

Contextual Influences on Recycling Practices among Melaka Civil Servants: A Path Analysis Approach

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DOI Link: <http://dx.doi.org/10.6007/IJARBSS/v15-i8/25989>

Published Date: 18 August 2025

Abstract

The practice of recycling plays an important role in efforts to deal with the problem of solid waste and protect the environment. This study aims to evaluate the level of involvement in recycling practices and the factors that influence it among civil servants. Civil servants are seen as an important group because they not only manage the implementation of public policy but also act as agents of change in society. There are many contextual factors that influence public servants to practice recycling, so path analysis is used to analyze direct and indirect influences on the decomposition model. The purpose of the study is to apply path analysis on the factors that influence recycling practices. This study is non-reactive with a cross-sectional design. This study uses a quantitative approach with a questionnaire method and interviews to collect data from civil servants in the State of Melaka. Path analysis is used to see the causal influence between variables. The results of the path analysis show that various contextual factors such as taking care of the environment, solid waste segregation, recycling campaigns, generating side income, social influence and recycling facilities on recycling practices. The results of the band analysis show four contextual factors that indirectly influence recycling practices ($e^2=0.352$), namely recycling facilities (37.8%), generating side income (18.5%), social influence (61.5%) and solid waste separation (6.2 %). Findings from this study, the Melaka State Government Civil Servant Recycling Practice Model which consists of elements of recycling facilities, generating side income, social influence, solid waste separation and knowledge has been developed.

Keywords: Recycling, Contextual Factors of Recycling, Recycling Practices, Civil Servants, Recycling Practice Model

Introduction

Solid waste management is an increasingly urgent environmental issue, not only at the global level but also at the national level, including in Malaysia. Every day, a large amount of solid waste is produced by domestic, commercial and industrial activities, which puts great pressure on the country's waste management system. In the context of Malaysia, statistics show that the rate of solid waste generation increases consistently with economic development and population growth. Based on data released by the National Solid Waste Management Department (JPSPN) in 2021, it is estimated that 14 million tons per year will be collected throughout the year 2022 or almost 40,000 tons per day with an estimated 95% of the solid waste collected being disposed of at landfills. This issue is worrying because the country's population is increasing with the latest data showing an estimated population growth of 2.4% or 600,000 people per year, which means more garbage will be produced.

Media reports on Garbage Collection Generation Data clearly show that there has been a significant increase in the production of waste by the people of this country in the past five years, namely in 2018 as much as 36,843 tons of garbage was produced per day, while in 2019 it increased to 37,462 tons which increased to 38,081 tons in 2020. In year 2021 a total of 38,699 tons of daily garbage was collected and in 2022, an estimated 39,936 tons of garbage was produced every day. According to Haliza quoted in Muhammad Basir & Sakinah (2022), states that the situation at the landfill has worsened with a large increase in medical waste, especially face masks and self-testing kits for COVID-19 which have become "new" waste where these two types of waste is not disposed of as clinical waste but instead has become domestic waste that is thrown away everywhere. The problem of solid waste dumping in Malaysia also continues and increases higher in the month of Ramadan when there is an increase in food waste with an increase of 2,800 metric tons that are simply thrown away.

According to the Chief Executive Officer of Alam Flora, Adam Saffian Ghazali, unconsumed or spoiled food sold in Ramadan bazaars is one of the main contributors to the increase in waste collection, the competition for the promotion of iftar meals made in most business premises such as hotels and restaurants and there are even food that has been damaged other than plastic and polystyrene food packaging sent to the disposal center. This matter has become a trend of increasing solid waste up to 66% every time in the month of Ramadhan from 2019 to 2024 (Kosmo, 2 April 2024).

One of the important strategies in achieving this goal is through the cultivation of recycling practices in the community, including in the public sector. Civil servants as the backbone of national administration not only play an important role in formulating and implementing government policies but also act as role models for the general public (Fan et al. 2023). The practice of recycling among civil servants can not only reduce the impact of solid waste in the workplace but can also influence the community to follow the same steps. Although various recycling initiatives and campaigns have been introduced in Malaysia, recycling practices among civil servants are still seen to be at a less than satisfactory level (Tiew et al. 2019). Although there are various contextual factors that have the potential to influence civil servants to practice recycling such as environmental awareness factors, recycling facilities,

recycling campaigns, social influence, generating side income and knowledge but it is not easy to determine the direct and indirect influence to practice recycle.

