

**UNIVERSITY OF GHANA
SCHOOL OF PUBLIC HEALTH
MASTER OF PUBLIC HEALTH**



**FACTORS INFLUENCING KNOWLEDGE ON SINGLE-USE
PLASTICS AND THEIR MANAGEMENT AMONG TRADERS IN SELECTED
MARKETS IN ACCRA**

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INDEX NUMBER: 11366572

2025

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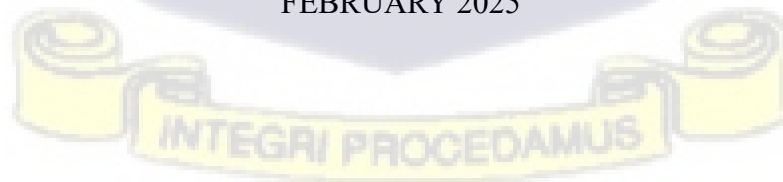
FACTORS INFLUENCING KNOWLEDGE ON SINGLE-USE PLASTICS
AND ITS MANAGEMENT AMONG TRADERS IN SELECTED
MARKETS IN ACCRA

BY

EMMANUEL OSEI

Thesis submitted to the Department of Biological, Environmental and
Occupational Health of the School of Public Health, College of Health
Sciences, University of Ghana, in partial fulfilment of the requirements for the
award of Master degree in Public Health

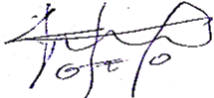
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DECLARATION

Candidate's Declaration

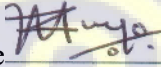
I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this College or elsewhere.

Candidate's Signature...  Date 28th February, 2025

Name: Emmanuel Osei

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of the thesis laid down by University of Ghana.

Principal Supervisors' Signature  Date 28th February, 2025

Name: Prof. Mawuli Dzodzomenyo



ABSTRACT

Plastic pollution, encompassing single-use plastics (SUPs), poses a persistent global threat across societies. This research examines the factors that affect traders' knowledge about SUPs and their management in specific markets in

Accra, Ghana. A cross-sectional study design was utilized, gathering data from 415 traders in three selected markets in Greater Accra through a semi-structured questionnaire. Descriptive and inferential statistical analyses, including independent samples t-tests, one-way ANOVAs, and chi-square tests, were conducted. The results indicate that traders have a strong knowledge of the public health (mean score = 5.56/6, 92.7% achievement rate) and environmental consequences (mean score = 5.79/7, 82.8% achievement rate) of SUPs, achieving average rates of 92.7% and 82.8%, respectively. Their comprehension of the economic effects was somewhat lower, with a 74.2% achievement rate. Higher education, especially tertiary degrees, strongly predicts greater knowledge, particularly in public health ($F(4, 410) = 17.858, p < 0.001$), environmental ($F(4, 410) = 32.876, p < 0.001$), and economic knowledge ($F(4, 410) = 36.046, p < 0.001$). A significant portion of traders (67.2%) favoured a ban on SUPs, with significant associations with higher environmental ($\chi^2(1) = 33.59, p < 0.001$) and economic knowledge ($\chi^2(1) = 60.58, p < 0.001$). Traders proposed various sustainable alternatives, such as stainless steel, bamboo, and bio-based plastics. Traders in Accra know the harms of SUPs but need more economic insight. Many support a ban and sustainable alternatives, showing potential for policy change. To reduce plastic use, we need education, financial incentives, stronger regulation, and collaboration to create a green environment.

KEY WORDS

Environmental impact

Market

Pollution

Public Health

Single Use Plastics

Traders



ACKNOWLEDGMENTS

I want to sincerely thank everyone who played a role in the successful completion of this study. First and foremost, I am deeply grateful to my academic supervisor, Professor Mawuli Dzodzomenyo, whose guidance, support, and valuable insights have been crucial in shaping this research. Your expertise and encouragement have continually motivated me throughout this journey. To my research assistances who helped me in the collection of data.

Finally, to the market traders for their cooperation and welcoming gestures to help provide information not to only help this study but to help guide and improve policies to create cleaner, greener environment and markets for everyone.



DEDICATION

I dedicate this work to all environmentalists and advocates for the environment who aspire to create a world devoid of single-use plastics, which pose significant threats to aquatic ecosystems, soil health, and public well-being.



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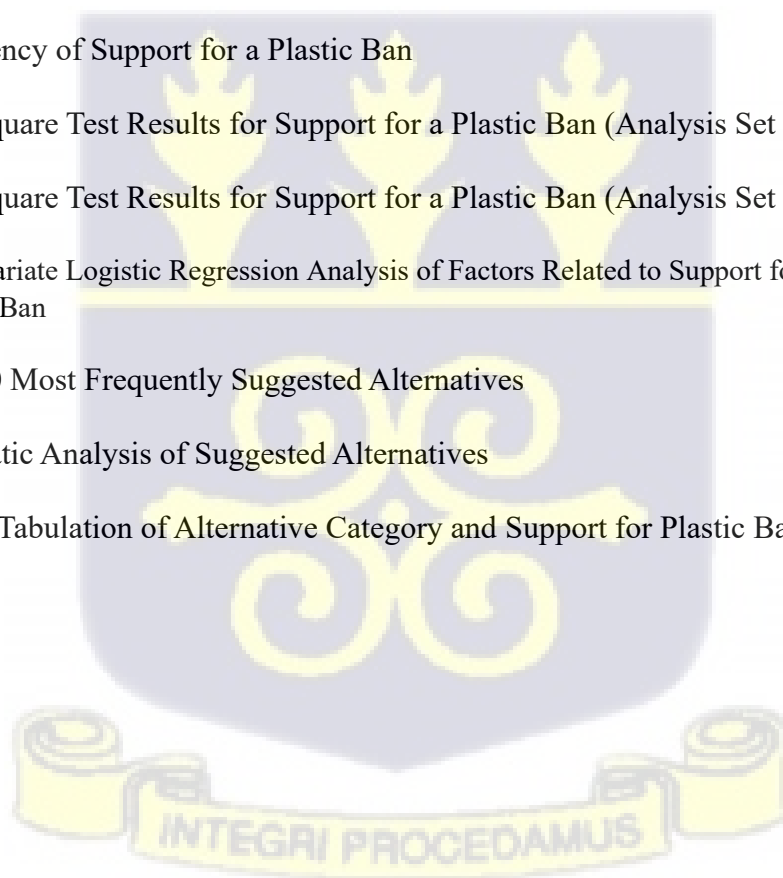
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LIST OF ACRONYMS

SUPs	Single Used Plastics
UN	United Nations
WRI	World Resource Institute



CHAPTER ONE

INTRODUCTION

The introduction discusses the issue of single-use plastics (SUPs) and their effects on the environment, public health, and socio-economic systems. It emphasizes the swift rise in plastic production and the challenges of disposal faced by developing nations such as Ghana. The chapter points out the importance of market traders in tackling plastic pollution, noting a deficiency in research regarding traders' knowledge, attitudes, and practices. The study aims to assess traders' knowledge, analyze practices, and explore alternatives, promoting sustainable alternatives and reducing SUP usage in Ghana.

