



HOUSEHOLD FOOD DONATIONS IN MALAYSIA: AN INTEGRATED NORM ACTIVATION AND PLANNED BEHAVIOUR APPROACH

Soekmawati¹, Robert Jeyakumar Nathan¹, Simona Grigaliūnienė²

¹Multimedia University, Malaysia, ²Lithuania Business College

Abstract

Food insecurity and food waste represent two sides of a global paradox—Hunger Amidst Abundance. Provocatively, the fact that food insecurity exists, given that the global food production exceeds the dietary needs of human population worldwide, necessitates critical examination. The extensive global loss and waste of food contribute not only to the depletion of finite resources but also to significant economic challenges for nations across the world. In Malaysia, households contribute significantly to food waste, with over 8.3 million tonnes discarded annually, including large quantities of edible food goes to waste. Even with its importance, research on food redistribution efforts in Malaysia, especially household-level contributions, remains scarce. Given this context, there is an urgent need to redirect edible food surpluses through systematic redistribution efforts. Reducing food waste, particularly via food bank donations, is among the most effective strategies to alleviate food insecurity. This study investigates the determinants influencing Malaysian households' intention to donate food surpluses to food banks, integrating the Norm Activation Model (NAM) and the Theory of Planned Behaviour (TPB) to develop a comprehensive framework to scrutinize this phenomenon. Using survey data from 312 households in Malaysia, the study examines the roles of perceived behavioural control, personal and subjective norms, awareness of consequences, and attitudes toward food waste reduction and food donation. Structural equation modelling via SmartPLS reveals that perceived behavioural control, personal norm, and awareness of consequences significantly influence donation intention. Notably, personal norm mediates the relationship between awareness of consequences and donation intention, suggesting that moral obligation activated by environmental awareness drives prosocial behaviour among households. Households' perceived behavioural control, personal norm, and awareness of food-waste consequences significantly influence their intention to donate food surpluses to food banks. While attitudes toward food waste reduction and food donation are positively correlated, they do not directly influence donation intention, indicating a disconnect between favourable attitudes and actual behavioural intent. This gap highlights the need to explore external barriers that may hinder households from acting on their intentions. The findings underscore the importance of fostering moral norms and environmental awareness to enhance food donation behaviour. They also call for policy interventions and cross-sector collaboration to address logistical and psychological barriers. Future research may incorporate external determinants and observed behaviours to enrich understanding and improve food redistribution practices. This study contributes to the literature on sustainable food management and offers practical insights for policymakers, NGOs, and food banks aiming to mobilize household-level food donations behaviour.

Keywords: Food Recovery, Food Redistribution, Donation Intention, Food Surplus, Households.

JEL classification: Q22, Q180, Q13.

Background and Introduction

The issues of hunger and food insecurity are at an unprecedented level of urgency now than at any previous point in the history. In year 2023, it was reported that 281.6 million, of people across fifty-nine countries suffered acute food-insecurity (FSIN & GNAFC, 2024). Over the span of one year, the number of individuals facing severe food insecurity has risen significantly, reaching 343 million across 74 countries (WFP, 2024). Notably, hunger and food insecurity are closely interrelated with the issue of food waste, highlighting a critical imbalance in global food distribution and resource management. Contemporarily, the global scale of food waste is staggering, amounting to approximately USD 1 trillion annually (Septianto et al., 2020). This significant economic and environmental concern underscores the urgent need for more sustainable food management and recovery practices.

The contrasting phenomena of food insecurity and food waste illustrate the Hunger Amidst Abundance paradox. Provocatively, the fact that food insecurity exists, given that the global food production exceeds the dietary needs of human population worldwide, necessitates critical examination. Modern agricultural systems, such as precision agriculture, digital and

automation farming, have achieved remarkable advancements in improving yield productivity by seventy percent, while significantly reducing adverse effects on the environment (Anyibama et al., 2025). In the world of plenty, it is ironic to know that 19 percent or 1.05 billion tonnes of foods are wasted during the food retailing, food servicing and household consumption (UNEP, 2024). Before the point of food retailing, approximately 14% of food produced globally is lost during production, processing, packaging and distribution process (FAO, 2019).

