

The Role of Internal and External Motivations in Shaping Household Attitudes Towards Waste Separation: Evidence from Colombo Municipal Council Area

Ravindu De Silva, Shanika Hansini Rathnasiri, [Shashini Kaushalya Bulumulla*](#) and Mihiri Buddika
Department of Marketing Management, Faculty of Management Studies,
Sabaragamuwa University of Sri Lanka
shashinibulumulla@gmail.com

Abstract - As the world's attention shifts towards sustainable development, waste management emerges as a critical global issue, exacerbated by population growth and rapid urbanization. The importance of waste prevention, reduction, and recycling has been emphasised by the United Nations' 2030 Agenda. Most developing countries around the world, including Sri Lanka, face numerous challenges in achieving effective waste separation, specifically at the household level. This study has identified the importance of considering the Sri Lankan waste management system. Hence, this study examines how households in the Colombo Municipal Council (CMC) region perceive waste separation, considering both internal and external motivations. Following a deductive research approach with a positivist philosophy, using a purposive sampling method, data were collected from 384 individuals through in-person visits to six locations in the CMC Area. Seven factors, including policy regulation, awareness of consequences, incentives, self-efficacy, facilitating conditions, moral norms, and subjective norms, were analysed to assess their impact on attitudes toward waste separation. To analyze the findings, multiple regression analysis was used in IBM SPSS 25 statistics software. Findings have identified a positive effect of all factors on attitude towards waste separation, except for incentives. The study's findings revealed that developing policy, establishing infrastructure, and increasing moral and social awareness are crucial to creating positive attitudes toward waste separation. The study suggests establishing collaborative efforts among multiple parties, including policymakers, local authorities, and households, to create awareness using educational programs, improve recycling facilities, and achieve waste management goals. Future researchers could investigate multiple regions, long-term motivational impacts, technological innovations, and cultural influences, and employ larger samples or longitudinal methods for waste separation studies.

Keywords: Attitudes toward Waste Separation, CMC Area, Household, Internal and External Motivations, Solid Waste.

I. INTRODUCTION

The continuous and rapid increase in solid waste generation has become a significant global concern, exacerbated by the rapid urbanization of the population. The issue is primarily influenced by human activities, which impact the environmental sustainability of both developed and developing countries. Developed countries, despite being significant generators of waste, have not become a major issue due to their advanced technology and well-established waste management systems. Previous studies have found that demographic factors like socio-economic background and dwelling types significantly influence the waste separation (Berglund, 2006; Vicente & Reis, 2008), Personal characteristics like education, awareness of consequences, and moral norms influence waste separation behavioral patterns (Williams & Taylor, 2004; Shirahada & Fisk, 2013). Most individuals directly link internal stimuli to their decision to separate waste. Behavioural decisions are influenced by external stimuli, such as punishment, economic incentives (cash, vouchers, discounts, and coupons on goods), and societal influences (Xu et al., 2017). Researchers have recognised differences in household attitudes and intentions towards waste separation. Among various factors, the ABC theory

suggests that facilitating conditions lead to higher participation rates in waste separation, irrespective of attitudes. At the same time, it has been identified that less accessibility leads to lower participation (Hage et al., 2008). This study focuses on the accumulated attitudes towards waste separation, which are influenced by both external and internal stimuli, as well as the different behavioral attitudes towards waste separation. The acceptance and perceived effectiveness of environmental policies can significantly influence people's intention to participate in waste separation, as it is a significant external stimulus.

In the existing context, this study examines the active participation of households in waste separation in the CMC area, investigating both external and internal motivations. MSW management in cities worldwide faces significant challenges due to the rapid growth of the population, changing lifestyles, and the increased use of less biodegradable materials (Asase et al., 2009). Collecting solid waste from various sources, including industrial, institutional, residential, and commercial, and transporting it to the disposal facility encompasses the waste collection process (Kumar & Adnan, 2020). However, the majority did not consider solid waste separation, which remains a significant global issue. Particularly in most developing countries, municipal solid waste (MSW) is frequently disposed of without being sorted or classified. Garbage pickers remove recyclables before, during, and at disposal locations (Kumar & Adnan, 2020). Approximately two billion tons of MSW are generated worldwide annually (Buchholz, 2022).

