

Hawker's Community Awareness and Knowledge towards Sustainable Solid Waste Management in Georgetown, Penang, Malaysia

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Abstract

Solid waste management practice is one of the crucial components in developing a sustainable city. The practice of sustainable solid waste management among the community is reflecting one of the sustainable community features. However, developing a sustainable community is not an easy task where it requires commitment from multiple stakeholders. Hawker's community is essential in urban areas where it plays a vital role in economic development and environmental sustainability. Therefore, this study was conducted to examine hawker's community's knowledge, awareness, and practices in solid waste management. This study used a questionnaire as the primary research instrument. A total of 105 respondents participated in this study, where they are hawkers in Georgetown, Penang, Malaysia. Descriptive analysis was applied to examine the hawker's community's awareness, knowledge, and practice on sustainable solid waste management, which focuses on recycling and composting. This study found out that the awareness of respondents on sustainable solid waste management is high. However, the knowledge of respondents is at a moderate level. This study also reveals that the respondent is reluctant to practice sustainable solid waste management because of time constraints and inconvenient facilities. This finding is significant to local authority and government agencies to develop sustainable community framework in an urban area.

Keywords: Sustainable solid waste management, recycling, composting, hawker's community

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1.0 INTRODUCTION

Lifestyle changes, urbanization, urban population growth, and increasing consumption are universal phenomena faced in most cities in the world. Sustainable development can be translated into two main dimensions, namely through green technology and through sustainable lifestyles. The practice of sustainable solid waste management including recycling and composting among the Malaysian community has started decade ago. Various initiatives have been undertaken by the government agencies, non-governmental organizations (NGOs), institutions and industry to increase the recycling rate and composting practices in Malaysia. Many recycling programs in Penang are organized by the Penang Municipal Council in collaboration with various parties such as industry, NGOs (Penang Institute), and institutions of higher learning. However, the recycling rate in Malaysia, is still low compared to neighbouring countries, namely Singapore and Thailand (Seow & Abas, 2016).

Waste production and economic growth are inextricably linked. In the long term, the challenge is to sever the connection between wastefulness and long-term growth and achieve more sustainable growth by conserving resources (Koop & van Leeuwen, 2017). Long-term research on finding a long-term solution to the problem of garbage segregation has already been done. It included developing new methods and technologies to help waste generators separate their recyclables. In Malaysia, the public interest in waste segregation has increased due to rising concerns about environmental sustainability, along with growing community awareness and involvement in waste management (Bong et al., 2017). However, an inadequate level of consideration has been given to practices regarding waste segregation at the source. Besides that, how the waste issues are currently rated in people's minds and the course of official development plans, which has allowed the recent surge in waste disposal problems in developing countries to take place (Sabini et al., 2019). Communities do not care about their surroundings as long as their waste is collected. Recognizing the impact of waste segregation on the community's views on municipal solid waste management is essential because by better managing, preventing, and mitigating excessive waste being dumped into landfills, landfills last longer, reducing the amount of garbage the community must handle.

Therefore, the Malaysian practices on sustainable solid waste management including recycling and composting need to be examined. This study explores the practices of hawker's community in solid waste management in Georgetown, Penang.

■ 2.0 LITERATURE REVIEW

2.1 Sustainable City

The concept of a sustainable city is derived from the original concept of sustainable development in the application of ecological principles to urban development planning. To date, there is no precise and applicable definition of sustainable development. This is because, sustainable development carries different meanings to different individuals. However, the definition often used by researchers and politicians is as set out in the 1987 Brundland Commission Report. In the report, the definition of sustainable development is “development that meets the needs and wants of the present without compromising the ability of future generations to meet their needs” (Mensah, 2019, p. 6). The sustainable development module covers three very important fundamentals namely economic, social and environmental. Therefore, sustainable urban development should involve such three fundamentals such as clean water and air (Environment), harmonious social life (Social) and rapid economic growth (Economy) (Abas et al., 2018). Therefore, the United Nations (UN) and Local Government for Sustainability have made the Triple Bottom Line (TBL) a holistic approach in the planning and development of sustainable cities and communities.

A sustainable city is a city that is able to maintain the well-being of the existing environment. In addition, a sustainable city should have features such as green technology, efficient transportation system, efficient use of space, adequate green space and cultural heritage that is always preserved. Overall, a sustainable city should strive towards the reduction of ecological footprint production (Zia et al., 2021). To achieve this effort, various things need to be taken into account. For example, poor construction of buildings and infrastructure has a negative impact on environmental well-being. A sustainable city is able to contribute to economic development through the attraction of investment and create many job opportunities. Rapid economic development is very important for the government to have sufficient financial resources to maintain and improve the well-being of the environment. In addition, stable economic growth can improve the living standards of the people in the city. Economic development initiatives among the community are one of the ways to solve the problem of economic instability in the community (He et al., 2018). Thus, these initiatives are capable of building community capacity in the long run. Considering the social and ecological conditions that are prosperous is very important in a sustainable city. Strong interactions and bonds between a multi-racial and multi-religious society are very important in a social structure. The growth of an enclave area that only cares about status, wealth and power is a situation that should not exist in a sustainable city. Influential communities should welcome other communities by providing assistance. Harmony in social life is a very important element to achieve a sustainable city (Saiu, 2017).