Irrepressible amount of food loss and waste worldwide leads to not only depletion of finite resources, but also economic burdens for all nations (Jamaludin, Elmaky, & Sulaiman, 2022). One of the prominent economic loss caused by food waste is its dire environmental effects. When food waste is discarded in landfills, it decomposes and releases greenhouse gases (GHGs), such as Methane gas and Carbon Dioxide, into the atmosphere. Although Methane constitutes only seventeen percent of greenhouse gases, it has a profoundly destructive impact. It is highly potent in driving global temperature escalation, exerting a warming effect 80 times greater than that of Carbon Dioxide (Harinderan, 2023). Among other causes, landfills are, in fact, the world top largest contributor in emitting Methane gas.

Access-barriers and unequal distribution of food abundance are the two main causes of the Hunger Amidst Abundance paradox. Economic disparities, political instability, as well as poor infrastructure and collaboration, are among common reasons behind the causes, preventing impoverished populations from receiving the global food abundance. Moreover, contemporary global trends, including rapid population growth, escalating consumption levels, climate change, and anthropogenic environmental pollution, are becoming increasingly pronounced and underscore pressing concerns regarding the quality and adequacy of food supplies (Melnikova et al., 2023). Often times, natural disasters, conflicts, climate change and exploitative agricultural system, that prioritises exports over local food security, could further exacerbate the issue of food insecurity, especially in developing countries, such as those in Sub-Saharan region (Bjornlund, V., Bjornlund, H., & Van-Rooyen, 2020). In other words, this paradox highlights a failure of social systems and policies. It amplifies the essential role of practicality and ethical principles in achieving global food security while emphasising the importance of environmental sustainability.

The objective of this study is to investigate the role of household food donations in advancing food recovery efforts within Malaysia. Accordingly, the object of this study is key determinants influencing households' intention to donate food surpluses to food banks in Malaysia. The study tested 12 hypotheses, some of which are interconnected through mediating and mediated mediation relationships, reflecting the complex structural dynamics within the research model. To address these objectives, integrated two theoretical frameworks which are the Norm Activation Model (NAM) and the Theory of Planned Behaviour (TPB) - a combination supported by recent research on intentions to engage in pro-environmental behavior was used and the survey method was employed due to its structured approach and rigorous sampling requirements, which enhance data reliability compared to qualitative techniques.

Literature Review

Food insecurity remains a critical issue in Malaysia, further compounded by significant levels of food waste. The United Nations Environment Programme (2023) reports that Malaysians discard approximately 8.3 million tonnes of food annually—equivalent to 259.82 kg per person (Nizam, 2023). In 2021, Malaysia recorded the highest per capita food waste in Southeast Asia (Zalina, 2023). According to SWCorp, 17,007 tonnes of food were wasted daily, including 4,081 tonnes that were still edible - sufficient to provide three meals a day to nearly 3 million undernourished individuals. Households were identified as the largest contributors to this waste, accounting for 38%, outpacing wet markets (24%) and restaurants (23%) (Jereme et al., 2016; Ramli et al., 2022).

Given this context, there is an urgent need to redirect edible food surpluses through systematic redistribution efforts. Reducing food waste, particularly via food bank

donations, is among the most effective strategies to alleviate food insecurity (Galli et al., 2019). Beyond alleviating food insecurity, such initiatives contribute to social welfare and reduce commercial disposal costs (Tarasuk & Eakin, 2005). However, household-level food surpluses remain an underutilised component in food recovery efforts, despite its substantial contribution to overall waste.

Even with its importance, research on food redistribution efforts in Malaysia, especially household-level contributions, remains scarce. Existing literature has concentrated on sustainable food waste behaviour (Nik-Masdek et al., 2023), retailers' motivations to donate food (Hamik et al., 2021), and food-surpluses donation initiatives such as the Lost Food Project (Ganesan, Thinakaran & Ramiah, 2019). Notably, there is a gap in empirically tested frameworks that examine the determinants of households' food donation intention. In light of Malaysia's commitment to the United Nations Sustainable Development Goals, particularly SDG 12.3, which targets a 50% reduction in global per capita food waste, developing an inclusive framework that promotes household engagement with food banks is critical. Cross-sector collaboration throughout the food supply chain is essential for advancing sustainable food waste management (Nik-Masdek et al., 2023).

