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Circular Economy and its Transition to Sustainable Economy: Malaysia and Philippines

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Abstract

The circular economy is an economic system targeting to reduce or eliminate waste, while promoting the efficient usage of resources. The key principles of the circular economy include designing products for longevity, minimising waste and emissions, and maximising the value of resources through reuse, remanufacturing and recycling. Nevertheless, despite ongoing efforts to address environmental issues, the level of waste reduction practices remains relatively low in both Malaysia and Philippines due to challenges of deforestation and habitat loss, waste management, pollution, illegal dumping and open burning as well as lack of enforcement and compliance. Both Malaysia and the Philippines, two rapidly developing countries in Southeast Asia, are increasingly recognising the importance of embracing the circular economy to achieve sustainable development. This paper studies the human behaviour on the practices of waste reduction in both Malaysia and Philippines to meet the circular economy concept for sustainable economy. This paper would be able to provide insights to various stakeholders on the behaviour of people in both the country on reducing the total waste with suitable introduction and implementation of certain policies, actions etc for a sustainable economy because addressing these challenges requires concerted efforts from government authorities, businesses, civil society organisations, and the general public. Enhancing waste management infrastructure, promoting sustainable practices, strengthening environmental regulations, and increasing public awareness and participation are essential steps toward improving the level of waste practices in Malaysia. Additionally, investing in research and innovation to develop sustainable technologies and solutions can help mitigate environmental degradation and promote a cleaner and healthier environment for all.

Key words: sustainability, circular economy, waste reduction, environmental, waste management
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Introduction

The traditional product life cycle is linear from materials extraction to disposal, which contributes to the generation of more waste. To reduce the waste, the concept of circular economy was introduced to use the resources based on the maximum value - recovered or regenerated. In Malaysia, the government has taken significant steps to promote the circular economy as part of its national agenda. Initiatives such as the National Strategic Plan for the Management of Scheduled Wastes and the National Policy on Solid Waste Management emphasize the importance of waste reduction, recycling, and sustainable consumption. Additionally, Malaysia's Eleventh Malaysia Plan (2016-2020) highlighted the need to adopt a circular economy approach to address environmental challenges and enhance resource efficiency. Efforts are underway to foster collaboration between government agencies, businesses, and civil society to develop innovative solutions and promote circular practices across various sectors.

Similarly, the Philippines has recognised the potential of the circular economy to address pressing environmental and social issues while promoting economic growth. The country's Solid Waste Management Act and Ecological Solid Waste Management Act provide the legal framework for waste reduction and recycling efforts. However, implementation challenges remain, including inadequate infrastructure and limited public awareness. Nonetheless, various stakeholders, including government agencies, businesses, and non-governmental organizations, are working together to overcome these obstacles and promote the transition to a circular economy.

Both Malaysia and the Philippines stand to benefit from embracing the circular economy. By reducing waste generation, conserving resources, and fostering innovation, these countries can create new economic opportunities, improve environmental sustainability, and enhance resilience to global challenges such as climate change. However, realizing the full potential of the circular economy will require continued commitment and collaboration from all stakeholders, as well as investment in infrastructure, technology, and education. With concerted efforts, Malaysia and the Philippines can lead the way towards a more sustainable and prosperous future based on the principles of the circular economy. This study intends to use the Theory of Interpersonal Behaviours (TIB) where it has the element of affect, social factors and perceived consequences to intention, habit and facilitating conditions which later lead to certain behaviour. However, this study limits its aims to studying the effect, social factors and perceived consequences elements to the intention of reducing waste for a cleaner environment to achieve sustainable economy only.

Problem Statement

Malaysia's population is estimated to grow at a rate of 2.4 percent (an addition of 600,000 people) every year, which will worsen the garbage generation situation. Due to the increase of population, there has been a significant increase in waste generation in recent years (New Straits Times, 2024). Refer to Table 1 and Table 2 for the data of total waste generated in Malaysia and Philippines for 2018 to 2022 respectively, which shows a continuous increase of total waste generated in Malaysia from 2018 to 2022. Hence, the problem of well-managed waste and reducing the number of total wastes needs to be reduced and managed in a proper way for a better sustainable economy.

Table 1: Total waste generated in Malaysia

Year	Total waste generated in Malaysia (tonnes of waste)
2018	36843
2019	37462
2020	38081
2021	38699
2022	39936

(Source: New Straits Times, 2022)

Table 2: Total Waste Generated in Philippines

Year	Total waste generated in Philippines (tonnes of waste)
2018	54620
2019	55730
2020	56870
2021	58040
2022	59240

(Source: Statista, 2024)

Research Objectives

The study was undertaken to determine the circular economy and its transition to a sustainable economy in the case of Malaysia and Philippines. Specifically, the study seeks to answer the following objectives:

1.To investigate the emotional element to the behaviour for perceived intention to waste reduction;
2. To investigate the social factors element for perceived intention to waste reduction; and
3. To investigate the perceived consequences element for perceived intention to waste reduction.