2.2 Sustainable Community

Community means a group of people who live in one place and have common interests. In addition, a community is a group of people who share various aspects within the institution such as economic, political, social, employment, lifestyle, location and housing (Delgado et al., 2021). Within a community, interaction and unity between other community members are forged because they share common interests. In essence, a community is a symbolic entity that provides a flexible framework. When individuals can build their own identities as well as be able to relate to each other, a larger group will exist. According to Borgatti (2005), communities can be divided into two categories namely:

- i. Communities can consist of neighbourhood, city, township, county and province units or anything that refers to a residence.
- ii. Communities are formed through the camaraderie that exists among individuals living in the same area, where this level of camaraderie can be seen through the frequency and strength of relationships between individuals in daily life.

Huh et al. (2020) explained that a community has a force of interaction that is formed within a group of people. They need each other in daily life, especially in terms of personal safety and home security. They support each other in times of trouble. Whereas a sustainable community is a community that can continue to be comfortable in life across generations.

A sustainable community is a place where people want to live and work in the present and in the future (Kohon, 2018). They need human beings now and in the future. In addition, they care about the environment and always help improve the quality of life. There are eight key characteristics of a sustainable community that have been outlined in the Bristol Accord.

- i. Active, inclusive and safe: fairness, tolerance and cohesiveness towards the culture and activities of the common community.
- ii. Well managed: activities are carried out effectively, there is representation in a community organization and participation with a spirit of leadership.
- iii. Concern for the environment: every activity that requires attention to the balance of the environment.
- iv. Well-designed: designed with given infrastructure features and taking into account nature.
- v. Well connected: provides affordable services and communications for employment, health, education and other services.
- vi. Thriving: a variety of fast-growing economies.
- vii. Good service: services provided to the public, private and voluntary services that are appropriate to the needs of the community and can be used by all.
- viii. Fair to all: fair not only in that community, but against other communities now and in the future.

A sustainable community is a community that occurs every time in sustainable development in the aspects of socio-economic improvement, environmental management and good living. Communities are one of the most important fundamental components in sustainable urban development.

2.3 The Issues of Street Hawkers in Urban Area

People generally see street Hawker and Street traders as part of the informal sector. A common misconception is that streets with street vendors have many securities and public order issues. Even though this tiny firm is thought of as dirty, disorganized, and an eyesore, they can be found everywhere: sidewalks, pedestrian bridges, city parks, and roads. Street hawkers who are assumed to contribute to traffic and ruin a city's appearance are often reprimanded by the local government. In essence, many people view street hawkers as a part of the problem (Wang et al., 2020).

Cities are like a coin where the same issue can have negative results depending on where they stand. In fact, hawker's community contribute to the employment and local income where it will give positive impact to the urban's economy. In contrast, existence of hawkers on public roads and sidewalks, with limited space for pedestrians, is unhelpful (Varming, 2021). This issue has raised public concern, as it causes traffic problems and impedes pedestrian traffic, creates a hostile and unhealthy environment, and overall interferes with people's lives. Environmental issues are not restricted to one country but instead have evolved into an international concern. In fact, environmental pollution has gotten increasingly important in the realm of environmental sustainability (Landrum, 2018). Increased solid waste generated due to consumption habits in developed and developing countries has caused massive environmental pollution (Abas & Seow, 2020). Street vendors operate as informal economies, providing one of the economy's essential foundations. The issue is how to lessen the detrimental effect hawkers have on the environment while operating their business.

The study of hawker's community awareness and knowledge on proper solid waste management is crucial for local authority. Many previous studies highlighted the significant of awareness and knowledge study on hawker's community for intervention program in the future (Basu & Punjabi, 2020).

2.4 Sustainable Solid Waste Management initiative in Penang

The "Cleaner Greener Penang" initiative carried out by the Penang State Government is Penang's direction to restore the living environment and make it a clean and green city, as well as improve the quality of life. This initiative is aimed at creating a three-party coordination of government, the corporate sector and the community in empowering the community to work towards a greener and cleaner in Penang. The achievement of waste reduction through 3R (Reduce, Reuse, Recycle) also contributed to the "Cleaner Greener Penang" initiative.