Therefore, this study aims to examine in more depth the contextual factors that influence the practice of recycling among civil servants in the State of Melaka by using a path analysis approach to assess the influence between factors such as environmental protection, campaigns, recycling facilities, generating side income, social influence and waste segregation towards recycling practices. Therefore, this study is to analyze the direct and indirect effects of those factors on recycling practices by using a path analysis approach.

Literature Review

The practice of recycling is closely related to a person's attitude towards the environment. Attitude plays an important role in influencing and encouraging a person's behavior to be positive to the environment and will apply that attitude in daily life. According to Cheku et al (20014), psychological factors that influence an individual's attitude are through qualities in oneself such as knowledge, good friends, relatives and the local community. For example, someone who is afraid of pollution involving environmental issues will act to affect their family, health and quality of life because they feel worried and insecure. The introduction of the Public Sector Conducive Ecosystem (EKSA) from January 2014 is an initiative to rebrand the public sector's 5S Practices by adding five new elements namely Green Practices, Creativity and Innovation, Conducive Environment and Corporate Image. This improvement is aimed at creating a quality and conducive workplace environment involving the diversity of public sector departments and agencies in Malaysia. Realizing the fact that environmental care is a shared responsibility among civil servants, EKSA has encouraged activities towards creating a green environment through Green Practices. Through this practice, every government department and agency is asked to implement programs such as recycling and increasing the efficiency of energy use towards saving resources. Every organization is seen to be able to give special emphasis to optimize available resources to avoid waste in terms of space, time, and human resources and prioritize the concept of value for money (Noor Mohamad 2017). Therefore, the Student Affairs Division (BHEP) of Universiti Putra Malaysia has emerged as the first university among 20 public universities to receive EKSA recognition in improving the culture of quality and rebranding the identity and corporate image of the university's citizens.

Civil servants are individuals who are close to the implementation of all government policies including policies related to recycling. Civil servants are part of the community who play an important role as agents of change in the effort to cultivate recycling practices towards making Malaysia a clean country by the year 2020. In addition, civil servants are also individuals who serve under a government administration and carry out duties and responsibilities who is an example to the community in the effort to implement government policies to advance the development of the country in addition to having the practice of good values and ethics in line with public administration.

As civil servants, they need to comply with and appreciate the Pure Values Program Supervision System Guidelines among which civil servants are responsible for carrying out pure values programs implemented by public organizations, supporting the level of achievement and effectiveness when a program is implemented, being able to sow

awareness, strengthen confidence, and realizing the practice of public service values and ethics. With the guidelines of this noble value program, civil servants can be an example to the community to realize and ensure the effectiveness of certain government policies (Sharifah Hayaati et al. 2009). In accordance with the gazette of the Solid Waste Management and Public Cleansing Act (Act 672), civil servants are also indirectly involved as members of the public service who are also subject to control, instructions and supervision from the Director General.

Mohamad Asrofi (2013) in his study on the recycling habits of civil servants at the Selangor State Government Secretary's Office showed three factors that influence recycling habits among civil servants are individual attitudes, subjective norms of the community and awareness in relation to control over behavior based on Behavioral Theory Planned. The results of his study show that there is no significant relationship between the three factors regarding the intention to recycle. While from the aspect of the relationship between intention and behavior, it was found that there is a significant relationship between the two. In addition, the concept of green practices has also become a priority for small and medium-sized manufacturing companies to achieve the ability to compete in order to achieve economic development while reducing environmental pollution. In line with that, Rahim et al. (2013) have formulated the concept of implementing green practices by working on the use of 5S and 3R methods to meet the needs of manufacturing companies of Small and Medium Enterprises (SMEs) in Malaysia such as management commitment, employee involvement, training and promotion are some of the critical success factors that influence green practices. Combining the 5S and 3R concepts can add value and provide benefits in operational and environmental aspects. This implementation is also in line with the concept of sustainability that takes into account the importance of the environment, social responsibility towards employees, the community and company profits

