Beyond the Bin: Overcoming the Intention-Behavior Gap in Zero Waste Living

*Muhammed Sajid[1], K.A. Zakkariya[1], Myriam Ertz[2]

[1] School of Management Studies, Cochin University of Science and Technology,

Kochi, India

[2] LaboNFC, Department of economics and administrative sciences, Université du Québec à

Chicoutimi, Saguenay, Canada

* Corresponding author

Abstract

Purpose: The Zero waste lifestyle (ZWL) is considered a reasonable step towards controlling waste generation and minimizing the consequences of human activities on the environment. The main aim of this study is to examine the behavioral antecedents of ZWL.

Design/Methodology: The study draws on the theoretical underpinnings of the theory of planned behavior (TPB) and the norm activation model (NAM) to develop a conceptual framework to understand the antecedents to ZWL. A cross-sectional survey among 349 randomly-selected consumers provided data analyzed with the Partial Least Square-Structural Equation Modeling (PLS-SEM) methodology.

Findings: The results demonstrate that personal norms, attitude, subjective norms, and perceived behavioral control positively influenced the intention to adopt ZWL. Additionally, the study showed that the awareness of consequences influenced personal norms, attitudes, and subjective norms. However, the study identified an intention-behavior gap in adopting ZWL.

Originality/value: This study serves as a pioneering exploration of the behavioral factors that impact the adoption of ZWL. Additionally, the paper endeavors to elucidate the underlying reasons behind the intention-behavior gap within this particular context. Consequently, the study offers substantial theoretical and practical implications aimed at promoting and fostering greater adoption of ZWL practices.

Keywords: Zero waste living; Zero waste lifestyle; Waste minimization; Sustainable lifestyle; Intention-behavior gap; PLS-SEM.

1. Introduction

Waste generation is an inevitable outcome of human activities, encompassing daily routines and industrial processes, and its volume increases with global population growth. This rising waste poses a significant threat to the environment, as improper disposal can lead to soil and water contamination, endangering ecosystems and wildlife (Hussein et al., 2021; Ibor et al., 2020). Hazardous waste, in particular, can have long-lasting detrimental effects. Beyond ecological concerns, waste exacerbates resource depletion, contributing to issues like deforestation, habitat destruction, and climate change (Holt & Berge, 2018; Johnson & DeRosa, 1997). Waste comes in solid, liquid, and hazardous forms, each with distinct characteristics and generation processes (refer to Table 1 for waste types and generation). To address these challenges, zero waste approaches have gained prominence, emphasizing the minimization of waste generation (Johnson, 2013; Zaman, 2022).

-Insert Table 1 here-

Zero waste refers to "the conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and

with no discharges to land, water, or air that threaten the environment or human health" (EPA, n.d.). More specifically, zero waste lifestyle (ZWL) refers to a set of principles and practices aimed at minimizing waste generation at the specific consumption level by individuals and households, aiming to achieve zero or near-zero waste (Zaman, 2022). The ZWL approach notably involves the application of the 5Rs approach for managing waste, that is, Refuse (buying [new] products), Reduce (buying [new] products), Reuse (used products), Repurpose (used products for new purposes, (e.g., upcycling)), and Recycle (non-reusable or non-repurposable products) as an alternative to sending waste to landfills or incinerators(Johnson, 2013; Balwan et al., 2022). In this framework, refusing is the most desirable action, while recycling is the least desirable (Balwan et al., 2022). More broadly, this pro-environmental lifestyle requires a conscious effort to adopt sustainable practices that minimize waste, such as choosing products with minimal packaging, repairing and repurposing items, composting food waste, and using reusable bags, bottles, and containers instead of disposable ones (Wilde & Parry, 2022).

Research into the ZWL is in its nascent stages, just like living a zero waste lifestyle. Although there has been extensive research on the individual components of ZWL, including refuse (Zen et al., 2013), reduce (Aruta, 2022), reuse (Ertz et al., 2017), repurpose (Wilson, 2016), and recycle (Mertens & Schultz, 2021; Sajid & Zakkariya, 2022), there is a notable absence of peer-reviewed literature that explores the behavioral antecedents of ZWL, which necessitates adherence to all five of these behaviors together. Although the literature on ZWL is in its infancy, some studies have explored the antecedents of waste reduction behavior (Ertz et al., 2021; Minelgaitė & Liobikienė, 2019), which share similarities with ZWL, albeit not being identical (Raghu & Rodrigues, 2020; Singh & Ambika, 2022). Besides, these studies have been undertaken in developed economies (e.g., Stancu et al., 2016; Kameke & Fischer, 2018; Minelgaitė & Liobikienė, 2019; Ertz & Favier, 2021) where opportunities for sustainable living

are generally more abundant than in developing countries (World Bank, 2022). The focus on ZWL in developing countries is thus not well-developed.

This research gap is of notable importance, mainly since adopting ZWL necessitates a higher level of commitment and effort than selectively adopting any of the 5Rs based on individual convenience (Piligrimiene et al., 2020). Moreover, as a comprehensive and coherent approach, ZWL requires a fundamental shift in an individual's perspective and approach toward waste management (B. Johnson, 2013). Essentially, embracing ZWL differs from selectively adopting certain sustainable practices as it demands a long-term commitment to promoting sustainability across various facets of life (Coskun, 2022), including in situations (e.g., holidays, celebrations, outings) where individuals typically indulge in suboptimal pro-environmental behaviors (Robinot et al., 2017). Besides, adopting sustainable lifestyles, such as the ZWL, faces numerous challenges in emerging economies (Econotimes, 2017; IYNF, 2018). In addition, these lifestyles are still considered a new concept and have not been fully integrated into the culture of developing countries, in contrast to their prevalence in developed countries (UNEP, n.d.). Therefore, it is crucial to examine the behavioral determinants underlying the adoption of ZWL in emerging economies to promote its widespread acceptance.

As a pioneering investigation, we intend to scrutinize the antecedents of ZWL adoption by integrating the Theory of Planned Behavior (TPB; Ajzen, 1991) and the Norm Activation Model (NAM; Schwartz, 1977). This integrated framework considers both rational and moral perspectives, which are crucial for a comprehensive understanding of the behavioral elements underlying ZWL adoption. Rational factors, including attitudes, subjective norms, and perceived behavioral control, provide insights into the practical aspects of ZWL, such as convenience, cost-effectiveness, and feasibility. On the other hand, moral factors encompass ethical considerations such as personal accountability and moral obligations. By combining rational and moral factors, this study seeks to attain a holistic comprehension of the complex

decision-making processes that influence individuals' adoption of ZWL, considering a diverse range of influences. In addition, this study aims to enhance understanding by addressing the 'intention-behaviour' gap, a phenomenon in which individuals' sound environmental knowledge, firmly held environmental values, beliefs and intentions do not materialize into sustainable behaviors (Ceglia et al., 2015). To be specific, the study is driven by the ensuing research questions:

RQ1) What are the drivers that encourage individuals to embrace a zero waste lifestyle (ZWL)?

RQ2) What strategies can be enacted to bridge the "intention-behavior" gap in the specific context of zero waste lifestyle (ZWL)?

This paper, therefore, serves as a significant contribution to both academia and policy makers. With this introductory chapter drawing to a close, the subsequent sections will unfold in the following order: Literature Review and Theoretical Framework, Conceptual Framework, Methodology, Results, Discussion, and finally, Conclusion.

2. Literature review and theoretical framework

2.1 Zero waste lifestyle

The Zero Waste Lifestyle (ZWL), as popularized by Bea Johnson through her personal experiences (Johnson, 2013), has gained significant attention in recent years due to escalating environmental concerns. Embracing ZWL can have a positive impact on one's quality of life by reducing their environmental footprint, promoting healthier choices, and potentially saving money through reduced consumption and waste (Johnson, 2013; Kaida & Kaida, 2016). This lifestyle movement has not only inspired individuals worldwide but has also emerged as a prominent consumer trend, driven by the increasing environmental consciousness of society

(Săplăcan & Márton, 2019). Consequently, gaining a deep understanding of the motivations and challenges associated with adopting ZWL becomes imperative (Tran, 2019).

