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# Drivers Of Domestic Waste Separation Intentions at The Household Level: An Application of The Theory of Planned Behavior

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**Abstract:** Effective domestic waste separation at the source is a cornerstone of sustainable waste management, yet its implementation faces significant challenges globally, particularly at the household level. This article investigates the determinants of household intention to separate domestic waste, applying Ajzen's Theory of Planned Behavior (TPB) as the guiding theoretical framework. The TPB posits that an individual's intention to perform a behavior is influenced by their attitude towards the behavior, subjective norms, and perceived behavioral control. Through a comprehensive review of existing literature, this study synthesizes findings on how these constructs, alongside other contextual factors, influence household waste separation intentions. Understanding these drivers is crucial for designing targeted interventions and policies that promote greater participation in waste segregation programs, ultimately contributing to improved resource recovery and reduced environmental impact.

**Keywords:** Domestic waste separation, household waste management, waste sorting behavior, Theory of Planned Behavior, recycling intention, attitude, subjective norms, perceived behavioral control, pro-environmental behavior, sustainability, behavioral intention, solid waste management.

## INTRODUCTION

The escalating volume of domestic waste poses a critical environmental and public health challenge worldwide [29, 34]. Improper waste disposal contributes to landfill overflow, greenhouse gas emissions, and pollution of land and water bodies [9, 29, 30]. In response, many nations, including Malaysia, have implemented policies and initiatives to promote waste separation at the source as a fundamental step towards a circular economy [1, 6, 19, 24]. Despite these efforts, the effectiveness of such programs hinges significantly on the willingness and active participation of individual households [12, 21].

Household waste separation, involving the segregation of different waste types (e.g., recyclables, organic waste) before collection, is essential for facilitating recycling, composting, and other forms of resource recovery [5, 6, 33]. However, achieving high rates of household participation remains a persistent hurdle, often due to a complex interplay of psychological, social, and contextual factors [12, 21]. Understanding the underlying motivations and barriers that shape household intentions towards waste separation is therefore paramount for developing effective and sustainable waste management strategies [26].

This article aims to explore the key determinants influencing household intentions to separate domestic waste, utilizing the well-established Theory of Planned Behavior (TPB) [3, 4] as its analytical lens. The TPB provides a robust framework for explaining human behavior by focusing on the cognitive processes that precede behavioral decisions. By applying this theory, we seek to identify how attitudes, subjective norms, and perceived behavioral control collectively predict the intention to engage in waste separation, drawing upon empirical evidence from various contexts.

## METHODOLOGY

This study employs a systematic literature review approach to synthesize existing research on household waste separation intentions, with a particular focus on studies that apply or extend Ajzen's Theory of Planned Behavior (TPB). The methodology involves identifying, selecting, and critically appraising relevant academic publications to extract key findings related to the TPB constructs and their influence on waste separation

behavior.

**Search Strategy:** A comprehensive search was conducted across various academic databases using keywords such as "household waste separation," "waste segregation," "recycling intention," "Theory of Planned Behavior," "attitude," "subjective norm," and "perceived behavioral control." The search was limited to peer-reviewed journal articles, conference papers, and book chapters published up to early 2024.

**Inclusion Criteria:** Studies were included if they:

1. Investigated household-level intentions or behaviors related to domestic waste separation.
2. Explicitly applied or discussed the Theory of Planned Behavior (TPB) or its extended versions.
3. Were published in English or had an English abstract sufficient for content assessment.

**Data Extraction and Synthesis:** For each selected study, information was extracted on:

- The specific waste separation behavior investigated.
- The operationalization of TPB constructs (attitude, subjective norm, perceived behavioral control).
- Additional constructs (e.g., moral norms, self-efficacy, environmental knowledge) if an extended TPB model was used.
- Key findings regarding the relationships between TPB constructs and intention/behavior.
- Methodological details (e.g., sample size, data collection methods, statistical analysis techniques).

