

**YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF ECONOMICS
MASTER OF DEVELOPMENT STUDIES PROGRAMME**

**ANALYSIS ON SHOPKEEPER'S KNOWLEDGE, ATTITUDES,
PRACTICES AND PERCEPTIONS TOWARDS
PLASTIC WASTE MANAGEMENT IN YANGON
(A CASE STUDY ON SANPYA MARKET,
THINGANGYUN TOWNSHIP)**

**ZAW MIN
EMDevS – 64 (17th BATCH)**

OCTOBER, 2022

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A thesis submitted in partial fulfillment of the requirements for the
Master of Development Studies (MDevS) Degree

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This is to certify that the thesis entitled “**Analysis on Shopkeeper’s Knowledge, Attitudes, Practices and Perceptions towards Plastic Waste Management in Yangon (A Case Study on SanPya Market, Thingangyun Township)**” submitted as partial fulfillment towards the requirements for the degree of Executive Master of Development Studies has been witnessed by the Board of Examiners.

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ABSTRACT

Management of plastic waste is an important and global issue. This thesis studies the opinion of shopkeepers in SanPya Market at Thingangyun Township on limited use of single use plastic bag during their sell and to examine shopkeeper's Knowledge, Attitudes, Practices and Perceptions towards Plastic Waste Management. Descriptive method is used and questionnaire survey is conducted with randomly selected 200 respondents. Most respondents at the SanPya market had knowledge in some aspects of waste management such as proper disposal of waste and waste separation but lacked knowledge on waste reduction. Due to the market authority's inadequate provision of dustbins, even though their knowledge and attitudes were good, they were unable to fully transfer them into appropriate practices for sorting waste. These findings are subjective measures of shopkeepers and the policy makers market authority (YCDC) can use these measures in implementation of sustainable in plastic bag control programs.

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TABLE OF CONTENTS

	Page
ABSTRACT	i
ACKNOWLEDGEMENTS	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	v
LIST OF FIGURES	vi
LIST OF ABBREVIATIONS	vii
CHAPTER I INTRODUCTION	
1.1 Rationale of the Study	1
1.2 Objective of the Study	3
1.3 Method of Study	3
1.4 Scope and Limitations of the Study	3
1.5 Organization of the Study	4
CHAPTER II LITERATURE REVIEW	
2.1 Concepts and Issues of Plastic Waste Management	5
2.2 Sources and Types of Plastic Waste	7
2.3 Overview of Plastic Waste Management Practices in some Selected Countries	10
2.4 Approaches to Measuring Knowledge, Attitudes, and Perceptions	15
2.5 Review on Previous Studies	20
CHAPTER III OVERVIEW OF PLASTIC WASTE MANAGEMENT IN YANGON	
3.1 Overview of Plastic Waste Management in Myanmar	23
3.2 Historical Background of Plastic Waste Management in Yangon	25
3.3 Rules and Regulations of Waste Management in YCDC, Thingangyun Township	26

3.4	Current Situation of Plastic Waste Management in SanPya Market, Thingangyun Township	27
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CHAPTER IV SURVEY ANALYSIS

4.1	Survey Profile	29
4.2	Survey Design	29
4.3	Analysis of Survey Results	29

CHAPTER V CONCLUSION

5.1	Findings	45
5.2	Suggestions	48

REFERENCES

APPENDICES

LIST OF TABLES

Table No.	Title	Page
Table 4.1	Socio Economics Profile of Respondents	30
Table 4.2	Knowledge on Storage, Separation and Generation of Plastic Waste	32
Table 4.3	Knowledge on Impact of Improper Solid Waste Management	34
Table 4.4	Attitude on Storage, Separation and Generation of Plastic Waste	35
Table 4.5	Attitude to be Proper Solid Waste Management System	37
Table 4.6	Practice on Storage, Separation and Generation of Solid Waste	39
Table 4.7	Practice on Solid Waste Disposal	41
Table 4.8	General Perception on Plastic Waste Management	42

LIST OF FIGURES

Figure No.	Title	Page
Figure 2.1	Sources of Plastic Waste	10
Figure 2.2	An Overview of Plastic Waste Management	11

LIST OF ABBREVIATIONS

3R	Reduce, Reuse, Recycle
CBD	Central Business District
CDCs	City Development Committees
GDP	Gross Domestic Product
GHG	Greenhouse Gases
JICA	Japan International Cooperation Agency
MCDC	Mandalay City Development Committee
MONREC	Ministry of Natural Resources and Environmental Conservation
MPW	Municipal Plastic Waste
MSW	Municipal Solid Waste
NGO	Non-Governmental Organisation
NPTDC	Nay Pyi Taw City Development Committee
NWMSMP	National Waste Management Strategy and Master Plan
PC3	Protection, Containment, Communication and Convenience
PCCD	Pollution Control and Cleansing Department
SWM	Solid Waste Management
UV	Ultra Violet
YCDC	Yangon City Development Committee

CHAPTER I

INTRODUCTION

1.1 Rationale of the Study

Plastic is incredibly useful in all aspects of modern life. However, toxic waste and greenhouse gases are produced during the manufacture and disposal of plastic. Since the 1950s, the production of plastic has vastly outpaced that of any other material due to a global shift away from durable plastics and toward single-use plastics. Fossil hydrocarbons, which are non-renewable resources, are mostly used in the creation of plastic. Long-term land and water spills may also endanger the public health effects of air, water, and soil contamination, which degrade any location's aesthetic appeal. As a result, plastic has raised to be one of the biggest issues, and managing it is one of the key concerns for our environment today.

Myanmar is a rapidly developing country that faces similar issues such as insufficient facilities, ineffective policy implementation, and a lack of public participation. Myanmar has also been faced with serious problems with waste management, the growth of the urban population, and a lack of efficient garbage treatment, disposal options, and single-use plastic. The natural environment is impacted by development in every way. Consequently, the nation faces significant environmental challenges.

Rapid urbanization has put strain on the population, and migration has accompanied it. As a result, household-based plastic trash management and its issues have become crucial difficulties in Myanmar. Similar to other developing nations, insufficient government oversight results in environmental and human health damage that is also accompanied by a lack of cleanliness and aesthetics. The collection and disposal of solid and plastic waste is frequently insufficient in cities other than Yangon, Mandalay, and Nay Pyi Taw.

As a result, Yangon also has environmental difficulties in its central districts, such as managing plastic garbage. With the advent of urbanization and industry, the population in the Yangon Region has dramatically expanded in recent years. Yangon's

plastic garbage collection system is similar to Myanmar's municipal solid waste collection systems, which are generally labor-intensive and rely on manual labor and non-specialized vehicles. As a result, garbage collection capacity has been growing in many communities as indicated by the ratio of plastic waste collected to total waste generated.

On the other side, Yangon's perception of the disposal of plastic garbage has made it particularly challenging to manage the waste collection system. No matter if it is a road, playground, market, or park, people throw their trash wherever they think it will be most convenient. They disregard how their careless rubbish disposal will impact the environment, public health, and the level of living for future generations.

With a growth in migration and urbanization, Yangon's population is growing yearly. With the rise of the urban population, residential areas and wards have grown. As a result, waste generation is more significant than before. The Yangon Township Development committee thus has a lot of obstacles to overcome. This includes a lack of collaboration with the current garbage collection system, a lack of knowledge among residents about municipal plastic waste management programs, which leads to incorrect and careless discharge, and a lack of funding for systematic plastic waste management.

There are 45 townships and four core districts that make up the Yangon Region. Out of the 45 townships, the city of Yangon today includes 33 of them. Thingangyun Township is one of the townships that contains Yangon. About 250,000 people live in Thingangyun Township, and that number has been steadily rising since 2010. SanPya Market is situated at the intersection of Lay Daungkan Road and Thanthumar Road in Thingangyun Township. Of the eleven markets in Thingangyun Township, the SanPya market is the biggest and busiest. Additionally, there are numerous stores and a wide variety of goods are offered for sale. Every day, approximately three thousand people visit the market. During the selling of goods, there will be plastic bags (mostly single-use) provided for packaging. Therefore, markets contribute to the source of plastic bag waste.

Suppose the plastic waste generated is sorted and dumped at the designated places. In such circumstance, waste management organizations can carry out their duties in a productive and effective manner. Individuals, groups, and governmental agencies must cooperate for the correct plastic waste management system to be in place. This will make it possible for waste management to turn waste into a useful resource and earn money. The SanPya market in Thingangyun Township is the center of this

study's knowledge, attitudes, practices, and perceptions of plastic waste disposal methods and management.

1.2 Objective of the Study

The objectives of the study are to examine shopkeeper's knowledge, attitudes and practices towards single-use plastic bags and to access shopkeeper's perceptions towards plastic waste management in the SanPya market, Thingangyun Township in Yangon.

1.3 Method of Study

This study is conducted based on both primary and secondary data. The descriptive analysis is used and shopkeeper questionnaire survey is conducted with simple random sampling method. Among (1000) shops, 200 shopkeepers were chosen as surveyed respondents. The questionnaire consists of shopkeeper's profile which attributes socioeconomic conditions such as age, sex, occupation and income level and evaluation of knowledge, attitude, practice and perception on plastic bags usage and waste disposal through field surveys.

Secondary data searched out from relevant texts, previous research papers, Township Development Affairs Organization's report, and the Yangon City Development Committee (YCDC) and the Market Department.

1.4 Scope and Limitations of the Study

This study identifies on the shopkeeper's knowledge, attitudes, practices and perceptions toward plastic waste management in the SanPya market, Thingangyun Township, Yangon. This study is mainly focused on awareness of the importance of plastic waste usage and disposal by shopkeeper around the area of SanPya Market which locates in Thingangyun Township and access to provide of Yangon City Development Committee (YCDC) service of solid waste disposal.

Among 1,000 shopkeepers, this study chooses 200 shopkeepers who represent 20 percent of them in the SanPya market. The survey focuses on the targeted eight categories. 1) Clothing stores, 2) Jewelry stores, 3) Cosmetic stores, 4) pharmacies, 5) fish and meat shops, 6) Green Grocer Shops, 7) food and beverage stores, 8) grocery stores in the market. The study and survey period are from July to August 2022.

1.5 Organization of the Study

There are five chapters in this study. The first chapter is the introduction, which includes the rationale, objectives, method, scope and limitations of the study, and organization of the study. Chapter two is a literature review. Chapter three states overview of plastic waste management on Yangon. Chapter four examines survey analysis, and Chapter five is the conclusion, which consists of findings and suggestions.

CHAPTER II

LITERATURE REVIEW

2.1 Concepts and Issues of Plastic Waste Management

Today, plastics play a significant role in almost every aspect of human activity, including agriculture, medicine, transportation, piping, electrical and heat insulation, packaging, the manufacture of household and electronic goods, furniture and other items of daily or specific use. Plastics have made a substantial contribution to supporting human life in medical items such as disposable syringes, blister packaging of tablets and capsules, joint replacement prostheses, intravenous (IV) fluid bottles, blood bags, catheters, heart valves, etc. Plastics are used to make medical devices that are placed within people.

The use of plastics in packaging is one of their most significant uses. In actuality, packaging applications use nearly 40% of all plastic materials globally. Plastics have helped to develop a packaging system that is sanitary, cost-effective, energy-efficient, and environmentally friendly. Due to plastics' versatility, food goods like milk, spices, edible oil, bread, confections, rice, wheat flour, snack foods, and other types of pharmaceuticals can now be packaged in a way that is successful at preventing theft, hygienic, and economical. Plastics are used for packaging of toiletries, cosmetics and host of other consumer products of daily and special purpose use required all -rich or poor in urban cities or in the villages.