In light of the pressing need to reduce food waste and enhance food bank efficiency, this study investigates the determinants influencing Malaysian households' intention to donate their food surpluses. Despite the essential role food banks play in mitigating hunger and food insecurity, donation rates remain inconsistent. Socio-psychological factors, including personal values or norms, social influence and awareness of consequences, are likely to shape donation behavior. Recent evidence highlights the role of personal norms in shaping household engagement with sustainable food waste practices (Nik-Masdek et al., 2023), which may similarly influence relevant attitudes and intention to donate to food banks (Bennet et al., 2023). Besides, awareness of consequences has been shown to activate these personal norms, thereby promoting donation behavior (Fang et al., 2009) or another behavioural intention (Shin et al., 2018; T'ing et al., 2021). In other words, personal norm could mediate the effect of awareness of consequence on intention to donate to food banks.

Additionally, subjective norm, reflecting perceived social expectations, have been identified as influential in motivating donation intention (Amin et al., 2023; Buyong, 2024). Subjective norm was also shown to significantly shape attitudes toward entrepreneurship (Baba, Keling & Yap, 2025), highlighting their potential to influence related attitudinal constructs. Moreover, perceived behavioural control, defined as individuals' belief in their ability to perform a given behaviour, has been shown to positively influence pro-social and sustainable actions (Savari et al., 2023). When donors feel confident in their capacity to contribute to food banks, their intention to donate increases accordingly (Amin et al., 2023; Buyong, 2024). This construct has similarly predicted intentions in other contexts, such as organic food consumption (Shin et al., 2018).

As for attitudes, they were found to significantly influence intention to donate (Habib et al., 2023; Millán et al., 2024). Interestingly Habib et al. (2023) has discovered that individuals' attitudes regarding food waste reduction would positively affect their intention to donate their food surpluses. Furthermore, Park et al. (2017) also revealed how different attitudes could interact to each other, influencing behavioural intention. Thus, in this study, attitudes regarding food waste reduction is postulated to influence attitudes regarding food donation, leading to households' intention to donate to food banks. By examining constructs such as attitudes toward food donation and waste, personal and subjective norms, perceived behavioural control, and awareness of consequences, this research seeks to develop a framework that can effectively encourage household participation in food redistribution efforts.

Building on the insights from the preceding literature review, this study outlines its key objectives to guide the forthcoming empirical analysis.

To investigate on determinants of food-donation intention to food banks among households in Malaysia;

- To scrutinise how personal norm and subjective norm influence food-donation intention to food banks among households in Malaysia;
- To find out how Malaysian households' attitude regarding food waste reduction and attitude regarding food donation impact on their food-donation intention to food banks;
- To examine how Malaysian households', perceived behavioural control impacts on their food-donation intention to food banks;
- To examine how Malaysian households' awareness of consequences impacts on their food-donation intention to food banks.

Hypotheses and Research Framework. The study tested 12 hypotheses, some of which are interconnected through mediating and mediated mediation relationships, reflecting the complex structural dynamics within the research model. The full list of the twelve hypotheses and the research framework (Fig. 1) is provided as follow.

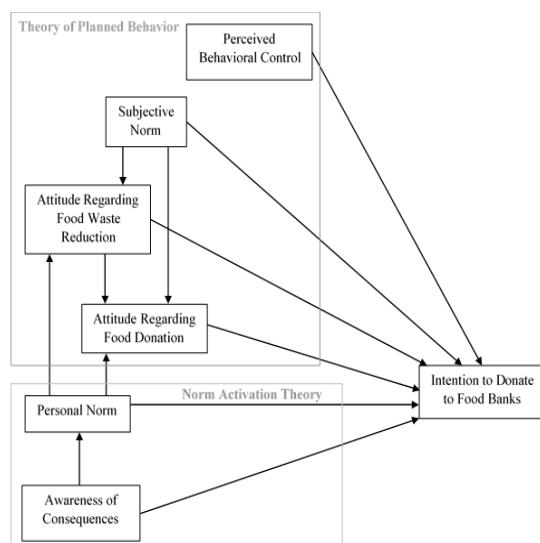


Fig 1. Research Framework

H1: Perceived Behavioural Control has positive impact on households' Intention to Donate to Food banks.