The Penang Municipal Council has Recycling Unit that manages municipal affairs and records recycling collection data for the state of Penang. Therefore, the State of Penang and Seberang Perai Municipal Council have each recorded 23% of waste for recycling, this achievement is the highest compared to the national average of 3% to 5% only. This recycling rate has preceded the goal of the Ministry of Local Government Housing which has targeted the achievement of a recycling rate in Malaysia at 22% by 2020 (Abas & Seow, 2015). As a result of this 3R effort, solid waste disposal has been reduced by 175 metric tonnes per day in Seberang Perai. In 2010, the recycling rate in the island area has increased by 20% from 80,000 metric tons in 2009 to 100,000 metric tons. Through this initiative can make the living environment better and make Penang a sustainable city.

Referring to the composting initiative, SERI or known as Penang Institute (PI) and Penang Consumers Association (CAP) have published a compost manual for households to give an overview of the composting process and introduce some examples of methods suitable for use by every walk of life. In addition, a community-oriented compost project initiative was also held in 2007 by the Penang Institute (PI) and CIDA-Asian Institute of Technology. This project aims to address the problem of solid waste management in Taman Duku, Bukit Mertajam. The compost produced will be used for planting ornamental trees in the garden. In addition, Penang Municipal Council and Seberang Perai Municipal Council together with Solid Waste Management and Public Cleansing have carried out composting activities using Takakura Home Method composting method which has been adapted from Japanese technology namely Kitakyusyu International Techno-Cooperative Association (KITA) in 2010.

3.0 METHODOLOGY

3.1 Sampling Method

This study uses a simple stratified random sampling method to select samples from the study area. According to So (2021), random sampling is very suitable for non-uniform populations (males and females). The first step in defined random sampling is the determination of the layers to be studied. In addition, the samples will be segregated first into different groups such as males and females. Through this defined randomized method, sampling errors can be reduced by reducing the variance of sample estimates. Each individual in the group of women and men in each location was given an equal opportunity to be selected as a respondent. An estimated 1000 hawkers in the Georgetown. Based on The Rule-of-Thumb, 10% of the total population can be sampled (Riley et al., 2019). A sample size of 100 respondents is the smallest acceptable to represent the entire population because it adheres to sampling theory in the context of a normal distribution. Therefore, a total of 105 respondents will be taken as a respondent in this study.

3.2 Research Instrument

Questionnaire survey forms were distributed to selected respondents to obtain data and information from the respondents. In this study, the survey questionnaire was divided into four main parts, namely:

- Section A: Respondents' socio-demographic
- Section B: awareness on sustainable solid waste management
- Section C: knowledge on the concept of recycling and composting
- Section D: recycling and composting practices

The questionnaire used closed-ended questions. Closed questions are used to facilitate respondents to give more complete and more standard answers so that the answers given can be compared with each other (Tvinnereim et al., 2017). Respondents have to answer selectively that provided by the researcher for closed-ended questions. Respondents are not allowed to give other answers.

3.1 Data Analysis

Descriptive analysis like frequency, percentage and mean was applied in this study to examine the practice of hawker's community in Georgetown on sustainable solid waste management which focusing on recycling and composting.

4.0 RESULTS AND DISCUSSIONS

4.1 Respondents' Profile

The total number of respondents participate in this study was 105 people. Based on Table 1, the percentage of female respondents exceeds the percentage of male respondents because the majority of hawkers in each location are female. The average age of the respondents in the study area is 41 years because most hawkers in the study area consist of adults compared to teenagers and the elderly. The Chinese showed highest percentage of 55.8% compared to 27.1% of the Malays and Indians 17.1%. This percentage shows that the majority of hawkers in the Georgetown are Chinese. Referring to the socio-economy of the respondents, majority respondents earn an income of RM3000 or more per month. However, the majority of hawkers (82.9%) has business hours from morning to night.

Table 1 Respondents' profile

Socio-demographic	Frequency/ (%)
Gender	
Male	51/ (48.6)
Female	54/ (51.4)
Age	
20-30 years old	9/ (8.7)
31-40 years old	32/ (30.8)
41-50 years old	45/ (42.8)
51-60 years old	12/ (10.7)
>61 years old	7/ (7.0)
Ethnicity	
Malay	28/ (27.1)
Chinese	59/ (55.8)
Indian	18/ (17.1)
Marital status	
Married	101/ (97.1)
Single	4/ (2.9)
Education status	
Primary school	41/ (38.6)
Secondary school	57/ (54.1)
Certificate/ Diploma	5/ (5.3)
Degree	2/ (2.0)
Business hours	
8.00 am - 10.00pm	87/ (82.9)
8.00 am - 6.00 pm	18/ (17.1)
Business income per month	
RM1000 – RM3000	24/ (22.9)
RM3001 – RM5000	57/ (54.2)
RM5001 – RM7000	24/ (22.9)

