ENVIRONMENT MANAGEMENT TOOLS TOWARDS FOODS WASTE MANAGEMENT IN MALAYSIA: A REVIEW FOR CLEAN ENVIRONMENT

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ABSTRACT

The major social issues faced by citizens in Malaysia are a lot of food wasted in the country such as agriculture which is not fresh, has been eliminated, and causes pollution and cases of diseases among citizens. From the information, Malaysia is in an untenable position and must act quickly to address its enormous food waste issue. Based on statistics, a total of 17,007 tons of food waste per day are reported in 2021. The substantial quantities of food and agricultural waste in Malaysia have been a persistent challenge, both locally and globally. This study is based on secondary data for researcher to analysis the issue and suggested Environment Management Tools (E.M.T) for overcome the issue. Due to the lack of strict regulations for waste management such as solid waste and public cleansing management act 2007(act 672) and separation –at- source regulation with land pollution has become a serious issue, impacting the ecosystem, environment, and communities. Without effective action from authorities and state level adoption on the regulation remain inconsistent, these problems continue to worsen. Farmers, agricultural SMEs, and local communities lack necessary skills and experience in implementing environmentally friendly waste treatment methods through (E.M.T). Tools including life-Cycle assessment (LCA), Composting and Anaerobic Digestion, Food Waste Tracking Technologies or Tools, Public Awareness Campaign, and policy and regulatory analysis highlight the important of awareness, moral, obligation and community participation in reducing household and institutional food waste. The review concludes that an integrated application of environmental management tools combination with policy, technology, and social dimensions is essential advancing Malaysia's progress towards food loss and waste reduction.

Keywords: *Waste, Food, Management, Pollution, Ecosystem*

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1.0 INTRODUCTION

The major social issues faced by citizens in Malaysia is a lot of food wasted in the country such as agriculture which is not fresh and has been eliminated and causes pollution and cases of diseases among citizens. From the news (Nizam, 2023), Malaysia is in an untenable position and must act quickly to address its enormous food waste issue. Based on statistics (Supramani, 2023), a total of 17,007 tons of food waste per day are reported in 2021.

In 2022, Malaysia wastes 17,000 tons of food every day, 24% of which is still edible. Table 1 shows the sources of food wasted. The study by UPM indicates that more than half of Malaysians waste food daily, despite possessing good household skills and being aware of the wastefulness of their actions. Therefore, pollution that was caused by the failure to manage food waste to the drain can be controlled and decrease the cases of diseases such as rat diseases (Wang et al., 2020).

Table 1 Sources of Food Wasted

Sources of food wasted	Percentage of food waste generated
Households	38%
Wet markets	23%
Hotels	24%
Restaurants	24%

Large-scale food production to meet demand leads to food waste and environmental degradation, exacerbating global warming. Waste in landfills pollutes soil and water, emits methane and contributes to the greenhouse effect. For example, the Terengganu landfill faces 300 tons of solid waste every day and costs RM7 million to clean up every year. Food waste masks awareness of hunger and wealth disparity. Addressing this issue could increase the price of food preparation materials and worsen food quality (Ramli et al., 2022).

The rapid growth of urban populations, changing consumption patterns, and insufficient segregation practices has exacerbated the strain on national solid waste management systems. Kuala Lumpur's population is growing steadily, underscoring its position as a major economic and cultural center. As of 2023, Kuala Lumpur will have approximately 1,998,600 residents with a density of 8,235 people per square kilometer. For instance, food courts in the Kepong area of Malaysia have reported high food wastes that go to the drain that may cause pollution that may have certain risk to have diseases among citizens.

This review critically examines environmental management tools applied towards food waste management in Malaysia, focusing on Environment Management Tools (EMT), policy frameworks, technological interventions, and behavioral approaches. Recommendations include strengthening enforcement mechanisms, scaling up waste-to-energy projects, mainstreaming digital monitoring tools, and fostering behavioral change programs to support a circular economy. The objective of the review is to analysis EMT towards food waste management in Malaysia to create more awareness among Malaysian.