The solid waste issue, with 7,000 tons of solid trash produced daily nationwide. The Trash Management Division of the Central Environmental Authority reports that only half of it is collected as municipal waste. An estimated 85% of the waste produced is thought to be improperly disposed of, primarily through careless open dumping, which hurts human health and the overall environment. Therefore, when deciding on policies and regulations for managing municipal solid waste (MSW) in Sri Lanka, one of the top priorities must be at the point of waste generation. However, Sri Lankan local authorities have so far taken several initiatives to encourage waste separation at the household level, which have not been effective (Fernando, 2019). The 2017 Meethotamulla garbage dump collapse incident led to a strong and multi-agency effort to improve solid waste management operations, from generation to disposal, including a significant push for waste segregation at the source. The national government is leading a widespread campaign in association with local authorities due to this preventable tragedy, focusing on messaging (and actions) that unsegregated waste will not be collected from residential or commercial premises.

Most studies have been conducted on solid waste globally, as well as in the Sri Lankan context. Those were related to waste recycling, waste disposal, and waste generation (Tiwari et al., 2023; Bilgilioglu et al., 2021; Khan et al., 2021). There are only a few studies about waste separation intention as a concept in the global context and the Sri Lankan context. Additionally, only a few previous studies on this topic have been conducted concerning households (Hafsah & Asih, 2021; Wanodya & Perera, 2019; Zhao et al., 2022). Limited research has been identified regarding attitudes toward waste separation influenced by external and internal factors (Chen & Lee, 2020); a considerable empirical gap remains. Hence, the researchers' attention is on filling this existing gap by focusing on internal and external motivations that influence attitudes toward waste separation among households in the CMC (CMC) area.

II. LITERATURE REVIEW

A. Theoretical Background

This study is based on two theories. One is the Theory of Planned Behaviour (TPB) proposed by Ajzen (1991), which proposes that behaviour depends on an individual's intention to perform the behaviour. An individual's attitude, perceived behavioural control, perceived behavioural control, determines the intention and leads to the behaviour. Household participation in waste separation schemes is crucial, with the intention of being the primary predictor of behaviour in the TPB. The TPB states that behaviour, intention, perceived behavioural control, subjective norms, and attitude influence individual actions (Ajzen, 1985). The real performance of individual behaviour has not always been predicted by intention (Kumar, 2012; Chung & Leung, 2007). To study intention, perceived behavioral control, attitude, and subjective norms, studies have used the Theory of Planned Behavior (TPB) (Pee et al., 2008). The second theory, the Attitude-Behaviour-Context Theory (ABC Theory), is a framework used in social psychology to explain how attitudes (A), behaviours (B), and context (C) interact and influence one another. It is instrumental in understanding and predicting how individuals' attitudes translate into behaviours within specific contexts. Shove (2010) proposed that the ABC model provides a linear, rational, and simplistic approach to studying intention, suggesting that knowledge, experience, and conception influence individuals' attitudes towards the target behaviour.

B. Empirical Background

1) Waste Separation:

Although not widely used in Sri Lanka, waste separation is attempted at the municipal level. Research from several developing nations offers insight into the factors influencing citizen involvement in waste management. Individual attitudes and situational circumstances were revealed as key predictors of behavioural intention regarding SWM in China (Ma et al., 2018). Zhang et al. (2017) found that Chinese college students achieved varying success rates in separating waste, with food waste being separated more effectively than wastepaper, batteries, textiles, and medicines. They also observed that female students were more conscious of the negative effects of improper waste management and more inclined to take action. Positive attitudes are the best predictor of food waste separation intention in Malaysia (Ghani et al., 2013). Similarly, Ma et al. (2018) found that situational circumstances and individual attitudes significantly influenced the behavioral intention for source-separated collection of solid waste. This behaviour was also influenced by perceived behavioural control and intention (Ma et al., 2018). Wang et al. (2018) found that in China, intentions for household solid waste (HSW) separation and collection are strongly influenced by facility conditions, moral obligations, and the behaviors of others. The primary determinants of willingness to pay were age, government policies, and views on the outcomes. In Shanghai and Singapore, solid waste sorting behavioural intentions are strongly influenced by habitual variables and general and specific environmental motivation, with contextual factors regulating the behaviour (Fan et al., 2019). In Ghana, households' intentions to separate from HSW were influenced by factors such as profession type, total income, education level, accessibility, area, knowledge, attitude, subjective norm, availability of a formal source separation system, and experience. A related study has found that employment status, service provider type, gender, age, housing type, household size, income, and monetary

incentives significantly influence households' source separation behavior in Ghana (Alhassan et al., 2020).