H2: Subjective Norm has positive impact on households' Intention to Donate to Food banks.

H3: Subjective Norm has positive impact on households' Attitude Regarding Food Waste Reduction.

H4: Subjective Norm has positive impact on households' Attitude Regarding Food Donation.

H5: Attitude Regarding Food Waste Reduction positively influence households' Intention to Donate to Food banks.

H6: Attitude Regarding Food Waste Reduction positively influence Attitudes Regarding Food Donation.

H7: Attitude Regarding Food Donation positively influence households' Intention to Donate to Food banks.

H8: Personal Norm positively influence households' Intention to Donate to Food banks.

H9: Personal Norm positively influence households' Attitude Regarding Food Waste Reduction.

H10: Personal Norm positively influence households' Attitude Regarding Food Donation.

H11: Awareness of Consequences has positive effect on households' Intention to Donate to Food banks.

H12: Awareness of Consequences has positive effect on Personal Norm.

Methodology

This study aims to identify the key factors influencing households' intention to donate food surpluses to food banks. It integrates two theoretical frameworks which are the Norm Activation Model (NAM) and the Theory of Planned Behaviour (TPB) - a combination supported by recent research on pro-environmental behavioural intentions (Dong et al., 2023; Savari et al., 2023; Setiawan et al., 2020). The integration of NAM and TPB offers a comprehensive model that captures both the pro-social drivers of NAM and the self-regulatory components of TPB. In this study, the proposed framework comprises of three independent variables (Perceived Behavioral Control, Subjective Norm, and Awareness of Consequences), three mediating variables (Personal Norm, Attitude Regarding Food Waste Reduction, and Attitude Regarding Food Donation) and one dependent variable (Intention to Donate to Food Banks). These constructs form the basis for twelve hypotheses underpinning the study. The survey method was employed due to its structured approach and rigorous sampling requirements, which enhance data reliability compared to qualitative techniques. A total of 312 valid responses were obtained from households in Selangor, Johor, and Kuala Lumpur which were selected for their high levels of municipal food waste and limited landfill capacity. The collected data were analysed using the SPSS and the SmartPLS 4.0 to perform internal validity and consistency, discriminant validity, descriptive analysis and hypothesis testing.

Result and Discussion

Assessing internal reliability, convergent validity, and discriminant validity is crucial to ensure constructs are stable, accurate, and distinct, enhancing the integrity of the analysis. The standard threshold for Cronbach's Alpha and Composite Reliability is 0.70 (Cronbach, 1951; Hair et al., 2022), indicating acceptable internal reliability and consistency. As shown in the Table 1, all constructs exceeded this threshold, confirming that the measurement model reliably assessed its intended constructs. Convergent validity evaluates how closely indicators correlate with the construct they are intended to measure, using AVE values as the benchmark. According to Hair et al. (2022) and Fornell & Larcker (1981), AVE values above 0.50 indicate sufficient convergent validity. In this study, all constructs met this criterion, with the lowest AVE at 0.69, demonstrating acceptable convergent validity across the model.

Table 1. Internal Reliability, Consistency and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Attitude Regarding Food Waste Reduction	0.924	0.943	0.767
Attitude Regarding Food Donation	0.873	0.913	0.725
Awareness of Consequences	0.884	0.92	0.743
Intention to Donate to Food Banks	0.861	0.906	0.706
Perceived Behavioral Control	0.874	0.914	0.726
Personal Norm	0.887	0.917	0.69
Subjective Norm	0.892	0.92	0.699

Discriminant validity is assessed using both the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio (HTMT). As proposed by Fornell and Larcker (1981), the square root of the AVE for each construct should exceed its correlations with other constructs, indicating that each construct shares more variance with its indicators than with others. The Fornell-Larcker table (Table 2) confirms this criterion is met.