The qualities of plastic materials that have made this possible include: i. Sterilizable and resistant to the growth of bacteria and other microorganisms, ii. Lightweight and unbreakable, iii. Excellent barrier properties, iv. Superior impact resistance, v. Sterilizable and resistant to bacterial and other microbial growth, vi. Transparency as well as opacity, vii. Less fuel consumption and product loss during transportation. Plastics' impact on human health is difficult to deny. The best, cleanest, and purest product can be distributed to the general public thanks to plastic packaging with the aforementioned qualities. (Source: Javeriya Siddiqui and Govind Pandey, 2013)

Due to its detrimental effects on the environment, public health, and wellbeing, the issue of plastic trash is currently gaining more attention than ever before. About 300 million tons of plastic are manufactured each year, half of which is used in single-use products, according to Earth Day Network (2018). Only 14% of plastic packaging is collected for recycling, and only 10% of that plastic is actually recycled, according to the World Economic Forum's 2016 study. The remainder, known as end-of-life plastic, is disposed of in landfills (40%), burnt (14%), or, most concerningly, leaks into the environment (32%), where it may take up to 1,000 years to breakdown and release potentially harmful compounds into the soil and water. Ecosystems may suffer long-term harm as a result of terrestrial microplastic contamination in soils, sediments, and waters.

Numerous issues with health, safety, and the environment are attributed to plastics. Plastics' nonbiodegradability is blamed for the clogging of urban city drains and issues with trash management. Toxic byproducts from the production of plastic bags, which include benzene and vinyl hydrochloride, harm our air, water, and land. However, that is not the end of it. After being produced, used, and discarded, a plastic bag doesn't just disintegrate into harmless parts. It takes 700 years for it to begin degrading, and once it does, it simply crumbles into tiny plastic particles that are still toxic but simple to breathe in or consume.

Plastic is a petroleum-based synthetic organic polymer with qualities that make it perfect for a wide range of uses, including packaging, construction, sports and domestic equipment, cars, electronics, and agriculture. Every year, more than 300 million tons of plastic are produced, of which half is utilized to make goods with a single use, like straws, cups, and shopping bags. Plastic garbage can harm the ecosystem and biodiversity if it is disposed of inappropriately.

The amount of plastic garbage that is annually produced and disposed of in open landfills or in large quantities in waterways and marine environments is a measure of how poorly it is managed. Inadequately managed plastic trash is an important variable to investigate since it encompasses plastic waste that can eventually enter the ocean through inland waterways, wastewater outflows, storm drains, and transport by wind or tides. Sometimes, plastic garbage generated by fishing, farming, and shipping activities is also dumped directly into the ocean.

The maritime ecology is greatly impacted by plastic pollution. It endangers the wellbeing of the ocean, marine life, human health, coastal tourism, food safety and

quality, and climate change. Numerous marine species are being ingested, choked, and entangled by plastic trash, which is one of its most obvious effects. Most marine animals that eat plastic garbage, including seabirds, whales, fish, and turtles, starve to death because their stomachs are overstuffed with plastic.

Microplastics have been observed in faucet water, beer, salt and are found in all samples accrued within-side the world's oceans. Several chemical compounds used within-side the manufacturing of plastic materials those are carcinogenic and to intrude with the body's endocrine system, inflicting developmental, reproductive, neurological, and immune problems in both human beings and wildlife. The switch of contaminants among marine species and human beings thru intake of seafood has been diagnosed as a health hazard. (Source: Javeriya Siddiqui and Govind Pandey, 2013)

2.2 Sources and Types of Plastic Waste

A vast variety of synthetic or semi-synthetic organic solid materials fall under the umbrella name of "plastic." High molecular weight polymers are frequently found in plastics. Most of the time, they are synthetic and generated from petrochemicals, while many are also partially natural. To enhance performance, a polymer may also include additional additives including plasticizers, stabilizers, lubricants, UV absorbers, and flame retardants. Every aspect of human life has been impacted by the use of plastics, including manufacturing, farming, transportation, construction materials, communication, teaching, healthcare, shipping, military, and consumer durable items.

Modern food systems cannot work adequately without packing, which is vitally necessary. Today's food chains are distinguished by their broad geographical spreading as well as by worldwide value chains. The main purpose of food packaging is to safeguard the contents, maintaining both the product's safety and overall acceptability qualities. Protection, Containment, Communication, and Convenience, also known as PC3, are the packaging requirements for a packaging system.

The choice of a suitable package, though, does not stand alone in ensuring the product's shelf life. In reality, the conditions in which the food is stored are as critical to choosing the right packaging material, which is essential. The product's packaging serves as its public face and is frequently the sole interaction consumers have with a product prior to buying. To persuade customers to purchase the product, it is crucial that the box has acceptable aesthetics. As packaging can be created to improve the

image or set one product apart from others in a competitive market, packaging can do this to drive sales.

The enormous variety of qualities that plastics exhibit due to their ease of processing is one of the reasons for their enormous popularity. As a result, the demand for plastics has been rising in modern society as a means of enhancing quality of life. Due to population growth, construction activities, and change in lifestyle, there is an increase in the amount of plastic waste in municipal solid waste (MSW). Particularly in the context of emerging countries and legislative requirements for environmental clearance, the health and environmental concerns of solid waste management are rising.

Solid wastes—which are generally made up of all the solid and semi-solid items that civilization discards—aside from poisonous and radioactive materials—are referred to as MSW. Notably, garbage is a required component of society. Due to its method of disposal and subsequent collection as household wastes, MPW are typically considered to be a component of MSW. Domestic wastes like food packaging foams, disposable utensils, discs, and kitchenware, CD and cassette cases, fridge liners, vending cups, electronic equipment cases, drainage pipes, carbonated drink bottles, plumbing pipes and guttering, and flooring are just a few examples of the many plastic sources that make up MSW. Others encompass cushioning-foams, thermal insulation foams, surface coatings, and so on. Mulch films, feed bags, fertilizer bags, silage covers, wire and cable, and automobile wrecks are examples of agricultural trash.

The numerous varieties of plastics and their principal packages are as follows:

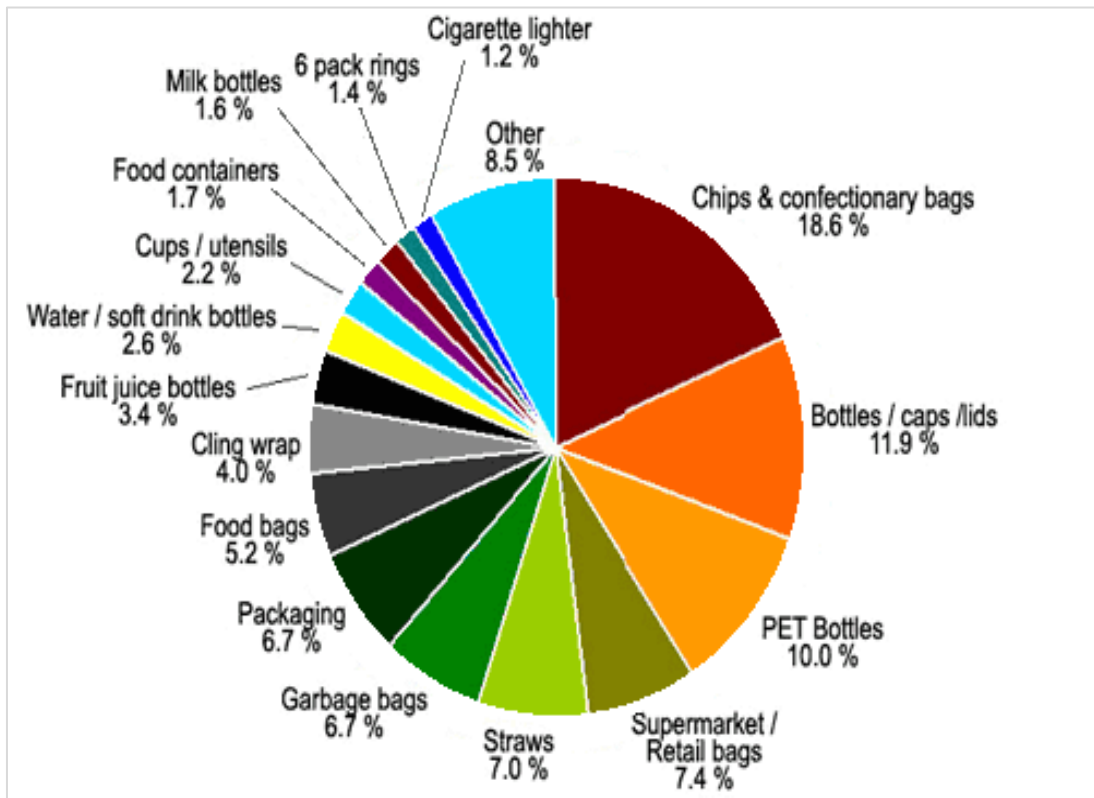
- Thermoplastics: These plastics soften when heated, allow for pressure molding or shaping while in the plastic state, and solidify and hold the shape or mold when cooled. Here are a few typical thermoplastics, along with their functions and characteristics:
- Polyethylene terephthalate (PET): Common characteristics include being tough and clear, having good strength and stiffness, being resistant to chemicals and heat, and having good oxygen and carbon dioxide barrier capabilities. Because it is fire resistant, it is utilized in packaging, soft drink and mineral water bottles, garment fibers, films, food containers, transportation, building, and appliance industries, among other things.
- High density polyethylene (HDPE): Good processability, an outstanding balance of stiffness and impact strength, excellent chemical resistance,

- crystalline, melting point (130-1350C), and excellent water vapour barrier qualities are a few of the prevalent characteristics. ii. Used to make films (carrying bags), pipes, injection-moulded goods (storage bins, caps, buckets, mugs), and blow-moulded goods (a variety of containers, water bottles).
- Polyvinyl chloride (PVC): It has the following qualities: 1. Versatility; 2. Energy conservation; 3. Adaptability to shifting conditions; 4. Durability; 5. Fire resistance. It is utilized in a variety of sectors, including construction, packaging, healthcare, agriculture, and transportation. Additionally, employ in the production of furniture, footwear, household appliances, films and sheets, bottles, and wires and cables.
 - Low density polyethylene (LDPE): i. Low density, semi-crystalline nature, low melting range, low softening point, good chemical resistance, outstanding dielectric properties, low moisture barrier, poor abrasion and stretch resistance are some of the characteristics of LDPE. ii. It is utilized in the production of carrying bags, sturdy bags, nursery bags, and tiny squeeze bottles. also utilized for milk packaging, insulation for wire and cables, etc.
 - Polypropylene (PP): Low density, excellent chemical resistance, environmental stress resistance, high melting point, outstanding process ability, dielectric characteristics, low cost, and creep resistance. Used to create toys, furniture, household goods, luggage, medical containers, hair dryers, fans, linens, straws, films, and other items.
 - Polystyrene (PS): i. Glassy surface, transparent to opaque, rigid, hard, high clarity, influenced by fats and solvents. ii. Used to create electrical and communication equipment, such as plugs, sockets, switch plates, coil forms, circuit boards, spacers, and housings. Used to create containers, toys, wall tiles, baskets, cutlery, plates, cups, tumblers, dairy containers, etc.
 - Others plastics: Besides these six categories, there are many more that are frequently utilized in the engineering industry. Nylon, polycarbonate, and acrylonitrile butadiene styrene are other examples (ABS).
 - Thermosets: Materials that are thermosetting cannot be remolded or heated to soften them once they have set. It consists of unsaturated polyester, epoxy, polyurethanes, phenol, melamine, and urea formaldehyde. No recycling can be done. (Source: Javeriya Siddiqui and Govind Pandey, 2013)

2.3 Overview of Plastic Waste Management Practices in some Selected Countries

The management of plastic waste must be organized so that the plastic waste produced by various sources is appropriately handled. The various sources of plastic waste are shown in Figure (2.1).