1.1 Background to the study

Plastic pollution, encompassing single-use plastics (SUPs), poses a persistent global threat across societies (Nwafor & Walker, 2020). While all plastic waste is detrimental to environment, SUPs pose significant challenges due to their intended single-use nature (Adam et al., 2020; Xanthos & Walker, 2017). Single-use plastics (SUPs) are inexpensive, readily available items intended for disposal after one-time use. Despite their convenience, they pose significant environmental and public health threats. They are inexpensive and readily available in stores and marketplaces. Contemporarily, single-use plastic bags are useful for carrying groceries, shopping bags, and other stuff (Wagner, 2017; Dominish et al., 2020). Despite being initially disposed of on land, the majority of SUP waste ultimately finds its way into sea, endangering marine ecosystems and jeopardizing the livelihoods of millions dependent on fisheries and tourism (Jang et al., 2014; Mcilgorm et al., 2011; Dalu et al., 2020).

Plastic's versatility, affordability, and durability make it popular in apparel, machinery, building, electronics, transportation, agriculture, and packaging (Oladele et al., 2024). Plastic is used to make toys, straws, packaging, disposable diapers, electrical device casings, tea bags, and fabrics (Gamboni et al., 2021). Single

used plastics include plastic bags, sachets, straws, stirrers, cups, cutlery, beverage and water bottles, as well as the majority of food packaging (Dominish et al., 2020).

According to World Bank study, 335 million tonnes of plastic were produced in 2016, accounting for 12% of municipal solid waste (Goyal, 2020; Terziev & Lyubcheva, 2017). This is expected to triple (670 tonnes per year) by 2036 due to rapid urbanisation and economic expansion. The world produces 5 trillion plastic bags annually, with each person using 300 (Abor et al., 2019). Due to their extended lifespan, plastics threaten ecosystems, biodiversity and society and business (Hakuzimana, 2021). Effective handling of plastic waste is crucial for the sustainability of urban areas. Numerous developing countries lack adequate waste management systems, resulting in improper and/or unregulated disposal. Due to poor recycling technology, waste management infrastructure, public knowledge, and incentives, plastic waste is everywhere (Faraca & Astrup, 2019).

Plastic and polythene bag use has been debated worldwide, making plastic reduction a global issue (Evans, 2013; Abor et al., 2019). Bangladesh, South Africa, China, Australia, and Italy have restricted or banned it. Rwanda, Tanzania, Kenya, Morocco, Mali, Cameroon, Ethiopia, and Uganda are some sub-Saharan African countries that have taxed, banned, or limited the use of plastics.

In Ghana, according to the EPA (2022), traders in urban areas contribute nearly 30% of single-use plastic waste due to packaging demands in informal markets. Plastics constitute up to 37% of the total municipal waste stream (Zoomlion Waste Audit, 2023), with markets being key contributors in the Greater Accra Region. For example, a recent survey by Amankwaa (2022) revealed that over 90% of traders in Accra markets rely on polythene bags for packaging, with an average trader using more than 200 plastic bags per week. This heavy reliance on plastics by traders makes them a central group in the debate on plastic waste management. Polythene bags and sachets are becoming the main causes of littering and environmental contamination in cities with high single-use plastic product use. Disease outbreaks could result from this, endangering

ecosystems that sustain over 275 million people through food production, income generation, coastal protection, and cultural benefits (Amankwaa, 2022). This presents significant threats to the environment and public health, while also representing a considerable missed potential to derive benefit from this resource. According to a UN Environment and World Resource Institute (WRI) research, 2018, at least 127 countries have banned plastic bags (Foolmaun et al., 2021). They also found that 55 countries entirely outlawed and 89 have partially banned single-used plastics. Despite the development of biodegradable plastic and recycling methods, technical innovations alone are unlikely to solve the plastic problem (Boultadaki et al., 2023).

Provision of safe water for drinking, packaging of food, wrapping of items and other commodities in Ghana significantly contribute to the production of single-use plastic waste (Abrokwah et al., 2024). In Ghana, the primary source of drinking water in urban cities is largely reliant on bottled and sachet water (Moulds et al., 2022). Almost all items or goods are wrapped or packaged with polyethene bags. Ghana is considering banning single-use plastics due to their negative consequences on waste management, the marine ecosystem, and aesthetics (Adam et al., 2021). Amankwaa, (2022) argue that a lack of political will, inadequate regulatory frameworks, inadequate municipal waste management, a lack of plastic recycling infrastructure, and attitudes are the primary factors contributing to single-use plastic pollution and littering in Ghana. Their negative environmental impact has drawn global attention to the need for sustainable alternatives.

This study investigates the factors influencing traders' knowledge and management of SUPs in selected Accra markets (Mokola, Madina, Dome), focusing on socio-demographic, economic, and policy-related determinants. Understanding these factors is critical for designing interventions to reduce SUP reliance and promote sustainable practices.

1.2 Problem Statement

The political economy of plastics in Ghana is undergoing significant transformation. The rising domestic consumption of plastics, increasing participation in plastic waste trade globally, and the implementation of

novel neoliberal governance strategies have jointly transformed the nation's plastics environment. Ghana generates over one million tonnes of plastic garbage each year, managed through formal and informal channels, with a mere 2-5% being recycled (Abrokwah et al., 2024). According to a 2020 UN report, 36% of the world's 50 largest dumpsites are situated in Africa, including Agbogbloshie in Ghana (Okeke et al., 2022). The ubiquity and detrimental health effects of plastic waste have drawn heightened attention from NGOs, government, and the media, thereby amplifying efforts towards mitigation.

In Ghana, plastics constitute about 37% of municipal solid waste nationwide, with Greater Accra alone generating over 900,000 tonnes of solid waste annually, of which plastic waste accounts for more than 30% (Zoomlion Waste Audit, 2023; EPA, 2022). Market centres are significant contributors to this waste stream, as packaging and trading activities drive a high demand for polythene bags, sachets, and other single-use plastic products. For instance, surveys conducted in major Accra markets such as Makola and Madina revealed that plastics form more than 60% of total market waste (Amankwaa, 2022). This overwhelming dominance of plastics in urban and market waste composition underscores the urgency of addressing plastic pollution in Ghana, particularly within trading communities.