The State of Malacca has taken the first step towards sustainable cities by adopting the Green Action Plan in 2011 and establishing the Green Technology Council in order to achieve the mission and rating method of the United Nations Convention on Environmental Cities to evaluate the performance of green cities. Next Datuk Seri Hj. Mohd Idris bin Haron introduced the Green City Action Plan for the state of Melaka in 2014 which aims to promote an integrated approach towards a Green City in line with the slogan "Melaka Maju Negeriku Sayang, Negeri Bandar Bandar Hijau Teknologi" (Siti Rohana et al. 2014). In the Melaka Green City Action Plan, solid waste management based on recycling practices has been made one of the main pillars in the strategy to realize the state of Melaka becoming a Green Technology City (Department of Town and Country Planning Melaka 2016).

Many writings discuss the use of models for a better understanding of the mechanism behind the change in recycling behavior of a civil servant or government employee. The Theory of Planned Behavior or (Theory of Planned Behavior) developed by Ajzen (1991) is a theory that is often used to argue about attitudes towards environmental behavior and is widely used as a model in their studies to explore pro-environmental behavior environment that exists against recycling practices (Singhirunnusorn et al. 2012; Ramayah & Rahbar 2013; Nameghi & Shadi 2013). From the theoretical point of view of social psychology, the theory of planned behavior is also often used as a model and used in studies to explain various consumer behavior situations. According to Ramayah and Rahbar (2013), this theory has proven that

recycling behavior is influenced by other psychological elements such as knowledge, motivational factors, pro-environmental attitudes that stimulate behavioral changes that have a high potential to achieve the target recycling rate. In addition, the characteristics of a recycler and a non-recycler can also be identified through recycling behavior. In order to understand recycling behavior, knowledge and attitudes towards the environment are identified as important factors influencing household recycling practices. This is because a recycler who is pro-environment is more likely to get information and knowledge about recycling through campaigns, friends, newspapers, and television (Singhirunnusorn et al. 2012). In the context of studying behavior in recycling practices, there are factors that influence a person's behavior to get involved and know the programs that are carried out in their workplace and residential area.

Preserving the environment for future generations has encouraged female civil servants to do solid waste separation and recycling activities at home. Disclosure about recycling activities in the office has made it easier for them to practice recycling when they return home. Hasnah et al. (2012) in his study revealed that taking care of the environment is a factor of civil servants at Universiti Kebangsaan Malaysia (UKM) doing solid waste segregation. His study of 300 respondents who live in Bandar Baru Bangi and work as civil servants at UKM is analyzed using descriptive analysis and OLS (Ordinary Least Square). Apart from the factor of caring for the environment, other factors such as the employment sector, the attitude that thinks before buying something and living in a community that actively carries out recycling activities also encourage them to recycle. This shows that working women have an important role in practicing recycling and as educators at home in aspects of solid waste management. Environmental education refers to planned efforts made to educate the community either formally or otherwise so that the well-being and survival of the community and the environment are preserved and sustained. Knowledge about recycling practices, solid waste management and caring for the environment should not only be given to the younger generation. In fact, knowledge about the benefits of practicing recycling also needs to be applied to civil servants as a management saving measure in the office.

A case study conducted by Farah Izyan and Kamariah (2019) among civil servants consisting of preschool teachers found that the results of the study showed recycling practices, the use of goods that do not harm the quality of nature, the saving of electricity and water consumption is still at a low level and unsatisfactory. This comparative study was conducted on 40 Malaysian Ministry of Education preschool teachers from Kanowit district, Sarawak which aims to identify environmental sustainability practices at home and at work. This study is in line with Karatekin's (2014) study to examine the awareness of civil servants who work as social studies teachers at the College of Education, Kastamonu University, Turkey. A total of 165 teachers attending classes in the first to fourth year were selected as respondents. From the results of the study, social studies teachers have a low level of knowledge and awareness of solid waste and recycling. This shows that environmental education needs more emphasis on more consistent, continuous practices so that it can be used as a complete lifestyle. Environmental education that starts as early as preschool is a profitable investment and able to form a sustainable community in the future.