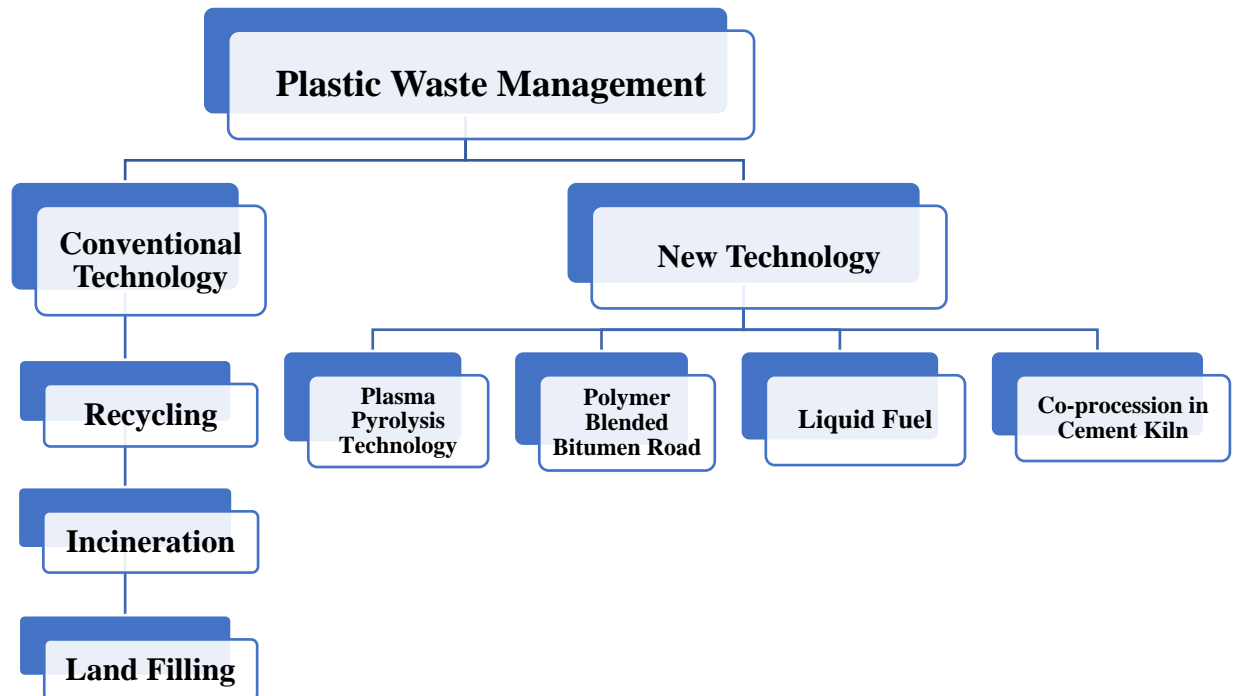
Figure (2.1) Sources of Plastic Waste



Source: Javeriya Siddiqui and Govind Pandey, 2013

An overview of plastic waste management is exhibited in Figure (2.2). The conventional and new technologies adopted for plastic waste management are summarized here.

Figure (2.2) An Overview of Plastic Waste Management



Source: Javeriya Siddiqui and Govind Pandey, 2013

Recycling, landfilling, and incineration are the three main components of conventional technology for managing plastic trash.

Recycling plastics in an environmentally responsible way: The recycling of plastics needs to be done in a way that reduces pollutants throughout the process, improving process efficiency and energy conservation. There are four main categories of plastic recycling technologies: primary, secondary, tertiary, and quaternary.

- i. **Primary:** recycling entails turning trash or garbage into a product with characteristics equal to the original.
- ii. **Secondary:** recyclable plastic waste is processed into items with properties different from those of the original plastic products.
- iii. **Tertiary:** Plastic scrap from municipal trash streams or separately collected rubbish is converted into recycling, basic chemicals, and fuels.

iv. **Quaternary:** recycling uses burning or cremation to recover the energy content of the used polymers.

Landfilling: This is a conventional method of garbage disposal, although landfill space is becoming scarce in some nations. Although there are long-term risks of groundwater and soil contamination by a few additives and plastic product breakdown, which can turn into constant organic pollutants, a well-managed landfill site results in limited immediate environmental harm beyond the effects of collection and transportation. One major issue with landfills in terms of sustainability is that none of the raw materials needed to make plastic are recovered; rather, the flow of materials is linear rather than cyclical. In the United Kingdom, a landfill tax is in place and is now scheduled to grow annually to boost the incentive to divert waste from landfill to recovery efforts.

Incineration: Plastic garbage disposal may not need to be as frequently done thanks to this method, however there are concerns that potentially dangerous substances could be discharged into the atmosphere. For instance, mixed plastic garbage frequently contains PVC and halogenated additives, raising the possibility that dioxins, furans, and other polychlorinated biphenyls will be discharged into the environment. The selection of incinerators is crucial. The pollution from off-gas, such as dioxins and furans, is not likely to be reduced to desired levels in a regulated manner, however. Therefore, this approach of managing plastic garbage is typically not favored. Often, the expense of treating the gases exceeds the energy recovered.

Any incineration issue can be solved by modern incineration technology without harming the environment and, in many situations, by recovering the calorific value of the trash being burned. Trash incineration facilities have the ability to use highly contaminated plastic waste collected from various waste streams for energy recovery. This recovery system's cost is regarded as the highest of all the available options. It is important to keep in mind that burning plastic garbage could produce dangerous pollutants like dioxins and furans, which is highly undesired, when considering incineration as a solution.

(Source: Javeriya Siddiqui and Govind Pandey December (2013)).

2.3.1 Management of Plastic Waste in India

In India, urbanization is producing plastic waste at a rapid rate. Waste generation rates are frequently influenced by socioeconomic development, industrialization level, industry sector, and climate circumstances. Municipalities, local governments, and the general public have been urged by legislation to adopt waste management policies with the goal of reducing the quantity of garbage dumped in landfills through selective collection, reuse, recycling, and recovery of varied solid waste. Reuse, recycling, landfills, or incineration are all ways used in nations with advanced waste management systems to dispose of plastic waste. For effective implementation, a severe penalty for breaking the regulations should be included. Every year, India produces close to 1.5 MT of plastic waste. Only about 25 percent of the waste is being gathered and processed.

Reusing something is putting it to use once more. This encompasses both traditional reused, where the object is utilized once more for the same purpose, and new-life reuse, when a different purpose is placed.

Recycling is the process of disassembling a used product into its constituent raw elements. Reuse helps save time, money, energy, and resources by taking useful products and exchanging them instead of reprocessing them. Savings on energy and raw materials come from fewer products needing to be produced overall when many single-use items are replaced by reusable ones. To avoid wasting potentially usable materials, recycling is the process of turning waste materials into new products. Both the regular and unofficial sectors participate in the recycling industry in India. Formal recycling facilities are licensed, pay taxes, and are included in the municipality's accounting.

The oldest method of waste treatment is the burying of waste products at a landfill site, commonly referred to as a dumping ground. Landfills have traditionally been the most popular way to dispose of organized trash, and they still are in many parts of the world today. Landfill can also refer to a piece of ground that has been filled in with rocks rather than waste items so that it can be used for a particular activity, such as house construction. These places may undergo significant shaking or ground liquefaction after a powerful earthquake if they are not stabilized. In order to prevent negative effects, landfill leachates must be periodically checked for metals, phthalates and their metabolites, and other possible xenobiotics. Several legislative and regulatory

initiatives that promote energy recovery from waste have a direct impact on GHG emissions from waste.

Using fire to burn the organic elements included in garbage, incinerating is a method of waste treatment. Thermal treatment includes incinerators and other high-temperature waste disposal methods. Waste materials are converted into ash, flue gas, and heat during incineration. The majority of the waste's inorganic components go into creating the ash, which can be carried by fuel gas as solid lumps or tiny particles. By giving industries instructions to decrease or eliminate the use of hazardous chemicals in production, use less packaging, create products that last longer and are simpler to recycle, reuse, and repair, the primary avoidance of pollution and waste is possible. It tries to cut back on waste generated at the source overall. Additionally, we may inform and motivate people to recycle, reuse, and compost as well as to buy and fix reusable objects. The contemporary paradigm has been pushed forward in industrialized nations by public health, the environment, resource scarcity, climate change, and public participation and knowledge. For the collection, treatment, and classification of particular wastes, infrastructure improvements are required. One of the critical facets of infection control is the handling of plastic biomedical waste, which requires oversight. Limit your options for final garbage disposal, encourage recycling and reuse, and push for waste reduction. (Source: P. Singh and V.P Sharma, 2016)

2.3.2 Plastic Waste Management in Japan, Taiwan.

The Japanese community is quite active in recycling, and they strongly urge their people to sort their waste at the source before recycling by giving them designated containers for PET bottles, PS foam containers, or PP bottle caps so they may be recycled separately from other plastics. (Yoda, 1999).

The community encourages recycling and offers advice through the regular publication of a variety of guides and magazines, such as the door-to-door distributed Guidebook for Sorting Recyclables and Waste, regular articles about resource recycling posted in the newsletter, and the "Minacle" 3R Information Magazine distributed in newspapers. The 3R Promotion Committee sponsors the Japanese community's unique CATV program "3R Forum," which is televised twice a year in addition to publication. (Hasegawa, 2014).

The community and condominium residents together have formed some organizations, which voluntarily and periodically collect and gather resources mainly

from household sources and then sell them to recyclers. In addition, the community also periodically launches some facility tours to incineration plants, recycling facilities, and other facilities (Hasegawa, 2014).

Recycling in Japan extends from the neighborhood to the family. Most Japanese families strictly follow to the rules and schedules established by the municipal governments for the collection of recyclables by keeping the color-coded calendars with the rules and schedule on it in their kitchens as a reminder to themselves (Hays, 2012). In accordance with those sorting regulations, homes must separate plastic garbage from other kitchen waste and plastic wrappers, labels, and packaging from PET bottles (McCurry, 2011).

In an effort to encourage its people to recycle more, the Taiwanese government launched the "4-in-1 Recycling Program" in 1997. In order to collect regulated recyclable waste, which includes 13 categories and 33 items, including metal containers, glass containers, plastic containers, and waste electrical appliances, the program brought together the cooperation of four different stakeholders, including community residents, recyclers and collectors, local governments, and the local recycling fund. Eight additional categories have been added to the waste plastic containers, which promotes sorting before recycling.

The Waste Disposal Act, passed by the Taiwanese government, prohibits the use of plastic shopping bags and the free distribution of disposable plastic (including Styrofoam) tableware to customers. (Legislative Council Secretariat, 2005).

2.4 Approaches to Measuring Knowledge, Attitudes, and Perceptions

The concept of knowledge, attitude, and perception (KAP) was originally used in a survey in the 1950s to look into how the concept of birth control or planned parenthood was regarded and implemented by various communities worldwide. Knowledge and attitude are both fundamental building blocks for practice, according to the basic tenets of the KAP surveys.

The development of behavioral intentions and attitudes is greatly influenced by knowledge. The respondent's ability to accept concepts and behavioral patterns associated with environmental sustainability is correlated with their understanding about littering and proper waste management. The respondent's awareness of and attitudes about the environment will improve with more knowledge of this element.

On the other hand, a respondent's attitudes may affect particular subjective norms that result in particular behavioral patterns. Because attitude determines how a respondent will react to waste management issues and influences how they act in favor of the environment, attitude is discovered to be a basic driver of a respondent's behavior.

It has been discovered that a high degree of perceived knowledge stimulates students to change their behavior toward waste management and the environment. Perception also has a significant effect in the behavioral intention of the students. The students' perception influenced their intents to behave in a particular way toward the environment and waste management, and their level of knowledge also translates into suitable or inappropriate intentions, which also results in appropriate or wrong actions or behaviors.

KAP surveys have been widely used to examine how people behave in a variety of contexts, including public development, ecological awareness, water, sanitation, and hygiene. The surveys are widely recognised as a very practical method for gauging people's awareness, interest, propensity, and participation in respect to specific topics.