Moreover, regulatory measures and extensive media coverage have acted as catalysts for this movement, indicating a promising potential for ZWL to become a commonplace way of life (Săplăcan & Márton, 2019). Interestingly, there exists a notable link between gender dynamics and ZWL, with gender roles both intensifying and evolving within ZWL communities (Wilde & Parry, 2022). Social media, being a significant influencer of consumer behavior, plays a pivotal role in propagating ZWL practices (Pratiwi et al., 2021). Furthermore, Bogusz et al. (2021) shed light on the complex relationship between ZWL and the reduction of food waste, showcasing how ZWL communities actively engage with these critical topics.

Murphy's (2019) investigation into the ZWL community on Instagram underscores the prominent position of individual responsibility in addressing plastic waste within the ZWL framework. Nevertheless, it does raise pertinent questions about the efficacy of certain ZWL strategies, particularly concerning plastic waste management. Furthermore, in shaping the adoption of ZWL, factors such as access to information and moral values play pivotal roles, offering opportunities for educational and promotional efforts (Maulana & Dwipayanti, 2022). Additionally, the ZWL holds the potential to meet diverse human needs and enhance overall well-being, highlighting the advantages of sustainable consumption (Zhan, 2022).

Spiteri (2021) emphasizes the seamless integration of ZWL practices into daily life, showcasing the comprehensive nature of the ZWL. Moreover, Salaysay (2019) underscores the vast potential of social media platforms in fostering ZWL practices and addressing pressing societal challenges. Despite the extant literature containing a limited number of investigations pertaining to the factors influencing the adoption of ZWL, the paucity of behavioral studies in this domain can be attributed to the nascent developmental phase of ZWL as a concept.

Furthermore, the intention-behavior gap remains conspicuously unaddressed within this context. Consequently, there exists a pressing imperative for a comprehensive and systematic inquiry to ameliorate these gaps in the existing academic discourse.

2.2 Theoretical framework

This study draws on two theoretical frameworks, notably TPB (Ajzen, 1991) and NAM (Schwartz, 1977). Regarding rational choice predictors, TPB has been widely utilized as a theoretical framework to predict various environmentally friendly behaviors (Alphonsa Jose & Sia, 2022; Ghaffar et al., 2023; Harun et al., 2022; Rakhmawati et al., 2023). TPB posits that human behavioral intention is driven by three rational factors: attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991; Wan et al., 2014). However, TPB encounters a significant limitation in its ability to account for the "attitude-behavior" or "intention-behavior" gap. The existence of the gap, as validated by empirical studies across numerous pro-environmental domains (El-Haffar et al., 2020; Park & Lin, 2020; Zhang et al., 2021), has prompted scholars to advocate for additional research to address the gap. Therefore, in this study, we propose to investigate factors that eliminate the discrepancy between individuals' intention to adopt ZWL and their actual adoption. Precisely, we pinpoint the extrinsic 'incentive measures' as a construct that strengthen the relationship between intention to adopt ZWL and ZWL adoption.

As opposed to TPB, which tends to overlook the importance of moral beliefs in sustainable behaviors, NAM places a greater emphasis on the significance of personal norms (moral obligations) in explaining individuals' sustainable behavior (Schwartz, 1977). NAM consists of three components: awareness of consequences, ascription of responsibility, and personal norms . The model posits that prosocial behaviors/intentions are driven by an individual's personal norms that are induced by awareness of consequences and ascription of responsibility (Schwartz, 1977). While it is frequently argued that the concept of "subjective norms" within

the TPB implicitly encompasses the role of personal norms, this effect is often oversimplified and not considered equivalent (Zhang et al., 2019).

The extant literature eloquently demonstrates that pro-environmental behaviors are driven by a blend of rational considerations and moral beliefs (Awais et al., 2022; Mehmood et al., 2023; Yeow & Loo, 2022). Therefore, integrating TPB and NAM will facilitate a holistic exploration of ZWL adoption, encompassing its rational and moral dimensions. Moreover, the TPB framework is widely criticized for its inclination towards self-interest and the desire for social approvals (Hamzah & Tanwir, 2021), whereas the NAM framework centers on individual pro-environmental motivations and moral obligations (De Groot & Steg, 2009). Thus, the integration of these frameworks effectively harnesses their combined strengths in a synergistic manner and resolves their inherent weaknesses. Therefore, the study puts forward a comprehensive, integrated framework by adopting 'attitude,' 'subjective norms,' and 'perceived behavioral control' from TPB and augmenting it with 'awareness of consequences' and 'personal norms' from the NAM.

This study does not include the NAM construct 'ascription of responsibility' in the model because it can be subsumed under personal norms, as posited by Kantola et al. (1982), who argue that the scales for the ascription of responsibility and personal norms are essentially similar, potentially engendering measurement issues. Moreover, several empirical investigations have revealed the direct impact of awareness of consequences on the formation of personal norms pertaining to pro-environmental behaviors (Rezaei et al., 2019; Song et al., 2019; Esfandiar et al., 2021), rendering the inclusion of ascription of responsibility as determinant to personal norms superfluous.

3. Conceptual framework

3.1 Awareness of consequences

Awareness of consequences is defined as "whether someone is aware of the negative consequences for others or for other things one values when not acting pro-socially" (De Groot & Steg, 2009, p. 426). For this research, we define awareness of consequences as the magnitude to which individuals are cognizant of the detrimental environmental consequences of waste generation and disposal. In a pro-environmental context, awareness of consequences can have a particularly strong influence on personal norms (Zhang et al., 2018; Wang et al., 2019). When individuals are aware of the adverse environmental repercussions of their actions, they may develop personal norms that prioritize environmental protection and sustainability (Sajid, et al., 2023a). For example, if individuals are aware of the environmental consequences of using single-use plastic bags, they may develop a personal norm of bringing their own reusable bags when shopping. This personal norm may guide their behavior and encourage them to make more sustainable choices (Ritchie et al., 2022). Therefore:

H1: Awareness of consequences positively influences personal norms.

Moreover, prior studies have depicted the relationship between awareness of consequences and attitude (Esfandiar et al., 2020; Sajid et al., 2022a). When people become conscious of the adverse outcomes linked with waste generation, it may create cognitive dissonance (Corsini et al., 2018). Cognitive dissonance refers to the discomfort that arises from holding conflicting beliefs or attitudes (Festinger, 1962). If individuals recognize that their current waste generation practices contribute to environmental harm and negative consequences, it creates a cognitive inconsistency. To reduce this dissonance, individuals may change their attitudes and align them with the goal of adopting ZWL. Thus, we expect that individuals' awareness of the detrimental effects of waste generation will impact their attitude toward ZWL. Therefore:

H2: Awareness of consequences positively influences attitude towards ZWL.

Similarly, awareness of the consequences of waste generation can influence individuals' subjective norms and their perceived social responsibility to take action to reduce waste (Park & Ha, 2014; Obuobi et al., 2022). This relationship can be explained through the lens of social identity theory, which suggests that individuals' behavior is influenced by their identification with social groups and their desire to maintain a positive social identity (Brown, 2000). In the context of waste generation, awareness of the consequences can shape individuals' social identity by making them conscious of their role as environmental stewards or responsible citizens (White et al., 2018). This heightened awareness triggers a process of identity alignment (Carter, 2013), where individuals feel a stronger connection to the group of environmentally-conscious individuals or sustainability advocates.

As a result of this identity alignment, individuals perceive a social pressure to adopt environmentally-friendly behaviors, including reducing waste generation. They feel compelled to be in accordance with the norms and values of their environmental peer group in order to maintain a positive social identity and gain social approval from like-minded individuals (Sajid et al., 2022a). Therefore, when individuals become cognizant of the consequences of waste generation, it induces their perceived subjective norms regarding the adoption of ZWL. Thus:

H3: Awareness of consequences positively influences subjective norms.