Many aspects drive the recycling program organized by the government. This includes ongoing recycling-related campaigns and publicity, systematic maintenance operations in

terms of selling recyclables, community roles, ongoing training, enthusiasm and knowledge of environmental protection programs. In order to achieve the success of a recycling program, the participation of stakeholders such as government departments, local authorities, the private sector, non-governmental organizations (NGOs) and consumers plays an important role in applying recycling practices in aspects of the recycling management training system and developing recycling learning programs. Sustainable in the community. In other words, civil servants who serve in the government are part of the community and have a great contribution and role to support recycling programs organized by stakeholders (Tiew et al. 2015).

This study aims to examine in more depth the contextual factors that influence the practice of recycling among civil servants in the State of Melaka by using a path analysis approach to assess the influence of factors such as environmental protection, campaigns, recycling facilities, generating income side effects, social influence and waste segregation on recycling practices. Therefore this study is to analyze the direct and indirect effects of those factors on recycling practices by using a decomposition model.

Methodology

Research Design

In this study, the researcher has used a cross-sectional survey design by applying quantitative and qualitative approaches, which are interviews. This study was conducted in the state of Malacca. The state of Melaka was chosen as the study site because the state of Melaka was the first state to make green development a priority in the state's development model. The efficiency of solid waste management by taking into account the practice of recycling as one of the main cores of the strategy in addition to being able to reduce the intensity of carbon emissions in an effort to realize the state of Melaka as Melaka Green Technology City. The total population of civil servants in the state of Melaka is 4174 people (Department of the Chief Minister of Melaka 2012). By using the Yamane Formula (1967) calculation, a total of 365 respondents were selected to answer the questionnaire among civil servants who serve regularly in 21 government departments in the state of Melaka using the purposive sampling method. The researcher also conducted a face-to-face interview session with four officials from four local authority offices in the state of Melaka to understand recycling practices and the factors that influence civil servants to do recycling activities. In the state of Melaka there are three districts namely Melaka Tengah, Jasin and Alor Gajah districts and four Local Authorities namely the Historic Melaka City Council, Hang Tuah Jaya Municipal Council, Jasin Municipal Council and Alor Gajah Municipal Council. The analysis used is path analysis using a decomposition model.

Path analysis is a technique for analyzing causal relationships that occur in multiple regression if the independent variable affects the dependent variable not only directly but also indirectly (Scheiner et al. 2000). Meanwhile, according to Hasanah (2019), path analysis is a direct development of the multiple regression form with the aim of providing an estimate of the level of importance (magnitude) and importance (significance) of a hypothetical causal relationship in a set of variables. Fidelis and Sunday (2018) defined path analysis as an advanced regression model used to test the alignment of the correlation matrix with two or more causal models compared by researchers. In this study, there are many factors that influence or contribute to the impact on the dependent variable which is the predicted

recycling practice. The researcher only determines the contribution of the variable being studied which is the independent variable and identifies the change in the independent variable to the change in the dependent variable.

Path analysis models are depicted in the form of circles and arrows where a single arrow indicates the cause. Regression is applied to each variable in the model as the dependent (respondent) variable while the other is the cause. The regression weights predicted in the model were compared with the observed correlation matrix for all variables and statistical goodness-of-fit tests were calculated.