Due to growing worries about the harmful impacts of single-use plastic waste on the environment and public health in Ghana, the government is contemplating prohibiting the manufacturing and use of single-use plastics (Amankwaa, 2022). Also, there has been a surge in research on policy solutions to reduce single-use plastics (Carlos Bezerra et al., 2021; Clayton, 2021; Diggle & Walker, 2020; Schnurr et al., 2018; Xanthos & Walker, 2017). Traders' activities are essential for addressing single-use plastic waste. Traders exhibit higher consumption rates of single-use plastics, largely due to their predominant activities, encompassing approximately 70-80% of consumer decisions (Diggle & Walker, 2020). However, traders are accustomed to utilizing plastics without sufficient awareness or comprehension of their detrimental effects. There is rampant use of plastics in Ghana, with no regulations to enforce and control its use. One occupational group is traders,

mainly because of their practices. Some plausible reasons for this may include inadequate knowledge of its impact on the environment and public health; hence, the need to carry out this study.

Previous studies have contributed to examining policy dimensions aimed at mitigating single-use plastic pollution, which have helped in educating the populace and putting in measures to ban SUPs. Typically, these studies have contributed predominantly on various aspects related to plastic recycling motivation, behaviours involving reuse and recycling, understanding the environmental consequences of bioplastics, intentions to transition to reusable options such as cloth bags, factors influencing the intention to utilise single-use plastics, the efficacy of legal frameworks in altering behaviours related to disposable plastics, awareness and attitudes among high school students regarding plastic pollution, views of beachgoers concerning single-use plastics, and public beliefs and attitudes towards plastics (Amenábar Cristi et al., 2020; Babader et al., 2016; Best & Kneip, 2011; Dilkes-Hoffman et al., 2019; Filho et al., 2021; Huffman et al., 2014; Khan et al., 2019; Saphores & Nixon, 2014; Van et al., 2021; Van Rensburg et al., 2020). This gap can be attributed in part to a broader scholarly neglect of behavioural strategies, particularly in underexplored developing areas like sub-Saharan Africa, including Ghana.

However, gaining insights into the knowledge and behavioural aspects of single-use plastic consumption could enable the development of effective interventions aimed at achieving lasting and sustainable reductions in single-use plastic consumption among traders and the country at large. This study aimed to examine the knowledge and practices about single-use plastics among traders in Greater Accra City. It will also identify interventions such as potential alternatives and innovative waste management techniques among traders at market centres. Moreover, this will help in limiting single-use plastics and promoting ecologically friendly alternatives, which will be a key strategy to combat plastic pollution. This will facilitate a positive interaction between advocates and policymakers in the management of single-use plastic waste.

1.3 Research Questions

1. What is the level of knowledge among market traders in Greater Accra regarding single-use plastics pollution?
2. What are the practices traders engage in that pollutes the environment?
3. What are some of the sustainable alternatives to single-use plastics the traders know?

1.4 Study objectives

1.4.1 General objective

To assess the determinants of single-use plastics and their potential relationship with knowledge among traders in selected markets in Accra.

1.4.2 Specific Objectives

1. To assess the level of knowledge among traders on single-use plastics pollution.
2. To determine practices associated with single-use plastic among market traders.
3. To investigate the opinions of market traders on potential alternatives to single-use plastic bags.

1.5 Justification of the Study

The urgent need to tackle the harmful environmental effects of single-use plastic bags, particularly in the context of Ghana's vibrant trading communities, is what drives the importance of this study. Every day, countless traders across Ghana rely on these plastic bags for their businesses, often unaware of the long-term damage they inflict on the environment. By delving into the perceptions, habits, and challenges faced by these traders, this research aims to shed light on how we can create targeted initiatives and policies that promote sustainable alternatives. These initiatives have the potential to greatly diminish plastic waste and set the stage for a more sustainable and healthier future.

Beyond policy recommendations, the findings of this study can serve as a powerful tool for education and awareness. Many traders may not fully grasp the extent of the environmental damage caused by single-use plastics or the benefits of adopting eco-friendly practices. By sharing these insights, we can empower traders with the knowledge they need to make informed decisions, encouraging them to embrace more sustainable options. This isn't just about reducing plastic waste, it's about fostering a cultural shift toward environmental responsibility.

Ultimately, this research is about more than just data and analysis; it's about people and their environment. It aims to play a part in a larger initiative to fight against plastic pollution in Ghana, making sure that the nation's natural beauty and resources are protected for generations to come. By working together, researchers, policymakers, traders, and communities can create a greener, healthier Ghana, where sustainable practices are not just encouraged but become a way of life. This study is a step toward that vision, one that prioritizes both the planet and the people who call it home.

1.6 Conceptual Framework

To guide the study and explore the factors influencing traders' level of knowledge on single-use plastics and management practices, a conceptual framework was developed (Figure 1). This framework examines the interplay between socio-demographic factors, economic considerations, policy-driven initiatives, educational influences, market and infrastructure factors, and behavioural and cultural factors that shape traders' knowledge and decision-making processes regarding plastic use and waste management.

Traders' age, educational attainment, and gender are key sociodemographic traits that significantly influence their level of knowledge and practices regarding single-use plastics (Clayton, 2021). Younger and more educated traders are often more receptive to sustainable practices, such as reducing reliance on single-use plastics, and tend to exhibit higher levels of

environmental awareness (Van Rensburg et al., 2020). Additionally, household roles play a crucial part, as traders, particularly women, often serve as primary decision-makers in their families, directly influencing consumption patterns and the adoption of eco-friendly alternatives.

Income levels and the cost of sustainable packaging alternatives, such as green packaging, are critical economic factors that affect traders' ability and willingness to shift away from single-use plastics. For many traders, the affordability and accessibility of eco-friendly options are major determinants in their decision-making process. If sustainable alternatives are perceived as too expensive or difficult to obtain, traders are more likely to continue relying on single-use plastics, regardless of their level of knowledge about their environmental impact.

Current policies and regulations designed to minimize plastic waste, like prohibitions on single-use plastics or rewards for employing eco-friendly packaging, significantly influence traders' understanding and behaviours. However, the effectiveness of these policies often depends on their enforcement and the level of awareness among traders. Policies that are well-communicated, supported by practical alternatives, and accompanied by educational campaigns are more likely to drive behavioural change and improve compliance.