4.2 Awareness on Sustainable Solid Waste Management

The level of awareness of the consumer community is high. This clearly shows that the hawker's community is aware of the importance of solid waste recycling and composting. The social interaction between the campus community and the user community in the USM neighbourhood has called for a high awareness. Apart from that, programs that have been carried out by the Penang Municipal Council such as 'Green and Clean Penang' are also among the factors related to the awareness of the consumer community on recycling. Thus, Penang has achieved a different recycling rate in other states in Malaysia at 20% in 2010. Respondent's knowledge of the need for positive impact of recycling on environmental well-being, economic development, social consumer measures evidenced respondent's awareness of the importance of recycle (Martinho et al., 2017).

4.3 Knowledge on Sustainable Solid Waste Management

The response of the business community to recycling practices is measured through knowledge related to the definition of recycling, recycling initiatives, composting practices, and knowledge related to recyclable materials. Based on Table 8.2, 88.6% of the respondents were able to give the definition of recycling correctly. This shows that the hawker's community understands the concept of recycling. While 85.7% of the respondents have ever carried out a recycling initiative and only 14.3% of the respondents have never carried out a recycling initiative.

Although the majority of respondents have practiced recycling initiatives, they are still unaware of the types of items that cannot be recycled. This argument is evidenced by only 34.3% of respondents knowing that plastic bags, tissues, and plastic wrap cannot be recycled. This situation occurs because the majority of respondents only practice recycling for certain materials or items only to get incentives. Therefore, they are unaware that tissues, plastic bags, and plastic bandages cannot be recycled.

Referring to the composting, only 17.1% of the respondents have knowledge and idea about composting. The majority of the respondents, 82.8%, have never know about composting because they do not have a clear knowledge of composting practices. Moreover, they do not have the confidence to practice composting due to lack of knowledge. This finding is parallel with the study of Chen et al. (2020). Therefore, programs related to composting practices need to be implemented to the hawker's community to provide clear knowledge.

Table 2 Knowledge on the sustainable solid waste management

Knowledge on sustainable solid waste management	Percentage (%)
Recycling:	
Correct	88.6
Wrong	11.4
Recyclable items:	
Correct	33.4
Wrong	65.7
Composting:	
Correct	17.1
Wrong	65.7

4.4 Sustainable Solid Waste Management Practices

The majority of the hawker's community (51.4%) in Georgetown felt that the practice of recycling was very harassing especially the work of segregating recycled items. Only 40% of respondents agreed stating the work of segregating recyclable items from solid waste streams is not troublesome. Referring to responsibilities, 51.5% of the respondents considered the recycling of solid waste not their responsibility but rather the responsibility of the local authority. This is because the majority of respondents (57.2%) stated that they do not have time to practice recycling because they are busy with business. However, 42.8% of the respondents are aware of their responsibility to recycle despite being busy with daily activities.

Based on the questionnaire, among other factors that cause respondents not to practice recycling are not having space or place to store recycled items, worry about the contamination of recycled items that will invite the presence of insects and pests, very limited recycling facilities in residences and shops, existing recycling systems are less effective, prices of recyclables are unstable, and recycling collection points are far away from residences and shops. Based on the questionnaire, the percentage of respondents who have ever practiced recycling is high compared to those who have never practiced recycling. But respondents' perceptions of recycling practices show that they do not practice recycling continuously due to several factors discussed above.

Furthermore, 100% of the respondents agreed they adopt a cycle to earn money. Meanwhile, 91.4% of respondents stated that they recycle to maintain the well-being of the environment and 88.6% of respondents stated that they recycle to respond to recommendations from local authorities, non-governmental organizations (NGOs), and higher education. This situation clearly shows that the majority of the respondents used to recycle just to earn money which in line with the study of Mahmoodi and Heydari (2021). Therefore, the majority of respondents consider recycling practices to be inconvenient and harassing (51.4%).

5.0 CONCLUSION

The majority of the hawker's community in Georgetown have run recycling initiatives but have never practiced composting. Composting - related programs need to be conducted more frequently by various parties such as the state government, NGOs, and the university to provide exposure and knowledge to the local community. Apart from that, a recycling program also needs to be carried out because most of the hawker's community is still unclear about recyclable and non-recyclable items, especially plastic materials. Although most communities have taken recycling initiatives, there are still shortcomings in their perceptions regarding recycling practices. To achieve a sustainable city, the recycling component of solid waste among the community is one of the requirements. Therefore, system improvements need to be done so that a paradigm shift takes place in the society towards recycling practices.

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