2.0 LITERATURE REVIEW

Food waste contributes to 8% of the world's greenhouse gas emissions, uses up 20% of our freshwater, and takes up 30% of the land used for agriculture. (FAO, 2018) Hence, this app contributes to the broader goal of promoting sustainable consumption and production, as outlined in Sustainable Development Goal (SDG) 12, thereby **minimizing environmental impact** and **maximizing resource efficiency, United Nations Development, no date** (UNDP, n.d.). The federal legal backbone for municipal waste (including organics) in Malaysia remains the Solid Waste and Public Cleansing Management Act 2007 (Act 672), which enables Separation-at-Source (SAS) and gives the federal government powers to license and regulate municipal services.

Malaysia currently depends extensively on landfills (around 80% usage) (Ghafar, 2017) for waste disposal, which raises serious problems about space constraints, health dangers, and environmental damage. For instance, this action emits greenhouse gasses like CH4 (methane), which leads to worldwide warming (Lam et al., 2016). On an ecological level, it causes contamination and greenhouse gas emissions (Chooi et al., 2022). Food waste can be used as a high-quality raw material for microbial fermentation without the need for additional nutritional supplements (Charles Ng et al., 2020). Therefore, pollution that was caused by the failure to manage food waste to the drain can be controlled and decrease the cases of diseases such as rat diseases (Wang et al., 2020).

Municipal Solid Waste (MSW) is the largest contributor to solid waste production in Malaysia, accounting for 64% of the entire waste composition. Organic waste such as food, vegetables, and fruits, accounts for 45% of the typical content of Malaysian MSW, concentrating on the seriousness of the environmental impacts (Fatiha Yaacob et al., 2019). Repurposing this garbage into a marketable product reduces the negative impact of landfill disposal, lowering greenhouse gas emissions and saving landfill space (Cardarelli et al., 2023).

Implementation of Separation at Source (SAS) and full enforcement of Act 672, however, varies across states and municipalities, producing uneven prerequisites for any downstream organic-recovery tools (composting, AD). Reviews and legal summaries emphasize that the Act provides authority but operational gaps (state adoption, financing, enforcement) limit uniform tool deployment. Legal mandates like SAS are necessary but not sufficient — they must be paired with local enforcement, financing, and service redesign to make source-separation and organic recovery work in practice. Idris et al. (2025) explicitly review Malaysia's legal and policy approaches to food waste and document these governance gaps and recommendations for harmonization.

Life-cycle assessment (LCA) has become central decision-support tools for municipal authorities and private investors considering organics processing options. Comparative LCA work and recent Malaysia-case techno-economic studies show anaerobic digestion (AD) and composting commonly outperform landfill disposal on greenhouse-gas metrics when feedstock is source-separated and contamination is low. A 2025 techno-economic and LCA case on restaurant food-waste-to-electricity exemplifies the kind of site-specific evidence municipalities need for investment decisions. Broader methodological reviews also stress careful system boundary and allocation choices when comparing treatment options (kc goh et.al 2025).

Community-scale composting LCAs (global cases) further demonstrate environmental benefits when compost replaces chemical fertilizers and landfill methane is avoided became a transferable result for Malaysian municipalities pursuing local organics loops. LCA provide the evidence base to choose between decentralized composting, centralized AD, or hybrid systems, but their accuracy hinges on realistic input data (contamination rates, transport distances, energy recovery factors) that depend on successful SAS implementation (kc goh et.al 2025).

A sizable and growing Malaysian empirical literature applies the Theory of Planned Behaviour (TPB) (often extended with moral norms and knowledge) to explain intentions and self-reported separation or waste-reduction actions in households, university campuses, and hospitality settings. Recent Malaysian studies (2020–2024) consistently find that attitudes, perceived behavioural control (convenience), subjective norms, and knowledge/moral obligation are significant predictors of intention to separate food waste — indicating that policy or infrastructural tools must be matched with behavioral design (signage, convenience, social norm nudges) (shahnaza akhter et al 2024).