2) External Motivations for Waste Separation:

Studies have identified different behavioural attitudes towards waste separation influenced by both internal and external motivations (Tian et al., 2022; Xu et al., 2018; Zhang et al., 2023). According to Chen and Lee (2020), external motivations originate from external sources and surrounding environments, including policy regulations, incentives, and facilitating conditions. These factors are directly linked to waste separation and are considered external motivations in the current study.

2.1) Policy Regulation (PR):

In recent years, policy interventions in waste separation studies have been introduced to evaluate the perceived effectiveness of waste separation policies among participants in environmental schemes. Wan et al. (2014) found a positive correlation between the perceived effectiveness of the policy and the intention to separate waste in Hong Kong. Zhao (2022) found that local authorities play a crucial role in promoting waste source separation practices. Steg (2009) highlighted that policy interventions can be specifically designed to influence a person's attitude. Hence, the following hypothesis was developed.

H1: Policy regulation has an impact on attitudes toward waste separation among households in the CMC area.

2.2) Incentives (INC):

In Economics, it has been identified that individuals are rational decision-makers guided by a reasonable assessment of costs and benefits. To re-evaluate individuals' cost of action, incentives, which include rewards and punishments, act as a motivational tool (Mankiw, 2020). Hage (2008) suggests that economic incentives have a significant impact on households' reactions to recycling and plastic waste collection. Geller (2002) indicates that incentives are generally more effective in promoting environmental action. In Hong Kong, waste recycling is promoted by economic incentives (Yau, 2010). However, Scott (1999) did not uncover any evidence to suggest that economic incentives greatly influence recycling. This study examines the impact of incentive plans on attitudes toward waste separation, aiming to understand the public's preferences for future enforcement of such plans. Consequently, the following hypothesis was formulated.

H2: Incentives have an impact on attitudes toward waste separation among households in the CMC area.

2.3) Facilitating Conditions (FC):

Waste separation is a crucial process that heavily relies on external conditions. The ABC theory suggests that participation rates decrease when access to recycling facilities is limited, as well as when there is a lack of environmental awareness (Hage, 2008). External constraints become a reason for the lower participation of households in recycling (Barr, 2013). Proper space, convenience in recycling channels, and time, like external constraints, are important conditions (Ghani et al., 2013). External conditions, such as the Environment, have a positive influence on waste separation intention (Liao et al., 2018).

The study examines how external conditions impact households' attitudes towards waste separation. Hence, the following hypothesis was developed.

H3: Facilitating conditions have an impact on attitudes toward waste separation among households in the CMC area.

2.4) Subjective Norms (SN):

The TPB explains subjective norms as the tendency to perform or refrain from performing an action based on social pressure (Ajzen, 1991). It explained the influence of important people, such as friends, family, and coworkers, on an individual's decision to exhibit certain behavior, like waste separation. Studies have shown that social norms play a crucial role in influencing people's intention to separate waste properly (Tonglet et al., 2004; Xu et al., 2017). Based on this understanding, the following hypothesis was developed.

H4: Subjective norms have an impact on attitudes toward waste separation among households in the CMC area.

3) Internal Motivation for Waste Separation:

In contrast to external motives, internal motives arise within an individual. According to Chen and Lee (2020), self-efficacy, moral norms, and awareness of consequences are considered key components of internal motivation. These factors are linked to waste separation and are therefore considered internal motivations in the current study.