3.2 Personal norms

Personal norms, an integral component of the NAM (Schwartz, 1977), describe an individual's internalized sense of morality or responsibility to perform or restrain a particular behavior (De Groot & Steg, 2009). In this context, personal norms are operationally defined as the norms that guide an individual's decision to adopt ZWL based on moral principles. Individuals who are deeply influenced by personal norms to participate in pro-environmental actions are more inclined to maintain long-term behavioral changes (Wang et al., 2018; Van der Werff et al.,

2019). Consequently, studies have demonstrated a significant correlation between personal norms and the adoption of pro-environmental behaviors. For example, individuals who possess a robust personal norm of energy conservation demonstrate a higher likelihood of practicing energy-saving behaviors, such as switching off lights when exiting a room or utilizing energy-efficient appliances (Wittenberg et al., 2018; Lopes et al., 2019). Therefore:

H4: Personal norms positively influence intention to adopt ZWL.

3.3 Attitude

Attitude encompasses an individual's level of favorable or unfavorable assessment of a specific behavior (Ajzen & Fishbein, 1975; Ajzen, 1991). The attitude-intention relationship is the core element of many psychological theories, such as the Theory of Reasoned Action (Fishbein and Ajzen, 1977), TPB (Ajzen, 1991), and Behavioral Reasoning Theory (Westaby, 2005), to mention but a few. Attitudes are formed through cognitive evaluation, which entails appraising the positive or negative characteristics associated with a behavior or object (Ajzen, 1991). When individuals hold a favorable attitude toward a behavior, they perceive it as advantageous, beneficial, or in harmony with their personal values (Ajzen & Fishbein, 1975). This positive cognitive evaluation creates a foundation for the formation of intention, as individuals tend to demonstrate a greater inclination and preparedness to participate in behaviors they perceive positively. Moreover, the positive influence of attitude on intention has been exemplified in numerous pro-environmental contexts (Ertz et al., 2017, 2021; Sajid et al., 2023b; Tong et al., 2023). From the above literature review, we anticipate that a favorable attitude towards ZWL will lead to the intention to adopt ZWL. Thus:

H5: Attitude towards ZWL positively influences intention to adopt ZWL.

3.4 Subjective norms

Subjective norms encompass an individual's perception of the societal influence or pressure to partake in a specific behavior (Ajzen, 1991). When individuals perceive that their significant others or referent groups anticipate them to behave in a specific manner, they tend to conform to these expectations with a greater likelihood (Tong et al., 2023). For example, individuals who perceive support from their significant others, such as friends or family members, regarding pro-environmental behavior are more inclined to actively participate in such behavior themselves (Lou et al., 2022; Song et al., 2023). Numerous studies have demonstrated the significance of subjective norms in predicting pro-environmental behavioral intentions (Ao et al., 2022; Lou et al., 2022; Sonnenberg et al., 2022; Song et al., 2023). Therefore:

H6: Subjective norms positively influence intention to adopt ZWL.

3.5 Perceived behavioral control

Perceived behavioral control refers to an individual's belief in their capacity to execute a particular behavior or action (Ajzen, 1991). Individuals who possess a heightened level of perceived behavioral control demonstrate a greater propensity to participate in pro-environmental behaviors (Sonnenberg et al., 2022). This is because they feel confident in their capacity to carry out the behavior and believe they have control over the situation (Lou et al., 2022). The practice of ZWL necessitates substantial alterations to an individual's everyday routine and consumption practices, posing a challenge to maintaining this lifestyle over an extended period of time (Johnson, 2013; Coskun, 2022). Given this situation, individuals must possess a heightened sense of control over adopting ZWL to develop a strong intention toward its adoption. Hence:

H7: Perceived behavioral control positively influences intention to adopt ZWL.

3.6 Intention to adopt ZWL

Intention refers to an individual's conscious plan or decision to engage in a particular behavior or action (Ajzen, 1991). Intentions lead to behaviors since they serve as a cognitive roadmap that directs attention, planning, and initiating action (Ajzen, 1991; Zhang et al., 2019). In consumer behavior research, it has been commonly held that intention and behavior are either synonymous or significantly interrelated (Ajzen & Fishbein, 2005). However, a divergence often emerges between intention and behavior, whereby individuals may fail to engage in behaviors that align with their intentions (El-Haffar et al., 2020; Lin & Shi, 2022). This may occur in various contexts, but it is often more prevalent in pro-environmental contexts for numerous reasons, such as the perceived lack of policy effectiveness (Lin & Shi, 2022), time lag effect (Zhang et al., 2023), lack of environmental responsibility (Hua & Dong, 2023), government stimulus and facilities accessibility (Zhang et al., 2019). Thus, we anticipate that a strong intention to engage in ZWL will not necessarily result in corresponding ZWL adoption. In sum, the intention to adopt ZWL is, in principle, positively related to ZWL adoption, but the intention will be higher than the actual behavior. Therefore, we posit the subsequent hypothesis:

H8: Intention to adopt ZWL positively influences ZWL adoption, but the intention will be higher than actual behavior.

3.7 Incentive measures

Incentive measures refer to policies or interventions designed to encourage individuals or organizations to engage in pro-environmental behavior by providing some form of reward or benefit (Ghesla et al., 2020). In a pro-environmental context, incentive measures can take many forms, including financial incentives such as tax breaks or rebates for purchasing energy-efficient products, non-financial incentives such as recognition or social approval for engaging in pro-environmental behavior, or regulatory incentives such as mandatory recycling programs

(Fontecha et al., 2022). In addition, based on the theory of welfare economics, individuals can be encouraged to consistently participate in pro-social and altruistic behaviors by implementing intervention measures such as incentives, which may serve to counterbalance the personal interests individuals may have to relinquish (Ostrom, 2000).

Individuals commonly face challenges and additional costs in adopting ZWL, such as investing additional time and effort in learning about sustainable living and purchasing waste management equipment (e.g., recycling bins) (B. Johnson, 2013). Given these added burdens, individuals may hesitate to commit to ZWL, despite intending to do so. In this context, offering monetary/non-monetary incentive measures can compensate for the extra money, time, and effort required, thereby encouraging individuals to bridge the intention-behavior gap and put their zero waste aspirations into action. In addition, incentive measures help promote behavior change by addressing the cost-benefit analysis individuals engage in when deciding whether to adopt a new lifestyle (Nash et al., 1975) and can ultimately contribute to realizing a more sustainable future. Hence:

H9: The relationship between intention to adopt ZWL and ZWL adoption is moderated by incentive measures, such that the positive relationship between intention to adopt ZWL and ZWL adoption is stronger when consumers believe that the incentive measures compensate for the extra money, time, and effort required to adopt ZWL.

Drawing upon an extensive review of the literature, we present herein the conceptual framework underpinning this study (Figure 1):

-Insert Figure 1 here-

4. Methods

4.1 Scales

To fortify the reliability and validity, we utilized previously validated measurement scales published in reputable scholarly journals (Ertz et al., 2021). Hence, drawing on Ertz et al. (2021), attitude towards ZWL, subjective norms, and perceived behavioral control were assessed with scales adapted from Taylor and Todd (1995), Sparks et al. (1997) as well as Paul et al. (2016), respectively. Furthermore, the measurement items for personal norms were adapted from Tonglet et al. (2004). Awareness of consequences was operationalized based on Wang et al. (2019). Further, the scales for intention to adopt ZWL and ZWL adoption were adapted from Ajzen (1991) as well as Wu and Chen (2014). Moreover, incentive measures were scaled based on Wang et al. (2017) and Hu et al. (2019) (See Appendix A). All the scales were measured based on a 5-point Likert scale, with response options spanning from "Strongly Disagree" (1) to "Strongly Agree" (5).