Seasonal nudges and event-specific toolkits (Ramadan bazaars, festivals) have been shown in practice to reduce edible waste when combined with donation stations, vendor guidance, and targeted messaging. National and municipal reports noted measurable recoveries during targeted campaigns. Seasonal donation or redistribution campaigns (e.g., Ramadan initiatives) and app-mediated surplus food matching are emerging market-shaping practices that reduce edible food loss with relatively low capital cost, often relying on partnerships between NGOs, municipal authorities, and retailers (Phooi et al., 2022). These exemplify low-cost coordination tools to reduce edible food entering the waste stream. Behavioral tools are essential complements to legal and technical measures without convenience and normative support, SAS and collection redesigns fail due to low household uptake (NAA Nazli 2024). Environment management tools included seven tools as table 2 mentionable:

Table 2 Environmental Management Tools

No	EMT tools	EMT Regulation
1	Environmental Policy	• Environmental Policy is for all organisation • Environment act chief director order 2014
2	Environmental Budgeting	Management must ready the annual budgeting for any environmental activity
3	Environmental Facility	Effluent treatment, air pollution, online instrument system, and others
4	Environmental Competency	Got 5 major competencies for example Cepswam
5	Environmental Monitoring Committee	Regulatory committee and implementation committee for all manufacturing sectors
6	Environmental Reporting And Communication	A formal communication channel must be established for reporting environmental concerns and system upsets which warrant prompts action to be instituted
7	Environmental Transparency	To foster rapport with the immediate neighbours, promote the green image, and improve public confidence, companies are encouraged to be more transparent in their environmental compliance and achievement

There are seven elements in EMT as Environmental Policy (EP), Environmental Budgeting (EB), Environmental Monitoring Committee (EMC), Environmental Facility (EF), Environmental Competency (EC), Environmental Reporting and Communication (ERC), Environmental Transparency (ET) (www.doe. gov. my). This research provided law; regulation practices and tools name Environmental Management Tools (EMT).

Environmental Policy (EP) The environmental policy (EP) of successful organizations uses strong and unequivocal statements to convey their environmental commitment to their employees, clients, stakeholders and the public. The EP is disseminated to all relevant parties and translated into action in the organization's work procedures, materials purchasing a policy, business decision making process and cascades down to the supply chain.

Environmental Budgeting (EB) Sufficient budget must be set aside solely for the purpose of taking measures to comply with the environmental regulatory requirements and other environmental-related efforts. At the design stage, the budget must be available for the design and installation of the pollution control facilities, while at the operational stage; budget must be allocated for proper operation and maintenance of pollution control systems and management of waste generated by the industry or project development. The environmental budget also includes the cost for setting up of laboratory facilities, provision of personnel, and purchase of performance monitoring equipment (DOE/EMT 2017).

Environmental Monitoring Committee (EMC) The success of an organization to comply with the environmental requirements is contingent upon the relevant personnel in different departments in the organization playing their role in an effective manner. To promote collective responsibility to be environmentally compliant, two monitoring committees are set up: one at the working level, the other at the policy level.

Environmental Facility (EF) The primary components of the environmental facilities (EFs) include industrial effluent treatment system, air pollution control system, best management practices, and associated support facilities Such as laboratory, performance monitoring equipment, online instrumentation system, and waste management infrastructure.

This a process in EMT which can practice achieving or as a guild line for community to carry out their duty towards green environment, with environmental monitory committee, audit can be carried out as safety audit or

walkthrough audit with element of environment by their internal audit team, external audit team can consider an audit by the enforcement agency once a year or twice a year.

