, the study indicates that people who perceive themselves as competent in handling food-related actions, like appropriate storage, portion management, and meal planning, generally exhibit stronger intentions and are more likely to engage in behaviors that reduce food waste. This is especially crucial in household settings, where day-to-day decisions about buying, cooking, and consuming food determine waste volumes. Confident individuals typically adopt deliberate strategies, including checking expiration dates, prioritizing perishable items, and creatively reusing leftovers. Beyond household practices, PBC also has significant implications for sub-optimal product utilization, particularly among Generation Z with entrepreneurial interests in food waste reduction. Those who view themselves as socially, mentally, and logistically prepared are more willing to launch or participate in ventures that collaborate with hotels, restaurants, or retailers to collect and repurpose surplus or nearly expired products. Such initiatives are consistent with the Bappenas Low Carbon Development Strategy, which promotes technology-driven collaboration, surplus food redistribution, and public awareness campaigns through platforms such as *Mitra 100% Merdeka* and *Mentari Bangsaku*.

The strong influence of religious values highlights the lasting role of faith-based principles in shaping everyday practices. Many religious traditions emphasize gratitude, moderation, and stewardship of resources, principles that directly align with the objectives of food waste reduction. Teachings rooted in faith frequently promote simplicity and mindfulness in consumption, encouraging individuals to avoid overindulgence. For members of Generation Z who closely identify with their religion, this sense of responsibility often becomes an intrinsic driver to minimize waste, viewing it not merely as a practical necessity but as a reflection of their spiritual commitment. In a wider business context, religious values also inform ethical choices, such as prioritizing food donations or supporting affordable food distribution for vulnerable communities. This resonates with the initiatives of Bappenas in collaboration with the Foodbank of Indonesia, particularly in promoting community education and food justice.

Equally significant are traditional values, which remain deeply embedded in many Indonesian households. Cultural traditions often encourage thrift, respect for food, and the transmission of intergenerational wisdom. Practices such as reusing leftovers or sharing meals with neighbors naturally reinforce sustainable consumption, even without formal education in sustainability. When effectively mobilized, these values can serve as the foundation for social enterprises or small-scale businesses engaged in food recovery or composting, reflecting Bappenas' emphasis on integrating local wisdom into the achievement of SDG 12.3.1. This is exemplified in the KEPAK program, where composting and community gardening transform food scraps into resources of value.

Conversely, subjective norms were found to exert no significant impact on the food waste reduction intention. This indicates Generation Z does not yet perceive strong social pressure or peer expectations related to waste reduction. Nevertheless, this presents an opportunity for strategic interventions through public campaigns, influencers, and educators, particularly within digital platforms where Gen Z is most engaged. By spotlighting businesses that creatively utilize near-expired products or operate zero-waste kitchens, media efforts can generate constructive peer pressure and position these practices as socially valued norms. Although currently underdeveloped as a motivational driver, subjective norms hold substantial potential for future engagement. Effective strategies should therefore integrate educational initiatives, value-driven messages, and business-supportive policies designed to resonate with Gen Z's lived experiences at both household and entrepreneurial levels. Such an approach can encourage sustainable practices and foster innovative business models that benefit individuals while advancing broader goals of social equity and environmental resilience.

This study also acknowledges certain limitations that highlight pathways for further research. A considerable proportion of variance in food waste reduction intention remains unexplained within the current TPB-based model, underscoring the importance of extending the framework. Future research could achieve a more comprehensive understanding of the psychological and contextual factors influencing Generation Z's intentions by including additional constructs such as moral obligation, environmental concern, digital influences, and emotional factors. Furthermore, expanding the geographic coverage of respondents to encompass diverse regions across Indonesia would enrich the analysis by capturing variations in cultural practices and socioeconomic conditions that may influence food waste behaviors.

REFERENCES

Abdelradi, F. (2018). Food waste behaviour at the household level: A conceptual framework. *Waste Management, 71*, 485–493. https://doi.org/10.1016/j.wasman.2017.10.001

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Process*, 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Alhaddi, H. (2015). Triple Bottom Line and Sustainability: A Literature Review. *Business and Management Studies, 1*(2), 6. https://doi.org/10.11114/bms.v1i2.752

Anjaka, R. G. (2022). *The Effect of Attitude, Subjective Norm, Perceived Behaviour Control on Intention to Reduce Food Waste And Food Waste Behaviour*.

APJII. (2023). *Survei Penetrasi & Perilaku Internet 2023*.

BPS. (2020). *Jumlah dan Distribusi Penduduk*. BPS.

Chakraborty, S., & Sadachar, A. (2023). Can a connection with the indigenous cultural values encourage sustainable apparel consumption? *Journal of Fashion Marketing and Management, 27*(1), 80–99. https://doi.org/10.1108/JFMM-07-2021-0191

Conner, M., & Armitage, C. J. (1988). Extending the Theory of Planned Behavior: A Review and Avenues for Further Research. *Journal of Applied Social Psychology, 28*(15), 1429–1464. https://doi.org/doi.org/10.1111/j.1559-1816.1998.tb01685.x

Elshaer, I., Sobaih, A. E. E., Alyahya, M., & Abu Elnasr, A. (2021). The impact of religiosity and food consumption culture on food waste intention in Saudi Arabia*. Sustainability (Switzerland), 13*(11). https://doi.org/10.3390/su13116473

Filimonau, V., Mika, M., Kubal-Czerwińska, M., Zajadacz, A., & Durydiwka, M. (2022). Religious values and family upbringing as antecedents of food waste avoidance. *Global Environmental Change, 75*. https://doi.org/10.1016/j.gloenvcha.2022.102547

Food and Agriculture Organization (FAO). (2023). *Hunger and food insecurity*. FAO.