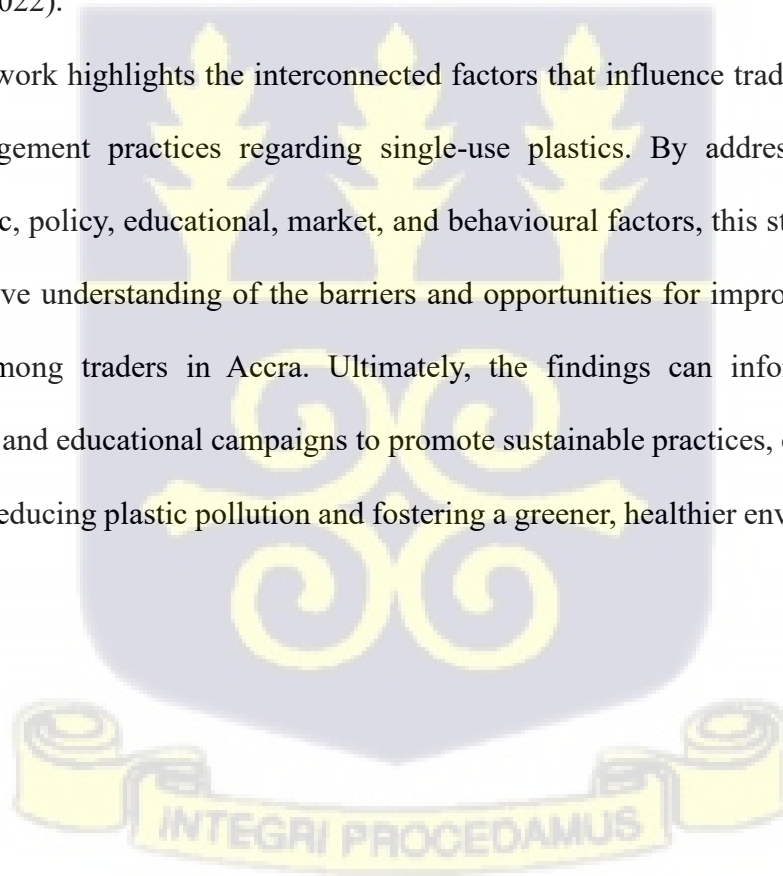
Education and awareness campaigns are vital in enhancing traders' knowledge of single-use plastics and their management. Many traders may lack a comprehensive understanding of the environmental impact of single-use plastics or the advantages of eco-friendly alternatives. By providing targeted education on these issues, traders can be empowered to make informed decisions. Additionally, raising awareness about the broader implications of plastic pollution such as its effects on ecosystems, public health, and future generations can motivate traders to adopt greener practices and improve waste management.

The availability of waste management facilities and recycling programs in markets significantly influences traders' ability to manage single-use plastics effectively. Inadequate infrastructure, such as a lack of recycling bins or waste collection services, can hinder traders' efforts to adopt

sustainable practices. Conversely, well-equipped markets with accessible waste management systems can encourage better plastic waste management and reduce reliance on single use plastics.

Traders' attitudes, cultural practices, and willingness to adopt sustainable behaviours are critical in shaping their knowledge and practices regarding single-use plastics. Cultural norms that prioritize convenience over sustainability may perpetuate the use of single-use plastics, while positive attitudes toward environmental conservation can drive the adoption of greener practices. Strategies such as promoting reusable or alternative products, implementing eco-design principles, and adopting circular economy practices can help reduce reliance on single-use plastics (Abbott & Sumaila, 2019; Carney Almroth & Eggert, 2019; Kasar & Ahmaruzzaman, 2018; Roy & Morya, 2022).

This conceptual framework highlights the interconnected factors that influence traders' level of knowledge and management practices regarding single-use plastics. By addressing socio-demographic, economic, policy, educational, market, and behavioural factors, this study aims to provide a comprehensive understanding of the barriers and opportunities for improving plastic waste management among traders in Accra. Ultimately, the findings can inform targeted interventions, policies, and educational campaigns to promote sustainable practices, contributing to the broader goal of reducing plastic pollution and fostering a greener, healthier environment in Ghana.



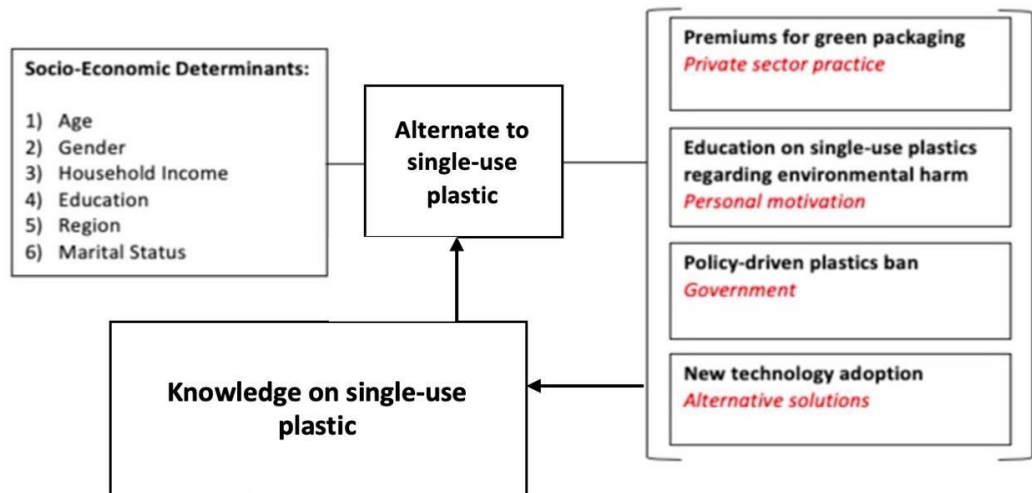


Figure 1: Conceptual Framework



CHAPTER TWO

LITERATURE REVIEW

Chapter Two (2) examines the current literature regarding single-use plastics (SUPs), concentrating on their classification, environmental and economic impacts, and strategies for reduction. It highlights knowledge gaps among traders, the challenges of plastic waste management in Africa and the success of plastic prohibitions. The chapter further investigates sustainable alternatives and the unforeseen repercussions of policies targeting SUPs.

2.1 Nature and Classification of plastics in the economy

According to Dominish et al, (2020) plastics can be grouped into Polypropylene and Polyethylene. Polypropylene is the most extensively utilised thermoplastic worldwide because it offers significant benefits and cost-effectiveness, allowing for different processes such as injection moulding, blow moulding, thermoforming, and extrusion. Plastics predominantly utilised in home and commercial settings comprise low-density polyethylene (LDPE), high-density polyethylene (HDPE), polypropylene (PP), polystyrene (PS), polyvinyl chloride (PVC), and polyethylene terephthalate (PET) (Andrady & Neal, 2009; Dalu et al., 2020).

