

Tingkah Laku Pembelian Mahasiswa Institusi Pengajian Tinggi dalam Jualan Secara Langsung di Aplikasi Tiktok

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LINKING KNOWLEDGE, AWARENESS, AND SHOPPING HABITS: A PATHWAY TO REDUCING HOUSEHOLD FOOD WASTE

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Abstract

Household food waste poses a critical global issue with profound economic, environmental, and social impacts. In Malaysia, the problem has grown increasingly severe, underscoring the importance of understanding consumer behaviour as a basis for developing effective food waste reduction strategies. This study explores the role of knowledge and awareness of food waste and examines their relationship with consumers' shopping habits. Responses were obtained using an online questionnaire shared on social media, producing 719 valid responses using convenience and snowball sampling techniques. Descriptive results indicated a relatively high level of knowledge and awareness, with mean scores between 4.03 and 4.31. Correlation analysis using Spearman's rho revealed a moderate positive association between knowledge and awareness of food waste and shopping habits ($\rho = 0.443$, $p < 0.001$), indicating that consumers with greater knowledge and awareness are more likely to adopt mindful shopping behaviours, including meal planning and careful purchasing. These findings carry important implications for policymakers and educators in designing targeted interventions to encourage sustainable consumption and reduce household food waste in Malaysia.

Keywords: Awareness, Household food waste, Knowledge, Shopping habits.

Abstrak

Sisa makanan isi rumah merupakan isu global yang kritikal dengan implikasi ekonomi, alam sekitar dan sosial yang meluas. Di Malaysia, masalah ini semakin membimbangkan, sekali gus menekankan kepentingan memahami tingkah laku pengguna sebagai asas untuk merangka strategi pengurangan sisa makanan yang berkesan. Kajian ini meneliti peranan pengetahuan dan kesedaran terhadap sisa makanan serta hubungannya dengan tabiat membeli-belah pengguna. Maklum balas diperolehi melalui soal selidik dalam talian yang dikongsi menerusi media sosial, menghasilkan 719 respons sah menggunakan kaedah persampelan mudah dan

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rantaian salji. Hasil deskriptif menunjukkan tahap pengetahuan dan kesedaran yang agak tinggi dengan skor min antara 4.03 hingga 4.31. Analisis korelasi Spearman's rho menunjukkan hubungan positif sederhana antara pengetahuan dan kesedaran tentang sisa makanan dengan tabiat membeli-belah ($p = 0.443$, $p < 0.001$), yang menggambarkan bahawa pengguna yang mempunyai tahap pengetahuan dan kesedaran lebih tinggi cenderung mengamalkan pembelian berhemah seperti perancangan hidangan dan pembelian yang teliti. Dapatan ini memberikan implikasi penting kepada pembuat dasar dan pendidik dalam merangka intervensi yang disasarkan untuk menggalakkan penggunaan lestari dan mengurangkan sisa makanan isi rumah di Malaysia.

Kata kunci: Kesedaran, Sisa makanan isi rumah, Pengetahuan, Tabiat membeli-belah.

Introduction

Food waste has emerged as a pressing global issue with profound environmental, economic, and social consequences. In the Malaysian context, reports by SWCorp (2023) indicate that food constitutes the largest component of household waste streams. This is supported by a report of the National Security Council stating that Malaysians generate considerably more food waste compared to residents of other developed nations (MKN, 2022). While the Food and Agriculture Organisation (FAO, 2021) estimates that 17% of food produced globally is wasted at the retail and consumer levels, Malaysia alone discards approximately 4,046 tons of waste daily, of which nearly 10% comprises still-edible food. It is estimated that the amount of edible waste generated could feed around three million individuals three times a day (Dermawan, 2022). More recent statistics from the United Nations Environment Programme (UNEP) further highlight the severity of the problem, reporting that Malaysians produced approximately 8.3 million metric tons of food waste annually in 2023, with each individual contributing an average of 259.82 kg per year (Nizam, 2023).