4.2 Study area and population

This study examined the behavioral antecedents of ZWL adoption among the residents of Kochi, a city located in the southern Indian state of Kerala, where the inefficient waste management system has led to a huge generation of waste and resulted in a drastic dump yard blaze (BBC, 2023; TNN, 2023). The selection of Kochi as the study site stems from the pressing necessity to embrace sustainable lifestyles and implement effective waste management practices in the area. This urgency arises due to the adverse environmental and public health consequences associated with inadequate waste management systems. The recent uncontained fire and resulting toxic fumes from the Kochi dump yard blaze (Anand, 2023; BBC, 2023) serve as a reminder of the pressing need to promote and encourage the adoption of ZWL. The outcomes of this study can provide significant insights into effective strategies to promote and encourage individuals to adopt sustainable lifestyles, thus contributing to the formulation of interventions and policies designed to alleviate the adverse effects of inefficient

waste management systems in the state of Kerala, India, and beyond, in other developing contexts.

4.3 Sampling and data collection

In the current study, data was collected from general consumers who had been residing in Kochi for a minimum of two years through a mall/supermarket intercept survey. This method has been previously employed in various studies (Khare et al., 2019; El-Haffar et al., 2020). Specifically, a random selection of a supermarket/mall was made, where every fifth individual exiting the supermarket/mall was randomly chosen to participate in the survey. Before starting the survey, the participants were provided with an introduction to ZWL, an explanation of the research objectives, and the required time commitment. Additionally, they were guaranteed confidentiality of their responses and informed that the information would solely be used for research purposes. The survey lasted for 12 days at each site and included the completion of questionnaires by 374 respondents. After screening for incomplete and unsuitable responses, a final sample of 349 respondents was deemed suitable for inclusion in the statistical analyses. This sample size is considered sufficient for conducting Partial Least Squares-Structural Equation Modeling (PLS-SEM) (Hair et al., 2019). Demographic profile of the respondents are provided in Table 2.

-Insert Table 2 here-

4.4 Data analysis strategy

PLS-SEM in SmartPLS 3.3 was used for the statistical analyses in this study. PLS-SEM is a popular and widely used approach for examining intricate relationships among latent variables (Sarstedt et al., 2022). It is beneficial when dealing with small sample size data sets, non-normal distribution, or both (Dash and Paul, 2021).

5. Results

5.1 Common method bias

Self-administered surveys may be subject to common method bias (CMB), which refers to respondents consistently responding in the same way across all items or measures (Podsakoff et al., 2003). To identify the likelihood of CMB in our study, we employed Harman's single-factor test. The outcomes of this test revealed that the highest proportion of variance accounted for a single factor is 37.93%. This value is within the acceptable limit of 50% and suggests that the influence of CMB on this study's results is minimal (Podsakoff et al., 2003).

5.2 Measurement model

Measurement validation in PLS-SEM comprises the assessment of reliability and validity (Hair et al., 2019). Item reliability is verified by scrutinizing the factor loadings. According to PLS-SEM guidelines, factor loadings must be at least 0.708 (Hair et al., 2019), while the lowest value observed in this study is 0.790 (INT 1; Table 1), confirming overall item reliability. For assessing internal consistency, composite reliability (CR) is the widely employed metric in the majority of PLS-SEM studies (Sarstedt et al., 2022). CR values ranging from 0.70 to 0.95 are considered safe and indicate satisfactory levels of internal consistency in social sciences research (Hair et al., 2019). As illustrated in Table 1, all CR values fall within the acceptable range of values, thereby confirming internal consistency reliability. To assess convergent validity, we analyzed the AVE values, and the findings indicate that convergent validity is corroborated, as the lowest observed AVE value of 0.633 (Table 3) exceeds the threshold (Hair et al., 2019). Finally, To evaluate the discriminant validity, we applied the Fornell & Larcker (1981) criterion. The results demonstrate that the square roots of all AVE values exceed the inter-construct correlation values in the respective rows and columns (Table 4), providing substantial evidence of discriminant validity.

-Insert Table 3 here-

-Insert Table 4 here-

5.3 Structural model

This analysis consisted of a comprehensive testing to validate the proposed conceptual model, which involved the examination of eight direct effects. The results support the relationship of awareness of consequences with personal norms, attitude towards ZWL, and subjective norms (H1-H3). Besides, the results report that personal norms, attitude towards ZWL, subjective norms, and perceived behavioral control positively predict the intention to adopt ZWL (H4-H7). However, it should be noted that although a significant relationship was observed between the intention to adopt ZWL and actual ZWL adoption in the PLS-SEM analysis, this finding alone is insufficient to fully confirm H8, which proposes a specific directional relationship with a magnitude expectation. Therefore, to comprehensively assess H8, a comparison of the mean values for both intentions to adopt ZWL and actual ZWL adoption was conducted. This analysis indicated that the intention to adopt ZWL (M= 3.413) exhibited a higher mean value compared to ZWL adoption (M= 2.724), thereby confirming H8 (See Table 5).

Further, the model explains a 56.4% variance in intention to adopt ZWL and a 17.2% variance in ZWL adoption. Moreover, the model's generalizability to different populations was evaluated by examining the predictive power (Hair, 2021). For this purpose, we employed PLSpredict (Shmueli et al., 2016). To obtain sufficient predictive power for the model in PLSpredict, Q^2 values should surpass zero, and RMean Square Error and Mean Absolute Error values should be positive (Woodside, 2013). Upon satisfying the aforementioned prerequisites, the present investigation has effectively manifested the predictive validity of the structural model.

-Insert Table 5 here-

5.4 Analysis of the moderating effect

The moderating effect of incentive measures in the relationship between intention to adopt ZWL and ZWL adoption was tested using Hayes' (2017) model 1 in PROCESS macro 4.0 with

5000 resamples. The results indicate a significant moderating effect of incentive measures between intention to adopt ZWL and ZWL adoption ($\beta = 0.190$; $t = 4.544$; LLCI $= 0.108$, ULCI $= 0.272$). Further, upon analyzing the moderation plot, it is evident that as the values of the moderator increase, the relationship between intention and ZWL adoption also increases. This finding suggests that individuals with higher levels of the moderator variable (represented by +1 SD) exhibit a stronger relationship between their intention to adopt a ZWL and their actual adoption of the lifestyle. Similarly, individuals with values at the Mean of the moderator variable also show a significant relationship between intention and ZWL adoption. Even those with values at -1 SD of the moderator variable also exhibit a significant relationship (See Figure 2).

-Insert Figure 2 here-

6. Discussion

The primary aims of this empirical investigation are to rigorously examine the behavioral antecedents of ZWL adoption and explore the potential existence of an intention-behavior discrepancy in the context of adopting ZWL in a developing economy context. Additionally, this inquiry endeavors to identify effective strategies for bridging that intention-behavior gap.

Specifically, the results lend support to the influence of awareness of consequences on personal norms, attitude towards ZWL, and subjective norms. This observation is generally in accordance with the studies conducted in emerging economies in different contexts (Zhang et al., 2018; Wang et al., 2019; Obuobi et al., 2022; Sajid et al., 2022b). In the context of ZWL, awareness of the consequences of waste generation may lead individuals to develop personal norms that prioritize environmental sustainability and waste reduction. This may also lead to more positive attitudes towards ZWL and stronger subjective norms from peers and community members who share similar values.

Further, the results illustrate that personal norms positively relate to the intention to adopt ZWL, in line with the NAM studies from an emerging economy (Zhang et al., 2018; Rosenthal, 2022). This result can be attributed to two factors. First, individuals with strong personal norms may have a greater perception of accountability and obligation to act in an environmentally-responsible manner, which may motivate them to adopt zero waste lifestyle. Second, personal norms may guide behavior, providing individuals with a clear understanding of what is expected of them and what they should strive to achieve. Therefore, individuals characterized by robust personal norms are more prone to embracing zero waste behaviors to fulfill their values and beliefs.