Polyethylene was initially synthesised as a low-density resin (LDPE) in 1935, and its manufacturing processes have since improved in sophistication and cost effectiveness. It is currently the world's second most extensively used resin type, produced in various forms including plastic films, injection-moulded and blow-moulded products. Polyvinyl chloride (PVC), first invented in 1872 and later commercialised in the 1920s, is also a major commodity polymer. Unlike other polymers, PVC contains chlorine in addition to carbon and hydrogen, making it unique in its properties and applications (Andrady & Neal, 2009; Dalu et al., 2020).

Moreover, plastics exist in various forms and dimensions, exhibiting either flexibility or rigidity (Gazal & Gheewala, 2020). They may consist of a single polymer, multiple layers of other polymers, or alternative materials. Plastics can be broadly categorised as petrochemical-based or biobased, based on their constituent

materials. Petrochemical-based plastics, also known as conventional plastics, are generated from petrochemicals and can be divided into thermoplastics and thermosetting polymers (Gazal & Gheewala, 2020). Thermoset polymers are irreversibly cross-linked, making them challenging to remelt and reconstruct (Safarpour, 2024), whereas thermoplastics can be remelted and reconstituted, making them the most prevalent in the economy (Loushin, 2016; Gong et al., 2019).

Biobased plastics, on the other hand, are polymers derived from biomass such as starch, sugar, or vegetable oils, excluding fossil sources (Chandran et al., 2020). They can be categorised into polymers wholly derived from biomass and those partially derived from biomass, depending on their constituent feedstock (Chandran et al., 2020).

2.2 Knowledge of Single-Use Plastic Among Traders

African traders regularly use single-use plastics, such as plastic bags, straws, and packaging materials, due to their convenience and cost-effectiveness. Nonetheless, many traders may lack a complete understanding of the environmental consequences of using these commodities. According to Shaira et al. (2020), the challenge of single-use plastics (SUP) among African traders is a multifaceted issue with environmental, economic, and societal implications. The understanding and opinions of traders on SUP are critical for the successful implementation of policies aimed at reducing plastic waste. Research shows that, despite growing awareness of the negative effects of SUP on health and the environment, significant knowledge gaps persist, particularly regarding the broader implications of plastic pollution, such as its role in climate change.

Omondi & Asari (2024) indicated that some African countries have passed legislation to combat SUP; nevertheless, the effectiveness of these policies is unknown due to continued plastic pollution challenges. This is underlined by Omohwovo (2023), who notes that predicted population expansion in Africa will undoubtedly increase demand for plastics, exacerbating the

problem of SUP pollution, particularly in coastal areas. The lasting presence of SUP in the environment is due not only to weak legislative measures but also to a lack of comprehensive public education and awareness programs involving local stakeholders, as highlighted by Uche (2023).

Adam et al. (2021) found that young people are more anti-SUP than older people and understood the negative impact of SUP on the environment, such as water pollution and harm to marine habitats. Some residents in Greater Accra are well aware of these effects; nonetheless, despite this awareness, many in Greater Accra and Cape Coast continue to utilise SUP since they are simple and cost-effective. Contrary to this, the National Plastic Action Partnership (2021) reported that 96.3% of respondents in a Ghanaian market were aware of the negative environmental effects of SUP. This mixed knowledge highlights the need for educational initiatives and awareness campaigns.

Traders in Africa may also have limited access to sustainable alternatives to SUP. They usually rely on these products because they are inexpensive and accessible. Nonetheless, policies such as Rwanda's ban on SUP illustrate the viability of transitioning to more sustainable packaging options. Providing merchants with cost-effective alternatives can help reduce reliance on SUP. Traders generally have positive attitudes regarding SUP, with many supporting plastic bag limitations and displaying willingness to embrace alternatives (Shaira et al., 2020). However, practical behaviours often contradict these ideas, since many traders continue to use SUP for convenience and economic reasons (O'Brien & Thondhlana, 2019). The discrepancy in knowledge, attitude, and practice (KAP) is therefore critical for understanding the challenges in reducing SUP usage among traders (Aghadi et al., 2020; Shaira et al., 2020).

Furthermore, education has a critical role in shaping traders' attitudes and actions. Research shows that incorporating environmental concerns about plastic pollution into educational

curricula may significantly enhance youth understanding, potentially influencing merchant habits as they enter the workforce (Dalu et al., 2020). Muposhi & Shanhuyenzva (2021) added that community engagement initiatives fostering a shared vision among stakeholders have been effective in furthering sustainable practices. In addition, Hassan et al. (2023) reported that most participants obtained their knowledge about plastics from personal experience, and more than half had a zero (0) knowledge score.

In conclusion, while knowledge of SUP issues is growing among African traders, significant gaps in understanding and practice continue. Effective policy formulation, thorough educational programs, and community involvement are critical for closing these gaps and encouraging sustainable behaviours. Mitigating these challenges will require joint efforts by legislators, educators, and community leaders to reduce reliance on SUP.

2.3 Practices of Single-Use Plastics in Africa

Single-use plastics have emerged as a major environmental concern around the world due to their negative effects on ecosystems and human health. Single-use plastics are widely used in Africa, particularly by traders who use them to package and ship their products. African traders rely heavily on single-use plastics for packaging and shipping commodities due to their low cost, ease of use, and durability. These plastics are used for product packaging, food storage, and transporting goods to markets. Single-use plastics have become entrenched in many African countries' commercial practices, exacerbating the region's growing plastic waste crisis. Despite the negative environmental impacts of single-use plastics, merchants continue to use them due to a lack of viable alternatives. Reusable packaging options are often more expensive and less accessible, complicating traders' transition away from plastics (Godfrey, 2019). Plastic bags are the most common type of single-use plastic used by vendors in Greater Accra. Suthar & Rayal (2016) found that 90% of surveyed traders used plastic bags, while many also used bottles and containers to store and sell food and beverages.

Hassan et al. (2023) further revealed that urban residents display poorer practices in plastic usage compared to rural populations.

Tabeyang (2018) investigated the management of single-use plastics in Cameroon, drawing comparisons with global practices. The study emphasised the importance of stakeholder involvement in formulating effective policies, as demonstrated by Australia's voluntary plastic plan, but also highlighted failures in Bangladesh and South Africa where enforcement and lack of awareness limited progress. Nyathi (2020) expanded on this by showing that a plastic bag fee led to a 70% reduction in consumption, though poor enforcement and resistance remained barriers. He proposed a structured six-step model to improve plastic bag policy effectiveness. Similarly, Omondi & Asari (2024) noted weak implementation of anti-plastic policies in Africa, stressing the importance of engaging stakeholders and developing alternatives. Kibli (2021) argued that inconsistent plastic policies across Africa create challenges, allowing unregulated goods to enter markets freely.