3.0 RESEARCH METHODS/METHODOLOGY/SYSTEM DESIGN

The substantial quantities of food and agricultural waste in Malaysia have been a persistent challenge, both locally and globally. Due to the lack of strict regulations for waste management, land pollution has become a serious issue, impacting the ecosystem, environment, and communities. Without effective action from authorities, these problems continue to worsen. Farmers, agricultural SMEs, and local communities lack necessary skills and experience in implementing environmentally friendly waste treatment methods. As a result, these wastes cause land, water and air pollution which results in soil contamination, harmful gas and the residue may be channelled into a water source thereby contaminating the water and aquatic ecosystem. These effects last for decades (Ng, 2021).

Malaysia is in an untenable position and must act quickly to address its enormous food waste issue. Based on statistics (Supramani, 2023), a total of 17,007 tons of food waste per day are reported in 2021. Food waste management in Malaysia involves various methods of analysis and management strategies aimed at reducing food waste and improving sustainability. Here are some common methods used:

3.1 Life Cycle Assessment (LCA)

- **Method**: LCA evaluates the environmental impact of food waste across its entire life cycle, from production to disposal. LCA is a comprehensive tool that assesses the environmental impacts associated with all stages of a product's life, from production to disposal.
- **Application**: LCA is used in Malaysia to quantify the environmental benefits of reducing food waste and to identify the most effective intervention points. In Malaysia, LCA is used to evaluate the environmental footprint of food waste and to identify opportunities for reducing waste at different points in the food supply chain.

Malaysia's National Solid Waste Management Department uses such frameworks to guide policies and initiatives aimed at reducing food waste and promoting recycling and composting.

3.2 Policy and Regulation Analysis

- **Method**: Analyzing the effectiveness of existing policies and regulations related to food waste management, such as waste segregation at source and incentives for food donation. These include laws, regulations, and policies that enforce food waste management practices, such as mandatory waste segregation and incentives for food donation.
- **Application**: Malaysian authorities review and update policies to encourage more sustainable practices in food production and consumption. The Malaysian government implements regulatory tools like the Solid Waste and Public Cleansing Management Act 2007 to guide and enforce proper food waste management practices.

3.3 Food Waste Tracking Technologies or Tools

- **Method**: Technology such as smart bins, apps, and management tools can track the amount and type of food waste generated in real time. Environmental management tools (EMT) play a crucial role in addressing food waste in Malaysia by helping to monitor, reduce, and manage waste more effectively. These tools are designed to mitigate the environmental impact of food waste and promote sustainable practices across various sectors. These systems of EMT tools to monitor and report on the amount and type of food waste generated in different sectors from the committee members with Environmental Reporting And Communication tools.
- **Application**: Some Malaysian companies and institutions use these technologies to monitor and reduce food waste in food service and retail sectors. EMT included education, training, policy, committee members to monitor any activities, company can allocate budget for the EMT committee to carry up activities. Malaysian food service providers and retailers use these systems to track food waste, identify inefficiencies, and make data-driven decisions to reduce waste to sharing Environmental Transparency with the community.

3.4 Composting and Anaerobic Digestion

- **Method**: Composting involves the biological decomposition of organic waste, while anaerobic digestion uses microorganisms to break down food waste in the absence of oxygen, producing biogas. Through EMT competency person in food waste management with background of food technology can lead the process of composting the food waste to valuable product. This includes the development and use of EMT technologies that reduce the environmental impact of food waste, such as composting systems, anaerobic digesters, and food waste processing equipment.

- **Application**: In Malaysia, composting is commonly practiced in agricultural sectors and by municipalities, while anaerobic digestion is used to convert food waste into renewable energy. Malaysian food producers and retailers adopt EMT practices to minimize waste, optimize resource use, and enhance sustainability throughout the EMT process chain. Malaysian companies and research institutions are investing in green technologies to convert food waste into valuable resources like biogas or organic fertilizers with practices of EMT.

3.5 Public Awareness Campaigns

- **Method**: Campaigns aimed at educating the public about the importance of reducing food waste. Educational tools and campaigns are used to raise awareness about the environmental impact of food waste and encourage behavioural change. EMT seven tools shall practices among community to create attitude change.
- **Application**: The Malaysian government and NGOs frequently run awareness campaigns to encourage better food management practices among consumers. The Malaysian government and NGOs run campaigns to educate the public and businesses on how to reduce food waste, thus reducing its environmental impact.