Given that households account for the largest share of food waste, identifying the drivers of consumer-generated waste is essential for effective prevention strategies (Aydin & Yildirim, 2021). Read and Muth (2021) pointed out that food waste reduction initiatives generally seek not only to decrease waste but also to enhance the value households gain from their food purchases. Prior studies have frequently classified populations by demographic variables such as age, gender, or income to identify segments more prone to wasting food. However, while demographic information is relatively easy to obtain, Pearson and Amarakoon (2019) concluded that it often fails to sufficiently explain household food waste behaviours and offers limited guidance for designing effective interventions.

Understanding behavioural practices in reducing food waste begins with examining consumers' knowledge and awareness, since these factors can shape attitudes, decision-making, and everyday practices related to purchasing, storage, and food consumption. Deeper insights into these cognitive dimensions not only strengthen the evaluation of current food waste reduction initiatives but also inform the design of interventions that encourage mindful consumption and sustainable household behaviours. Building on this perspective, the present study investigates how knowledge and awareness shape food waste behaviours and explores their relationship with shopping habits among Malaysian consumers.

Literature Review

Definition of Household Food Waste

There is currently no universally accepted definition of household food waste. The absence of a standardised term can lead to ambiguity, particularly in classifying food consumed outside the home, such as at workplaces or schools (Ponis et al., 2017). Van Herpen et al. (2019) define household food waste as food suitable for consumption within the household but discarded uneaten. Building on this, Ponis et al. (2017) broaden the definition to encompass all categories of food intended for human consumption that are discarded, whether stored, expired, or spoiled. Similarly, Principato et al. (2020) emphasise that food waste refers to edible items discarded or spoiled at the consumer level, irrespective of the underlying causes.

Knowledge and Awareness of Food Waste

Knowledge of food waste refers to consumers' understanding of its causes, impacts, and management practices, while awareness includes the extent to which individuals perceive food waste as a personal and societal problem. In Türkiye, a study conducted by Erol et al. (2023) implied that the COVID-19 pandemic has heightened consumer awareness of food waste, thereby fostering more cautious food planning and consumption practices. Likewise, in the United States, consumers were reported to be willing to invest in technologies and packaging aimed at reducing food spoilage (Fennell et al., 2024).

In the Malaysian setting, a number of studies consistently reported high levels of public knowledge and awareness of food waste, particularly around its societal, environmental, and economic consequences. For example, in Selangor, Jarjusey and Chamhuri (2017) found substantial consumer awareness and understanding of food waste issues among household respondents, highlighting recognition of both financial and environmental implications. Similarly, a more recent study among a community in Bandar Puncak Alam, Selangor, also observed robust awareness and commitment to environmental sustainability (Mokhtar et al., 2023).

Although most studies suggest that higher levels of knowledge can contribute to reducing food waste, a persistent knowledge–action gap has been observed, as reported by Attiq et al. (2021) and Schmidt (2019). Recent research further confirms that while awareness campaigns may enhance perceptions, they do not necessarily lead to behavioural change in the absence of practical strategies (Wang et al., 2023). This limitation is evident in Malaysia, where food waste remains a significant issue despite ongoing awareness initiatives. For instance, Mokhtar et al. (2023) reported a weaker understanding of specific management methods, suggesting an emerging knowledge–practice gap. Analogously, Phooi et al. (2022) observed that while 95% of Malaysian respondents recognised food waste as a serious issue, many still discarded edible food, illustrating the persistence of the awareness–practice gap. In contrast, evidence from countries such as Turkiye and the United States, as highlighted by Erol et al. (2023) and Fennell et al. (2024), suggests that awareness is more effectively translated into preventive behaviours, highlighting Malaysia’s unique challenge in converting knowledge into sustainable consumer practices.

Shopping Habits and Food Waste

Globally, shopping habits have been identified as a central driver of household food waste. Empirical evidence indicates that practices such as preparing shopping lists, purchasing perishable goods in reasonable quantities, and avoiding impulse buying are strongly linked to reduced food waste, as reported by Filimonau and Coteau (2019) in hospitality operations and by van der Werf et al. (2022) among single-family households in Ontario. Other studies highlight that sustainable shopping practices not only curb waste but also serve as mediating mechanisms linking knowledge and awareness to actual behaviour (Stancu et al., 2016; Schanes et al., 2023).