Table 2. Fornell Larcker

	1	2	3	4	5	6	7
1	0.876						
2	0.692	0.851					
3	0.61	0.669	0.862				
4	0.491	0.606	0.715	0.841			
5	0.426	0.537	0.533	0.664	0.852		
6	0.541	0.681	0.68	0.751	0.58	0.831	
7	0.543	0.522	0.546	0.603	0.641	0.655	0.836

Additionally, HTMT values are evaluated following recommendation by Hair et al., 2022 and Ringle et al., 2023, with the accepted threshold of 0.90. Bootstrapped confidence intervals were applied, with all HTMT values below 0.90 and no intervals containing the value of 1, satisfying the criteria for discriminant validity (Franke & Sarstedt, 2019; Henseler et al., 2015). Therefore, as shown in Table 3, discriminant validity is supported in this model.

Table 3. HTMT and Confidence Interval

Correlation	HTMT	5.%	95%
2 <-> 1	0.768	0.683	0.842
3 <-> 1	0.673	0.577	0.76
3 <-> 2	0.76	0.67	0.842
4 <-> 1	0.549	0.437	0.651
4 <-> 2	0.699	0.611	0.777
4 <-> 3	0.82	0.731	0.898
5 <-> 1	0.467	0.372	0.56
5 <-> 2	0.609	0.523	0.688
5 <-> 3	0.602	0.505	0.693
5 <-> 4	0.762	0.688	0.83
6 <-> 1	0.589	0.487	0.687
6 <-> 2	0.766	0.687	0.835
6 <-> 3	0.763	0.661	0.851
6 <-> 4	0.857	0.771	0.93
6 <-> 5	0.652	0.554	0.741
7 <-> 1	0.592	0.494	0.687
7 <-> 2	0.584	0.492	0.671
7 <-> 3	0.611	0.495	0.727
7 <-> 4	0.69	0.58	0.792
7 <-> 5	0.724	0.62	0.812
7 <-> 6	0.733	0.649	0.813

1: Attitude Regarding Food Waste Reduction

2: Attitude Regarding Food Donation

3: Awareness of Consequences

4: Intention to Donate to Food Banks

5: Perceived Behavioral Control

6: Personal Norm

7: Subjective Norm

Before examining the results of hypothesis testing, it is necessary to profile the 312 individuals who contributed to the dataset. The demographic profile of the respondents, shown in Table 4, reveals a predominantly youthful and socially conscious cohort, with a notable skew towards female participants (54.2%). The age distribution is concentrated among individuals aged 18 to 24 (75.3%) and the majority of respondents are single (68.3%), suggesting a population in early adulthood. Educational attainment is relatively high, with over 90%

of them possessing at least a college-level or higher qualification, reflecting well educated and informed group. Prior donation behavior is prominent, with 73.7% having contributed before, indicating a predisposition towards altruistic and community-oriented activities. Household composition is typically moderate, with 76.3% residing in households of three to six members, while 89.7% report having no children, reinforcing the demographic's youthful and unattached status.

Table 4. Demographic Profile

Demographic Variable	n	%
GENDER		
Female	169	54.2
Male	137	43.9
Prefer not to say	6	1.9
MARITAL STATUS		
In a relationship	67	21.5
Married	32	10.3
Single	213	68.3
EDUCATIONAL BACKGROUND		
College / Professional Background	186	59.6
Higher Education or Above	96	30.8
Other or Non-Formal Education	2	0.6
Primary / Secondary School	28	9
AGE		
18-24 years old	235	75.3
25-34 years old	50	16
35-44 years old	8	2.6
35-54 years old	14	4.5
55-64 years old	4	1.3
65 years old and above	1	0.3
NUMBER OF CHILDREN		
1-2	14	4.5
3-4	15	4.8
5 and more	3	1
none	280	89.7
NUMBER OF PEOPLE LIVING IN THE HOUSE		
1-2 people	44	14.1
3-4 people	125	40.1
5-6 people	113	36.2
More than 6 people	30	9.6
DONATED BEFORE?		
No	82	26.3
Yes	230	73.7