Aragaw & Mekonnen (2021) examined microplastic contamination in African water systems, revealing ineffective waste management practices and stressing the need for stronger government action. Okeke et al. (2022) raised the issue of nano plastics and the lack of African research capacity to measure and address their risks, showing a critical knowledge gap. Studies in Greater Accra also confirm awareness of environmental effects but continued high use due to convenience and affordability. These findings reveal a clear discrepancy between knowledge and practice.

Waste management in Africa is a key barrier in reducing single-use plastics. Ayeleru et al. (2020) reported that 17 million tonnes of plastic waste are generated annually in sub-Saharan Africa, with 70% openly dumped. Akan et al. (2021) emphasised the importance of adopting unconventional solutions to deal with plastic waste. Jambeck et al. (2017) highlighted Africa's land-based plastic waste problems and noted initiatives like Senegal's Proplast, which has been collecting and processing plastic since 1997. Oyake-Ombis et al. (2015) studied Kenyan cities and found that innovative environmental strategies were essential to reduce plastic trash.

Godfrey et al. (2019) added that plastics account for nearly 13% of Africa's solid waste, underscoring the scale of the challenge.

Muposhi et al. (2021) reviewed the effects of plastic bag bans, noting major problems in the Global South due to lack of feasible alternatives and enforcement. They stressed that robust waste management systems must be built before prohibitions are enforced. Further, Andrady & Neal (2009) emphasised the need for stronger, more integrated methodologies to understand recycling behaviours, highlighting a major empirical gap in household recycling studies. This demonstrates that Africa needs more rigorous, context-specific studies to shape effective interventions.

2.4 Benefits of plastic bag bans

According to Andrady et al. (2009), plastics provide exceptional design versatility suitable for a wide range of temperatures. Thanks to their remarkable strength-to-weight ratio, along with properties such as stiffness, toughness, ductility, corrosion resistance, bio-inertness, high thermal and electrical insulation, and outstanding durability, plastics are highly resource-efficient and have a relatively low lifetime cost compared to other materials. The authors suggest that the lightweight nature of plastics contributes to reduced transportation expenses and, in turn, lower atmospheric carbon dioxide emissions. Currently, approximately 20% of the materials utilized in both public and private transportation vehicles—such as parcel shelves, door liners, steering wheels, and electrical components—may consist of plastics. Newer aircraft, like the Boeing Dreamliner, are made up of up to 50% plastic. Additionally, plastics can be utilised to lower the cost and increase the performance of building materials (Soutis, 2009). Lightweight fasteners, window and door frames, fittings, and insulating materials are a few examples of this. In addition to improving the enjoyment of numerous leisure activities, plastics also save energy in a range of other uses (Walker & Walker, 2011). For instance, materials such as nylons, polyether ether ketones, polypropylene, and polymer rubber mixtures are utilized in footballs that meet World Cup standards and other gear like tennis and squash rackets as well as golf clubs.

When it comes to applications involving the packaging of food and water, plastics improve consumer health and safety. Hopewell et al. (2009) stated that cities currently emphasize the importance of water and plastics provide a way to deliver and store potable water safely. Furthermore, plastics are used in a variety of water control and distribution systems, including irrigation, storm water drainage, sewerage, and land drainage. According to the authors, plastics are also lightweight and simple to manufacture. Fresh produce and other foods can be safely and temporally stored in plastic food packaging by controlling the internal temperature and atmosphere through the use of gas-flush packaging and oxygen scavenger technology. Additionally, low-cost indicator labels integrated into the packaging allow for the monitoring of the quality of packaged meals, particularly those with a history of temperature changes.

On the other hand, environmental concerns associated with plastics have attracted attention. According to Maiga et al. (2023), pyrolysis is a way of converting single plastics into liquid fuel and flammable gases, which can help solve the plastics menace in Ghana. All plastics, irrespective of being petrochemical-derived or biobased, can be engineered to exhibit two unique characteristics: biodegradable and nonbiodegradable. Biodegradable plastics can break down in the environment through the action of microorganisms such as bacteria or fungi, resulting in the formation of water, carbon dioxide (CO₂), methane (CH₄), and biomass. Nonetheless, the biodegradability of plastics can differ significantly depending on their intrinsic and engineered characteristics, environmental factors such as wind, precipitation, and ultraviolet light, and specific processing settings (Maiga et al., 2023). Some biodegradable polymers can also be classified as compostable. To be considered compostable, plastics must show they can biologically decompose at a composting site that follows a recognized program, with the breakdown materials being fully integrated by microorganisms in environments certified by international standards ISO 17088, EN 13432 (Europe), ASTM D400, and D6868 (United States) (Clapp & Swanston, 2009). Additionally, although not every biodegradable plastic can be composted, every compostable plastic is naturally biodegradable.

The types of plastics, including petrochemical and biobased varieties, currently found in the marketplace are commonly used in packaging, transportation, construction, and agriculture. They are categorised based on the origin of the raw materials utilised in their production and their potential for biodegradability. Bioplastics, encompassing both biobased and biodegradable varieties, constitute around 1% of the 335 million tonnes of total global plastic production. According to Clapp and Swanston (2009), the justification for implementing plastic bag bans (PBBs) extends beyond the apprehensions over the adverse impacts of utilising single-use plastic bags (SUPBs). Banning SUPBs can foster a circular economy by promoting economic activities that eliminate waste through the continuous utilisation of resources. Consequently, the prohibition of plastic bags is anticipated to have economic, environmental, and social advantages (Knoblauch et al., 2018).

Adam et al. (2021) conducted research on initiatives aimed at mitigating single-use plastic marine pollution in West Africa, finding that a 10% tariff on imported semi-finished and raw plastic products may help mitigate pollution.

2.5 Environmental effect of single used plastics

Every year, South Africa discards almost 8 billion used plastic bags (O'Brien & Thondhlana, 2019) found that the country's extensive coastline is a major factor in the disproportionate quantity of plastic pollution that it has traditionally released into the world's oceans. Approximately 50% of single-use plastic bags (SUPBs) are disposed of after a single use, resulting in pollution of air, land, and water (Clapp & Swanston, 2009). Global carbon emissions from single-use plastic bags (SUPBs) vary between 100 and 300 million tonnes annually (Diaz Silvarrey & Phan, 2016). Approximately 8.4 million tons of plastic bag waste contaminate the oceans each year, with approximately 46,000 plastic pieces floating in every square mile of ocean (Belle et al., 2018). The buildup of plastic waste is illustrated by the Great Pacific Garbage Patch and the North Atlantic Sub-Tropical Gyre (Morritt et al., 2014). Single use plastics require over 500 years for biodegradation, hence limiting landfill capacity (Ajoykumar, 2016). Thirty-one percent (31%) of plastic bag waste is dumped in landfills, limiting landfill capacity. In the Baltic and North Sea, plastic constitutes over 70% of total marine

debris (Oosterhuis et al., 2020). In 2008, Kigali, Rwanda's commercial capital, was nominated for the cleanest city award by UN Habitat (Behuria, 2021).