2.4.1 Knowledge of Waste Management

Understanding of topics and information that is currently known about them are referred to as knowledge. A person learns from past experience, experts, books, research, etc. and imparts that information to others through a variety of mediums (Collins, 1993). The degree to which a person is knowledgeable about something affects how that person feels about it. According to a study by Teo and Loosemore on waste behavior in the construction sector, inadequate awareness of waste management has a detrimental effect. They outlined how well-organized waste management training for contractors has a favorable impact on their operations (Teo and Loosemore, 2001). This implies that attitude is a function of knowledge about an object or situation. According to Maycox, social norms and a lack of information among the general population are two major obstacles that have a negative impact on waste practices. Understanding behavior is also essential to reducing municipal solid waste, but these barriers must be overcome. (Maycox, 2003).

In their study on contractors' attitudes about waste management done in Malaysia, Begum et al. (2009) found that the majority (55%) of respondents were aware of trash reduction. This came about as a result of their involvement in waste management training programs. This implies that their favorable attitude toward waste

management is influenced by their knowledge about waste management. Residents of Port Harcourt have a poor understanding of waste management, according to Ayotamuno and Gobo's (2004) research. They said that respondents agreed with the local government's position that keeping the city clean falls under their purview. This is a result of the people not being sufficiently informed about the risks connected with improper waste management and the requirement to properly dispose of their waste.

Most people in impoverished nations are unaware of the health implications of poor waste management practices. According to research, the public's disposal of waste is negatively impacted by the municipality's lack of solid waste management understanding (Teo and Loosemore, 2001). The trend of the literature under evaluation shows that little study has been done on market women's attitudes regarding trash management. However, this issue might also apply to users because they may dump rubbish in the open due to a lack of information about waste management.

2.4.2 Attitude towards Waste Management

People's attitudes are their assessments of things or circumstances that influence how they behave (Ajzen 1993). According to Begum et al. (2009), attitude can be either good or negative toward a particular object, and it has a specific impact on how that person behaves around other people, things, or circumstances. It is widely acknowledged that attitude has four aspects, namely affective (feeling/emotions), behavioural (intentions/actions), cognitive (knowledge/beliefs), and evaluative (values/like or dislike), according to Gibson et al. (1997). Affect, the emotional component of attitude, is taught through a variety of people, including classmates, instructors, parents, and leaders. Cognitive processes are the perception, opinion, or belief component of an attitude, with appraise believe being the most significant component that manifests as a person's favorable or negative view of an object or another person. Behavior is the second element of attitude. A person's behavior is the method in which they act toward someone or something.

It is suggested that a person's attitude affects their behavior. Whether serious or not, Fabrigar affirmed that attitudes frequently inform behavioral choices (Fabrigar, 2004 cited in Begum et al, 2009). Since attitudes "help to give structure and importance to a complicated world by offering a degree of consistency and clarity to an individual's explanation and interpretation of things and circumstances," Olson and Zanna (1993) asserted that humans develop attitudes.

The literature on people's attitudes on garbage management has many empirical findings. Literature has established that people have a bad attitude about garbage management. A key factor in decision-making behavior is attitude. According to Kaneshie Market, Andoh (2014), the market women attributed the unclean environment at the market to the carelessness of the waste management business tasked with collecting rubbish at the market. They expressed their belief that since they pay the toll each day, the local assembly must ensure that the market is kept tidy. This suggests that market women have a negative attitude toward trash management because they think it is not their responsibility to maintain a clean environment.

In addition, a Kenyan study on municipal solid waste management points to a few issues with public attitudes. According to Henry et al. (2006), the lack of prompt delivery by local services is the cause of the public's unfavorable perception of waste management in the nation. Their research revealed that most dump sites do not function in all weather conditions. For instance, the roads leading to the dumpsites can be challenging to utilize during the rainy season. Due to this, the majority of rubbish is not transferred to the landfill, resulting in a waste buildup nearby. Furthermore, collection truck breakdowns in most towns, which result in the majority of rubbish not collected being sent to the landfill sites are another issue with waste management that the public must deal with. (Henry et al,2006)

2.4.3 Waste Management Practice

Studies on waste management practices have been done by Adeyemo et al. (2013), Banga (2011), and Agwu (2012). The practice of waste management focuses on the involvement of individuals in waste management tasks like recycling, trash separation, and disposal. For a high standard of living, proper waste management is crucial. This will prevent risks like floods and infections that are connected to inappropriate waste management.

According to Amoah-Alex (2010), a study carried out in some Kumasi markets, including Adum, Kajetia, Roman Hill, and Central Market, revealed that people's negative waste management practices are caused by some factors impeding proper waste management, such as insufficient dustbins and a lack of education given to market women on waste management. The few dustbins in the market centers, he continued, are further away from the vendors. Residents are forced to dispose of rubbish

in their neighborhood as a result. To lessen this issue, nevertheless, there is a need for sufficient trash cans, effective law enforcement, and public awareness campaigns.

Understanding behavior is essential to reducing municipal solid waste, as mentioned earlier by Maycox (2003), but there are substantial obstacles, such as a lack of awareness among the general public and social conventions that have a negative impact on waste practices. However, the government must make sure that the populace is informed about good waste management techniques.

Residents of Sta. Rosa City, Laguna, according to Jamais and Tatlongahar (2010), had good waste management habits. The majority (65%) of respondents were found to separate, recycle, and reuse their waste. Reusing and recycling rubbish can help cut down on the amount dumped in landfills. However, examinations in Laguna revealed that although recycling of waste occurs in Calamba, the majority of respondents do not separate their waste (Cedillo, 1996). Residents' attitudes regarding waste management practices reveal a lack of understanding of recycling. Banga (2011) suggested that education on waste management improves people's attitudes and knowledge, resulting in better waste management practices.

2.4.4 Perception towards Waste Management

Humans learn about the world primarily through their senses of perception. In response to external stimulation, it involves the actions of our sense organs (sight, hearing, touch, taste, and smell) (Barnhart, 2008; Gibson & Tierney, 2006). Although perceptions can be formed without experience or understanding about the item or person, they are influenced by our knowledge, resources, beliefs, values, and conventions (Mariwah et al., 2010). Additionally, it requires perception, understanding, discrimination, and insights. Due to extremely individual/unique perceptual systems, perception is subjective and differs from person to person. It depends on how each individual see thing in terms of awareness, understanding, beliefs, expectations, interpretation, and knowledge of a situation or phenomena. The environments that a person lives in and their general upbringing have a legitimate impact on perception.

Kumar & Nandini (2013): studied on “People’s perception on waste-collection-services and on waste-disposal is primordial for its-willingness to-pay”. The fact that students and vendors are prepared to pay more for better WM services demonstrates how much they respect and care for the environment in which they work. The willingness of the-students and vendors to-pay, for improved-WM-services, shows that

they do value the-environment, they operate-in, and they want it to-be decent/clean. This-result corroborates the-findings of Salequezzaman et al. (2001), in their-study of the willingness to-pay for community-based SWM, in-Bangladesh. People's perceptions on fees, waste-collection procedure, and health-effects of ill-disposed-waste, are important for their-willingness to-pay, and even, in exercising environmentally-friendly waste-behaviors (Mwiinga, 2014).

2.5 Review on Previous Studies

The causes of the plastic waste problem and education for managing plastic waste are examined by Cheuk-Fai Chow (2017). Plastic wastes have dramatically increased globally as a result of economic development and people's shifting habits of consumption and production. Disposal of plastic garbage threatens human health and affects the environment. Therefore, there is a strong need to cut down on plastic trash. Education is crucial for reducing plastic waste because it can alter people's understanding, attitudes, and behaviors regarding plastic waste management. This study looks at how well three teaching methods (direct instruction, practical instruction, and simulation game-based instruction) affect students' knowledge, attitudes, and behaviors towards the management of plastic waste.

According to Thomas-(1998) Hope's research, inadequate solid waste management in homes, businesses, and markets presents a significant challenge for cities in developing nations (for example Ghana). The city becomes dusty and unpleasant to visitors as a result. Additionally, it contributes to diseases that harm the nation's population and increases government spending on health care. Ayotamuno and Gobo (2004) provided examples of cities with trash collecting issues. They claim that in Nigeria, rubbish is frequently dumped in public places, harming people's health. This pessimistic mindset is typical of Ghanaian city people.

Adu-Boahen (2012) carried out a study to confirm that people carry on with their everyday operations after the regular waste collection to the landfill sites. After 6 o'clock and well into the night, this generates another waste at the market center. Late-night commerce causes rubbish to accumulate, which is then not collected until the following day. He continued by saying that the designated locations for trash placement are not complete. In addition, there aren't many trash cans, so people just litter and drop their trash around at the market centers. Furthermore, vendors who operate in the market's forbidden areas often generate waste that isn't picked up. The areas that are not

allowed to sell things include sidewalks, the fronts of houses, and many of the strewn lorry packs. The market area and the entire city are made unclean and unpleasant to visitors by the uncollected rubbish. Uncollected rubbish obstructs drainage pipes and heightens health issues caused by standing water. People who approach an accumulation of trash run the risk of getting hurt, especially young children. The market women are forced to sit around the pile of rubbish to sell it since the uncollected waste takes up space. This suggests that rather than clean food, market women would be promoting disease to customers. Additionally, typhoid fever, cholera, dysentery, and infectious hepatitis can spread due to this.

According to research by McAllister (2015), a lack of concern for the environment leads to a culture where communities don't participate in decision-making, which increases a lack of accountability for pollution and waste problems. When citizens are educated or made aware of waste, they become knowledgeable and understand the fundamentals of waste management, which will make them accountable. Keeping people informed or educated entails increasing their understanding of waste management, which requires involvement in decision-making. Participating in waste management decisions and structural changes will boost the sense of ownership and belonging in the community, which can lead to improvement rather than finger-pointing. Littering, which has several causes, is the bad conduct with solid waste management in the majority of underdeveloped countries. These factors include a lack of societal pressure to stop littering, a lack of effective fines or consistent enforcement, and ignorance of the harm that littering does to the environment. Other factors include the amount of trash present in a specific area and the number of trash cans on a site (McAllister, 2015).

A 2016 study on consumer attitudes around the use of plastic and cloth bags was undertaken by Erkan Ari and Veysel Ylmaz. Latent variables used in the model include environmental awareness regarding the use of plastic bags, societal pressure, support for a ban on plastic bags, intention to use cloth bags, and behavior to limit plastic bag use. The structural model defines the intention to use cloth bags and the behavior to limit the usage of plastic bags as endogenous latent variables. Consumers who are concerned about the environment and experience social pressure tend to use less plastic bags and more cloth bags, according to the study's result.

In order to investigate customer perceptions regarding the usage of plastic bags to package hot edible goods, Jayaraman et al. (2011) carried out an empirical study in

Malaysia. Food safety and solid waste disposal were the two issues raised by the study about the use of plastic bags. Consumers were found to be unconcerned by public attempts to discourage the usage of plastic bags. Furthermore, it was discovered that the government had no influence on lowering the usage of plastic bags to package hot foods. The study also indicated that customers had a positive attitude toward the risks to their health and the environment posed by using plastic bags to store hot foods.

CHAPTER III

OVERVIEW INFORMATION OF PLASTIC WASTE MANAGEMENT IN YANGON

3.1 Overview of Plastic Waste Management in Myanmar

Myanmar, the largest country in mainland Southeast Asia, recorded a population of 51 million as of 2014 census data. Urban populations make up 30% of this total, while Myanmar's rural population, the majority of whom depend heavily on subsistence farming, makes up the remaining 70%. Recent economic liberalization policy changes have made Myanmar more accessible to international direct investment, which has aided in the country's quick industrialization and urbanization. This economic expansion has resulted in an increase in trash creation as well as the emergence of new waste streams like industrial, medical, and hazardous waste. As a result, national, state/regional, and municipal governments have enormous issues when it comes to garbage management.

In Myanmar, the separate township and city development committees have traditionally been in charge of waste collection and disposal. Solid waste management in municipal areas is the responsibility of autonomous City Development Committees in Yangon, Mandalay, and Nay Pyi Taw, as well as their Pollution Control and Cleansing Departments (PCCDs), which have a network of administrative branches and sub-units.