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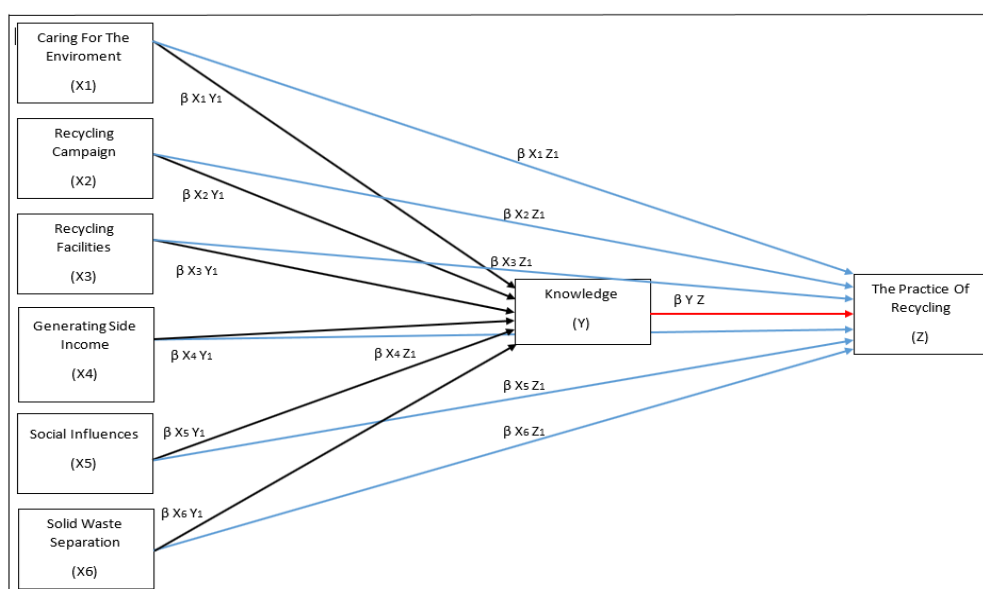


Figure 1: Malacca State Government Civil Service Recycling Practice Theory

Findings

Based on the results of data analysis using path analysis with the decomposition model in table 1.0 shows an R Square value of 0.055 or 5.5%. The value shows the large influence of X1, X2, X3, X4, X5 and X6 on knowledge in combination and the remaining 94.5% is influenced by other factors or errors. In addition, the great influence of caring for the environment (X1), recycling campaign (X2), recycling facilities (X3), generating side income (X4), social influence (X5) and solid waste separation (X6) on knowledge (Y) can be seen in the table.

Findings show that the significant value of caring for the environment is $0.043 < 0.05$, with a positive influence (predictor value 0.112) through knowledge. The significant value of the recycling campaign is $0.022 < 0.05$, with a positive influence (predictor value 0.138) through knowledge. While the significant value of recycling facilities is $0.900 > 0.05$, with (predictor value 0.006) through knowledge. The significant value of generating side income is $0.882 > 0.05$, with (predictor value -0.011) through knowledge. While the significant value of

social influence is $0.340 > 0.05$, with (predictive value 0.061) through knowledge and the significant value of solid waste separation is $0.713 > 0.05$, with (predictive value -0.028) through knowledge.

Table 1.

Results of the Path Coefficient of the Dependent Variable to the Mediator Variable

Variables	Coefficient (β)	p-Value	Test Results	R Square
Caring for environment through Knowledge	0.114	0.043	significant	0.055
Recycling campaign through Knowledge	0.150	0.022	significant	
Recycling facilities through Knowledge	0.008	0.900	Not significant	
Generating side income through Knowledge	0.012	0.882	Not significant	
Social Influence through Knowledge	0.063	0.340	Not significant	
Separation of solid waste through Knowledge	0.029	0.713	Not significant	

Table 2 shows the R Square value of 0.876 or 87.6%. The value shows the great influence of caring for the environment (X1), recycling campaigns (X2), recycling facilities (X3), generating side income (X4), social influence (X5) and solid waste separation (X6) through knowledge (Y) against the practice of recycling (Z) in a combined amount of 87.6% while the remaining 12.4% is influenced by other factors or error values.

The table below also shows the values of path coefficients, t-statistics and significant levels of contextual factors through knowledge against the practice of recycling. Findings show the significant value of caring for the environment (X1) is $0.571 > 0.05$, with (predictor value 0.010) the environment against the practice of recycling (Z). The significant value of the recycling campaign (X2) is $0.861 > 0.05$, with (predictor value -0.003) against the practice of recycling (Z). The significant value of recycling facilities (X3) is $0.000 < 0.05$, with a positive direct influence (predictor value 0.231) against the practice of recycling (Z). While the significant value of generating side income (X4) is $0.000 < 0.05$, with a direct positive influence (predictor value 0.148) against the practice of recycling (Z). The significant value of social influence (X5) is $0.000 < 0.05$, with a direct positive influence (predictor value 0.530) against the practice of recycling. The significant value of solid waste separation (X6) is $0.038 < 0.05$, accepted with (predictor value -0.050) against the practice of recycling (Z). While the significant value of knowledge (Y) is $0.042 < 0.05$, with (predictive value 0.035) against the practice of recycling (Z).