3.1) Moral Norm (MN):

A moral norm refers to the perceived social responsibility and ethical concerns associated with prosocial behavior. Moral norms are categorized under internalized values that are more disciplined and stronger in behavior, reflecting the strength of the self's moral values. Moral norms refer to an individual's inner sense of what is right or wrong, and they play a significant role in guiding how individuals plan to act when ethics are involved, as reported by Botetzagias et al. (2015) in the context of pro-environmental behaviors. Chan (2013) found that moral norms significantly predict a person's attitude toward recycling. A study on waste separation found that perceived moral obligation significantly predicts attitude (Xu et al., 2017). Consequently, the following hypothesis was formulated.

H5: Moral norms have an impact on attitudes toward waste separation among households in the CMC area.

3.2) Self-efficacy (SE):

Self-efficacy is an individual's perceived knowledge and effectiveness in performing targeted behaviour, which is a key component of perceived behavioural control. Possessing more knowledge about a specific action leads to increased control and confidence. Previous research has demonstrated a relationship between self-efficacy and behavioural intention (Wan et al., 2014). A study conducted four experiments in Germany and Australia to demonstrate that self-efficacy has a significant influence on pro-environmental intentions and collective efficacy (Jugert et al., 2016). Sheeran et al. (2016) found that changes in self-efficacy can potentially influence health-related intentions. Taberero and Hernandez (2010) found a significant impact of self-efficacy on recycling in Spain through path analysis, highlighting its direct influence on consumer behavior. Hagger et al. (2001) found that self-efficacy has a positive impact on the intention to

engage in physical activity. A study confirmed that self-efficacy indicates confidence in an individual's ability to control their actions, leading to a positive attitude toward performing certain behaviours (Zolait, 2014). Hence, the following hypothesis was developed.

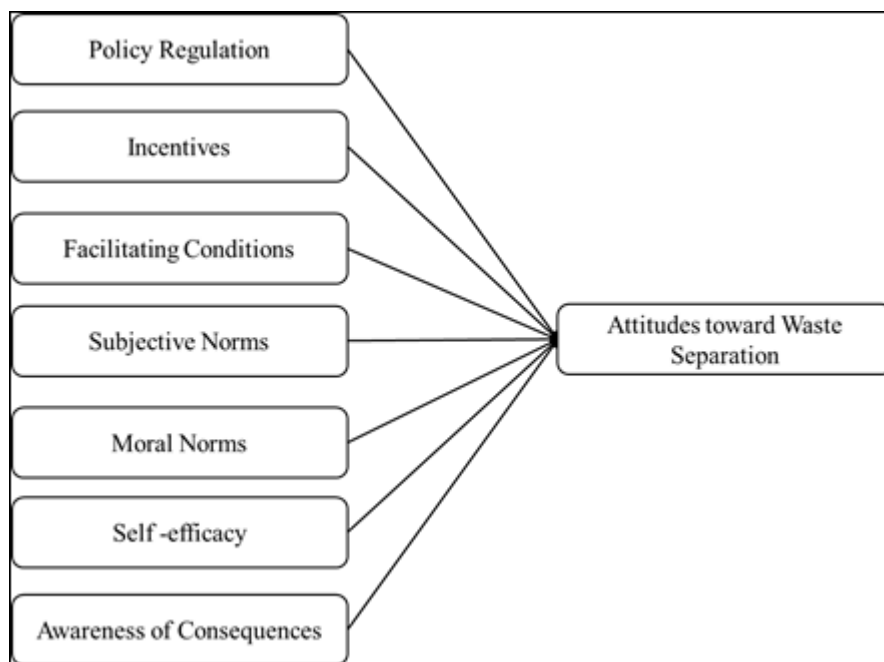
H6: Self-efficacy has an impact on attitudes toward waste separation among households in the CMC area.

3.3) Awareness of Consequences (AC):

The awareness of consequences under external motives helps individuals understand the expected outcomes of waste separation. An individual's understanding of expected outcomes can be influenced by their knowledge of the results of their behaviours or actions. Chen (2010) indicates that the positive outcomes of recycling impact an individual's recycling intention. Wan et al. (2014) indicate that understanding the consequences of actions positively impacts recycling intentions. A study conducted in Bangkok found that understanding the consequences significantly enhances the intention to separate sources (Vassanadumrongdee, 2018). It was identified that awareness of consequences is an effective element of attitude (Tonglet et al., 2004). A person's motivation can be influenced by external factors that are beyond their control, such as rewards, facilitating conditions, policy regulations, and subjective norms. Based on this understanding, the following hypothesis was developed.