The majority of Myanmar's cities' MSW collection systems can be characterized as labor-intensive because they rely on both physical labor and non-specialized vehicles. Primary and secondary collection are both included in the current waste management systems in Myanmar. Primary collection occurs in a variety of ways, including block, container, and door-to-door (bell collection) approaches. Push carts and tricycles are used in the primary waste collection system, whereas dump trucks are mostly used in the secondary collection system.

Although some cities run public awareness-raising initiatives and environmental education programs for local citizens to encourage 3R activities, waste separation at the source and 3R activities are not extensively practiced in Myanmar. For instance, since 2009, MCDC has actively promoted the use of alternative bags like string bags, leaf boxes, and baskets and has forbidden the production, marketing, and use of thin plastic bags throughout its administrative territory. MCDC has also developed public awareness campaigns in an effort to encourage residents to live more sustainably and to rally around 3R projects.

In many cities in Myanmar, the recycling of waste is done primarily by the informal sector, which includes waste pickers, collectors, and traders. These waste pickers and waste collectors collect recyclables like newspapers, metal, plastic bottles, tin cans, and glass from homes, communal depots, streets, and final disposal facilities. They then sell these materials to waste dealers who clean, sort, store, and then sell them in bulk to the recycling industry both locally and internationally. Data on recycling volumes, ratios, and the number of recycling factories present in Myanmar cities are currently neither accurate or reliable.

Currently, waste that has been collected by the corresponding township and municipal development committees is taken to the final disposal locations, which are typically open dumping grounds inside city limits. summarizes the fundamental operations of the landfills in the cities of Mandalay and Yangon. These typically cover an area of around 1 hectare and are found between 10 and 25 kilometers from the city's CBD (Central Business District) area.

The majority of dump sites face a variety of management and operational difficulties. Rubbish that has been transported is subsequently unloaded onto the ground or other waste. The garbage is then separated by rubbish pickers using rakes and other manual instruments. After human sorting, mechanical tools like bulldozers are used to advance the unsorted debris further inside the dumpsite. Waste that has been sorted is then packaged, kept, and brought back to the city for sale. Landfill fires are frequent and produce strong gases and thick smoke. Uncontrolled dumps present a number of health risks in addition to disagreeable odors, including pathogenic organisms, insects, and rodents, as well as air pollution from dust, inadvertent burning, and ground and surface water pollution from unresolved leachate concerns.

(Source: <https://www.ycdc.gov.mm>)

3.2 Historical Background of Plastic Waste Management in Yangon

The largest city in Myanmar, Yangon City is located in Yangon Region, in the country's southern region. Up until 2003, Yangon served as Myanmar's capital, but it is still a significant commercial centre. Of the 46 townships that made up Yangon city, 33 were townships. There are 4.2 million people living in Yangon City, according of the 2014 Census.

On May 24, 1874, the first Yangon Municipal Act was formed. The Municipal Board was established and provided municipal services in accordance with that municipal act. The newly founded Yangon Municipal Act was formulated and established in 1922 in response to the population's fast growth. The organization is renamed the Yangon City Development Board in 1974. The municipal committee's basic responsibilities, including street lighting, water supply, waste disposal, upkeep of parks and gardens, markets, and slaughterhouses, do not alter. The Yangon City Development Law also grants the Committee additional powers, including the ability to define and re-define the city's boundaries, operate city development projects independently with its own funds, assess and levy its own taxes, use the foreign currency generated from the lease of its own lands and properties for development projects, and accept loans and grants from the government or from foreign organizations.

Local municipal authorities in Myanmar have traditionally been in charge of rubbish collection and disposal. Solid waste management in municipal areas is the responsibility of Yangon's Development Committees, Pollution Control and Cleansing Departments (PCCDs), and its network of administrative branches and sub-units. In other regions of the country, the local government's Township Development Committees are responsible for collecting and disposing of municipal waste. The institutional situation was reformatted by the State Law and Order Council Government in 1988, and it became the Yangon City Development Committee (YCDC).

The majority of Yangon City's municipal solid waste collection systems can be defined as labor-intensive because they rely on manual labor, nonspecialized vehicles, and a small number of specialized vehicles. Primary and secondary collection are generally included in the present waste management system. Primary collection occurs in a variety of ways, including block, container, and door-to-door (bell collection) approaches. Push carts and tricycles are used for the primary waste collection system, whereas tipper trucks are mostly used for the secondary collection system.

The Yangon City Development Committee Acts of 2018 state that the YCDCPCCD is the only public institution with the authority to manage solid waste in the Yangon City region, including waste collection, waste storage, waste transportation, waste discharge, managing of final disposal sites, and waste treatment. The Acts also state that the YCDCPCCD may also call for competitive bids from private or public companies to handle the SWM tasks in a transparent manner. The YCDC - PCCD is empowered to create the waste management policy for Yangon City and to give instructions to citizens, companies, stores, schools, and other public locations on how to maintain the best waste management standards. This law grants the YCDC-PCCD the authority to advise citizens to follow waste management best practices and to pursue legal action against anyone found to have violated waste management laws or harmed the environment. A person disposes of 0.41 kg of waste per day, or 2387.12 tons per day, according to the YCDC-PCCD, which estimates waste generation. According to this law, YCDC-PCCD is authorized to instruct the citizen to follow the best practices, which is related to waste, take the legal action who violate the acts of waste management and cause the environmental damage. According to the YCDC-PCCD, waste generation is 2387.12 tons per day and so it can be discovered that a person disposes 0.41 kg of the waste daily.

(Source: Japan International Cooperation Agency (JICA) Master Plan,2018)

3.3 Rules and Regulations of Waste Management in YCDC, Thingangyun Township

Yangon Regional Government is responsible for managing Yangon Region. The four districts that make up the Yangon Region are North, East, South, and West. The Yangon City Development Committee (YCDC) is in charge of municipal tasks such roads in some areas, water supply, sanitation, solid waste management, and market administration in 33 Townships among the 45 townships in the Yangon Region. Regarding SWM, there are primarily three formal acts and rules created by PCCD.

The three written acts are:

- The Environmental Conservation Law (The Pyidaungsu Hluttaw Law No. 9 / 2012),
- The City of Yangon Development Law (1990) by the State Law and Order Restoration Council Law No. 11/90, and

- The City of Rangoon (Yangon) Municipal Act (1922): Amendment (1960) Act 31/1960.

The Environmental Conservation laws mainly describe about the roles and responsibilities of the Ministry of Environment Conservation and Forest (MOECAAF) to protect the environment and to manage the solid waste in collecting, transporting, treating, disposing and recycling.

The fact that Myanmar is a signatory to numerous multilateral environmental treaties and agreements, such as the 2030 Agenda for Sustainable Development Goals (SDGs) 2015 and the Paris Agreement on Climate Change 2016, means that the importance of environmental protection is recognized in national and local policy.

In 2015, the Yangon City Development Committee hired a total of 4,220 people to collect and dispose of rubbish. As a comparison, in the year 1983, 1700 individuals were employed for these duties. Similar circumstances can be found in Mandalay City Development Committee, where 2,000 people were in charge of managing rubbish in 2016 as opposed to 900 in 2005. The allocation of capital expenditures for garbage collection has generally increased over time, including for the purchase of new waste collection trucks and the construction of necessary waste treatment infrastructure, such as the installation of final disposal sites

(Source: <https://www.ycdc.gov.mm>)

3.4 Current Situation of Plastic Waste Management in San Pya Market, Thingangyun Township

Thingangyun Township is surrounded by the South Okkalapa, Thakayta, Yankin, Tamway, and South Dagon Townships and is located in the East Districts of the Yangon Region. The population of Thingangyun Township has substantially expanded with the development of urbanization and industrialisation. Thingangyun Township has 11.4 square kilometers in total. There are 43,320 households in the township overall, per the 2017 Census report and Thingangyun Township GAD report. Thingangyun Township had a total population of 209,486 people. There are 38 quarters in Thingangyun Township.

SanPya Market is situated at the intersection of Lay Daungkan Road and Thanthumar Road in Thingangyun Township. Of the eleven markets in Thingangyun Township, the SanPya market is the biggest and busiest. Additionally, there are numerous stores and a wide variety of goods are offered for sale. Three thousand people

or so frequent the market every day. There will be plastic bags (mainly single-use) available for packing during the sale of the items. As a result, markets are a source of trash plastic bags. Assume that the utilized plastic waste is sorted and disposed in the appropriate locations. In such circumstance, waste management organizations can carry out their duties in a productive and effective manner.

Individuals, groups, and governmental agencies must cooperate for the correct plastic waste management system to be in place. Participation in the management of waste activities in a specific setting, particularly in the market, is considered a waste management practice. One of the topics examined in this part was waste management practices. People in the community place a high value on proper trash disposal practices because they keep the environment safe and disease-free.

At SanPya Market, the YCDC market cleansing section is now providing garbage management services. They have 11 people in this group that are in charge of cleaning. Every evening following the day's end at 6 o'clock, they sweep and wash the floors. To dispose of the trash at the market corner, YCDC provides a 3 tons container. The container will be picked up by the market authority three times per week. The market authority (YCDC) did not provide a dustbin or garbage container in the market, thus anyone who wanted to dispose of their rubbish had to go to a 3.0 T waste container outside the market. Municipal solid waste (MSW) generation at SanPya Market is now estimated by the YCDC's cleaning department to be 1.5 tons per day.

Primary collection, secondary collection, and final disposal are all parts of the market cleaning department's current waste management system. Shop-to-shop collection, container collection from curbside bins, and open collection stations are the main techniques for garbage collection. Shop-to-shop collection requires a lot of labor and uses a variety of announcement techniques, including bell ringing and loudspeaker announcement. The SanPya market does not currently have a formal waste sorting system in place. Inadequate legal provisions are one of the most frequent issues with waste collection that waste management authorities deal with. YCDC has also formed its own waste management laws, regulations, and guidelines. But one of the major challenges to implementing appropriate waste management procedures is highlighted as poor enforcement of current rules and regulations

CHAPTER IV

SURVEY ANALYSIS

4.1 Survey Profile

This chapter analyses the awareness on plastic waste disposal management activities of shopkeepers that have been dwelling at SanPya Market in Thingangyun Township. To assess the perception of shopkeepers on plastic waste disposal, the required data is collected by selecting 200 sample shops. Respondents include in the survey data among 1,000 shopkeepers, this study choose 200 shopkeepers who represent 20 percent of them in the SanPya market. The survey focuses on the targeted eight categories. 1). Clothing store, 2). Jewelry store, 3). Cosmetic store, 4). Pharmacies store, 5). Fish and meat store, 6). Green Grocer store, 7). Food and Beverage store, 8). Grocery stores in the market. A structured questionnaire is administered to the shopkeepers on their knowledge, attitude and practice in plastic waste disposal.

4.2 Survey Design

Shopkeepers are primary source of plastic waste generation within the range of the resources allowed, a survey was carried out among 1,000 shopkeepers, choose 200 shopkeepers who represent 20 percent of them at SanPya Market, Thingangyun township. The participants are selected by simple random sampling survey design. The questionnaire consists of respondents' profile which attributes socioeconomic conditions such as age, sex, occupation and income level and evaluation of knowledge, attitude and practice on plastic waste usage and disposal through field surveys.

Secondary data will be collected from relevant texts, previous research papers, Township Development Affairs Organization's report, and the Yangon City Development Committee (YCDC) and the Market Department.

4.3 Analysis of Survey Results

4.3.1 Socioeconomic Characteristics of the Respondents

This section discusses the demographic and socioeconomic characteristics of respondents surveyed in the 200 shopkeepers, are classified in terms of gender distribution, age, number of household members, educational level, types of occupation

and income level which include frequency and percentage of respondents. The profile of respondents in the shopkeeper is shown in Tables(4.1) below.