These methods are part of a broader effort in Malaysia to manage food waste more effectively and align with global sustainability goals. These environmental management tools (EMT) are essential for tackling the food waste problem in Malaysia, promoting sustainability, and reducing the ecological footprint of food production and consumption.

3.6 Data Analysis

The purpose of manual thematic coding is to instruct the coder on entering data. To provide an acceptable when qualitative data will coded, it becomes easier to interpret. By assigning codes to the words and phrases in each response, researchers can better understand the response, allowing for more effective analysis and summarization of the results. The procedure by which the researcher examines the data to ascertain the categories to which the data belongs Researchers can use coding to fine-tune and refine their data. It enables the researcher to segment, group, re-group, and re-link data to consolidate meaning and explanation. The data has been coded to aid researchers in identifying themes, patterns, and classifications.

Manual thematic coding is used in this review to achieve the objective of the study, Inductive coding, also known as opens coding, begins with nothing and develops codes from the qualitative data. The researchers do not use a predefined codebook; all codes are generated directly from EMT and Food Waste Management reviews. This instrument's code is based on the purpose of the EMT and Food waste management, which is to advance the category toward the research objective. Open coding is the first level of coding. The researcher uses open coding to identify distinct concepts and themes for categorization.

The code is based on theories such as the Department of Environmental (DOE) for Small and Medium-Sized Enterprises (SMEs) with Environmental Mainstream Tools (EMT) concept. The source is the Department of Environment's 2014 EMT implementation in the manufacturing sector, and the code of regulation is from the DOE Act to complement the workplace. As illustrated in the figure, the codes are, as mentioned previously, derived from existing theory and literature and are referred to as "a priori" codes.

The second level of coding is called axial coding. Compared to open coding, which focuses on identifying emergent themes, axial coding refines, aligns, and categorizes the themes further. After completing open coding and transitioning to axial coding, the collected data can be sifted, refined, and classified to create distinct thematic categories in preparation for selective coding. Axial coding establishes relationships between open codes in order to create core codes.