H7: Awareness of consequences has an impact on attitudes toward waste separation among households in the CMC area. The conceptual framework of this study is illustrated in Figure 1.

Figure 1. Conceptual Framework



Source: Adapted from Chen and Lee (2020).

III. METHODOLOGY

This research uses a positivist philosophy. It has developed hypotheses by considering existing theories and using reliable sources. Data were collected; therefore, a deductive research approach with an explanatory research design was utilized. The researchers' methodological choice was a quantitative method. This research was conducted in a natural environment with minimum interference. The population of this study comprises all households in the CMC Area, Sri Lanka. The unknown population of the study necessitates the use of purposive sampling techniques. To collect primary data, it was determined that a survey research strategy was the most appropriate method; therefore, a questionnaire was distributed to 384 respondents, and a cross-sectional study design was employed. Researchers collected primary data by conducting in-person visits to six locations in the CMC Area: Bambalapitiya, Narahenpita, Dematagoda, Maradana, Aluthkade, and Modara. Researchers selected those six areas as they represent a combination of commercial, residential, and cultural zones within the Colombo Municipal Council area, allowing for different consumer insights in urban environments. The questionnaire consisted of 41 questions under three sections. Section 1 included two filtering questions. There are respondents who are residing in the Colombo Municipal Council area and are aware of practice called waste separation. Section 2 contained thirty-three five-point Likert scale statements to check dependent and independent variables, and Section 3 featured six demographic questions to gather more information about respondents. The measurement scales were adopted from Chen and Lee (2020). The questionnaire was tested using academic and subject experts to ensure its clarity. The gathered data were analyzed using multiple regression analysis with IBM SPSS Statistics software.

IV. DATA ANALYSIS

The researchers distributed questionnaires to the 384 respondents, and 345 responses were received. To obtain accurate results, the researchers performed treatments for missing values and outliers. Consequently, 34 questionnaires were removed due to the common outliers. As a result, the effective rate is 81%. Furthermore, a current study performed descriptive and inferential statistical analyses using SPSS software as follows.

A. Respondents' Demographic Information

According to demographic analysis, the respondents consist of 117 males and 194 females. Most of the sample respondents are aged 31 to 43 years, accounting for 43.4% of the total respondents, while those aged 18-30 comprise 15.4%. According to the sample data, 36.3% of respondents belong to the 44-56 age group, while 4.8% of respondents were aged 57 and above. Furthermore, the majority of respondents fell within the Rs. 100,001- Rs. 150,000 categories, accounting for 37.6% of the total. Rs 50,001- Rs 100,000 respondents were 28.3%, less than Rs 50,000 respondents were 12.8%, and above Rs 150,001 respondents were 21.2%. According to the details obtained, a higher percentage of respondents are working in the private sector, accounting for approximately 37.9% of the total respondents. 16.4% of the total sample consisted of students. Furthermore, unemployed public-sector employees and self-employed individuals represent 9.0% and 8.4%, respectively. Most respondents come under the postgraduate category. It is 32.47% (101) of the overall sample size. Others belong to primary

education, secondary education, and degree and equivalent. Those are, respectively, 9.0% (28), 31.51% (98), and 27.01% (84). The household size of the respondents was categorized into different categories. The majority of the respondents were four members, representing 42.4% of the total. Moreover, 30.9% of the sample size contained five or more members in the household. Further, one member, two members, and three members represent 1.3%, 3.5%, and 21.9%, respectively.

B. Reliability and Validity Analysis

Table 1 highlights that independent and dependent variables have Cronbach's Alpha values of more than 0.8, indicating high reliability. As a result, every variable can be considered strongly reliable. The Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity results for each variable examined in this study. As shown in Table 1, all KMO values obtained fall within the range of 0.718 to 0.931, indicating that the sample adequately represents the population. Moreover, according to Bartlett's test of sphericity, all variables are significant ($p < 0.001$).