Table 4.1 Socio Economic Profile of Respondents

Description	Frequency	Percentage (%)
Male	80	40.0
Female	120	60.0
Total	200	100
Description	Frequency	Percentage (%)
Age		
18-25 years,	8	4
26-40 years	100	50
41-50 years,	60	30
51 years and above.	32	16
Total	200	100
Household Members		
1-3	80	40
4-6	110	55
7and above	10	5
Total	200	100
Description	Frequency	Percentage (%)
Educational level		
Primary School	8	4
Middle School	80	40
High School	90	45
Graduate	20	10
Master Degree	2	1
Total	200	100
Household income /month	Frequency	Percentage (%)
Under 180000 kyat	4	2
180001-300000 kyat	50	25
300001-500000 kyat	120	60
Above 500,001 kyat	26	13
Total	200	100

Source: Survey Data (2022)

Table 4.1 summarizes the profile of the respondents in SanPya market selected for this study.

It is found that 120 (60%) are female and 80 (40%) are male. The sample was dominated by more females; this is because more females were found at their stores as compared to males. Female respondents were more accessible and willing to give information as compared to the male who constantly looked to be busy doing their own work. More over Females are designated the store duty of managing waste and therefore, it is responsible for females to be represented as such when a questionnaire has to be completed.

The survey respondents were categorized into four age group: between 18 to 25 years old, between 26-40 years old, between 41 to 50 years old and 50 years old and older.

Shopkeepers who participated in garbage disposal ranged in age from 18 to 25 (8%), 26 to 40 (50%) and 41 to 50 (30%) to over 51 (16%). This showed that younger business owners with heads in the 26–40 age range predominated in the survey locations where trash management was practiced. Someone at this age is energetic and full of energy, so they can take part in cleanup activities and join organizations that support garbage management.

In terms of household size, (40%) households have 1-3 household members, (55%) have 4-6 household members, (5%) have 7 household members or more.

According to survey findings, all shop owners involved in waste management had some form of education, with graduates making up the majority (10%), followed by students who only completed high school (45%), middle school (40%), or primary school (4%), and finally those who only completed a master's degree (1%). Increased knowledge and awareness that foster a preference for a sanitary environment are linked to higher levels of education. As a result, it can be argued that every response among the chosen shopkeepers has a formal education.

It has been determined that the income of households with incomes below 180,000 kyat is (2%), between 180,001 and 300,000 kyats is (25%), between 300,001 and 500,000 kyats is (50%), and above 500,001 kyats is (13%). The majority of shopkeepers made between Kyat 300,001 and Kyat 500 000 each month.

4.3.2 Knowledge on Plastic Waste Management

In this section, the respondents' knowledge on plastic waste management are presented by dividing respondents (a) knowledge on storage, separation and generation of plastic waste and (b) knowledge on impact of improper waste disposal.

(a) Knowledge on Storage, Separation and Generation of Plastic Waste

Regarding to the respondents' knowledge on waste, they were asked if they had ever heard of the storage, separation and generation of plastic waste. Their answers are shown in Table (4.2).

Table (4.2) Knowledge on Storage, Separation and Generation of Plastic Waste

Question	Answer	Frequency	Percentage %
Do you know the systematic storage of solid wastes?	Yes	194	97
	No	6	3
Do you know the separation of (categorization of) solid wastes?	Yes	180	90
	No	20	10
Do you know the systematic disposal of plastic wastes daily?	Yes	178	88
	No	22	11
Do you know that some plastic used bags can be reused?	Yes	140	70
	No	60	30
Do you know that increasing ant, fly and rats in the shop is due to improper plastic waste disposal?	Yes	190	95
	No	10	5
Do you know that consumption of food by using plastic bags is not good for health?	Yes	192	96
	No	8	4
Do you know that plastic waste disposal that can be pollution in the environment must be reduced?	Yes	188	94
	No	12	6

Source: Survey Data (2022)

Respondents' knowledge on waste disposal is generally positive. There are seven questions for knowledge on waste. 194(97%) respondents answered they have knowledge on systematic storage of wastes because secure storage of waste that ensures

protection for shopkeepers, the customer and the environment. 6 (3%) respondents are lack of knowledge of the environmental effects of storage.

About 180 (90%) of the respondents segregated their waste because they thought it would keep their business tidy and free of animals, as well as improve customer health and cleanliness. They learned the information from friends, family, and television shows. However, they no longer clearly separate items like sharp garbage, used plastic waste, and others as they once did. 20 (10%) of the store owners said they were unsure since they had never heard of it.

About 190 (95%) of respondents have knowledge that improper waste generation and storage can cause adverse effects on health through increasing ant, fly and rats near wastes because plastic waste emits foul odors and facilitates the spread of diseases caused by mosquitoes and flies as well as respodents.10 (5%) of respondents do not know about the negative effects of improper waste generation and storage due to lack of knowledge. A total of 192 (96%) of the shopkeepers are aware of the harmful effects of eating food that has been packaged in plastic. because plastic bags have a major negative impact on the environment. They penetrate the soil and gradually release harmful substances. A person may become ill by consuming food that has been incorrectly stored, especially if the storage container is made of a plastic that contains hazardous compounds. Chemicals with the potential to be harmful to human health are used in the production of all plastic. Therefore, it's crucial to understand what respondents think about the drawbacks of using plastic bags.8(4%) of respondents do not know about the negative effects of food consumption with plastic bags and it is not good for health due to lack of knowledge.

The majority of the shopkeepers 188(94%) are aware about the plastic waste generation that can be environmental pollution and they know that this type of plastic waste disposal must be reduced because improper plastic waste management causes all types of pollution: air, soil, and water. These negative environmental impacts are only a result of plastic waste disposal.

(b) Knowledge on Impact of Improper Plastic Waste Management

Regarding to the respondents' knowledge on impact of improper plastic waste disposal, they were asked if they had ever heard of the negative effects by improper disposing of plastic waste from their stores. Their answers are shown in Table (4.3).

Table (4.3) Knowledge on Impact of Improper Solid Waste Management

Question	Answer	Frequency	%
Knowledge of negative effects cause by improper wastes disposing			
Breathing bad smell	Yes	190	95
	No	10	5
The potential of the diseases from the abundance of rat, mosquito, and fly.	Yes	190	95
	No	10	5
The potential environmental issues	Yes	170	85
	No	30	15
Too much work for the waste collectors	Yes	128	64
	No	72	36
Destruction of aesthetic view and seeing of urban city	Yes	156	78
	No	44	22
Knowledge of negative effects cause by improper wastes disposing.			
Important for Health	Yes	190	95
	No	10	5
Prefer to be clean environment.	Yes	120	60
	No	80	40
Do you agree improper waste disposing may effect of aesthetic and prestige the city.	Yes	110	55
	No	90	45

Source: Survey Data (2022)

Most respondents are aware that improper waste generation and storage can lead to breathing bad odors (95%), certain diseases on rats, mosquitoes, and flies (95%), environmental pollution (85%), revealed overload to waste collectors who are department staff (64%), and aesthetic view and seeing of urban city (78%) respectively.

(95%) of respondents agree systematic plastic waste disposal is important for health, cleaning environment (60%), and aesthetic and prestige of city (55%) respectively. They know very well about waste management is important for health and environment. However, it was found that many people have an idea (95 percent) about the interrelation between waste and the public health problems but some are lack of recreation and aesthetic views on waste management.

4.3.3 Attitude on Plastic Waste Management

(a) Attitude on Storage, Separation and Generation of Plastic Waste

Regarding to the respondents' attitude on storage, separation and generation of plastic waste, they are asked to give opinion on the agreement level of waste management statements. Table (4.4) reveals the number and percentage of the statements. The likert scale questionnaire is used in order make it easier to obtain precise answers from the respondents.

Table (4.4) Attitude on Storage, Separation and Generation of Plastic Waste

Responses of Shopkeepers in Attitude Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean Value
Different types of solid wastes should be stored systematically			10 (5%)	160 (80%)	30 (15%)	4.1
Plastic wastes that can be recyclable should be resold.	2 (1%)	8 (4%)	52 (26%)	78 (39%)	60 (30%)	3.93
Plastic wastes should be disposed systematically in order to be free ant, fly and rats in the store.	-	-	10 (5%)	180 (90%)	10 (5%)	4.0
Different types Plastic wastes should be disposed daily			16 (8%)	180 (90%)	4 (2%)	3.94
Usage of food by the plastic bags is not good for health.	-	8 (4%)	10 (5%)	180 (90%)	2 (1%)	3.88
Plastic waste disposal that can cause pollution in the environment should be reduced.		12 (6%)	10 (5%)	170 (85%)	8 (4%)	3.87

Source: Survey Data (2022)

According to Table (4.4), the majority of respondents (95%) had good attitude to store different types of solid waste systematically because different types of solid

waste storage facilities is necessary that it may be as far as from, insect proof and animal proof. So, they use Plastic Bin with or without lid are preferred for temporary storage in the store. (5%) of respondents neither agree nor disagree because they do not have attitude and they are lazy.

The majority of respondents (69%) have good idea that can be recyclable should be resold because and (26%) of respondents reported the damage plastic bottles are normally thrown in pit latrines and plastic bags are burnt. The main reasons of (5%) respondents are that the quantities are too small to be traded and respondents do not know where to sell them.

According to the data, (90%) of respondents agreed that plastic garbage should be disposed of in a systematic manner in order to keep rats, flies, and other pests out of the business, while (10%) strongly agreed since they no longer needed it. They discard it since it is bad for their health. Imagine if it wasn't removed, it would serve as a breeding ground for rodents, flies, and mosquitoes that spread diseases like malaria and diarrhea. (10%) neutral; they don't agree or disagree because they're idle and lack attitude.

Data also provides that (92%) of the respondents answered that different types of plastic wastes should be disposed daily because they preferred the plastic waste to be cleared daily. (8%) of the respondent's neutral, because they have no time to do it daily.

It also reveals that (90%) of the respondents agreed that usage of food by the plastic bags is not good for health whereas (1 %) strongly agreed because they know about that all plastic is made from chemicals, it is harm a person's health. And (5%) neutral and (4%) disagree of respondents due to poor knowledge. Regarding to the statement of plastic waste disposal that can cause pollution in the environment should be reduced; it is found that (85%) of the respondents agreed whereas (4%) strongly agreed due to the negative environmental impacts (air, soil and water pollution) are only a result of solid waste disposal. Moreover, it is studied that (6%) of the respondents disagreed and (5%) neutral in this regard due to lack of knowledge of the environmental effects of littering.

Respondents asked the questions that different types of solid wastes should be stored systematically was highest mean value is 4.1 and plastic waste disposal that can cause pollution in the environment was lowest mean value 3.87. The result found out

that average overall mean value is 3.95. So, respondent's attitude towards on Storage, Separation and Generation of Plastic Waste was good.

(b) Attitude on Proper Solid Waste Management System

Regarding to the respondents' attitude on the proper management system of storage, separation and generation of solid waste, they are asked to give opinion on the agreement level of the proper solid waste management system statements. Table (4.5) reveals the frequency and percentage of the statements.

Table (4.5) Attitude to be Proper Solid Waste Management System

Responses of Shopkeepers in Attitude Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean Value
Irregular and un-planned dumping of plastic wastes in the streets can adversely affect health condition.		4 (2%)	6 (3%)	186 (93%)	4 (2%)	3.95
Launch a quarter clean-up campaign should be carried out by setting up the fund of fees..	-	24 (12%)	56 (28%)	120 (60%)		3.48
Current waste collection system in the market is good.		40 (20%)	60 (30%)	100 (50%)	-	3.3
The garbage truck should come and collect wastes on time.		10 (5%)	60 (30%)	120 (60%)	10 (5%)	3.65
The waste disposal system by separation should be developed.		10 (5%)	20 (10%)	160 (80%)	10 (5%)	3.9

Source: Survey Data (2022)

Regarding the opinion of respondents on the severe health problems caused by dumping of plastic wastes, it is found that (95%) of the respondents concern with irregular and unplanned dumping of solid wastes in the streets and roads can adversely affect health condition because they know about that Environmental and health

problems associated with solid waste mismanagement. It is also found that (5%) of the respondents have not good attitude.