Furthermore, the study provides evidence of the relationship between attitude towards ZWL, subjective norms, perceived behavioral control, and the intention to adopt ZWL, confirming the extant TPB literature (Ajzen, 1991; Sajid et al., 2022a). These relationships can be explained by the psychological mechanisms proposed by TPB (Ajzen, 1991). Attitude towards ZWL reflects an individual's favorable or unfavorable assessment of the zero waste activities, which may influence their motivation to adopt ZWL. Perceived behavioral control over ZWL reflects an individual's belief in their capacity to engage in the behavior, which may affect their confidence in their ability to adopt ZWL. Subjective norms related to ZWL reflect the perceived societal influence that encourages or pressures individuals to engage in the behavior, potentially influencing their perception of socially acceptable or desirable conduct.

Besides, the findings exemplify that the intention to adopt a ZWL positively impacts actual adoption, but the level of intention surpasses that of actual behavior, thus confirming the presence of an intention-behavior gap (H1) in this particular context. This result aligns with previous studies conducted in other contexts (Echegaray & Hansstein, 2017; Zhang et al., 2021). It's important to note that these studies were conducted within the settings of emerging economies. One plausible elucidation for this result is a lack of knowledge or skills. Individuals

may be motivated to reduce their waste but may not know how to do so or may not have access to the necessary resources. Additionally, cultural practices may be obstacles to adopting zero waste behaviors. For example, single-use plastic bags are commonly used in India, and it may be difficult for individuals to break away from this habit due to the convenience and availability of such items. Economic factors may also play a role, as environmentally sustainable products and practices may be more expensive or not as widely available as less sustainable alternatives. Finally, government policies and infrastructure may not yet be supportive of zero waste initiatives, making it more difficult for individuals to adopt such practices.

As a measure to eliminate the intention-behavior gap in the current context, this paper tested the effect of incentive measures on the relationship between intention to adopt ZWL and ZWL adoption (H9). The results provide evidence that incentive measures play a constructive moderating role in the association between intention and actual adoption of zero waste lifestyle, indicating that individuals who receive incentives are prone to participate in zero waste behaviors. One possible explanation for this finding is that incentives provide individuals with additional motivation and resources to overcome barriers to adopting zero waste behaviors (Vorobeva et al., 2022).

6.1 Theoretical contributions

This study presents a plethora of noteworthy contributions to the prevailing literature. First, this is the first attempt, at least to the authors' knowledge, to examine the behavioral antecedents of a zero waste lifestyle. Second, the findings of this study provide insights into the intention-behavior gap in zero waste lifestyle adoption. Specifically, it sheds light on why individuals might express an inclination to adopt zero waste lifestyle but fail to translate their intentions into behavior. By pinpointing the factors that either hinder or facilitate the association between behavioral intention and actual behavior, policymakers can calibrate their strategies to effectively encourage the adoption of zero waste lifestyle on a larger scale. Third,

this study has the potential to make valuable contributions to the existing body of literature addressing the disparity between intention and behavior, providing insights into this complex area of research. The field of consumer behavior has traditionally considered intention to be identical to, or at least closely associated with actual behavior. However, there frequently remains a disparity between individuals' intentions and actual behavior, commonly referred to as "literal inconsistency" in consumer behavior (Ajzen & Fishbein, 2005). This research reaffirms the significant influence of intention in shaping behavior while offering a theoretical explanation for the inconsistency observed in adopting a zero waste lifestyle.

6.2 Implications

To promote a ZWL, policymakers can take a multifaceted approach that addresses various behavioral factors contributing to waste generation. First, policymakers can increase awareness of the consequences of waste generation, highlighting the environmental, health, and economic impacts of waste. By building awareness of these issues and promoting the need for waste reduction, policymakers can encourage individuals to adopt ZWL. This can be done through public education campaigns, public service announcements, and targeted messaging to specific groups, such as businesses and households. Second, policymakers can promote the benefits of ZWL through education and awareness campaigns. By highlighting the positive impact on the environment and personal health, policymakers can encourage individuals to adopt a positive attitude toward ZWL. This can be accomplished by employing various strategies such as public service announcements, social media campaigns, and educational initiatives implemented in educational institutions ranging from schools to universities.

Third, policymakers can encourage social influence by highlighting the growing trend of ZWL adoption and promoting positive social norms around waste reduction. By showcasing the number of individuals who have adopted ZWL and the benefits of waste reduction, policymakers can create a sense of community and encourage individuals to adopt a similar

lifestyle. This can be done through community-based initiatives and peer-to-peer education programs. Fourth, policymakers can support individuals adopting ZWL by encouraging reuse initiatives (e.g., secondhand networks) or providing access to recycling facilities and alternative waste disposal methods. By increasing perceived behavioral control, policymakers can make it easier for individuals to adopt ZWL and reduce their waste generation. This can be done through public investment in reuse and waste management infrastructure and promoting responsible waste disposal practices.

Fifth, policymakers can encourage personal responsibility by promoting the idea that individuals can make a difference through their actions. By highlighting the personal benefits of ZWL and the sense of satisfaction that comes with positively impacting the environment, policymakers can encourage individuals to take responsibility for their waste generation. This can be done through messaging that highlights the positive impact of ZWL on personal health and well-being.

Finally, to bridge the intention-behavior gap, policymakers can implement reward programs for individuals who successfully adopt and maintain a ZWL. These rewards could be monetary, such as tax credits or rebates, or non-monetary, such as bonus points that can be exchanged for products or honorary titles and certificates. By providing tangible rewards for ZWL adoption, policymakers can increase the likelihood that individuals will follow through on their intentions and sustain their ZWL practices over time.

6.3 Limitations and future research agenda

While this study provides valuable theoretical and practical implications, it is essential to acknowledge its limitations, as with any study. One potential limitation of this study lies in the sample size and composition, raising concerns about its representativeness to the wider population. Additionally, the study depended on data gathered through self-reporting, which introduces the possibility of biases and inaccuracies. Further, the study focused solely on the

factors that influenced adopting a zero waste lifestyle and did not examine potential barriers to adoption. Moreover, the study solely focused on investigating the moderating effect of incentive measures on the link between the intention to adopt ZWL and actual ZWL adoption. Therefore, the potential influence of other relevant constructs, such as perceived effectiveness, remains unexplored. Future research could address these limitations by using larger and more diverse samples, employing alternative data collection methods, investigating potential barriers to adoption, and examining the role of additional factors that can attenuate the intention-behavior gap.

7. Conclusion

This empirical investigation has delved deeply into the behavioral antecedents of adopting ZWL within the context of a developing economy. The study not only confirmed the relevance of factors such as awareness of consequences, personal norms, attitude towards ZWL, subjective norms, and perceived behavioral control but also highlighted the presence of an intention-behavior gap in ZWL adoption. This gap can be attributed to various challenges, including limited knowledge, cultural practices, economic factors, and the absence of supportive government policies. Moreover, this research introduced a novel dimension by exploring the impact of incentive measures in bridging the intention-behavior gap. The findings underscore the constructive role incentives can play in motivating individuals to engage in zero waste behaviors, providing valuable insights for policymakers seeking effective strategies to promote ZWL adoption.

-Insert appendix A here-

References

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, *50*(50), 179–211.

Ajzen, I., & Fishbein, M. (1975). A Bayesian analysis of attribution processes. *Psychological Bulletin*, *82*(2), 261–277.

Ajzen, I., & Fishbein, M. (2005). The Influence of Attitudes on Behavior. *The Handbook of Attitudes*, 187–236.

Alphonsa Jose, K., & Sia, S. K. (2022). Theory of planned behavior in predicting the construction of eco-friendly houses. *Management of Environmental Quality: An International Journal*, *33*(4), 938–954.