Table 1. Reliability and Validity Measures

Variable	No. of Items	Cronbach's Alpha Value	KMO Values	Bartlett's test of sphericity	AVE	CR
PR	3	.830	0.718	0.000	0.746	0.898
INC	3	.892	0.744	0.000	0.822	0.932
FC	3	.866	0.735	0.000	0.788	0.932
SN	6	.934	0.921	0.000	0.751	0.917
MN	4	.897	0.824	0.000	0.763	0.928
SE	3	.868	0.739	0.000	0.790	0.919
AC	5	.932	0.890	0.000	0.785	0.948
AT	6	.952	0.931	0.000	0.805	0.961

Source: Survey data (2024).

In order to determine convergent validity, certain conditions must be fulfilled: Average Variance Extracted (AVE) of each of the constructs should be more than 0.50, Composite Reliability (CR) should be larger than 0.70 and each of the AVE should be smaller than their Pakistani Race CR values, which is what Hair et al. (2010) recommend. The presented values meet these conditions in Table 1, which proves the existence of the convergent validity in the used measurement model.

Next, the researchers evaluated discriminant validity concerning the Fornell-Larcker criterion. Under this approach, the square root of the AVE in each construct should be

larger than its correlation with any other construct in the model. This is to ensure that every construction is empirically distinct from others.

Table 2. Discriminate Validity Measures

	PR	INC	FC	SN	MN	SE	AC	AT
PR	0.864							
INC	0.727	0.907						
FC	0.831	0.720	0.888					
SN	0.853	0.750	0.850	0.867				
MN	0.817	0.733	0.817	0.836	0.874			
SE	0.778	0.725	0.789	0.819	0.795	0.889		
AC	0.740	0.676	0.735	0.784	0.787	0.800	0.886	
AT	0.822	0.697	0.829	0.865	0.828	0.810	0.803	0.898

Source: Survey data (2024).

As indicated in Table 2, the square root of the AVE values for all constructs exceeds their correlation with other constructs. This demonstrates that discriminant validity is established in the study, indicating that each construct is distinct and measures a unique underlying concept.

C. Multiple Regression Analysis

In the current study, there are seven independent variables. Therefore, the researchers determined the strength of the relationship between independent and dependent variables using multiple regression analysis.

Table 3. The Model Summary

Model	R	R Square	Adjusted R Square
1	0.906	0.821	0.817

Source: Survey data (2024).

Based on Table 4, the adjusted R-squared value is 0.817. It can be summarized that 81.7% of the variation in attitude toward waste separation can be explained by policy regulation, incentives, facilitating conditions, subjective norms, moral norms, self-efficacy, and awareness of consequences. However, 18.3% of variations in attitude toward waste separation can be explained by other factors not considered in the current study.

Table 4. ANOVA Table

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	167.225	6	27.871	231.890	.000b
Residual	36.538	304	.120		
Total	203.763	310			

Source: Survey data (2024).

As shown in Table 5, the ANOVA test p-value is 0.000. Therefore, it is concluded that the fitted model is significant. It means that the independent variables of policy regulation, incentives, facilitating conditions, subjective norms, moral norms, self-efficacy, and awareness of consequences significantly influence attitudes toward waste separation.

Table 5. Coefficient Table

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.031	.122		.256	.798
PR	.130	.058	.118	2.247	.025
FC	.156	.051	.160	3.042	.033
FC	.295	.060	.290	4.907	.000
MN	.138	.055	.132	2.528	.012
SE	.109	.053	.101	4.070	.042
AC	.193	.047	.185	4.070	.000

Source: Survey data (2024).

The coefficient in regression analysis is called the beta coefficient, which measures the relative strength and direction of the relationship between each independent variable and the dependent variable, while holding other variables constant. Moreover, the p-value is another statistical measure used to determine the significance level of each relationship. The statistical significance and acceptance of the hypothesis hold in case the p-value is less than 0.05 (as suggested by Saunders et al. 2009). According to the results presented in Table 6, a statistical influence of variables such as policy regulation, facilitating conditions, subjective norms, moral norms, self-efficacy, and awareness of consequences on attitudes towards waste separation can be observed among households in the CMC Area.