In the Malaysian context, recent findings reinforce the importance of shopping habits or practices in shaping food waste behaviour. For example, Haron et al. (2023) demonstrated that Klang Valley households reduced food waste primarily through mindful expenditure and reuse behaviours, highlighting the importance of meticulous planning and budgeting. Extending this evidence, Nazli et al. (2024) posited that structured shopping habits and the reuse of leftovers were significant predictors of reduced food waste, with perceived behavioural control mediating these effects.

Linking Knowledge, Awareness and Shopping Habits

In general, knowledge and awareness of food waste have consistently been identified as important precursors of sustainable consumer behaviour. Several studies demonstrate that individuals with higher awareness of the environmental and social consequences of food waste are more likely to adopt mindful consumption practices, including structured shopping practices and meal planning. For instance, research conducted in the United States found that cognitive factors such as awareness of

environmental consequences, coupled with emotional drivers like anticipated guilt, significantly reduced food waste through behaviours such as reuse and recycling (Attiq et al., 2021). In the same vein, in Malaysia, a study among hospitality students observed that higher levels of environmental knowledge were positively associated with food waste reduction behaviours, indicating that awareness can be translated into pro-sustainability actions even among younger individuals (Rani et al., 2022).

Shopping habits have been identified as a critical mediating factor in the knowledge–behaviour relationship. Empirical evidence suggests that individuals who are more aware of food waste tend to plan their purchases meticulously, avoid overbuying, and reuse leftovers more consistently. For instance, in Selangor, Jarjusey and Chamhuri (2017) reported that while households demonstrated strong awareness of food waste and its financial implications, they often underestimated their own contribution to waste relative to others. This “perception gap” suggests that awareness must be coupled with behavioural interventions such as structured shopping practices to effectively reduce waste. Supporting this, Nazli et al. (2024) applied the Theory of Planned Behaviour (TPB) in the Malaysian context and confirmed that shopping practices and perceived behavioural control were strong predictors of reduced household food waste.

Overall, the interplay between knowledge, awareness, and shopping habits provides a behavioural pathway to understanding food waste reduction. Schanes et al. (2023) suggested that consumers with higher knowledge and awareness are more likely to engage in responsible shopping practices, thereby reducing household food waste. In line with this, Nabi (2021) demonstrated that in Australia, shopping routines such as planning purchases and managing frequency were significantly linked to the intensity of household food waste. In Malaysia, Nazli et al. (2024) concluded that shopping routines, alongside perceived behavioural control, significantly influenced wasteful behaviours, reinforcing the idea that awareness and knowledge are integral to shaping everyday food management practices. While heightened knowledge and awareness provide the foundation for waste reduction, the adoption of sustainable shopping routines such as meal planning, mindful expenditure, and reuse behaviours forms the behavioural pathway that ultimately shapes household food waste outcomes. However, the extent to which this relationship applies to Malaysian consumers remains underexplored. Therefore, this study aims to examine the significance of knowledge and awareness of food waste and to investigate the association between levels of knowledge and awareness and shopping habits among Malaysian consumers. Accordingly, the study seeks to answer the following questions: (1) What is the level of knowledge and awareness of food waste among consumers? (2) Is there a significant relationship between consumers’ knowledge and awareness of food waste and their shopping habits? The significance of this study lies in its contribution to understanding how knowledge and awareness of food waste translates into consumer behaviour, offering insights that can inform targeted

interventions, educational campaigns, and policy measures aimed at reducing food waste at the household level. By linking knowledge and awareness with actual shopping practices, the findings provide a foundation for designing more effective strategies that not only raise awareness but also promote sustainable household practices.