The extracted data were then synthesized thematically, categorizing findings according to the core TPB constructs and other significant influencing factors. This qualitative synthesis allows for the identification of consistent patterns, variations across different contexts, and gaps in the current understanding of household waste separation intentions. The theoretical underpinning of TPB, as detailed by Ajzen (1991, 2020), guided the interpretation of the findings, ensuring

consistency in the conceptualization of the variables.

## RESULTS

The application of the Theory of Planned Behavior (TPB) consistently demonstrates its utility in explaining household intentions towards domestic waste separation. Numerous studies have validated the core tenets of the TPB, showing that attitude, subjective norms, and perceived behavioral control significantly predict the intention to segregate waste at the source [26, 27, 28, 33].

### Attitude Towards Waste Separation

Attitude, defined as an individual's positive or negative evaluation of performing the behavior, is a strong predictor of waste separation intention [3, 4]. Households with a more favorable attitude towards waste separation are more likely to intend to engage in it. This favorable attitude often stems from an understanding of the environmental benefits of recycling and proper waste management, such as reducing pollution and conserving resources [17, 18, 26]. For instance, a study on Malaysian households found that a positive attitude significantly influenced the intention to separate waste [26]. Similarly, the perception of waste separation as a responsible or beneficial act contributes to a stronger intention [26, 27].

### Subjective Norms

Subjective norms refer to the perceived social pressure to perform or not perform a behavior [3, 4]. This construct captures the influence of important referent groups, such as family members, friends, neighbors, and community leaders, on an individual's decision-making process [22, 26]. If a household perceives that people important to them expect them to separate waste, or if they observe others doing so, their intention to separate waste is likely to increase [21, 26]. Research highlights the critical role of community engagement and visible participation in shaping these norms [21]. The influence of social norms can be particularly strong in collectivistic societies where community cohesion plays a significant role in individual actions [7, 22].

### Perceived Behavioral Control (PBC)

Perceived behavioral control refers to an individual's

perception of the ease or difficulty of performing the behavior, reflecting their belief in their ability to execute the behavior successfully [3, 4]. This construct encompasses both self-efficacy (one's belief in their capability to perform a task) and controllability (the extent to which the behavior is perceived to be under one's volitional control) [13, 32]. For waste separation, high PBC is associated with beliefs that one has the necessary knowledge, skills, time, and resources (e.g., bins, collection services) to separate waste effectively [26, 27]. Conversely, a lack of perceived control due to factors like insufficient information, inconvenient collection systems, or limited space for segregation can hinder intention [12, 21]. Studies in Malaysia and Indonesia have consistently shown that PBC is a crucial determinant of waste separation intention [26, 27, 33].

### Extended TPB Constructs and Contextual Factors

While the core TPB constructs are robust, several studies have extended the model to include additional variables that enhance its explanatory power in the context of waste separation.

- **Moral Norms:** The inclusion of moral norms, reflecting an individual's sense of moral obligation to separate waste, has been found to significantly influence intention, particularly when individuals feel a personal responsibility towards environmental protection [33].
- **Environmental Knowledge and Awareness:** A deeper understanding of environmental issues and the benefits of waste separation can strengthen attitudes and, consequently, intentions [18, 23]. Educational initiatives play a vital role in this regard [23].
- **Infrastructure and Facilities:** The availability and accessibility of waste separation infrastructure, such as designated bins, clear guidelines, and reliable collection services, directly impact perceived behavioral control and thus intention [1, 12, 21]. Challenges in waste management infrastructure, especially in low-cost housing or specific regions, can impede effective separation [1, 10].
- **Policy and Regulation:** Government policies and regulations, including Extended Producer

Responsibility (EPR) schemes, can create an enabling environment for waste separation by influencing perceived norms and providing incentives [19, 24]. However, the effectiveness of these policies depends on public awareness and enforcement [15].

- **Socio-demographic Factors:** While not direct TPB constructs, socio-demographic variables like age, education, and income can moderate the relationships within the TPB model or directly influence waste separation intentions [12].

The literature consistently highlights that a multi-faceted approach, addressing attitudes, social influences, and practical capabilities, is necessary to foster strong household intentions for domestic waste separation.