Research Framework

Figure 1 illustrates the research framework used for this study where the study on the affect, social factors and perceived consequences elements to intention to waste reduction using the Theory of Interpersonal Behavior (Triandis, 1977). The theory assumes that

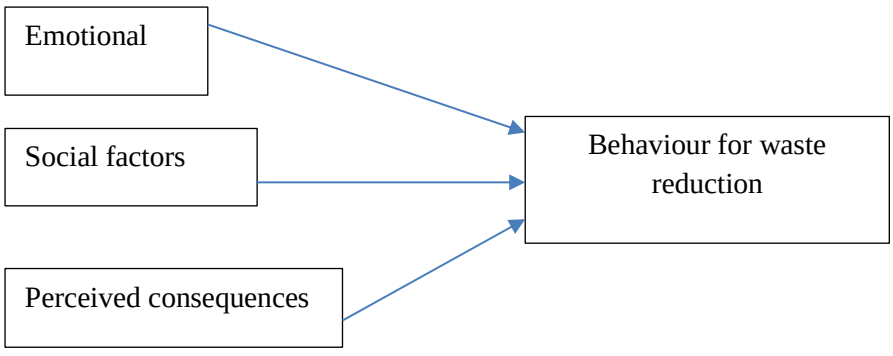

Figure 1: Research Framework

Literature Review

Based on Figure 1 and Figure 2, both the countries (Malaysia and Philippines) have an increasing tonne of rubbish produced on a yearly basis from 2028 to 2022. The trend is highly expected to increase continuously in the coming years, providing no suitable policies and regulations to be introduced and implemented in place for these two countries. The global rise in food waste, which is one of the contributors for increasing total waste in both Malaysia and Philippines, has become a pressing issue, necessitating the active involvement of consumers in waste reduction efforts. However, traditional approaches such as the Theory of Planned Behaviour (TPB) may fall short in capturing the emotional complexities inherent in consumer behaviour because it primarily focuses on behavioural intention without adequately addressing emotional and subconscious factors (Lopes, J.R.N et.al, 2019). Therefore, in order to address this, the Theory of Interpersonal Behaviour (TIB) is used in this research. because this theory offers a more nuanced understanding of consumer behaviour by encompassing emotional and non-conscious variables, thus providing a more comprehensive framework for waste reduction strategies (Russell & Young 2017).

The present research examines the influence of emotional factors, such as anticipated guilt (Russell et al., 2017), perceived consequences where having the environmental knowledge and the consequences, and social factors like the sense of community, on the development of intentions to reduce total waste. These variables were selected based on recent studies indicating the significant role of emotions in food consumption and waste (Falasconi et al., 2019). Moreover, food waste, which is one of the reasons for increasing total waste has been linked to the emergence of negative emotions, such as anticipated guilt, with studies suggesting that individuals experiencing stronger feelings of guilt regarding food wastage are more inclined to actively reduce such behaviours (Richter & Bokelmann, 2018). Additionally, a sense of community has been shown to correlate with socially responsible actions (Omoto & Packard, 2016), potentially fostering pro-environmental behaviour and persuading consumers to refrain from actions with long-term consequences for future generations (Yuriev et al., 2020).

Researchers have contended that emotions offer valuable insights into the multifaceted nature of food waste behaviour (Russell et al., 2017). Specifically, negative emotions such as guilt and regret have been identified as significant predictors of behavioural intentions (Soscia et al., 2019). Guilt emerges as a particularly pertinent negative emotion within the realm of food behaviors compared to fear, anger, and hate (Ruddock & Hardman, 2018). Recognized for its significant role in shaping affective-cognitive-action patterns of social norms, anticipated guilt stands out as one of the most crucial prosocial emotions, compelling individuals to address the harm they've caused (Soorani & Ahmadvand, 2019). Anticipated guilt manifests as a common negative sensation, prompting individuals to avoid wasteful behaviors through inner feelings of discomfort (Lefebvre et al., 2019). This anticipation of guilt not only facilitates learning but also drives behavioral change over time (Soorani & Ahmadvand, 2019).