As presented in Table 5, eight out of twelve hypothesized relationships are empirically supported. Specifically, households', perceived behavioral control, personal norm, and awareness of food-waste consequences were found to have significant and direct effects on their intention to donate to food banks. In overall, all the path coefficients are also depicted in Fig.2

Interestingly, although subjective norm does not directly influence the intention to donate, it demonstrates a significant direct effect on households' attitude regarding food waste reduction. Moreover, subjective norm exerts a significant indirect effect on households' attitude regarding food donation through the full mediation of food waste reduction attitudes (refer to Table 6). In turn, households' positive attitude regarding food waste reduction significantly predicts a favorable attitude regarding food donation.

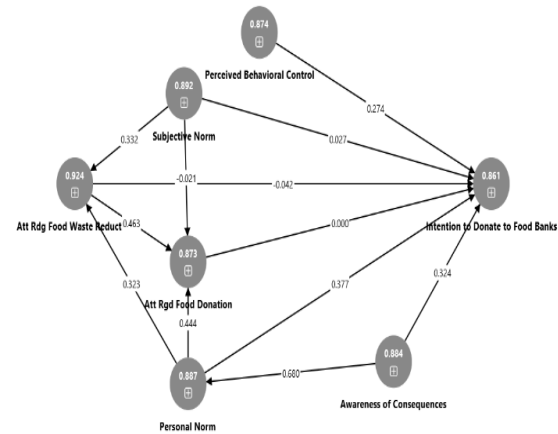


Fig 2. SmartPLS Structural Model

Table 5. Hypotheses Testing Results

Hypothesis	Relationship	Path Coeff	P Value	Decision
H1	Perceived Behavioral Control → Intention to Donate to Food banks	0.274	0***	S
H2	Subjective Norm → Intention to Donate to Food banks	0.027	0.372	NS
H3	Subjective Norm → Attitude Regarding Food Waste Reduction	0.332	0***	S
H4	Subjective Norm → Attitude Regarding Food Donation	-0.021	0.366	NS
H5	Attitude Regarding Food Waste Reduction → Intention to Donate to Food banks	-0.042	0.25	NS
H6	Attitude Regarding Food Waste Reduction → Attitudes Regarding Food Donation	0.463	0***	S
H7	Attitude Regarding Food Donation → Intention to Donate to Food banks	0	0.497	NS
H8	Personal Norm → Intention to Donate to Food banks	0.377	0***	S
H9	Personal Norm → Attitude Regarding Food Waste Reduction	0.323	0***	S
H10	Personal Norm → Attitude Regarding Food Donation	0.444	0***	S
H11	Awareness of Consequences → Intention to Donate to Food banks	0.324	0***	S
H12	Awareness of Consequences → Personal Norm.	0.68	0***	S

Note: *** Significant at 1%; S: Supported; NS: Not Supported

However, it is noteworthy that neither of the attitudes - regarding food waste reduction nor food donation - are found to have a significant impact on the intention to donate to food banks. Further analysis reveals that personal norm has a direct and significant effect on both attitudes: regarding food waste reduction and food donation. Additionally, personal norm shows a significant indirect influence on households' attitude regarding food donation, indicating a partial mediation effect, as illustrated in Table 6.

Importantly, households' awareness of consequences is identified as a key antecedent, exerting direct and significant effects on both personal norm and the intention to donate to food banks. Beyond these direct effects, awareness of consequences also contributes an indirect effect via personal norm, highlighting another partial mediation pathway in shaping donation intentions to food banks. In addition to the indirect effect of households' awareness of consequences on their attitude toward food donation, a mediated mediation effect is also observed. Specifically, personal norm was found to mediate the mediating effect of awareness of consequences on attitude, indicating a more complex relationship. This layered mediation suggests that while awareness of consequences influences attitude, this effect is further transmitted through the internalization of personal norms. For detailed statistical support, refer to Table 6.