With regard launching a quarter clean-up campaigns, it is asked the respondents' opinion. Data provides that (60%) of the respondents have a good idea that the statement of launching and carrying out a quarter clean-up campaign by setting up the fund because Public awareness is important in improving waste management service and they initially participated in the ward cleaning drives but it was found to be very limited. (28%) neutral. (12%) of the respondents disagreed in this regard because they do not want to pay fees.

When studying the respondents' opinion on the current solid waste collection system, it is found that (50%) of the respondents agreed that the statement of the current solid waste collection system is good and (30%) neutral but (20%) of the respondents do not agree because they are not satisfied with the services provided. Normally, they do collection with truck four times a week, but sometimes they miss out to collect the refuse, waste, so the area is messy with the waste some respondents are in general to be not satisfactory.

Regarding the required factors to improve the current solid waste collection system, it can be found that (65%) of the respondents accepted that the statement of the garbage truck should come and collect wastes on time because the respondents expect that their market waste will be collected every day. The rest answered (30%) neutral and (5%) disagreed that statement because waste must be placed in market containers. Garbage truck from Municipal (YCDC) agree to collect four times a week, but sometimes they miss out to collect the refuse, waste, so the garbage from waste container was fell over and the area around messy with the waste, so some respondents were not satisfactory of their service YCDC.

It is found that (85%) of the respondents have a good attitude that the statement of solid waste disposal system by separation should be developed because they know well about the practice of waste segregation is intended to reduce the volume of wastes disposed. Most respondents considered cleanliness and the environment as primary concerns for engaging in waste management activities (10%) are neutral. The rest (5%) regarded waste segregation as not important due to low attitude.

Base on result, average overall mean value is 3.65. So, respondent's attitude on Proper Solid Waste Management System was good.

4.3.4 Practices on Solid Waste Management

In this section, the respondents' practice on plastic waste management are studied by classifying the respondents (a)' practice on storage, separation and generation of solid waste and the respondents' (b) practices on solid waste disposal.

(a) Practice on Storage, Separation and Generation of Solid Waste

Table (4.6) presents whether there are the practice on storage, separation and generation of solid waste or not. The respondents are asked to answer yes or no concerning their practices.

Table (4.6) Practice on Storage, Separation and Generation of Solid Waste

Question	Yes		No	
	Frequency	%	Frequency	%
Do you make the systematic storage of solid wastes?	194	97	6	3
Do you make the separation of (categorization of) solid wastes?	60	30	140	70
Do you know the systematic disposal of plastic wastes daily?	116	58	84	42
Do you know that some plastic used bags can be reused?	112	56	88	44
Do you make the proper solid waste disposal to decrease ants, flies and rats in the house?	190	95	10	5
Do you make that consumption of food without using plastic bags as it is not suitable for health?	140	70	60	30
Do you reduce the plastic waste disposal that can be pollution in the environment?	158	79	42	21

Source: Survey Data (2022)

According to Table (4.7), it can be found that 194(97%) respondents in the study areas the systematic storage of solid wastes. They said that if we do not handle or store it properly, all waste has the potential to pollute the environment. Solid waste is stored in no uniform waste storage bins at the source of generation in different store. Generally, waste is stored mainly in plastic bins together with plastic bags. These bags are thrown away in medium-sized stationary containers, if we do not store waste with

plastic bag, bad smell will emit. The rest (3%) answered their reason for not storing their waste was that they were too lazy.

It is found that (30%) of the respondents separate some of their waste. They gave various reasons for doing so. The minority of the respondents separated waste because they believed the practice kept their store clean and free of pests. The rest (70%) of the respondents do not separate their waste prior to disposal. It may be due to poor knowledge of the benefits of recycling and one of respondents answered storage space as a problem (lack of space), cannot afford separated bins, separation consuming time, no ready market for recyclables' materials, etc.

In asking the respondents whether there are reused plastic bags or not, out of the respondents, there are 112 respondents (56%) which reply yes because they had ever seen products from recycled materials and had known about recycled products from utensils and households reported that they never throw away the beverage bottles. They also said that the plastic bottles have already market as dealer take them. 88 respondents' answered that they do not reuse or resold the plastic waste with the percent of (44%).

It is also found that 190 respondents in the market, they dispose solid waste properly in order to decrease ant, flies and rats in the area because they are primarily responsible for the cleanliness of the store and public hygiene. But 10 respondents do not make due to need information of hygiene and they do not know that flies are strongly suspected of transmitting diseases to humans.

In asking whether there is the consumption of food without using plastic bags or not, out of the respondents, there are 140 respondents which reply yes with (70%) due to it is not suitable for health. So, they answered that they buy food with organic bags instead of plastic. And 60 respondents answer that they use the plastic bags in the consumption of foods with the percent of 30 because plastic bags are convenient.

The majority (79%) of the respondents reduce the plastic waste disposal that can be pollution in the environment. They always remove anything plastic from the waste because the plastics do not rot and they spoil our land. (21%) of the respondents do not reduce because they did not know how to reduce waste.

(b) Practice on Solid Waste Disposal

Regarding the respondents' practice on the solid waste disposal, Table (4.7) reveals the frequency and percentage of the statements.

Table (4.7) Practice on Solid Waste Disposal

Question	Frequency	%
How are the wastes stored in your shop?		
The dustbin with cover	100	50
The dustbin without cover	56	28
plastic bag	44	22
Total	200	100
How are the food leftovers thrown away in your shop?		
Give it to the animal husbandry as the foodstuffs for the animals.	120	60
Dispose into dustbin by packing in the plastic bags	80	40
Total	200	100
How are the non- food leftovers wastes and used materials thrown away?		
Apart from resell wastes, the rest wastes are thrown away into the dustbin.	114	57
All the wastes into the dustbin	86	43
Total	200	100
How do you dispose the solid waste in your shop?		
Dispose the solid waste when the garbage truck collects the waste.	110	55
Dispose the solid waste to the garbage bin and container	90	45
Total	200	100
Do you take part in implementing to throw away the wastes systematically?		
Cooperation	178	89
Non-cooperation	22	11
Total	200	100

Source: Survey Data (2022)

Regular waste collection is crucial for practice with solid waste disposal. The majority of respondents (56%) reportedly store their trash in open containers because they are unaware that doing so can lead to health issues, particularly with regard to insects like flies and mosquitoes. In shops where animals (dogs, cats, rats, etc.) are present, waste storage containers must take this into consideration and be fitted with lids so that the garbage is not distributed by these animals. Respondent (50%) store bins with covers.

Because it is a more environmentally friendly approach to dispose of waste, some respondents (22%) store their wastes in plastic bags. Solid waste is stored in a variety of market places in non-uniform waste storage bins.

For food leftovers, (60%) of respondents dispose their waste for animal husbandry because pet owners around the market take food leftovers to feed their pets especially dogs and (40%) of respondents answered that food leftovers waste is stored mainly in plastic bins together with plastic bags because these bags are thrown away in containers.

For non –food leftovers, (43%) of the respondents said that all wastes are disposing into the bins and (57%) of respondents reported that separated wastes to resell and the residual is disposed into their bins and they know that burning waste can pollute the air. The majorities of shopkeepers’ participation in systematically solid waste disposal activities is not bad, so when promoted can result in great benefits.

4.3.5 General Perception on Plastic Waste Management

Regarding to the respondents' general perception on plastic waste management, Table (4.8) reveals the frequency and percentage of the statements.

Table (4.8) General Perception on Plastic Waste Management

Particular	Frequency(F)	Percentage(P)
The reasons for using plastic bags even using plastic bags are not good for health		
Easy and readily to use	166	83
It is difficult to replace with others	34	17
Total	200	100
What kind of food packaging should be replaced instead of using plastic bags?		
utensils and potable boxes	180	90
papers and some leaves	20	10
Total	200	100
Do you think it is important that systematic waste disposing?		
Very important	225	75
Important	60	20
Not important	15	5
Total	200	100

Who is the responsible for waste management?		
Myself	70	35
Township Development Committee	30	15
Both Township Development Committee and me	100	50
Total	200	100
What is your opinion on the current waste charges?		
High	36	18
Low	20	10
Reasonable	144	72
Total	200	100
How much money will you spent to upgrade the current waste disposal system?		
100-1000 kyats	110	55
1001-2000 kyats	60	30
2001-3000 kyats	22	11
3001 And above	8	4
Total	200	100
How should Government draw policy to clean city?		
Government should use more budgets for cleaning.	82	41
Promotion on awareness rising to community.	40	20
Fine to people who throw waste without obeying rules	78	39
Total	200	100
Why is Cluttering waste in the markets around your environment?		
Developing committee staffs are not working	120	60
Some people who are not following rules	80	40
Total	200	100
Concerning waste collecting system, following suggestion to YCDC.		
YCDC should provide more trucks and dustbin	46	23
More cleaning staffs should have appointment	46	23
If throw the waste without obeying rules, they should be fined	108	54

Source: Survey Data (2022)

Respondents claim that despite knowing that plastic bags are bad for them, they continue to use them. However, 83% of respondents said it is simple and convenient to use, while 17% said it is hard to change their behavior. If respondents change behavior, they answer they should replace utensils and potable boxes (90% of respondents) and papers and some leaves (10% of respondents).

(95%) of respondents accept that systematic generation, separation, packaging and storage activities are very important for environment of urban cities. Because they know about improper waste disposal has caused problems for the environment and the health of individuals. (5%) of the respondents needs to know about the important of proper waste management to help induce action.

(35%) of respondents believe they are accountable for it, and (50%) believe shopkeepers and the relevant department should perform it. Only the department workers are responsible, according to 15% of respondents. As a result, the opinions of many people are valid and commendable, and they should alter their perspective. For better practices in this, inspiration and education are crucial.

Regarding the fees of waste collection by the department, (72%) of respondents agree that it is reasonable rate. On the other hand, (18%) and (10%) of respondents reply it is high and low respectively.

For a better and more efficient solid waste management system, (55%) of respondents are willing to pay the fees of charge for waste collection in the range of 100–1000 kyat, (30%) of respondents are willing to pay for the range of 1001–2000 kyat, (11%) of respondents want to pay the range of 2001–3000 kyat, (4%) are willing to pay in the range of more than 3000 kyat. Most responders are willing to pay rates of charge that are less than 1000 kyat.

According to 20% of respondents, the government should create policies to promote municipal cleanliness. These policies should include activities or campaigns to raise public knowledge of proper garbage disposal. The respondents' most common ideas (39%) and (41%) were for effective punishments for persons who throw away rubbish and additional budgets should be used.

CHAPTER V

CONCLUSION

5.1 Findings

In this study, shopkeeper's surveys were conducted in SanPya market, Thingangyun Township. The selected population were interviewed to obtain the information as to how their knowledge, attitudes, practices and perceptions towards on Plastic Waste Management. Altogether 200 peoples are interviewed at the market.

According to the results of the demographic and socioeconomic characteristics of respondents surveyed in the 200 shopkeepers, more female shopkeepers were found at their stores as compared to males. Most shopkeepers in survey areas that involved in waste management were younger with heads that fell in the age bracket of 26-40years. This is the age where someone is active and full of energy to participate in clean up exercises as well as join groups that help in waste management. Survey result of household size show that most of the shopkeepers own (1-3) members with medium household size.

As for educational background majority of respondents are high school education. High level of education is associated with increased knowledge and awareness for a hygienic environment.

Respondents' knowledge indicated that they were aware of the storage, separation, and production of plastic garbage. The majority of respondents say that, yes, they are aware of waste management practices that protect business owners, customers, and the environment through secure trash storage. One of the respondents who separates solid trash had this to say: "I do not have to set aside time for separating, thus waste separation is not time consuming." Most respondents answer eating food stored in plastic bags has a negative impact on health and also aware that the production of plastic trash poses a threat to the environment must be reduced.