## DISCUSSION

The findings from the literature review strongly affirm the applicability and predictive power of Ajzen's Theory of Planned Behavior in understanding household intentions for domestic waste separation. The consistent significance of attitude, subjective norms, and perceived behavioral control across diverse geographical and socio-economic contexts underscores the universality of these psychological determinants in shaping pro-environmental behaviors [7, 17, 18, 20].

The prominence of attitude suggests that fostering a positive disposition towards waste separation is foundational. This can be achieved through educational campaigns that highlight the tangible environmental benefits (e.g., reduced landfill waste, resource conservation, lower greenhouse gas emissions) and personal advantages (e.g., cleaner living spaces, community pride) of segregation [9, 17, 18]. Such campaigns should aim to shift perceptions from waste separation as a burden to a valuable and impactful civic duty.

Subjective norms emerge as a powerful social lever. The influence of family, friends, and community members on an individual's intention emphasizes the need for community-based interventions. Programs that promote visible waste separation, encourage peer-to-peer learning, and involve community leaders can

effectively cultivate a social environment where waste segregation becomes a widely accepted and expected practice [21, 22]. Public recognition for participating households could further reinforce positive social norms.

Perceived behavioral control is arguably the most actionable construct for policy makers. Even with positive attitudes and strong social norms, individuals will not intend to separate waste if they feel incapable or face insurmountable practical barriers [12, 21]. This highlights the critical role of accessible and convenient infrastructure, clear guidelines, and adequate support systems [1, 10, 21]. Providing appropriate bins, clear labeling, regular and reliable collection schedules, and readily available information on what can be recycled are essential. Addressing challenges related to space constraints in urban dwellings or specific housing schemes is also vital [1]. Furthermore, enhancing self-efficacy through practical workshops or easy-to-follow instructions can empower households to feel more capable of performing the behavior [13, 32].

The inclusion of extended TPB constructs like moral norms and environmental knowledge further enriches our understanding. Moral obligation can be a powerful intrinsic motivator, suggesting that campaigns appealing to a sense of duty towards the environment can be effective [33]. Continuous environmental education is crucial for building a knowledgeable populace that understands the "why" behind waste separation, thereby reinforcing attitudes and moral norms [18, 23].

It is also important to acknowledge that the effectiveness of waste management policies, such as Extended Producer Responsibility (EPR), is intertwined with household behavior [19, 24]. While EPR aims to make producers responsible for the end-of-life management of their products, its success ultimately relies on consumers' willingness to separate waste at the source. Thus, policy design must consider the behavioral aspects captured by the TPB to ensure effective implementation and public compliance.

In sum, the TPB provides a robust framework for diagnosing the drivers and barriers to household waste separation. Future interventions should adopt a holistic approach that simultaneously targets attitudes, leverages social influences, and enhances perceived

control, while also considering the broader policy and infrastructural context.

## CONCLUSION

This article has explored the determinants of household intention for domestic waste separation through the lens of Ajzen's Theory of Planned Behavior. The synthesis of existing literature consistently demonstrates that attitude towards waste separation, subjective norms, and perceived behavioral control are significant predictors of an individual's intention to engage in this crucial pro-environmental behavior. A positive attitude, influenced by an understanding of environmental benefits, coupled with perceived social pressure from important referent groups, and a strong belief in one's ability to perform the behavior, collectively drive the intention to separate waste at the source.

Beyond the core TPB constructs, factors such as moral norms, environmental knowledge, and the availability of supportive infrastructure play crucial roles in shaping these intentions. The findings underscore the necessity of multi-pronged strategies for promoting effective waste separation. These strategies should encompass educational initiatives to cultivate positive attitudes and increase environmental awareness, community engagement programs to foster supportive social norms, and improvements in waste management infrastructure to enhance perceived behavioral control. By systematically addressing these psychological and contextual factors, policymakers and waste management authorities can design more effective interventions that encourage greater household participation in waste separation, thereby contributing significantly to sustainable waste management practices and a healthier environment.

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