Group identification refers to the sense of pride associated with being a member of a particular group, encompassing shared symbols, values, and destinies, whether explicitly or implicitly acknowledged (Van Stekelenburg & Klandermans, 2017). When individuals identify with a social group, they tend to align their feelings, thoughts, and behaviors with group norms and goals, thereby adjusting their self-perception and actions accordingly (Hogg et al., 1995). In their study, Schanes et al. (2018) identified a sense of community as a significant motivator for individuals to share food with others, thereby preventing food waste. They observed that fostering a deeper sense of community was the most effective method for encouraging pro-environmental behaviour, convincing consumers of the

long-term impacts of their actions on future generations. Therefore, it can be inferred that a sense of community plays a crucial role in increasing individuals' engagement in socially responsible actions.

The altruistic model of behavior, as proposed by Schwartz (1977), posits that understanding the consequences of one's actions is crucial. It emphasizes that behaviors and their outcomes are integral to studying consumer intentions. Individuals typically cultivate positive attitudes towards behaviors that lead to favorable results or consequences. Furthermore, awareness of consequences has been shown to have a positive correlation with behavioral intentions, including return intentions (Khan, Ahmed, & Najmi, 2019; Kochan et al., 2016). According to Von Kameke and Fischer (2018), initiatives aimed at raising awareness have the potential to heighten consumers' sensitivity to food waste and motivate them to enhance their food management habits. Empirical findings further corroborate that individuals who possess a deeper understanding of food security, as well as the environmental and economic impacts of food waste, are more likely to engage in behaviors that reduce food waste (Bravi et al., 2019).

Methodology

This research was conducted in two countries: Malaysia and Philippines simultaneously. This study uses a survey questionnaire where it was distributed to respondents who are of 18 years above in both Malaysia and Philippines. This is because 18 years old is the age where the respondents are adults and are assumed to have rational decision-making ability. The data was collected via both physical face-to-face interview and online using google form in order to reach a wider audience. The total number of respondents collected is 289; with 167 from Malaysia and 122 from Philippines on the waste reduction behaviour with its demographic details.

Prior to the interview which was conducted face-to-face, the enumerators explained to the respondents on the purpose of this study. Besides, the survey questionnaire contains the following sections: an introduction, purpose of the survey and the assurance of confidentiality of the responses obtained are solely for the purpose of this study only. The survey questionnaire consists of five parts: Part A: Demographic details of the respondents, Part B: Emotional element items, Part C: Social factors element items, Part D: Perceived consequences items, and Part E: Behaviour for waste reduction.

The items in Part B to Part E have a 5-Likert scale with the following scales:

1: Strongly Disagree	2: Disagree	3: Neutral	4: Agree	5: Strongly agree

The total items in each of the part are as follows:

Part A: 5	Part B: 5	Part C: 5	Part D: 6

The data was distributed between Malaysia and Philippines and was later analysed using suitable statistical analysis software to provide relevant conclusions and suitable recommendations to narrow the current research gap.

Data Analysis and Discussion

A total sample of 289 was collected from both Malaysia and Philippines (Table 1). Approximately 67.13% and 32.87% of the respondents for this study are male and female respectively. Most of the respondents are of 18-30 years old with approximately 73.36% and the least with approximately 3.11% are of more than 50 years old. Other than that, most of the respondents with approximately 74.05% are so single in their marital status. Meanwhile, the education level of the respondents of this study with highest with a Bachelor Degree with approximately 48.78%, follows with certificate holders and diploma holder with approximately 22.49 and 20.76% respectively; the least respondents are with secondary certificate with approximately 2.08% of the total respondents of the study. Meanwhile, due to the majority of the low age of the respondents, hence the highest bracket of annual income of this study is less than <$24000 with approximately 62.98% and the lowest would be approximately 4.5% for the annual income of $48001-$60000.

Table 1: Summary of the respondents' demographic profile

Demographic details	Percentage (%)
Gender	
Male	67.13
Female	32.87
Age (years old)	
18-30	73.36
31-40	15.92
41-50	7.61
> 50	3.11
Marital Status	
Single	74.05
Married	24.57
Others	1.38
Education Level	
Primary	5.54
Secondary	2.08
Certificate	22.49
Diploma	20.76
Bachelor Degree	48.78
Masters/ Doctorate	0.35

Income	
<$24000	62.98
$24000-$36000	10.03
$36001-$48000	6.57
$48001-$60000	4.5
>$60000	15.92

Table 2: Mean statistics for both independent and dependent variables

Description	Mean
Emotional (E)	3.91
Social Factor (SF)	3.49
Perceived Consequences (PC)	3.70
Behaviour for waste reduction (BWR)	3.45

Table 2 above illustrates that mean value for all the dependent and independent variables, with all the variables are higher than the value of 3.0. The highest mean is seen in emotional factors with 3.91, followed with perceived consequences with value of 3.70.