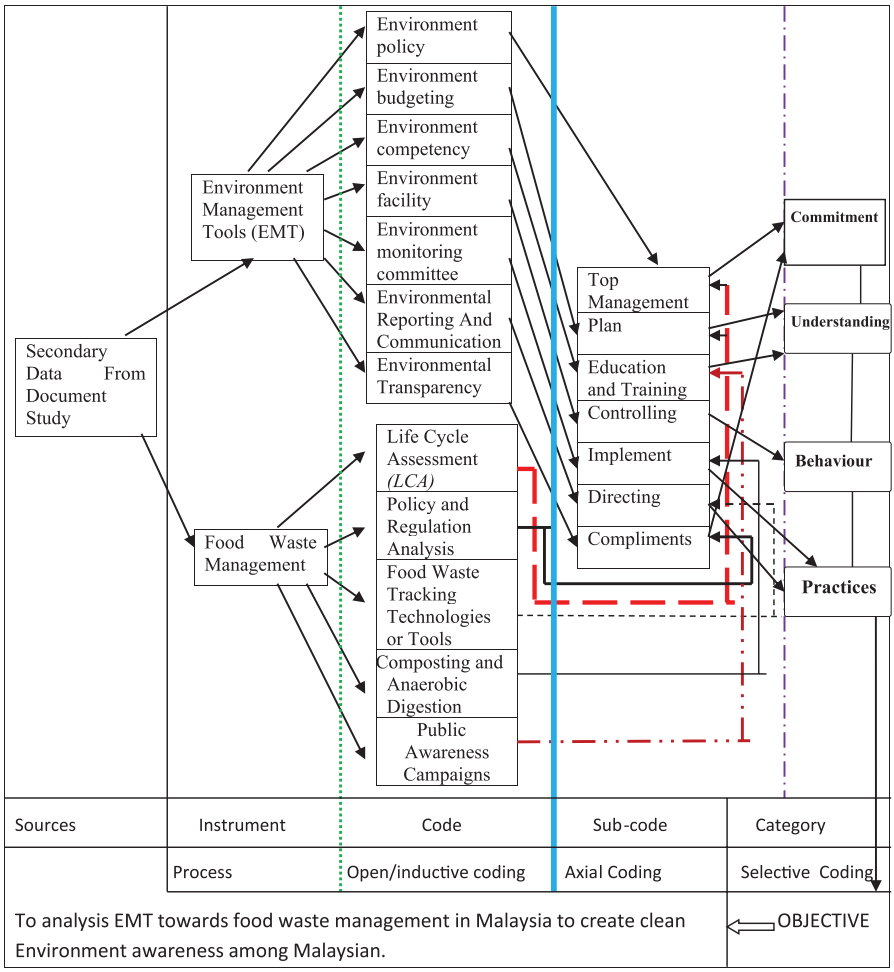

Figure 1 Processes of coding analysis

4.0 RESULTS AND DISCUSSION

The issue of food waste in Malaysia has significant environmental, economic, and social implications. Addressing food waste is crucial for the country's sustainability efforts. Malaysia generates a substantial amount of food waste daily. According to the Solid Waste Management and Public Cleansing Corporation (SWCorp), approximately 16,688 tons of food waste are generated daily, with nearly 24% of this being edible food that could potentially be redirected.

The high volume of food waste indicates inefficiencies in the food supply chain, from production to consumption. Significant portions of this waste occur at the consumer level, suggesting a need for public education on proper food

management and storage practices. This research is discussion on fruits waste and food waste recycling to new product which are more valuable and eco friendly to environment.

The gap exists because there is no effective way for dealing with fruit waste disposal that addresses these difficulties. Salima (2024) claimed that liquid organic fertilizer provides soluble nutrients that promote plant growth and environmental sustainability by ensuring equitable distribution, reducing waste, and maximizing retention of nutrients.

The environmental impact of food waste is alarming, contributing to climate change and land degradation. Effective waste management strategies, such as composting and anaerobic digestion, could mitigate these impacts. However, the adoption of these methods remains limited due to lack of infrastructure and awareness.

Fruit waste is a critical issue that may be studied qualitatively and quantitatively. Qualitatively, food waste has a major impact on social justice and well-being. It raises expenses, usage, and market volatility, while also affecting resource utilization and waste disposal in the economic sector. On an ecological level, it causes contamination and greenhouse gas emissions (Chooi et al., 2022). Quantitatively, Municipal Solid Waste (MSW) is the largest contributor to solid waste production in Malaysia, accounting for 64% of the entire waste composition. Organic waste such as food, vegetables, and fruits, accounts for 45% of the typical content of Malaysian MSW, concentrating on the seriousness of the environmental impacts (Fatiha Yaacob et al., 2019).

The group of people that affected are consumers, farmers and producers, food processors and manufacturers and Waste Management Authorities and Environmentalists. By industry commonly uses enzymes in food processing such as flavor enhancement and preservation. However improper enzyme usage can lead to quality issues and cause damages towards human life, farmers have faced challenges in managing food waste during harvesting due to factors such as the pre harvest conditions and perish ability (Sanad Alsbu et al., 2023). Hence, it has influenced the farmers in fruit ripening affecting the timing and quality of harvest. Therefore, enzyme hydrolysis and fermentation technologies have been explored for converting fruit waste into liquid organic fertilizer (Maitan-Alfenas, et al., 2014) (Janeeshma a et al., 2023).

Technology can play a vital role in food waste management by providing data and tools for more efficient food management. However, the adoption

of these technologies is still in its early stages in Malaysia, and broader implementation is needed to see widespread benefits. Adopted of EMT is one of the tools must practices by the community to reflect on food waste towards environmental issue and problem to ours health life. Land filling is unsustainable in the long term, and alternative waste management practices like composting and anaerobic digestion need to be promoted. The government and private sector must invest in infrastructure and systems as EMT that supports these methods.