The results of the path coefficients of the dependent variable and the mediating variable on practice

Figure 2 shows the influence of caring for the environment (X1) against the practice of recycling (Z) as much as 0.012 or 1.2%, for recycling campaign (X2) against the practice of recycling (Z) as much as -0.004 or -0.4%, recycling facilities (X3) against the practice of recycling (Z) as much as 0.364 or 36.4%, generating side income (X4) against the practice of recycling (Z) of 0.179 or 17.9%, social influence (X5) against the practice of recycling (Z) of 0.613 or 61.3% and solid waste separation (X6) against the practice of recycling (Z) of -0.060 or -0.6%. For the value of $e_2 = \sqrt{1-0.876} = 0.352$.

Figure 1 is a path diagram illustrating the proposed model. The model includes six exogenous variables (X1-X6) and two endogenous variables (Y and Z). The paths and their coefficients are as follows:

- X1 (Caring for The Environment) to Y (Knowledge): 0.114 (**)
- X2 (Recycling Campaign) to Y: 0.150 (**)
- X3 (Recycling Facilities) to Y: 0.008
- X4 (Generating Side Income) to Y: -0.012
- X5 (Social Influences) to Y: 0.063
- X6 (Solid Waste separation) to Y: -0.029
- Y (Knowledge) to Z (The Practise of Recycling): 0.364 (**)
- X1 to Z: 0.012
- X2 to Z: -0.004
- X3 to Z: 0.039 (**)
- X4 to Z: 0.179 (**)
- X5 to Z: 0.613 (**)
- X6 to Z: 0.060 (**)

The R-squared values for the endogenous variables are:

- $R^2_Y = 0.97$
- $R^2_Z = 0.352$



Figure 2: Malacca State Government Civil Service Recycling Practice Model.

A summary of path analysis tests to see the influence of contextual factors that influence directly and indirectly through knowledge against the practice of recycling. Based on the results of the path analysis above, the researcher summarizes as in Table 3 below:

Table 3.

Summary of Path Analysis test to see the influence of contextual factors through knowledge against the practice of recycling

Influence	Factor	Mark (%)	Significant
Direct Influence	Caring for the environment (X1) through Knowledge (Y)	11.4	Yes
	Recycling campaign (X2) through Knowledge (Y)	15	Yes
	Recycling facilities (X1) through Knowledge (Y)	0.8	Tidak
	Generate side income (X4) through Knowledge (Y)	-1.2	No
	Social Influence (X5) through Knowledge (Y)	6.3	No
	Solid waste segregation (X6) through Knowledge (Y)	-2.9	No
	Protecting the environment (X1) against the Practice of recycling (Z)	1.2	No
	Campaign (X2) against the Practice of recycling (Z)	-0.4	No
	Facilities (X3) against the Practice of recycling (Z)	36.4	Yes
	Generating Side Income (X4) against the Practice of recycling (Z)	17.9	Yes
	Social Influence (X5) against the Practice of recycling (Z)	61.3	Yes
	Solid waste segregation (X6) against the Practice of recycling (Z)	-0.6	Yes
Indirect Influence	Caring for the Environment (X1) through Knowledge (Y) against the Practice of recycling (Z)	1.6	No
	Campaign (X2) through Knowledge (Y) against the Practice of recycling (Z)	0.98	No
	Facilities (X3) through Knowledge (Y) against the Practice of recycling (Z)	37.8	Yes
	Generating Side Income (X4) through Knowledge (Y) against the Practice of recycling (Z)	18.5	Yes
	Social influence (X5) through Knowledge (Y) against the Practice of recycling (Z)	61.5	Yes
	Segregation of Solid Waste (X6) through Knowledge (Y) against the Practice of recycling (Z)	6.2	Yes