According to Chen et al. (2021), primarily, the sources of single used plastics waste are identified as terrestrial and aquatic. Terrestrial sources encompass industrial activities, tourism, leisure activities, household waste, poorly managed mulch film, insufficiently treated sewage, and unsecured landfills. Aquatic sources comprise fisheries, commercial and recreational shipping, and runoff. While fragmented plastic film may temporarily remain airborne, it ultimately becomes buried in soil or floats before sinking to the bottoms of rivers, lakes, or seas, thereby inflicting detrimental effects on the environment. Dong et al. (2019) stated that single-use plastic bags and agricultural mulching film remnants are significant contributors to soil contamination. Plastic mulching film is recognised for substantially enhancing crop yields and profits by preserving soil moisture, hence conserving water resources. The concern over mulching garbage has just lately arisen. The absence of management strategies has resulted in significant accumulation of film in fields, which is resistant to degradation, leading to agronomic and environmental issues (Briassoulis et al., 2015). Polyethene mulch film is a primary contributor to SUP contamination in soils (Chen et al., 2021). Storm drains and sanitation systems are obstructed by single used plastics waste that is dispersed throughout urban and rural areas, which may result in flooding (Piccardo et al., 2020).

Various types of plastic waste, particularly films, bags, and foams, can easily be washed into rivers from land and float in water. As a result, this kind of trash from lakes and rivers can be carried to the ocean. Boucher et al. (2018) assessed the sources of plastic pollution, finding that the yearly plastic influx into a lake basin reaches 173,000 tonnes, while the annual plastic usage is estimated at around 135,000 tonnes. Packaging is identified as the predominant source of plastic waste, accounting for 46,769 tonnes annually in Lake Geneva (Switzerland and France) (Boucher et al., 2018). Research by Eriksen et al. (2013) indicated that the predominant types of plastic particles in surface waters include fragments, films, and foams, with the highest concentration found in the Laurentian Great Lakes. An evaluation of plastic contamination across four beaches

on the southern and eastern coasts of Lake Huron, Canada, discovered a total of 3,209 plastic items within an 85m² area, including 2,984 pellets, 117 pieces of styrofoam, and 108 fragments. The bulk of fragments were situated along strandlines.

In addition, Chen et al. (2021) stated that the primary repository for the majority of SUP waste is the sea. Single used plastics can infiltrate the ocean via surface runoff and coastal recreational activities. Moreover, intense precipitation, storm occurrences, or seismic activities accompanied by tsunamis can transport substantial amounts of terrestrial material, including plastic waste, into the oceans. Significant quantities of trash from terrestrial activities are transported to the ocean by rivers. Plastic waste often collects in the convergence zones or gyres of sub-tropical regions. There are five primary areas in the ocean where accumulation occurs: two in the Atlantic Ocean, two in the Pacific Ocean, and one in the Indian Ocean. Finally, Chen et al. (2021) stated that a habitat polluted by single use plastic wastes and their by-products directly influences biological outcomes. Single use plastics (SUPs) and their related microplastics have inflicted discernible and substantial adverse effects on the natural system. Plastic bag waste and mulching film residue jeopardise the safety of agricultural products and contribute to plastic ingestion, which includes primary ingestion (direct consumption of plastics by animals), secondary ingestion (consumption of prey that has ingested plastics), and incidental ingestion (Markic et al., 2018), resulting in significant adverse effects on animals, especially marine wildlife.

2.5.1 Effect of Single-Use Plastics on Aquatic Organisms

Over 200 different species of marine life are vulnerable to consuming plastic waste throughout their lives. Among the species impacted by the entanglement and swallowing of plastic, 17 percent are classified as endangered (Thompson et al., 2009). More than 70% of cattle in Mauritania have been lost owing to ingesting (Jambeck et al., 2017). In 2018, a whale died in Southern Thailand as a result of consuming many plastic bags (Merrill et al., 2024). Plastic pollution has become a significant environmental challenge in recent years, with single-use plastics being a major factor in this problem. These single-use plastics, intended for disposal after

one use, frequently accumulate in aquatic environments such as rivers, lakes, and seas, where they can adversely affect marine life. This analytical paper will assess the effects of single-use plastics on aquatic organisms and investigate alternative strategies to alleviate this problem (Eriksen et al., 2013).

Plastics consist of synthetic polymers that exhibit resistance to degradation, resulting in their environmental survival for centuries. When single-use plastics infiltrate aquatic environments, they can decompose into diminutive fragments termed microplastics, measuring less than 5 millimetres. Microplastics can be consumed by aquatic organisms, including fish, seabirds, and marine mammals, resulting in various adverse impacts (Kaleli et al., 2017). A principal issue regarding the consumption of microplastics is the potential physical damage they may inflict on aquatic species. The acute edges of microplastics can harm the digestive systems of marine organisms, resulting in internal injuries and possible mortality. Furthermore, the presence of microplastics in the digestive tract can disrupt food absorption, resulting in malnutrition and diminished reproductive success in impacted organisms (Dalu et al., 2020).

Additionally, microplastics can act as carriers for harmful materials such as polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs), which can cling to the surfaces of the plastics. Upon ingestion by aquatic creatures, these harmful substances can concentrate in their tissues and biomagnified across the food chain, endangering higher trophic levels, including humans who consume seafood (Asante et al., 2013). Besides the obvious physical and chemical effects of single-use plastics on aquatic animals, these materials can also exert indirect influences on marine ecosystems. Plastics can serve as a substrate for the proliferation of detrimental algae, resulting in algal blooms that decrease oxygen levels in aquatic environments and generate hypoxic zones where marine organisms cannot survive. Plastics can ensnare marine fauna, including sea turtles and seals, resulting in injuries and fatalities (Thompson et al., 2009).

A comprehensive strategy is required to tackle the problem of single-use plastic pollution in aquatic ecosystems. This entails diminishing the manufacture and consumption of single-use plastics by regulatory

initiatives, including prohibitions on plastic bags and straws, advocating for reusable alternatives, and enhancing waste management methods to avert plastic debris from contaminating aquatic environments (Omondi & Asari, 2024). Furthermore, research initiatives must concentrate on creating biodegradable substitutes for traditional plastics and assessing the prolonged impacts of plastic pollution on aquatic ecosystems. The widespread use of single-use plastics constitutes a substantial danger to aquatic species and marine environments. By comprehending the effects of plastic pollution on aquatic ecosystems and executing effective mitigation techniques, we may strive for a cleaner and healthier future for our oceans and its inhabitants (Heidbreder et al., 2019).