Transforming fruit waste into organic enzyme liquid fertilizer is a viable solution to various pressing issues in Malaysia. It efficiently handles the issue of fruit waste disposal, which contributes to solid waste from municipalities and environmental contamination. Repurposing this garbage into a marketable product reduces the negative impact of landfill disposal, lowering greenhouse gas emissions and saving landfill space (Cardarelli et al., 2023).

Besides that, the product idea addresses the rising demand for ecologically responsible solutions. As customers become aware of ecological problems, the demand for organic fertilizers grows. This opens up a viable path for market expansion and acceptance of the product, assuring its economic sustainability. EMT play important role by creating food waste policy in the source waste location and possible created community members committee on discussion about food waste in the source of the waste such as restaurants, hotel or food court.

Transforming fruit waste into organic enzyme liquid fertilizer requires specific technical processes such as fermentation, enzymatic hydrolysis, and filtration. However, these processes are well-established and feasible with appropriate equipment and know-how. Additionally, it can be done at home with some easily accessible materials. YouTube has many videos and articles that teach how to perform these processes (Adelliya Novianti, & I Nengah Muliarta., 2021). In these conditions a competency person in waste management with information technology needed as mention in EMT to create training programs for adult's learner around the food waste sources area such as food court, hotels or restaurants.

Recycling fruit waste into fertilizer promotes a circular economy and contributes to sustainable waste management practices. The production of organic fertilizers releases smaller amounts of carbon dioxide (CO2) into the atmosphere compared to inorganic fertilizer which involves combustion of fossil fuels at high temperatures that will contribute to greenhouse gas

emissions and climate change. It significantly helps to reduce carbon footprint (The Impact of Fertilizers on the Environment: Inorganic Vs. Organic – Farmerline, 2023).

The Malaysia Standard for chicken feed (MS20:2008) was satisfied by the feed's crude protein, crude fat, crude fiber, total ash content and total energy content. To differentiate with agro-industrial raw materials, food waste can be used as a high-quality raw material for microbial fermentation without the need for additional nutritional supplements (Charles Ng et al., 2020). Therefore, pollution that was caused by the failure to manage food waste to the drain can be controlled and decrease the cases of diseases such as rat diseases (Wang et al., 2020).

Food recycling means transforming the food waste into useful secondary products which we turn the food waste into chicken feed (Pleissner, 2018). The good thing is food waste feeds the chicken, who in turn feed people, preserving wasted food in the human food chain (Environmental Protection Agency, 2023). Apart from that, transforming food waste into chicken feed is feasible as it can help reduce the demand of traditional feed. Traditional feed requires more resources to develop. By transforming food waste into chicken feed, it can help reduce the cost of farmers and companies (Environmental Protection Agency, 2023). Moreover, the company can easily provide the food waste to the chicken feed manufacturer since there is a lot of food waste around them. It can reduce the cost of the chicken feed manufacturer to send trucks to collect the food waste from different places (Environmental Protection Agency, 2023).

Repurposing excess or unsold food into chicken feed, it provides a variety of environmental benefits compared with wasting it in landfills. This is because the process of wasting in landfills will release methane which is the causing greenhouse effect. In addition, utilizing food waste as chicken feed can provide a circular economy by reusing nutrients. This approach mitigates the environmental impacts linked with producing feed crops, including land utilization, energy consumption, and water usage. Overall, this product is a greener alternative that adheres to the principles of sustainability and resource efficiency (Ojha et al., 2023).

In this review, the final thematic coding analysis (figure 1) was a management process adopted from the Theory of Management Practice (Friend and Kohn, 2018), which was the major element in this review. It is developed since community leader must understand this theory to manage their food waste in the long run and to determine the success of the execution of understanding

for a clean environment in their SMEs organization or community. This review indicates the need to continuously update the process because managing food waste towards a clean environment is a non-stop process. New rules, new organizations, new acts, new sciences, and new knowledge need to be introduced for upgrading and updating from time to time as a result of changing technology, human behavior, and the environment, like many other management activities, consists of planning, organizing, controlling, and directing.