Table 3: Reliability Analysis

Variables	Cronbach Alpha
Emotional (E)	0.808
Social Factor (SF)	0.775
Perceived Consequences (PC)	0.678
Behaviour for waste reduction (BWR)	0.809

Based on Table 3, most of the variables have a value of higher than 0.70 for Cronbach Alpha except for perceived consequences (PC) with a slightly lower than 0.70, which is 0.678. According to Peterson, R. A (1994), Cronbach Alpha that is 0.70 is at an acceptable level of reliability. This study's Cronbach Alpha's value for all the dependent and independent variables are between 0.678 and 0.809, hence it is considered acceptable and high in the reliability coefficient.

Table 4: Regression analysis

Regression Statistics	
R^2	0.747
Adjusted R^2	0.554

Table 6 above illustrates that the value of R^2 is 0.747 and this shows that all the intendant variables will be able to explain approximately 74.7% of the dependent variable. This illustrates a relatively strong relationship between dependent and independent variables. From Table 4, the adjusted R^2 value is 0.554 and this means adding predictors of factors will improve the regression model by 55.4 percent.

Table 5: Model Summary

	Coefficients	Standard Error	P-value
Intercept	0.759	0.166	0.000
E	0.043	0.063	0.501
SF	0.556	0.045	0.000
PC	0.156	0.074	0.037

Table 5 illustrates the model summary where the social factors and perceived consequences variables are significant to behavioural to waste reduction. However, the emotional variable is not significant to behavioural waste reduction. Besides, social factors' coefficients have the strongest predictor (($\beta = 0.556$) of the dependent variable with value.

Conclusion

The transition from a linear economy to a circular economy represents a pivotal shift towards sustainability for both Malaysia and the Philippines. This paper tried to explore the various aspects of the circular economy framework, its potential benefits, challenges, and the unique opportunities it presents for these two nations. It is evident that embracing circular economy principles offers numerous environmental advantages, such as the practice of reducing resource extraction, minimizing waste generation, and promoting efficient resource use through practices such as recycling and remanufacturing. These practices could help both Malaysia and the Philippines to mitigate the negative impacts of industrial activities on their ecosystems because it not only conserves natural resources but also helps in combating pollution and addressing climate change, crucial imperatives for the sustainable development of both countries. Then, the circular economy could present significant economic opportunities by fostering innovation, stimulating entrepreneurship, and creating new markets for secondary resources and eco-friendly products, driving both Malaysia and the Philippines in economic

growth while simultaneously enhancing resource productivity. The transition to a circular economy model can also contribute to job creation across various sectors, particularly in industries related to recycling, renewable energy, and sustainable manufacturing.

Apart from the economic benefits, the social benefits of transitioning to a circular economy should not be overlooked. Malaysia and the Philippines can improve the well-being of their citizens while fostering resilient and vibrant communities by prioritizing inclusivity, promoting social equity, and ensuring access to essential goods and services. Engaging stakeholders through participatory decision-making processes and empowering local initiatives are needed as both nations could build stronger social cohesion and foster a sense of ownership over the transition to a sustainable economy. Nevertheless, it is crucial to acknowledge that the transition to a circular economy is not without its challenges. Both Malaysia and the Philippines face institutional barriers, policy gaps, and infrastructural limitations that may hinder the widespread adoption of circular practices. Overcoming these hurdles will require concerted efforts from governments, businesses, civil society, and international partners to develop robust regulatory frameworks, invest in infrastructure, and promote capacity-building initiatives. Transitioning to a circular economy requires a paradigm shift in mindset and behaviour at all levels of society. Education, awareness-raising campaigns, and targeted communication strategies will be essential to inspire individuals and businesses to embrace sustainable consumption and production patterns. Moreover, fostering a culture of collaboration, knowledge-sharing, and technology transfer will be crucial for unlocking the full potential of the circular economy in Malaysia and the Philippines.

The transition to a circular economy holds immense promise for Malaysia and the Philippines in their journey towards sustainable development. However, realizing this vision will require bold leadership, strategic planning, and concerted action from all stakeholders. Through collaborative efforts and collective determination, Malaysia and the Philippines can emerge as champions of sustainability, setting an inspiring example for the rest of the world to follow. Therefore, the crisis in Malaysia and Philippines stems from a combination of population growth, increased consumerism driven by rising incomes, and inadequate regulatory frameworks. Without concerted efforts to address these challenges through improved waste management infrastructure, enhanced enforcement of regulations, and greater public awareness, the issue of solid waste will continue to pose significant environmental and socioeconomic threats to both Malaysia and Philippines.

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