Table 6. Specific Indirect Effects

Mediating / Mediated Mediation Relationship	Path Coeff.	P values	Remark
Personal Norm → Att Rgd Food Waste Reduction → Att Rgd Food Donation	0.15	0***	M
Subjective Norm → Att Rgd Food Waste Reduction → Att Rgd Food Donation	0.154	0***	M
Awareness of Consequences → Personal Norm → Att Rgd Food Waste Reduction → Att Rgd Food Donation	0.102	0***	MM
Awareness of Consequences → Personal Norm → Att Rgd Food Waste Reduction	0.22	0***	M
Awareness of Consequences → Personal Norm → Att Rgd Food Donation	0.302	0***	M
Awareness of Consequences → Personal Norm → Intention to Donate to Food Banks	0.256	0***	M

Note: *** Significant at 1%; M: Mediating Relationship; MM: Mediated Mediation Relationship

To validate the specific indirect effects, the results of the total indirect effects are presented in Table 7. Consistent with aforementioned findings, the total indirect effects of awareness of consequences on households' attitudes regarding food waste and food donation were found to be significant. Likewise, awareness of consequences has a significant total indirect effect on households' intention to donate to food banks. Additionally, both personal and subjective norms

demonstrate significant indirect effects on households' attitudes regarding food donation.

However, households' attitudes do not necessarily translate into households' intention to donate food surpluses to food banks. This disconnection may stem from various intervening factors, such as logistical, social, or psychological barriers that impede food donation intention. The disjunction between attitude and donation intention warrants further exploration in future research to identify the underlying mechanisms and possible moderating variables.

Table 7. Total Indirect Effects

Mediating / Mediated Mediation Relationship	Path Coeff	P values	Remark
Awareness of Consequences → Att Rgd Food Waste Reduction	0.22	0***	M
Awareness of Consequences → Att Rgd Food Donation	0.404	0***	MM
Awareness of Consequences → Intention to Donate to Food Banks	0.247	0***	M
Personal Norm → Att Rgd Food Donation	0.15	0***	M
Subjective Norm → Att Rgd Food Donation	0.154	0***	M

Note: *** Significant at 1%; M: Mediating Relationship; MM: Mediated Mediation Relationship

The Q^2 Predict value assesses the model's predictive relevance, with values above 0 indicating some level of relevance. The construct 'Intention to Donate to Food Banks' demonstrates strong predictive capacity with a Q^2 of 0.600. Additionally, the coefficient of determination ($R^2 = 0.692$) reveals that 69.2% of the variance in donation intentions is explained by the structural model, highlighting substantial explanatory power. The unexplained variance (30.8%) suggests the potential influence of other unexamined factors.

Table 8. Coefficient of Determination and Predictive Relevance

Construct	R^2	Q^2 Predict
Attitude Reducing Food Waste Reduction	0.355	0.378
Attitude Regarding Food Donation	0.613	0.434
Intention to Donate to Food Banks	0.692	0.600
Personal Norm	0.456	0.456

Conclusion

Households' perceived behavioural control, personal norm, and awareness of food-waste consequences significantly influence their intention to donate food surpluses to food banks. Notably, personal norm plays a mediating role in the relationship between awareness of

food-waste consequences and donation intention. This suggests that households' recognition of food waste issue can activate moral obligations toward helping those in need, ultimately reinforcing their intention to donate their food surpluses.

Importantly, in this study, while personal norm is primarily associated with prosocial behaviour, such as aiding the underprivileged, awareness of consequences pertains to the broader societal issue of food waste. This mediation effect underscores the intricate relationship between food waste and food insecurity. Households with strong moral convictions about helping the poor tend to develop favourable attitudes regarding both food waste reduction and food donation.

Interestingly, attitude toward reducing food waste positively correlates with attitude regarding food donation, further reinforcing the interconnectedness of these issues. This association also reflects households' understanding of how food donation can serve as a practical means of addressing food waste. However, despite these favourable attitudes, households' intention to donate food surpluses does not improve correspondingly. This disengagement between attitude and intention reveals underexplored determinants that inhibit households from translating their positive attitudes into behavioural intention.