Methodology

Research Design and Data Collection

A quantitative, cross-sectional design was employed to examine the association between knowledge and awareness of food waste and shopping habits. Responses were collected through an online questionnaire administered via Google Forms between October 2024 and January 2025. The survey link was disseminated through social media platforms, including Facebook, WhatsApp, and Instagram, using a combination of convenience and snowball sampling techniques. The respondents were encouraged to further share the survey link within their networks. This approach enabled broader participation across diverse demographic groups nationwide through digital networks while minimising costs. Google Forms was employed as the survey tool because of its efficiency in distributing concise questionnaires, generating descriptive charts, and facilitating data extraction for spreadsheet analysis (Nayak & Narayan, 2019).

Sampling Size Determination

The target population in the present study comprised Malaysian adults aged 18 years and above. The target population was estimated at 26,656,579 in mid-2025 (DOSM, 2025). Therefore, Cochran's (1977) formula was employed to determine the minimum required sample size. Using a 95% confidence level ($Z = 1.96$), an assumed population proportion of 0.5 ($p = 0.5$), and a 5% margin of error ($e = 0.05$), the finite population correction was applied as follows:

$$n = \frac{n_0}{1 + \frac{n_0 - 1}{N}} = \frac{384.16}{1 + \frac{384.16 - 1}{26,656,579}} = 384.15 \approx 385$$

Accordingly, a minimum sample of 385 adults was deemed sufficient to represent the population in this study.

Instrument Development and Structure

Before participation, respondents were required to provide informed consent, confirming that they were at least 18 years old and voluntarily agreeing to participate after being fully informed about the purpose and implications of the study.

The questionnaire for this study was originally developed in English and subsequently translated into Malay to ensure accessibility for respondents. The questions on knowledge and awareness of food waste were adapted from Jarjusey and Chamhuri (2017) and Phooi et al. (2022). Knowledge and awareness of food waste were combined into a single construct because the two are conceptually interrelated, with awareness generally presupposing a degree of knowledge (Visschers et al., 2016). This integration also avoids redundancy in measurement and aligns with previous studies that have treated them as a unified factor when examining determinants of food waste behaviour (Attiq et al., 2021; Jarjusey & Chamhuri, 2017; Qi & Roe, 2016). On the other hand, questions on shopping habits were adapted from Jürgens (2023).

The instrument consisted of three sections: (I) demographic profile, (II) knowledge and awareness of food waste, and (III) shopping habits. The demographic section included questions on gender, age, marital status, ethnicity, and religion. Knowledge and awareness of food waste were measured using nine items addressing environmental, social, and economic dimensions, while shopping habits were assessed using five items. Both constructs in sections (II) and (III) were measured on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree").

Data Analysis

In this study, data were analysed using IBM SPSS 26. The questionnaire was reviewed by two experts in survey methodology to ensure content validity. Construct validity was assessed using exploratory factor analysis (EFA), which indicated sampling adequacy ($KMO = 0.936$; Bartlett's test, $p < 0.001$). All factor loadings exceeded 0.50, supporting convergent validity. Reliability was evaluated using Cronbach's alpha, with all subscales demonstrating good to excellent internal consistency ($\alpha = 0.879$ – 0.929).

Descriptive analyses were conducted to report the frequency and percentage distributions of respondents by gender, age, marital status, ethnicity, and religion. Measures of central tendency (mean) and variability (standard deviation, SD) were also used to assess the level of knowledge and awareness of food waste, addressing the first research objective, which was to examine the significance of knowledge and awareness in relation to food waste.

To address the second objective, which was to investigate the association between knowledge and awareness of food waste and consumers' shopping habits, Spearman's rho correlation was employed in this study because the data were obtained through non-probability sampling methods, which may not ensure the normal distribution of variables. Furthermore, this non-parametric test was deemed appropriate due to its fewer assumptions compared to parametric alternatives.