Graham-Rowe, E., Jessop, D. C., & Sparks, P. (2015). Predicting household food waste reduction using an extended theory of planned behaviour. *Resources, Conservation and Recycling, 101*, 194–202. https://doi.org/10.1016/j.resconrec.2015.05.020

Hair, J., Hult, G., Ringle, C., et al. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). 2nd Edition, Sage Publications, Thousand Oaks.*

Hair, J. F., Hult, G. T., Ringle, C. M., & Sarstedt, M. (2022). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) Third Edition.*

Henning, G. (1986). Quantitative Methods in Language Acquisition Research. In *TESOL QUARTERLY* (Vol. 20, Issue 4).

Herdian, R., & Puspitasari, D. M. (2022). Pengaruh kualitas produk, diskon harga, dan Promosi terhadap keputusan pembelian. *Fair Value: Jurnal Ilmiah Akuntansi dan Keuangan*, *5*(4), 1777-1785.

Himawan, R. P., & Puspitasari, D. M. (2023). Pengaruh Dimensi Social Commerce Marketing Mix terhadap Customer Loyalty Pada Produk Thrift di Platform Instagram. *JIIP-Jurnal Ilmiah Ilmu Pendidikan*, *6*(2), 1317-1324.

Imtiyaz, H., Soni, P., & Yukongdi, V. (2021). Investigating the role of psychological, social, religious and ethical determinants on consumers' purchase intention and consumption of convenience food. *Foods, 10*(2). https://doi.org/10.3390/foods10020237

Iriyadi, Setiawan, B., & Puspitasari, R. (2023). Consumer intentions to reduce food waste in all-you-can-eat restaurants based on personal norm activation. *Heliyon, 9*(2). https://doi.org/10.1016/j.heliyon.2023.e13399

Joshi, A., Kale, S., Chandel, S., & Pal, D. (2015). Likert Scale: Explored and Explained. *British Journal of Applied Science & Technology, 7*(4), 396–403. https://doi.org/10.9734/bjast/2015/14975

KLHK, *Kementrian Lingkungan Hidup dan Kehutanan* (2021).

Mishra, P., Singh, N., Shrama, C., & Pathak, A. K. (2020). Landfill Emissions and Their Impact on the Environment. *International Journal of Engineering Research & Technology (IJERT), 9*(8). www.ijert.org

Ramli, N., Sharif, S. A. M., Bahari, N. S. M. S., Nawawi, W. N. W., & Kamal, M. H. M. (2023). Determining Factors Affecting Intention of Food Waste Recycling in Malaysia. *International Journal of Business and Technology Management, 5*, 96–107. https://doi.org/10.55057/ijbtm.2023.5.s1.9

Schrank, J., Hanchai, A., Thongsalab, S., Sawaddee, N., Chanrattanagorn, K., & Ketkaew, C. (2023). Factors of Food Waste Reduction Underlying the Extended Theory of Planned Behavior: A Study of

Consumer Behavior towards the Intention to Reduce Food Waste. *Resources, 12*(8). https://doi.org/10.3390/resources12080093

Seberini, A. (2020). Economic, social and environmental world impacts of food waste on society and Zero waste as a global approach to their elimination. *SHS Web of Conferences, 74*, 03010. https://doi.org/10.1051/shsconf/20207403010

Sekaran, U., & Bougie, R. (2016). *Research Methods for Business: A Skill-Building Approach*.

Sia Niha, S., Lopes Amaral, M. A., & Tisu, R. (2022). Factors Influencing Behavior to Reducing Household Food Waste in Indonesia. *KINERJA, 26*(1), 125–136. https://doi.org/10.24002/kinerja.v26i1.5493

Soorani, F., & Ahmadvand, M. (2019). Determinants of consumers' food management behavior: Applying and extending the theory of planned behavior. *Waste Management, 98*, 151–159. https://doi.org/10.1016/j.wasman.2019.08.025

Suratri, M. A. L., Putro, G., Rachmat, B., Nurhayati, Ristrini, Pracoyo, N. E., Yulianto, A., Suryatma, A., Samsudin, M., and Raharni. (2023). Risk Factors for Stunting among Children under Five Years in the Province East Nusa Tenggara (NTT), Indonesia. *International Journal of Environmental Research and Public Health, 20*, 1640. https://doi.org/10.3390/ijerph20021640

United Nations. (2023). *Ensure sustainable consumption and production patterns*. United Nasions.

Visschers, V. H. M., Wickli, N., & Siegrist, M. (2016). Sorting out food waste behaviour: A survey on the motivators and barriers of self-reported amounts of food waste in households. *Journal of Environmental Psychology, 45*, 66–78. https://doi.org/10.1016/j.jenvp.2015.11.007

Wajon, E., Richter, J., & Dahl, M. (2019). *Students' Intention to Reduce Food Waste An approach with an extended version of the Theory of Planned Behavior.* https://www.diva-portal.org/smash/record.jsf?pid=diva2:1335458

Wong, K., Seng, K., Rozana, N., Masdek, N., Sharifuddin, J., Teng, P. K., Li, W. W., & Song, L. K. (2021). Assessing Urban Households' Intention to Reduce Food Waste. In *MALAYSIAN JOURNAL OF CONSUMER AND FAMILY ECONOMICS* (Vol. 27).

Zong, Z., Liu, X., & Gao, H. (2023). Exploring the mechanism of consumer purchase intention in a traditional culture based on the theory of planned behavior. *Frontiers in Psychology, 14.* https://doi.org/10.3389/fpsyg.2023.1110191