Many respondents are aware of the effects of inappropriate plastic trash disposal, including the fact that foul odors might be breathed in as a result of incorrect

garbage generation and storage. They are fully aware of the value of waste management for the environment and public health. Also discovered that (95%) respondent are aware of the connection between waste and public health issues, few are not because of a lack of entertainment or aesthetic perspectives on waste management.

Respondent's attitudes of storage, separation and generation of plastic waste, the majority of respondents (95%) had good attitude to store different types of solid waste systematically, so they use Plastic Bin with or without lid. Base on the answer of the respondents, most of them had good attitudes of storage, separation and generation of plastic waste. Base on the survey result, majority of respondents considered cleanliness and the environment as primary concerns for engaging in waste management activities.

Respondent's practice on storage, separation and generation of solid waste, most of respondents do systematic storage of solid wastes in their area. (30%) of the respondents separate some of their waste and (70%) of the respondents do not separate their waste prior to disposal because can't afford separate dustbins. Most of the respondents consume of food without using plastic bags due to it is not suitable for health. But (30%) of respondents answer that they have to use because seller use the plastic bag. It indicates that the majority of plastic using is cause by seller.

According to survey result of the respondents' practice on the solid waste is stored in no uniform waste storage bins at the source of generation in different areas of the market.

Assessment on the respondent's perception, most of them know plastic bags are not good for health, still using because easy and readily to use. Most respondents willing to pay the fees of charge for waste collection and expect that YCDC should keep improving their service on waste bin and should provide the waste bin in more location. Municipal garbage truck should come as per schedule.

The Executive Officer of the Market Department talked about how they can't place roadside cans next to the road. People throw their trash along the walkway. People dispose of food garbage, business waste, and other waste around the market. People flush their waste down the drain because they are disobedient to the law. To implementing appropriate waste management procedures.

Regarding the face to face discussion with market department, they face many challenges concern with SWM.

- (1) The current waste collection system is not well-coordinated by people.

- (2) Inadequate skills and capacity of waste management staff s.
- (3) The results of ignorance result in improper and discipline-inappropriate Dismissal.
- (4) Collection fee of store refuse is less than 1000kyat /month for Single store.
- (5) This necessitates the development of sanitary landfills and the use of appropriate technologies for waste collection, transportation, biological treatment (composting/biogas), recycling, and waste-to-energy.
- (6) MSW does not have any formal policies.

Commented that a poorly designed SWM plan might be implemented because current SWM system is ineffective, and the primary problems with waste management include a lack of funding, outdated technology and insufficient regulatory frameworks.

In order to determine the barriers to connecting the municipality and the people for the aim of providing better SWM service, the researcher conducted focus groups and interviewed the respondents. The replies indicated that four important obstacles stand in the way of such a relationship. These included:

- (1) Municipal staff members' lack of knowledge and abilities to build relationships with individuals.
- (2) People's lack of knowledge of their obligations and disregard for them.
- (3) The lack of motivation or information, as people generally do not know what management exercises are happening and how they can get involved.
- (4) The solid waste management service is often not satisfactory in both the market and the municipal open areas outside the market. The causes behind this could be workers' lack of motivation, insufficient manpower and financial assistance.

According to the officer of the market department's face-to-face interview, they had trouble facilitating the participation process since their team lacked the relevant knowledge and abilities. They find it difficult to approach the people and form a partnership as a result. However, this plan is the result of the YCDC's and the public's advocacy and effort to provide the Pilot Ward with better garbage collection services and maintain a clean market for environmental betterment.

5.2 Suggestions

The majority of responders have education above their high school level. Most respondents have knowledge of the increasing plastic bag industry as well as packaging made of paper and leaves. The voices of the public should be heard when implementing a program to reduce the use of plastic bags.

Four main categories of commodities offered in the market are textile (clothes), household use hardware, fish and meat, and grocery (dry goods). If plastic bag usage in these types of stores could be controlled, it might be cut by more than 50%.

Major type of material use for packaging is plastic bag which is nearly 90% of respondent. This is the result of the study that was already anticipated. Respondents spend a considerable portion of their spending on packing, which is something that merchants should be aware of and should be pointed out. If the amount of utilization could be decreased, more profit could be made.

Customers' preference for plastic bags and the fact that these bags are affordable and available are the main causes of difficulty. These facts show that giving plastic bags is primarily done for the convenience of the user, hence we must concentrate on consumer-side interventions like the "NO PLASTIC BAG DAY" event and charge more for plastic bags (do not provide free of charge).

Another point is that accessibility and cheap price of plastic bag, therefore everyone can use plastic bag without limitation. So, the policy makers should increase taxation on plastic bag. 30% of respondents, who agree to use eco-friendly packaging, sell the products like grocery (dry goods), textile, jewelry, household hardware. It means that if the government wants to implement plastic ban program, they can start with that kind of goods for sustainable approach.

Based on field survey, most of the respondent aware 3R campaign and over 56% of respondent agree with 3R practice. Meanwhile there is only a few respondents have regular practice. It can conclude that there is a gap between knowledge and actual practice.

Observed in this study that solid waste generated in SanPya market is not collected regularly due to inadequate dumping site. Uncollected solid waste generated at SanPya market has become a problem. This has resulted in piling up of waste and overflowing of rubbish from waste containers to the extent that people dump refuse around the waste containers and in gutters.

Inadequate trash management has been a problem at SanPya market due to inadequate equipment and malfunctions with some existing vehicles.

This study will broaden the expertise of professionals, business owners, and leaders in the area of waste management to contribute to the development of solutions to reduce the problem of inadequate waste management in SanPya market and the nation at large. And also suggest to find out the barriers which interfere with the behavioral change process by doing research like KAP survey.

From this study, the followings can be recommended:

- Strengthen legislate restrictions on single use plastic distribution
- Identify pollution hot spots and lead focused campaigns
- Reuse and Recycle your plastic bags at home
- Ban plastic bags packaging for selected items (feasible and sustainable approach)
- Charge plastic bags
- Implement no plastic bag day campaigns at the markets
- Promote informal sector partnership for recycling plastic bags
- Promote people to separate trash
- Promote eco-friendly alternatives

The study recommended more and frequent sensitizing programmes for shopkeepers to enable them to translate their knowledge into effective waste management practices. In addition, city authorities YCDC must provide necessary support to enable the waste collection task forces to promptly collect waste at the market.

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APPENDICES

Survey Questionnaires

Knowledges, Attitudes, Practices and Perceptions on Plastic Waste

In Sanpya Market, Thingangyun Township, Yangon

The following questions are for the research of Master of Development Studies Yangon. Survey to analyze on shopkeeper's Knowledge, Attitude, Practices and Perceptions towards plastic waste management

We would like to kindly request you to answer independently without any doubt.

You can freely refuse to answer if you do not want to participate.

Answer can be ticked at the box. Thank you for your participation.

1. Age -----

2. Male/Female Male Female

3. Education

Primary School	<input type="checkbox"/>
Middle School	<input type="checkbox"/>
High School	<input type="checkbox"/>
Graduate	<input type="checkbox"/>
Master Degree	<input type="checkbox"/>

4. Occupation Shopkeeper Yes. No.

1. Clothing store	<input type="checkbox"/>
2. Jewelry store	<input type="checkbox"/>
3. Cosmetic store	<input type="checkbox"/>
4. Pharmacy store	<input type="checkbox"/>
5. Fish & Meat shop	<input type="checkbox"/>
6. Green grocer shop	<input type="checkbox"/>
7. Food & Beverage shop	<input type="checkbox"/>
8. Grocery shop	<input type="checkbox"/>

5. Total number of household members -----

6. Total household income over per month -----

Knowledge Questions on Storage, Separation, Generation and Impact of Plastic Waste Management

1. Do you know the systematic storage of solid wastes?

(a) Yes

(b) No

2. Do you know the separation of (categorization of) solid wastes?

(a) Yes

(b) No

3. Do you know the systematic disposal of plastic wastes daily?

(a) Yes

(b) No

4. Do you know that some plastic used bags can be reused?

(a) Yes

(b) No

5. Do you know that increasing ant, fly and rats in the house is due to improper plastic waste disposal?

(a) Yes

(b) No

6. Do you know that consumption of food by using plastic bags is not good for health?

(a) Yes

(b) No

7. Do you know that plastic disposal that can be pollution in the environment must be reduced?

(a) Yes

(b) No

8. What negative effects can impact from improper plastic wastes disposing?

- (a) Breathing bad smell
- (b) The potential of the diseases from the abundance of rat, mosquito, and fly
- (c) The potential environmental issues
- (d) Too much work for the waste collectors
- (e) Destruction of aesthetic view and seeing of urban city.

9. Do you think the proper waste disposing is important?

- (a) Yes
- (b) No

10. Why is the systematic disposal of wastes important?

- (a) For our health
- (b) Prefer to be clean environment
- (c) For aesthetic and prestige of city

Attitude Questions on Storage, Separation and Generation of Plastic Waste

Responses of shopkeeper in attitude question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Different types of solid wastes should be stored systematically					
Plastic wastes that can be recyclable should be resold.					
Plastic wastes should be disposed systematically in order to be free ant, fly and rats in the house.					
Different types Plastic wastes should be disposed daily					
Usage of food by the plastic bags is not good for health.					
Plastic waste disposal that can cause pollution in the environment should be reduced.					

Attitude Questions on Proper Solid Waste Management System

Responses of shopkeeper in attitude question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Irregular and un-planned dumping of Plastic wastes in the streets and roads can adversely affect health condition.					
Launch a quarter clean-up campaign should be carried out by setting up the fund of fees.					
The current waste collection system in the market is good.					
The garbage truck should come and collect wastes on time.					
The waste disposal system by separation should be developed.					

Practices Questions on Storage, Separation and Generation of Solid Waste

1. Do you make the systematic storage of solid wastes?

(a) Yes

(b) No

2. Do you make the separation of (categorization of) solid wastes?

(a) Yes

(b) No

3. Do you make the systematic disposal of plastic wastes daily?

(a) Yes

(b) No

4. Do you reuse some plastic used bags?

(a) Yes

(b) No

5. Do you make the Proper solid waste disposal to decrease ant, fly and rats in the market?

(a) Yes

(b) No

6. Do you make that consumption of food without using plastic bags as it is not suitable for health?

(a) Yes

(b) No

7. Do you reduce the plastic wastes disposal that can be pollution in the environment?

(a) Yes

(b) No

8. How are the wastes stored in your shop?

(a) The dustbin with cover

(b) The dustbin without cover

(c) Plastic Bag

9. Why for using plastic bags even are not good for health?

(a) easy and readily to use

(b) It is difficult to replace with other

11. How are the food leftovers thrown away in your shop?

12. How are the non-food leftovers thrown away in your shop?

Perception on Plastic Waste Management

1. The reasons for using plastic bags even though using plastic bags are not good for health.
 - (a) Easy and readily to use
 - (b) It is difficult to replace with others

2. Do you think that systematic waste disposing is important?
 - (a) Very Important
 - (b) Important
 - (c) Not Important

3. What kind of food packaging should be replaced instead of using plastic bags?
 - (a) utensils and potable boxes
 - (b) papers and some leaves

4. Who is responsible for plastic waste management?
 - (a) Myself
 - (b) Markets Management Committee

5. How to reduce using plastic bags in the market?
 - (a) Bring own basket
 - (b) Bring reusable bag

6. What is your opinion on the current waste charges?
 - (a) High
 - (b) Low
 - (c) Reasonable

7. How much money will you spent to upgrade the current waste disposal system?

- (a) 100-1000 kyats
- (b) 1001-2000 kyats
- (c) 2001-3000 kyats
- (d) 3001 And above

8. How should Government draw policy to clean city?

- (a) Government should use more budgets for cleaning.
- (b) Promotion on awareness rising to community.
- (c) Fine to people who throw waste without obeying rules

9. Who is responsible for waste disposal system by separation to be developed?

- (a) Market Management Committee
- (b) YCDC market cleansing department
- (c) Shopkeepers & Users
- (d) All of the above