Findings

Demographic Profile

A total of 775 responses were collected; however, only 719 were retained for analysis, as the remaining were excluded due to straight-lining patterns that could compromise construct validity and reliability. Missing data were addressed using pairwise deletion, in accordance with the recommendations of Pallant (2020). Table 1 presents the demographic profile of the respondents. The majority were female (60.9%), single (64.5%), Muslim (65.0%), and aged 30 years or below (67.1%). In terms of ethnicity, most respondents identified as Bumiputera (88.7%), followed by Chinese (6.3%), Indian (2.6%), and other ethnic groups (2.4%).

Table 1: Demographic Profile of the Respondents (N=719)

Variables	Frequency	Percentage (%)
Gender		
Male	281	39.1
Female	438	60.9
Age		
20 years old and below	139	19.3
21 – 30 years old	344	47.8
31 – 40 years old	106	14.7
41 – 50 years old	96	13.4
51 years old and above	34	4.7
Marital status		
Single	464	64.5
Married	237	33.0
Divorced/Separated/Widowed	18	2.5
Ethnicity		
Bumiputera	638	88.7
Chinese	45	6.3
Indian	19	2.6
Others	17	2.4
Religion		
Islam	467	65.0
Buddhism	26	3.6
Christianity	208	28.9
Hinduism	14	1.9
Others	4	0.6

Level of Knowledge and Awareness of Food Waste

Overall, the composite mean score for knowledge and awareness of food waste was 4.21 (SD=0.75), indicating a high overall level among respondents. As presented in

Table 2, the item means ranged from 4.03 to 4.31, with standard deviations between 0.886 and 0.995. The highest level of agreement was observed for the societal impact of food waste ("I am aware that food waste impacts society"), while the lowest was reported for familiarity with awareness campaigns ("I am familiar with awareness campaigns regarding food waste"). This pattern suggests that respondents are generally well-informed about the broader economic, environmental, and social consequences of food waste, likely due to increased public discourse, media coverage, and educational content highlighting these issues in Malaysia. However, the relatively lower familiarity with awareness campaigns may reflect limited visibility, reach, or effectiveness of such initiatives, indicating that many campaigns have not penetrated the wider population despite their importance.

Table 2: Level of Knowledge and Awareness of Food Waste (N=719)

Statements	Percentage					Mean	SD
	1	2	3	4	5		
I know and aware that food waste causes economic problems	2.2	4.2	13.6	35.5	44.5	4.16	.962
I know and aware that reducing food waste can reduce environmental hazards	2.1	3.3	12.1	30.3	52.2	4.27	.944
I know and aware that food waste impacted the society	1.7	2.8	11.3	31.0	53.3	4.31	.900
I know and aware that food waste causes environmental pollution	2.1	3.2	11.4	31.3	52.0	4.28	.934
I know and aware food waste are wasting farmer planting efforts	1.8	5.0	14.5	32.4	46.3	4.16	.972
I know and aware food waste gives a bad conscience	2.1	3.2	13.2	32.8	48.7	4.23	.940
I know and aware food waste increases the food production costs	1.9	5.3	15.0	32.8	44.9	4.13	.984
I know and aware food waste is a serious issue that must be solved as soon as possible	1.5	2.9	11.0	34.2	50.3	4.29	.886
I know and familiar with awareness campaign regarding food waste	2.4	4.7	19.5	34.1	39.4	4.03	.995

Association between Level of Knowledge and Awareness of Food Waste and Shopping Habits

As shown in Table 3, Spearman's rho indicated a moderate positive correlation between knowledge and awareness of food waste and shopping habits ($\rho = 0.443$, $p < 0.001$). This result suggests a significant association between consumers' knowledge and awareness level and their shopping practices. Squaring the coefficient ($0.443 \times 0.443 = 0.196249$) suggests that approximately 19.6% of the

variance in ranked shopping-habit scores is shared with ranked knowledge/awareness scores — indicating a meaningful but not dominant relationship. Importantly, correlation does not imply causation; other factors such as price sensitivity, time constraints, availability, and social norms likely account for much of the remaining variation in shopping behaviour.