Table 6. Excluded Variables

Model	Beta In	t	Sig.
INC	0.070	1.365	0.173

Source: Survey data (2024).

According to Table 7, the p-value for incentives is 0.173, which is greater than 0.05. Hence, it can be concluded that incentives do not impact attitudes toward waste separation among households in the CMC Area.

D. Discussion

The proposed research will examine the different levels of internal and external motivations that influence household attitudes toward waste separation in an area of the city of Colombo adjacent to the Colombo Municipal Council (CMC). Based on information generated by the previous studies, a conceptual framework was proposed to analyse the effects of some major determinants. These include policy regulations, incentives, easing conditions, subjective norms, moral norms, self-efficacy, and consequence awareness. All these factors have been evaluated to determine whether they may influence individuals' attitudes toward participating in waste separation practices.

The authors of the study categorize the main factors that influence waste separation behavior into two primary types of stimuli: external and internal. According to Sukholthaman and Sharp (2016), household waste segregation typically involves sorting recyclable or compostable materials on an individual level and delivering them to designated locations near the residence. Since this practice is voluntary, personal commitment is a crucial factor in its effectiveness. To this effect, the determinants of attitude toward waste separation have been categorized into external stimuli, whose origins are in the environment, and inner stimuli, which are deeply rooted in individual ideologies and motivational needs.

According to this study, the researchers found that policy regulation has a positive impact on the attitude towards waste separation among households in the CMC Area. Similar to this finding, Wan et al. (2014) found a direct and positive correlation in Hong Kong between the desire to separate garbage and the perceived effectiveness of waste management policies. In China's rural locations, Liao et al. (2018) similarly found a favourable correlation between PPE and the intention to separate garbage. As noted by Steg and Vlek (2009), police interventions can be tailored to affect an individual's attitude specifically. An individual's attitude will be favourable and will motivate them to engage if they believe that the waste separation policies are effective or if they support the current policies.

Moreover, this study's findings appear to contradict several earlier pieces of research, indicating that incentives do not significantly influence attitudes regarding trash separation. Ekvall et al. (2010) state that policymakers can only observe a transient impact, despite the proposal of economic incentives for residual trash as an intriguing way to improve recycling (Bisaillon et al., 2009). Furthermore, if an incentive leads to illegal dumping, the consequence may not be favourable. Furthermore, it is challenging to implement these incentives in rental multi-family properties. Considering these facts,

the researchers can conclude that the impact of incentives on attitudes toward waste separation is not significant among households in the CMC Area.

Furthermore, Chen and Lee (2020) and Barr (2013) concluded that the facilitation conditions have a positive impact on attitude towards waste separation, which highly depends on external conditions. Confirming these findings, the current study demonstrated a positive impact of facilitating conditions on attitudes toward waste separation among households in the CMC Area. According to this study, the researchers found a positive impact of subjective norms on household waste separation attitudes in the CMC Area. Further confirming this result, Chen and Lee (2020) proved that subject norms on attitude waste separation at the aggregate level. According to this study, the researchers found a positive impact of moral norms on attitudes toward household waste separation in the CMC Area. Several researchers have emphasized the significance of moral norms in shaping pro-environmental attitudes. For example, Botetzagias et al. (2015) stated that individuals with high moral standing are more likely to have a positive attitude towards recycling. Similarly, Chan and Bishop (2013) listed moral norms as one of the primary factors that influence individuals' recycling behavior. In another present-day study, Xu et al. (2017) investigated the influence of Perceived Moral Obligation (PMO), and indeed, it emerged as a considerable antecedent of attitude development within the waste separation framework.

Numerous studies demonstrate that self-efficacy can influence pro-environmental behaviors, such as waste separation. For instance, those who believe they can sort waste correctly are more likely to feel morally obligated and responsible, which reinforces their positive views on waste separation. This is consistent with Bandura's social cognitive theory, which maintains that self-efficacy has a direct impact on motivation and behavioral choices (Bandura, 1997). Research on home waste separation indicates that higher levels of self-efficacy are associated with more positive perceptions regarding garbage sorting and recycling activities (Wang et al., 2018). Based on this research, the data providers have confirmed that the impact of self-efficacy on motivation is not affected by waste separation among households in the CMC Area.