Limitation of Study

The findings of this study are derived from data collected exclusively from households residing in three Malaysian states: Kuala Lumpur, Selangor, and Johor. As such, caution must be exercised when generalising these findings to the broader Malaysian population, as regional differences in socio-economic profiles, cultural attitudes, and infrastructural support may yield varying outcomes in other states. Moreover, the study's structural model is limited to internal determinants, such as personal attitudes, perceived behavioural control, and subjective norms, that operate at the level of individual cognition and intention. In reality, however, households' decisions regarding the donation of food surpluses are likely influenced by a complex interplay of external factors that support or hinder food redistribution practices. Without accounting for these external variables, the predictive capacity of the model remains inherently constrained. Additionally, it is crucial to highlight that the present research focuses on behavioural intention rather than observed behaviour. Although intention is often considered a strong antecedent to action, it does not guarantee behavioural execution. Factors, such as situational barriers, changes in personal circumstances, or the absence of enabling environments, can disrupt the translation of intention into actual behaviour.

Further research

Future research should consider examining additional variables that may influence households' intention to donate food surpluses to food banks. In particular, it is essential to investigate external determinants, such as

government initiatives, institutional support, and macroeconomic conditions that could lead to donation intention. Given that the current study reveals no significant relationship between attitudes and donation intention, further inquiry is warranted into perceived risks and barriers that may hinder households from engaging in food surpluses donation. It is strongly recommended that subsequent studies delve deeper into the underlying psychological and contextual mechanisms governing food donation practices among households and identify potential moderating factors that may impact this donation intention. In addition, employing a mixed-method approach that integrates both quantitative and qualitative techniques would enhance understanding of the complexities surrounding food donation intention and its underlying determinants. Besides, mixed-method approaches could capture both intention and real-world behaviours, thereby offering a more comprehensive understanding of food donation dynamics among households.

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Soekmawati is a researcher in topics of Marketing and Sustainability. She is a PhD student in Management. She holds a Bachelor's Degree in Accounting (Hons) and Masters of Philosophy (Management) from the Multimedia University, Malaysia. She is a Digital Marketing instructor in the Prakerja Programme under the Ministry for Economic Affairs of Indonesia. She was a Programme Officer of an International NGO. She worked in liaison with various international organisations, governmental bodies, UN agencies and directs events and programmes pertaining to youth issues. In addition, she has been involved in mentoring and teaching online, as well as facilitated international workshops. Address: Faculty of Business, Multimedia University, Melaka, 75450 Malaysia. Email: SOEKMAWATI@student.mmu.edu.my

Assoc. Prof. Dr. Robert Jeyakumar Nathan, PhD., is attached to Multimedia University, Malaysia. He is a researcher under the Centre for Management and Marketing Innovation, CoE for Business Innovation and Communication, Multimedia University, Malaysia. He was former Visiting Professor with the Faculty of Economics, University of South Bohemia in Czech Republic. He teaches and conducts research on Management, Marketing, Digitalization, Startup and Innovation, Research Methodology and Leadership. He is a certified Design Thinking Trainer, by Stanford University Design School. Prior to joining academia, he worked for Siemens Semiconductor, a semiconductor manufacturing firm based in Munich, Germany. Robert participates in the Standing Committee for Copyright and Related Rights (SCCR) with the World Intellectual Property Organization (WIPO). Address: Faculty of Business, Multimedia University, Melaka, 75450 Malaysia. Email: robert.jeyakumar@mmu.edu.my Orcid ID: <https://orcid.org/0000-0002-0897-0015>

Assoc. Prof. Dr. Simona Grigaliūnienė, Doctor of Technology Sciences, Lithuania Business College. Field of Scientific research: composite materials, printing and packaging technologies, digital processes, green and blue project development, sustainability cyber-security. Working as a Associate Proffessor at Technology Department in Lithuania Business College. Expert in Agency for Science, Innovation and Technology (MITA), Expert for study field evaluation in IT and Material Sciences for AIKA (Latvia) and SKVC (Lithuania). Address: Turgaus str. 21., Klaipėda, LT-91249. Email: simona.grigaliuniene@ltvk.lt; Orcid ID: <https://orcid.org/0009-0009-5423-9600>.