Top management commitment is significant to backing up any activities such as policies, environmental policies, and other matters related to food waste and the environment. Without the commitment of top management mean leader to the community, all functions will fail. Without a budget and approval from top management, all activities can't be implemented. There needs to be a commitment to follow and obey any regulations from time to time, such as laws and regulations such as, the Environmental Clean Air Regulations from 2004 to 2014.

Understanding is the beginning of the process of managing food waste towards a cleaner environment by leader in the community. Leadership understanding on such as the basic self regulation in DOE act 1994 and amendment 2022 on what is practicable to implement in their organisation, example the need of Environmental policy in organization, support government regulation in food waste and the important of environmental committee members to monitor community activities. This is the basic understanding by leadership to implement and committed to the regulation towards food waste reducing and clean environment in surrounding.

Behaviour-based aims at addressing the attitude of community, but management must also possess the proper attitude and behaviour in carrying out the serious practice of food waste toward a clean environment, because leadership through example will lead to commitment by other people. In addition to technical and systemic food waste management, behavioral attitude is the third element of a comprehensive approach to monitoring food waste management in our community (Niciejewska and Obrecht, 2020). Everyone has to carry out what has been understood, commit to correct behaviour and attitude, and achieve the objectives of the food waste management plan. This makes it safer for ours community, from individual and community to food operations organizations. This refers to the concept of attitude psychology and is a tool for improving the behavior of community to enable them to perform under clean conditions.

Practices improvement refers to where the management practices the correct thing at the right time with the right person or a group of people, while at the same time monitoring their behaviour in terms of practices with regards to food waste for a clean environment. Most importantly, all practices should adhere to EMT, which can help community achieve excellence in food waste management for a clean environment. Good food waste management practice would include the need for Standard Operating Procedures (SOP's) or other procedures that all community easy understand the vision, mission and goals.

Directing is the skill of influencing people for a particular intention or reason. Directing is an important and challenging part of all management activities. Directing is influencing or prompting members of the organization to act united in line with the system. Creating a positive attitude towards work and goals among the members of the organization is call directing. It helps to meet the objectives of effectiveness and efficiency by altering the behavior of the community.

5.0 CONCLUSIONS

Based on the information discovered, transform food waste as chicken feed to cover the high food wasted issues and protect the environment to mitigate the environment pollution cases. Therefore, achievement to fulfilling 2 out of 17 Goals from the Sustainable Development Goals (SGD) which are SDG 12 which relates to ensure sustainable consumption and production patterns and SDG 15 which protect, restore and promote sustainable use of terrestrial ecosystems (United Nations, n.d.).

The findings on food waste in Malaysia highlight a pressing need for more comprehensive and effective management strategies. Addressing food waste requires a multi-faceted approach, involving policy reform, public education, technological innovation, and better waste management practices. By tackling food waste, Malaysia can achieve significant environmental, economic, and social benefits, contributing to a more sustainable future.

Compared to other countries, Malaysia's food waste generation is on par with global trends, but its waste management practices lag behind more developed nations. Learning from best practices in countries that have successfully reduced food waste could help Malaysia develop more effective strategies. These include stricter regulations, better waste segregation systems, and more robust public engagement initiatives. The researcher is proposing

Environmental Management SEVEN Tools to be practices by all parties that involve in producer food waste.

Community leader can improve their community skills and knowledge and motivate them to work more efficiently and productively by adhering to good food waste management practices standards such as Good Management Practice (GMP). The researcher believes that the activities of food waste management for the clean environment can begin from individual, community and public, which is the largest contributor to Malaysia food waste issue. This move helps Malaysia to achieve 'Smart, Green and Clean'. The never-ending improvement in food waste management for a clean environment begins with the communities.

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