Finally, the current study researchers found a positive impact on awareness of the consequences of attitudes toward waste separation among households in the CMC Area. Further confirming this, Wan et al. (2014) explained that recycling is positively influenced by awareness of consequences. According to a recent study conducted in Bangkok, source separation was significantly positively influenced by an understanding of consequences (Vassanadumrongdee & Kittipongvises, 2018). According to Tonglet et al. (2004), the dynamic (experiential) attitude component is represented by knowledge of consequence. CMC

V. CONCLUSION AND IMPLICATIONS

A. Conclusion

The current study has been conducted to investigate the factors influencing external and internal motivations on attitudes toward waste separation among households in the CMC Area. To conduct this study, the researchers identified an empirical gap in the existing literature regarding the provision of a localized understanding of internal and external motivations that influence household attitudes toward waste segregation. The proposed conceptual framework has examined the impact of independent variables (policy regulation, incentives, facilitating conditions, subjective norm, moral norm, self-efficacy, and awareness of consequence) on the dependent variable (Attitude toward waste separation). The researcher has collected data on the influence of waste separation in 384 households in the CMC Area to achieve the research objectives. The researchers collected data using the purposive sampling method, a non-probability sampling technique. The gathered data was analyzed using SPSS version 25 software. After verifying the reliability and validity of the current study's results, an overall conclusion can be drawn that internal and external motivations influencing attitudes towards waste separation among households in the CMC Area are significantly influenced by factors such as policy regulations, facilitating conditions, subjective norms, self-efficacy, and awareness of consequences. In contrast, factors such as incentives have no significant impact.

B. Theoretical and Managerial Implications

Considering the theoretical implications, this study highlights the relevance of the Theory of Planned Behavior in understanding household behaviors and attitudes towards waste separation in the Colombo Municipal Council area. As the Theory of Planned Behavior shows, waste management is influenced by internal attitudes, perceived behavioral control, and social norms, and it highlights that further research should focus more on this. Because in a densely populated urban setting like Colombo, waste management is a growing concern. Furthermore, integrating Regulatory Focus Theory offers further insight into how different policies can shape behaviors. Therefore, these theoretical frameworks underline the importance of motivation with a supportive external system to encourage sustainable waste separation habits in urban communities like the Colombo district.

Considering the managerial implications, policy regulations have been identified as the most important factor influencing people's attitudes toward waste separation. As an internal motivation factor, awareness of the consequences of one's actions has a strong connection with one's attitude. Hence, the findings suggest that it is essential for policymakers to establish rules, regulations, policies, and strategies that foster positive attitudes. Especially, increasing awareness and providing clear guidelines regarding recycling helps people understand and adopt waste separation practices properly. For instance, the Korean government has implemented a series of waste management laws and made continuous efforts to enforce specialized acts; as a result, the waste separation behavior of Korean households has gradually changed. This suggests that policymakers should emphasize the importance of waste separation to educate households by implementing consistent and robust policy regulations. Furthermore, policymakers and relevant authorities should provide sufficient facilities, including a considerable number of waste bins, and ensure the quality of these bins is maintained. The bins should be placed in an appropriate and convenient location, like residential areas where most people have

easy access. Further, the cleanliness and maintenance of the bins encourage people to use them properly.

Surprisingly, the study's findings contradict several previous studies. Specifically, some studies revealed that neither self-efficacy nor incentives has any significant impact on attitude toward waste separation. According to a study by Ekvall et al. (2010), although providing economic incentives is suggested as a good strategy to increase recycling, it has been identified as a temporary solution (Bisaillon et al., 2009). Furthermore, the incentive may not have a positive impact if it leads to illegal dumping, and there are some mismatches when applying these incentives. It is difficult to change people's habits related to waste separation. This study identifies attitude as a major factor in waste separation. While people generally have a positive attitude, their behaviour regarding waste separation could be improved. This study is limited to This study Colombo Municipal Council Area and focuses only on Internal and External Motivations factors. Hence future researchers could look in to different geographical areas and consider different factors which affects on Household Attitudes Towards Waste Separation.

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