Anand, N. (2023, March 10). Kochi struggles to breathe amid toxic smoke: What led to Brahmapuram plant fire? *Hindustan Times*. https://www.hindustantimes.com/cities/kochi-struggles-to-breathe-amid-toxic-smoke-what-led-to-brahmapuram-plant-fire-101678424135737.html

Ao, Y., Zhu, H., Wang, Y., Zhang, J., & Chang, Y. (2022). Identifying the driving factors of rural residents' household waste classification behavior: Evidence from Sichuan, China. *Resources, Conservation and Recycling*, *180*.

Aruta, J. J. B. R. (2022). An extension of the theory of planned behaviour in predicting intention to reduce plastic use in the Philippines: Cross-sectional and experimental evidence. *Asian Journal of Social Psychology*, *25*(3), 406–420.

Awais, M., Fatima, T., & Awan, T. M. (2022). Assessing behavioral intentions of solar energy usage through value-belief-norm theory. *Management of Environmental Quality: An International Journal*, *33*(6), 1329–1343.

Bank, W. (2022). *Solid Waste Management*. https://www.worldbank.org/en/topic/urbandevelopment/brief/solid-waste-management

BBC. (2023, March 6). Brahmapuram fire: India's Kochi city covered in toxic haze from

waste dump fire. *BBC*. https://www.bbc.com/news/world-asia-india-64835273

Bogusz, M., Matysik-pejas, R., Krasnodębski, A., & Dziekański, P. (2021). The concept of

zero waste in the context of supporting environmental protection by consumers.

Energies, *14*(18).

Brown, R. (2000). Social identity theory: Past achievements, current problems and future

challenges. *European Journal of Social Psychology*, *30*(6), 745–778.

Carter, M. J. (2013). Advancing Identity Theory. *Social Psychology Quarterly*, *76*(3), 203–

223.

Ceglia, D., de Oliveira Lima, S. H., & Leocádio, Á. L. (2015). An Alternative Theoretical

Discussion on Cross-Cultural Sustainable Consumption. *Sustainable Development*,

23(6), 414–424.

Corsini, F., Gusmerotti, N. M., Testa, F., & Iraldo, F. (2018). Exploring waste prevention

behaviour through empirical research. *Waste Management*, *79*, 132–141.

Coskun, S. (2022). Zero Waste Management Behavior: Conceptualization, Scale

Development and Validation—A Case Study in Turkey. *Sustainability (Switzerland)*,

14(19).

Dash, G., & Paul, J. (2021). CB-SEM vs PLS-SEM methods for research in social sciences

and technology forecasting. *Technological Forecasting and Social Change*, *173*(June),

121092.

De Groot, J., & Steg, L. (2009). Morality and prosocial behavior: The role of awareness,

responsibility, and norms in the norm activation model. *Journal of Social Psychology*,

149(4), 425–449.

Echegaray, F., & Hansstein, F. V. (2017). Assessing the intention-behavior gap in electronic

waste recycling: the case of Brazil. *Journal of Cleaner Production*, *142*, 180–190.

ECONOTIMES. (2017). *Why Developing Countries Struggle to Develop*. ECONOTIMES.
https://econotimes.com/why-developing-countries-struggle-to-develop-928411

ElHaffar, G., Durif, F., & Dubé, L. (2020). Towards closing the attitude-intention-behavior
gap in green consumption: A narrative review of the literature and an overview of future
research directions. *Journal of Cleaner Production*, *275*.

Ertz, M., & Favier, R. (2021). *To waste or not to waste ? Empirical study of waste
minimization behavior*. *131*(June 2020), 443–452.

Ertz, M., Favier, R., Robinot, É., & Sun, S. (2021). To waste or not to waste? Empirical study
of waste minimization behavior. *Waste Management*, *131*, 443–452.

Ertz, M., Huang, R., Jo, M. S., Karakas, F., & Sarigöllü, E. (2017). From single-use to multi-
use: Study of consumers' behavior toward consumption of reusable containers. *Journal
of Environmental Management*, *193*, 334–344.

Esfandiar, K., Dowling, R., Pearce, J., & Goh, E. (2020). Personal norms and the adoption of
pro-environmental binning behaviour in national parks: an integrated structural model
approach. *Journal of Sustainable Tourism*, *28*(1), 10–32.

Esfandiar, K., Dowling, R., Pearce, J., & Goh, E. (2021). What a load of rubbish! The
efficacy of theory of planned behaviour and norm activation model in predicting
visitors' binning behaviour in national parks. *Journal of Hospitality and Tourism
Management*, *46*(January), 306–315.

Festinger, L. (1962). Cognitive dissonance. *Scientific American*, *207*(4), 98–99.

Fishbein, M., & Ajzen, I. (1977). Intention and Behavior: An introduction to theory and
research. *Philos. Rhetor.*, *5*(3), 177–189.

Fontecha, J. E., Nikolaev, A., Walteros, J. L., & Zhu, Z. (2022). Scientists wanted? A

　　literature review on incentive programs that promote pro-environmental consumer

　　behavior: Energy, waste, and water. *Socio-Economic Planning Sciences*, *82*.

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with

　　Unobservable Variables and Measurement Error. *Journal of Marketing Research*, *18*(1),

　　39.

Ghaffar, A., Zaheer Zaidi, S. S., & Islam, T. (2023). An investigation of sustainable

　　consumption behavior: the influence of environmental concern and trust in

　　sustainable producers on consumer xenocentrism. *Management of Environmental*

　　Quality: An International Journal.

Ghesla, C., Grieder, M., Schmitz, J., & Stadelmann, M. (2020). Pro-environmental incentives

　　and loss aversion: A field experiment on electricity saving behavior. *Energy Policy*, *137*.

Hair, J. F. (2021). Next-generation prediction metrics for composite-based PLS-SEM.

　　Industrial Management and Data Systems, *121*(1), 5–11.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report

　　the results of PLS-SEM. *European Business Review*, *31*(1), 2–24.

Hamzah, M. I., & Tanwir, N. S. (2021). Do pro-environmental factors lead to purchase

　　intention of hybrid vehicles? The moderating effects of environmental knowledge.

　　Journal of Cleaner Production, *279*.

Harun, S. A., Fauzi, M. A., & Sulaiman, N. S. (2022). Examining consumer's purchasing

　　behavior of energy-efficient appliance through the lenses of theory of planned behavior

　　and environmental factors. *Management of Environmental Quality: An International*

　　Journal, *33*(5), 1207–1225.

Hayes, A. (2017). Integrating Mediation and Moderation Analysis: fundamentals using PROCESS. In *Introduction to Mediation, Moderation and Conditional Process Analysis*.

Holt, S. P., & Berge, N. D. (2018). Life-cycle assessment of using liquid hazardous waste as an alternative energy source during Portland cement manufacturing: A United States case study. *Journal of Cleaner Production*, *195*, 1057–1068.

Hu, H., Zhang, J., Wang, C., Yu, P., & Chu, G. (2019). What influences tourists' intention to participate in the Zero Litter Initiative in mountainous tourism areas: A case study of Huangshan National Park, China. *Science of the Total Environment*, *657*, 1127–1137.

Hua, Y., & Dong, F. (2023). Can environmental responsibility bridge the intention-behavior gap? Conditional process model based on valence theory and the theory of planned behavior. *Journal of Cleaner Production*, 376.

Hussein, M., Yoneda, K., Mohd-Zaki, Z., Amir, A., & Othman, N. (2021). Heavy metals in leachate, impacted soils and natural soils of different landfills in Malaysia: An alarming threat. *Chemosphere*, *267*.

Ibor, O. R., Eni, G., Andem, A. B., Bassey, I. U., Arong, G. A., Asor, J., Regoli, F., & Arukwe, A. (2020). Biotransformation and oxidative stress responses in relation to tissue contaminant burden in Clarias gariepinus exposed to simulated leachate from a solid waste dumpsite in Calabar, Nigeria. *Chemosphere*, *253*.