Table 3: Spearman's Correlation Between Knowledge and Awareness of Food Waste and Shopping Habits

Variables	1	2
1. Knowledge and awareness of food waste	-	
2. Shopping habits	.443**	-

** Significant correlation at the 0.01 level (2-tailed)

Discussion

This study shows that respondents possessed a high level of knowledge and awareness of food waste, particularly its social, environmental, and economic consequences. They recognised both personal and societal impacts, including environmental hazards and agricultural resource wastage, reflecting a multidimensional understanding of the issue. However, awareness of formal campaigns was comparatively lower, suggesting gaps in outreach and communication strategies, consistent with prior findings (Jarjusey & Chamhuri, 2017; Mokthar et al., 2023; Phooi et al., 2022).

Despite this strong knowledge and awareness, behavioural change remained inconsistent, confirming the knowledge/awareness–action gap highlighted in previous studies (Phooi et al., 2022; Schmidt, 2019; Wang et al., 2023). One explanation lies in the design of Malaysian awareness campaigns, which often focus on information dissemination rather than addressing underlying behavioural drivers. As argued by Mustafa et al. (2022), attitudes, norms, and perceived behavioural control play a critical role in shaping behaviour, yet campaigns tend to neglect these psychosocial factors.

Contextual barriers further limit the translation of knowledge and awareness into practice. Household dynamics, limited storage, and cultural tendencies to over-purchase, particularly during festivities, make wasteful practices difficult to avoid. Without addressing these everyday constraints, interventions remain less effective. Additionally, campaigns often lack continuity, visibility, and cultural resonance, which reduces their ability to connect with younger demographics who formed the majority of this study's sample.

The results also confirm that knowledge and awareness are positively associated with responsible shopping habits, such as planning purchases and avoiding overbuying.

This aligns with findings from Nabi (2021) in Australia and Nazli et al. (2024) in Malaysia, who emphasised the role of shopping routines and perceived behavioural control in food waste prevention. Similarly, Aydin and Yildirim (2021) found that consumer awareness reduces avoidable waste, reinforcing that cognitive factors can enable sustainable consumption. However, as highlighted in the literature, awareness does not guarantee action when behaviours are mediated by social norms and structural barriers.

Taken together, these findings suggest that awareness campaigns must evolve from being primarily informational to incorporating interactive, participatory, and behaviourally informed strategies. Interventions such as gamified platforms, educational programs, and behavioural nudges show promise in bridging the gap between knowledge and action, especially among younger populations (Tan et al., 2024; Li et al., 2023; Zhang et al., 2025).

Conclusion, Implications/Contributions, Limitations and Future Research

This study highlights a paradox – Malaysians exhibit strong knowledge and awareness of food waste but demonstrate weaker behavioural follow-through, underscoring the persistence of the knowledge–action gap. While awareness supports responsible shopping habits, broader structural, cultural, and psychosocial factors often hinder consistent practice.

The findings make two key contributions. First, they show that knowledge and awareness remain critical but insufficient drivers of behavioural change, echoing global evidence on the value–action gap. Second, they emphasise the importance of designing interventions that combine information with practical, experiential, and context-sensitive strategies. For Malaysia, this means tailoring campaigns to younger populations through innovative tools such as gamification, immersive education, and social norm messaging, while also addressing cultural and structural barriers. In sum, reducing household food waste requires shifting from traditional awareness campaigns toward integrated approaches that link cognitive understanding with tangible behavioural and structural supports.

This study is subject to several limitations. The reliance on self-reported measures may have introduced social desirability bias, with respondents potentially overstating their awareness. Furthermore, the cross-sectional nature of the data restricts the ability to track changes in awareness and behaviours over time.

Future research should consider longitudinal designs to monitor shifts in knowledge and practices and evaluate the long-term effectiveness of interventions. Incorporating experimental and experiential approaches, such as gamification, immersive VR, or emotionally framed campaigns, could provide deeper insights into mechanisms that

effectively translate awareness into sustainable behaviour. Comparative studies across different cultural, demographic, and socioeconomic groups would also be valuable in tailoring interventions. Finally, greater attention should be directed toward measuring actual behaviour, such as household waste audits, to complement self-reported awareness levels.

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