Discussion

Based on Figure 2 shows the predictor model for the contextual factors that influence the practice of recycling among civil servants of the Melaka state government. The results of the path analysis show seven contextual factors that have been identified that influence recycling practices, namely knowledge, caring for the environment, recycling campaigns, recycling facilities, generating side income, social influence and solid waste separation. Therefore, based on the results of the path analysis, four contextual factors that directly contribute to the practice of recycling among civil servants in the state of Melaka are social influence (61.3%), recycling facilities (36.4%), generating side income (17.9%) and solid waste segregation (0.6%) In addition, the findings of the path analysis also show two contextual

factors that have a direct influence on knowledge, namely caring for the environment factors and recycling campaigns. The factor of caring for the environment contributes 11.4% while the recycling campaign contributes 15% to environmental knowledge. According to Ling-Yee (1997) the percentage of the contribution is very good and acceptable. Based on the path analysis study carried out, the researcher believes that a predictive model of recycling practices among civil servants in the state of Melaka can be developed if the five contextual factors resulting from the path analysis, namely social influence, ease of recycling, generating side income, solid waste separation and knowledge given priority. These findings highlight that recycling practices are not only influenced by infrastructure and awareness but also by socio-cultural dynamics that can be strategically strengthened to build a sustainable recycling culture in the public sector.

The results of the study by Tan Awang Besar et al. (2013) showed that the level of knowledge and attitude of newly appointed civil servants towards recycling is high but the level of recycling practice at work is moderate. Therefore, the researcher believes that in order to maintain the culture of recycling practices among government civil servants, the level of knowledge of civil servants needs to be increased about recycling such as the types of recycled goods, how to practice recycling, solid waste, campaigns to protect the environment as well as recycling separation methods. The findings of this study show that environmental protection factors and recycling campaigns can increase the knowledge of civil servants and can be applied in their daily lives. In addition, the practice of recycling can be made a lifestyle among civil servants who have just served the public sector if they have knowledge about recycling (DiEnno and Hilton 2005). A study by Folz and Hazlett (1991) supports this view that knowledge about recycling is important for civil servants to prepare, allocate time, know the items that need to be separated, sorted and recycled and stored in a special store as a collection point for recyclables. As a result of this evaluation, the researcher formulated the level of recycling knowledge divided into two parts, namely the level of specific knowledge and the level of general knowledge. For a civil servant who is inclined towards environmentally friendly behavior, the specific level of recycling knowledge is more prominent compared to the general knowledge that only knows the practice of recycling is separation, reduction and recycling (3R) only.

Campaigns related to recycling are also considered a direct contributor to knowledge. For example, through the zero waste campaign carried out by public servants, they know the difference between zero waste and the recycling process that starts with the production of waste, while zero waste starts as early as the process of creating a product that involves consumers, producers and policy makers.

According to Rosmidzatul Azila (2014), the combination of the concept of zero waste and recycling is able to overcome problems related to environmental conservation. The benefits obtained from the recycling campaign include helping to reduce the problem of solid waste dumping which is increasing every year, reducing the cost of waste management and landfill maintenance in the long term as well as maximizing the use of a material from the occurrence of waste and reducing the import rate of the impact of the rate of use high material recovery. The implication for policymakers is clear well-designed and continuous campaigns are not merely informational tools but powerful behavioral change instruments.

Researchers believe that continuous recycling campaigns can educate civil servants about the importance of caring for the environment. Most of the awareness and promotion campaigns are carried out through mass media such as television, radio, newspapers, roadside signs as well as social media such as the internet which help to apply awareness and improve public servants' understanding of recycling practices. The distribution of recycling bags, leaflets, magazines, articles, photo posters and video screenings are also often carried out by PBT and NGOs in government office areas, schools, supermarkets, public places and so on as a preparatory step to carry out recycling activities. Therefore, researchers suggest that civil servants should respond to the government's call to recycle starting at work and then practicing at home. This is very significant because the recycling campaign can be an intermediate medium to give awareness to civil servants not to throw away garbage at will but need to do segregation first before putting the items in the recycling bin according to the correct label. Researchers believe that awareness campaigns about the importance of recycling practices that are carried out continuously can form a generation that has a high level of knowledge and awareness about caring for the environment. The effect is that the problem of environmental pollution and solid waste dumping that occurs in Malaysia can be overcome more effectively and pragmatically.