IYNF. (2018). *Sustainable Development and its Challenges in Developing Countries*. MEDIUM. https://medium.com/@iynf/sustainable-development-and-its-challenges-in-developing-countries-487a333184a0

Johnson, B. (2013). *Zero waste home: The ultimate guide to simplifying your life by reducing*

your waste.

Johnson, B. L., & DeRosa, C. (1997). The toxicologic hazard of Superfund hazardous-waste sites. *Reviews on Environmental Health*, *12*(4), 235–251.

Kaida, N., & Kaida, K. (2016). Pro-environmental behavior correlates with present and future subjective well-being. *Environment, Development and Sustainability*, *18*(1), 111–127.

Kantola, S. J., Syme, G. J., & Campbell, N. A. (1982). The Role of Individual Differences and External Variables in a Test of the Sufficiency of Fishbein's Model to Explain Behavioral Intentions to Conserve Water. *Journal of Applied Social Psychology*, *12*(1), 70–83.

Khare, A., Sarkar, S., & Patel, S. S. (2019). Influence of culture, price perception and mall promotions on Indian consumers' commitment towards malls. *International Journal of Retail and Distribution Management*, *47*(10), 1093–1124.

Khawar Balwan, W., Singh, A., & Kour, S. (2022). 5R's of zero waste management to save our green planet: A narrative review. *European Journal of Biotechnology and Bioscience*, *10*(1), 7–11. www.biosciencejournals.com

Lin, B., & Shi, L. (2022). Identify and bridge the intention-behavior gap in new energy vehicles consumption: Based on a new measurement method. *Sustainable Production and Consumption*, *31*, 432–447.

Lopes, J. R. N., Kalid, R. de A., Rodríguez, J. L. M., & Ávila Filho, S. (2019). A new model for assessing industrial worker behavior regarding energy saving considering the theory of planned behavior, norm activation model and human reliability. *Resources, Conservation and Recycling*, *145*(March), 268–278.

Lou, S., Zhang, X., & Zhang, D. (2022). What determines the battery recycling behavior of

electric bike users?: Introducing recycling convenience into the theory of planned behavior. *Journal of Cleaner Production*, *379*.

Maulana, S. A., & Utami Dwipayanti, N. M. (2022). Perception and Factors associated with Zero Waste Lifestyle among University Students in Medical Faculty, Udayana University, Bali. *IOP Conference Series: Earth and Environmental Science*, *1095*(1).

Mehmood, K., Jabeen, F., Rehman, H., Iftikhar, Y., & Khan, N. A. (2023). Understanding the boosters of employees' voluntary pro-environmental behavior: a time-lagged investigation. *Environment, Development and Sustainability*.

Mertens, S. N., & Schultz, P. W. (2021). Referent group specificity: Optimizing normative feedback to increase residential recycling. *Journal of Environmental Psychology*, *73*.

Minelgaitė, A., & Liobikienė, G. (2019). Waste problem in European Union and its influence on waste management behaviours. *Science of the Total Environment*, *667*, 86–93.

Murphy, M. (2019). Zero Waste on Instagram Through the Lens of Precautionary Consumption. *Gettysburg Social Sciences Review*, *3*(1), 3.

Nash, C., Pearce, D., & Stanley, J. (1975). an Evaluation of Cost-Benefit Analysis Criteria. *Scottish Journal of Political Economy*, *22*(2), 121–134.

Obuobi, B., Zhang, Y., Adu-Gyamfi, G., Nketiah, E., Grant, M. K., Adjei, M., & Cudjoe, D. (2022). Fruits and vegetable waste management behavior among retailers in Kumasi, Ghana. *Journal of Retailing and Consumer Services*, *67*.

Ostrom, E. (2000). Collective action and the evolution of social norms. *J. Econ. Perspect.*, *6*(4), 235–252.

Park, H. J., & Lin, L. M. (2020). Exploring attitude–behavior gap in sustainable consumption: comparison of recycled and upcycled fashion products. *Journal of*

Business Research, *117*, 623–628.

Park, J., & Ha, S. (2014). Understanding Consumer Recycling Behavior: Combining the
Theory of Planned Behavior and the Norm Activation Model. *Family and Consumer
Sciences Research Journal*, *42*(3), 278–291.

Paul, J., Modi, A., & Patel, J. (2016). Predicting green product consumption using theory of
planned behavior and reasoned action. *Journal of Retailing and Consumer Services*,
29(December), 123–134.

Piligrimiene, Ž., Žukauskaite, A., Korzilius, H., Banyte, J., & Dovaliene, A. (2020). Internal
and external determinants of consumer engagement in sustainable consumption.
Sustainability (Switzerland), *12*(4).

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common Method
Biases in Behavioral Research: A Critical Review of the Literature and Recommended
Remedies. *Journal of Applied Psychology*, *88*(5), 879–903.

Pratiwi, P. Y., Handra, T., & Choirisa, S. F. (2021). Determinants of Zero Waste Lifestyle
Adoption Among Generation-Z. *Conference Series*, *3*(2), 371–384.

Raghu, S. J., & Rodrigues, L. L. R. (2020). Behavioral aspects of solid waste management: A
systematic review. *Journal of the Air and Waste Management Association*, *70*(12),
1268–1302.

Rakhmawati, T., Damayanti, S., Jati, R. K., & Astrini, N. J. (2023). An extended TPB model
of waste-sorting intention: a case study of Indonesia. *Management of Environmental
Quality: An International Journal*.

Rezaei, R., Safa, L., Damalas, C. A., & Ganjkhanloo, M. M. (2019). Drivers of farmers'
intention to use integrated pest management: Integrating theory of planned behavior and

norm activation model. *Journal of Environmental Management*, *236*(November 2018), 328–339.

Ritchie, B. W., Prideaux, B., Thompson, M., & Demeter, C. (2022). Understanding tourists' attitudes toward interventions for the Great Barrier Reef: an extension of the norm activation model. *Journal of Sustainable Tourism*, *30*(6), 1364–1383.

Rosenthal, S. (2022). Information sources, perceived personal experience, and climate change beliefs. *Journal of Environmental Psychology*, *81*.

Sajid, M., K.A., Z., Surira, M. D., & Peethambaran, M. (2023a). Flipping the Script: How Awareness of Positive Consequences Outweigh Negative in Encouraging Tourists' Environmentally Responsible Behavior? *Journal of Sustainable Tourism*.

Sajid, M., Midhun, V., K.A., Z., Surira, M. D., & K.P., V. (2023b). Pedaling Towards Sustainability: A Mixed-Method Study of the Drivers and Barriers to Bike-sharing Adoption. *Management of Environmental Quality*, *ahead-of-p*.

Sajid, M., & Zakkariya, K. A. (2022). Reasons for resistance to e-waste recycling: evidence from an emerging economy. *Asia Pacific Journal of Marketing and Logistics*, *35*(6), 1330–1348.

Sajid, M., Zakkariya, K. A., & Peethambaran, M. (2022). Predicting virtual care continuance intention in the post-COVID world : Empirical evidence from an emerging economy. *International Journal of Healthcare Management (Ahead-of-Print)*.

Sajid, M., Zakkariya, K. A., Peethambaran, M., & George, A. (2022). Determinants of on-demand ridesharing: the role of awareness of environmental consequences. *Management of Environmental Quality: An International Journal*, *33*(4), 847–863.

Salaysay, L. J. L. (2019). Can a Facebook Group Make People's Lifestyle Zero-Waste? *E-*

Proceedings of the International Conference on Distance Learning, 223.

Săplăcan, Z., & Márton, B. (2019). Determinants of Adopting a Zero Waste Consumer Lifestyle. *Regional and Business Studies*, *11*(2), 25–39.

Sarstedt, M., Hair, J. F., Pick, M., Liengaard, B. D., Radomir, L., & Ringle, C. M. (2022). Progress in partial least squares structural equation modeling use in marketing research in the last decade. *Psychology and Marketing*, *39*(5), 1035–1064.

Schwartz, S. H. (1977). Normative influences on altruism. *Advances in Experimental Social Psychology*, *10*(C), 221–279.

Shmueli, G., Ray, S., Velasquez Estrada, J. M., & Chatla, S. B. (2016). The elephant in the room: Predictive performance of PLS models. *Journal of Business Research*, *69*(10), 4552–4564.

Singh, P. P., & Ambika. (2022). Solid waste management through the concept of zero waste. *Emerging Trends to Approaching Zero Waste: Environmental and Social Perspectives*, 293–318.

Song, J., Cai, L., Yuen, K. F., & Wang, X. (2023). Exploring consumers' usage intention of reusable express packaging: An extended norm activation model. *Journal of Retailing and Consumer Services*, *72*.

Song, Y., Zhao, C., & Zhang, M. (2019). Does haze pollution promote the consumption of energy-saving appliances in China? An empirical study based on norm activation model. *Resources, Conservation and Recycling*, *145*(March), 220–229.

Sonnenberg, N. C., Stols, M. J., Taljaard-Swart, H., & Marx-Pienaar, N. J. M. M. (2022). Apparel disposal in the South African emerging market context: Exploring female consumers' motivation and intent to donate post-consumer textile waste. *Resources,*

Conservation and Recycling, *182*.

Sparks, P., Guthrie, C. A., & Shepherd, R. (1997). The dimensional structure of the perceived behavioral control construct. *Journal of Applied Social Psychology*, *27*(5), 418–438.

Spiteri, L. (2021). Zero-waste instagram communities: A thematic analysis of zw activities through the lens of the lifestyle movement framework. *Canadian Journal of Information and Library Science*, *43*(3), 245–268.

Stancu, V., Haugaard, P., & Lähteenmäki, L. (2016). Determinants of consumer food waste behaviour: Two routes to food waste. *Appetite*, *96*, 7–17.

Taylor, S., & Todd, P. (1995). Decomposition and crossover effects in the theory of planned behavior: A study of consumer adoption intentions. *International Journal of Research in Marketing*, *12*(2), 137–155.

TNN. (2023, March 27). Fresh fire erupts at dump yard. *The Times of India*. https://timesofindia.indiatimes.com/city/kochi/fresh-fire-erupts-at-dump-yard/articleshow/99022155.cms?from=mdr

Tong, X., Yu, H., Han, L., Liu, T., Dong, L., Zisopoulos, F., Steuer, B., & de Jong, M. (2023). Exploring business models for carbon emission reduction via post-consumer recycling infrastructures in Beijing: An agent-based modelling approach. *Resources, Conservation and Recycling*, *188*.

Tonglet, M., Phillips, P. S., & Bates, M. P. (2004). Determining the drivers for householder pro-environmental behaviour: Waste minimisation compared to recycling. *Resources, Conservation and Recycling*, *42*(1), 27–48.

Tran, B. Y. (2019). *Zero waste lifestyle*. *September*, 45. https://www.theseus.fi/handle/10024/261946

UNEP. (n.d.). *Why Sustainable lifestyles matter*. UNEP. https://www.unep.org/explore-topics/resource-efficiency/what-we-do/sustainable-lifestyles/why-sustainable-lifestyles

Van der Werff, E., Vrieling, L., Van Zuijlen, B., & Worrell, E. (2019). Waste minimization by households – A unique informational strategy in the Netherlands. *Resources, Conservation and Recycling*, *144*, 256–266.

von Kameke, C., & Fischer, D. (2018). Preventing household food waste via nudging: An exploration of consumer perceptions. *Journal of Cleaner Production*, *184*, 32–40.

Vorobeva, D., Scott, I. J., Oliveira, T., & Neto, M. (2022). Adoption of new household waste management technologies: The role of financial incentives and pro-environmental behavior. *Journal of Cleaner Production*, *362*.

Wan, C., Shen, G. Q., & Yu, A. (2014). The role of perceived effectiveness of policy measures in predicting recycling behaviour in Hong Kong. *Resources, Conservation and Recycling*, *83*, 141–151.

Wang, S., Li, J., & Zhao, D. (2017). The impact of policy measures on consumer intention to adopt electric vehicles: Evidence from China. *Transportation Research Part A: Policy and Practice*, *105*(August), 14–26.

Wang, S., Wang, J., Zhao, S., & Yang, S. (2019). Information publicity and resident's waste separation behavior: An empirical study based on the norm activation model. *Waste Management*, *87*, 33–42.

Wang, Z., Guo, D., Wang, X., Zhang, B., & Wang, B. (2018). How does information publicity influence residents' behaviour intentions around e-waste recycling? *Resources, Conservation and Recycling*, *133*(July 2017), 1–9.

Westaby, J. D. (2005). Behavioral reasoning theory: Identifying new linkages underlying

intentions and behavior. *Organizational Behavior and Human Decision Processes*, *98*(2), 97–120.

White, K., Stackhouse, M., & Argo, J. J. (2018). When social identity threat leads to the selection of identity-reinforcing options: The role of public self-awareness. *Organizational Behavior and Human Decision Processes*, *144*, 60–73.

Wilde, M. de, & Parry, S. (2022). Feminised concern or feminist care? Reclaiming gender normativities in zero waste living. *Sociological Review*, *70*(3), 526–546.

Wittenberg, I., Blöbaum, A., & Matthies, E. (2018). Environmental motivations for energy use in PV households: Proposal of a modified norm activation model for the specific context of PV households. *Journal of Environmental Psychology*, *55*, 110–120.

Woodside, A. G. (2013). Moving beyond multiple regression analysis to algorithms: Calling for adoption of a paradigm shift from symmetric to asymmetric thinking in data analysis and crafting theory. *Journal of Business Research*, *66*(4), 463–472.

Wu, S.-I., & Chen, J.-Y. (2014). A Model of Green Consumption Behavior Constructed by the Theory of Planned Behavior. *International Journal of Marketing Studies*, *6*(5).

Yeow, P. H. P., & Loo, W. H. (2022). Antecedents of green computer purchase behavior among Malaysian consumers from the perspective of rational choice and moral norm factors. *Sustainable Production and Consumption*, *32*, 550–561.

Zaman, A. (2022). Zero-Waste: A New Sustainability Paradigm for Addressing the Global Waste Problem. *The Vision Zero Handbook*, 1–24.

Zen, I. S., Ahamad, R., & Omar, W. (2013). No plastic bag campaign day in Malaysia and the policy implication. *Environment, Development and Sustainability*, *15*(5), 1259–1269.

Zhan, M. X. (2022). Sustainable consumption and the well-being dividend: Insights from the zero-waste movement in Chinese cities. *Sustainability: Science, Practice, and Policy*, *18*(1), 731–748.

Zhang, B., Lai, K. hung, Wang, B., & Wang, Z. (2019). From intention to action: How do personal attitudes, facilities accessibility, and government stimulus matter for household waste sorting? *Journal of Environmental Management*, *233*, 447–458.

Zhang, S., Hu, D., Lin, T., Li, W., Zhao, R., Yang, H., Pei, Y., & Jiang, L. (2021). Determinants affecting residents' waste classification intention and behavior: A study based on TPB and A-B-C methodology. *Journal of Environmental Management*, *290*.

Zhang, S., Xia, Z., Zhang, C., Tian, X., & Xie, J. (2023). Green illusions in self-reporting? Reassessing the intention-behavior gap in waste recycling behaviors. *Waste Management*, *166*, 171–180.

Zhang, X., Liu, J., & Zhao, K. (2018). Antecedents of citizens' environmental complaint intention in China: An empirical study based on norm activation model. *Resources, Conservation and Recycling*, *134*(March), 121–128.

Zhang, Y., Bai, X., Mills, F. P., & Pezzey, J. C. V. (2021). Examining the attitude-behavior gap in residential energy use: Empirical evidence from a large-scale survey in Beijing, China. *Journal of Cleaner Production*, *295*.