The researcher also suggested that the management at the responsibility center level in the government department can ensure that the practice of circularity must involve all civil servants regardless of gender. The study that Oztekin et al. (2017) found that there is a gender difference where women are more likely to cycle all over men. The findings of the study are in line with the study of Lucy et al. (2013) who reported that overall the youth showed interest and were positive and confident in their ability to carry out recycling activities individually or in groups. This is reinforced by the observation of the interview informant (P4: 35 years old, Malay, MBMB) who stated that in order to ensure that the MBMB area is always clean, a patrol team has been established to ensure that the office environment is always clean. If there are MBMB staff who find garbage even in small size, they will continue to collect and throw it in the trash can.

In addition to convenience factors such as recycling bins, the distance from residence also contributes directly to recycling practices. Therefore, in order to improve recycling practices in the workplace, the researcher recommends that recycling facilities should be added from time to time, the recycling bins provided should be clearly labeled according to the correct garbage criteria and placed in an open and easy-to-find location, for example near with photocopiers, service counters, foyers, by the elevators and by the toilets. This statement is supported by the interview informant (P1: 42 years old, Malay, MPJ) who stated that if recycling bin facilities are provided in abundance, then it is easy for civil servants to do segregation especially involving recyclable items such as paper. For the community, the provision of recycling bins in strategic residential areas such as at every intersection in housing estates, mosque, playgrounds and public halls makes it easier for the community to place items for recycling. Recycling facilities also need to be monitored from the aspect of safety and damage because there are times when the recycling bins provided are not maintained in good condition. This is very important to encourage community interest and behavior to recycle at home.

The researcher thinks recycling practices should be started immediately and cultured in the workplace. A civil servant who is used to recycling at work will educate his family to recycle at home as well. In the community, civil servants will join hands by involving their family members with the rest of the community to make recycling a part of a healthy lifestyle. If this practice is ingrained in the soul and sanubari then environmental cleanliness will be easy to practice and the benefits of cleanliness will be shared by all layers of the community. This statement is reinforced by the interview informant's statement (P4: 35 years old, Malay, MBMB) who insists that ongoing efforts involve various community groups in addition to giving the public exposure to efforts to improve recycling practices. In addition, the researcher would like to emphasize that civil servants should be aware that recycling is very important in keeping the environment from being destroyed. Therefore, the researcher would like to suggest that every stakeholder should be responsible in playing a role in taking care of the environment through recycling practices.

This recycling activity can also provide income indirectly. There are also civil servants who have artistic skills using recycled items to make new products such as stationery containers, decorative flowers in the office, cooking aprons, shopping bags and so on. For the community outside, recycling activities can also be used as a source of income to support family life such as single mother associations and community members who make handicraft items from old newspapers to make vases, serving covers and flowers for sale. This dual environmental conservation and economic empowerment—makes recycling a highly attractive and sustainable practice worthy of continued investment. This statement is reinforced by an interview informant (P1: 42 years old, Malay, MPJ) who states that there are also creative staff who generate side income by turning magazine papers into handicrafts for flowers, patchwork cloths made into pencil cases, footwear, aprons and so on. While Omrani (1995) explained that the responsibility of recycling is an economic-based action where individuals can get cash payments if they can produce goods from recycling. In addition, recycling hub centers have been developed to collect recycled goods such as plastic, iron, electronic goods, cloth and others where customers who come will be paid in cash or even by using e-wallet.

Conclusion

Civil servants are part of the community who play an important role as agents of change in efforts to cultivate recycling practices towards making Malaysia a clean country towards a developed country. Therefore, some recycling practice strategies should be taken into account by employers and organizations to ensure that civil servants practice recycling at work. The findings of the study have successfully developed a decomposition model carried out through path analysis showing that there are four factors that indirectly affect the practice of recycling among civil servants in the state of Melaka, namely (i) recycling facilities through knowledge (ii) generating side income through knowledge (iii) social influence through knowledge as well as (iv) solid waste separation through knowledge. Therefore, from the findings of the path analysis, a model of recycling practices among civil servants of the Melaka state government has been developed. This model can be used as a reference base in producing a solid waste separation strategy plan in offices, improving existing regulations and producing a complete guideline in an effort to oblige civil servants to carry out recycling practices in government offices.

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