2.5.2 Effect of Single-Use Plastics on Humans

Plastic pollution has emerged as a prominent environmental issue in recent years, with single-use plastics serving as a substantial contributor to this dilemma. Single-use plastics are products intended for one-time use before disposal, including plastic bags, straws, and water bottles (Ebhaleme, 2022). These objects are frequently utilised for brief durations yet require centuries to breakdown, resulting in extensive pollution of our oceans, rivers, and landfills. The effects of single-use plastics on human health are an increasing concern. Research indicates that plastics can release deleterious chemicals into the environment, which may then be consumed by humans via food and water sources (Thompson et al., 2010; Dominish et al., 2020). Bisphenol A (BPA), a chemical prevalent in plastic items, has been associated with numerous health complications, including reproductive difficulties, cancer, and neurological concerns (Ma et al., 2019).

Besides the direct health hazards associated with plastic compounds, single-use plastics may also exert indirect impacts on human health. Plastic pollution in the environment poses a threat to wildlife, disrupts ecosystems, and contaminates food supplies, resulting in potential health problems for humans consuming tainted food (Thompson et al., 2010; Heidbreder et al., 2019). Abandoned plastics further serve as breeding habitats for malaria-transmitting mosquitoes in impoverished nations, thereby contributing to increased disease transmission (Chitotombe, 2014; Gong et al., 2019). Human exposure to hazardous phthalates through seafood

consumption has also been reported, raising concern about the long-term implications of plastic pollution on food safety (Thompson et al., 2009; Giuliani et al., 2020)..

The manufacture and disposal of single-use plastics exacerbate greenhouse gas emissions and climate change, potentially affecting human health in various ways. The incineration of plastic garbage emits hazardous chemicals into the atmosphere, aggravating respiratory ailments and other health concerns (Thompson et al., 2009; Giuliani et al., 2020). Improper disposal also blocks drainage systems, as witnessed in Dhaka, Bangladesh, where severe floods in 1989 and 1998 were intensified by plastic bags obstructing pipes (Synthia & Kabir, 2024). Similarly, the widespread utilisation of plastic bags in Kenya resulted in detrimental public health consequences (Clapp & Swanston, 2009; van Rijn et al., 2023).

To alleviate the adverse impacts of single-use plastics on human health, it is imperative to diminish dependence on these items and shift towards more sustainable alternatives (Silva et al., 2020). This can be accomplished via regulations that limit single-use plastics, advocate for recycling and waste minimisation, and foster the creation of biodegradable substitutes (Villarin, 2020). The influence of single-use plastics on human health is a complicated and diverse concern that necessitates immediate action. By comprehending the hazards associated with these items and implementing proactive strategies to mitigate their usage, we can safeguard both human health and the environment for future generations (Thompson et al., 2010).

2.6 Economic factors

The expense associated with managing plastic bag trash is substantial (Jambeck et al., 2015). Pollution of Geoje Island resulted in a loss of tourism revenue estimated between US\$29 million and US\$37 million (Jang et al., 2014). In 2008, the expense of clearing the Asian Pacific Coast was US\$1.26 billion annually (Mcilgorn et al., 2011; Dominish et al., 2020). Similarly, the annual economic cost of litter regulation in China was 18.5 million yuan (He et al., 2021). In Sweden, marine debris on beaches diminished tourism by 1–5%, while UK towns expend around €18 million annually on the removal of beach rubbish (Binetti et al., 2020; Wagner,

2017). The expense of restoring marine habitats in Canada amounted to US\$13 billion, further illustrating the financial strain caused by plastic waste.

The economic implications extend beyond waste management and restoration costs. Prohibiting plastic bags has been projected to conserve 4% of worldwide oil usage (Thompson et al., 2009; Gong et al., 2020), highlighting the potential savings in resource consumption. Such prohibitions are further justified by the low global recycling rate of merely 1%. In many cases, expenses associated with the restoration of obstructed rivers add to the overall financial burden (Oyake-ombis et al., 2015). Overall, the financial costs of handling plastic waste are often grouped to include all varieties of plastic debris, with plastic bag litter alone acknowledged to constitute around 60% of the total (Jambeck et al., 2015).

2.7 Effectiveness of plastic bag bans

The effectiveness of plastic bag bans (PBBs) has been widely debated, with several global and national initiatives promoting their adoption. Frameworks such as the UN 2030 Agenda for Sustainable Development, Greenpeace, the Global Partnership on Marine Litter, the G7 Action Plan to Combat Marine Litter, and Ocean strategies have all underscored the importance of reducing plastic pollution (Chen et al., 2021). In Kenya, civil society, supported by UNEP and Nobel laureate Wangari Maathai, successfully advocated for the prohibition of plastic bags (Njeru, 2006; Mrkajić et al., 2018). Although numerous advantages are anticipated from PBBs, studies have highlighted their limited efficacy and a lack of comprehensive data for adequately assessing their impacts (Chen et al., 2021). The restricted availability of evidence complicates efforts to measure the economic, social, and environmental consequences of bans, including the reduction in plastic ingestion and entanglement by fauna in terrestrial and marine ecosystems (Heidbreder et al., 2023; Vince & Hardesty, 2018).

Several factors contribute to the mixed outcomes of PBBs. In some contexts, poor implementation, insufficient commercial support, and opposition from certain enterprises have limited effectiveness. At the same time, businesses advocating for bans, especially in retail, have been criticised for capitalising on alternatives by

charging elevated profit margins, which discourages consumer adoption of reusable options. In Africa, for instance, Turpie et al. (2019) argued that Malawi should outlaw single-use plastics, while Abdellatif et al. (2021) noted the detrimental effects of microplastics across the continent and highlighted efforts in South Africa to reduce their usage. The success of bans often depends on community support and consumer willingness to embrace environmentally friendly practices, with concepts such as green consumerism and green innovation playing a central role (Bostrom & Klintman, 2008).

The outcomes of bans have varied significantly across regions. After one year, Sao Paulo, Brazil, recorded a 70% decline in plastic bag use, while in Bhutan, Guinea-Bissau, Ethiopia, Niger, Tanzania, and Somalia, no substantial effects were noted due to poor implementation (Nielsen et al., 2019). In China, the ban led to a 49% decrease in plastic bag usage within four months (He et al., 2021), while Italy reported a 50% reduction in 2011 following its prohibition (Nielsen et al., 2019).

2.8 Unintended consequences

The challenge of single-use plastics (SUP) among traders in Africa is a complex subject that involves environmental, economic, and social aspects, and unintended consequences often arise when mitigation strategies are implemented. The understanding and perspectives of traders regarding SUP are essential for the successful execution of policies designed to reduce plastic waste. Research demonstrates that despite growing awareness of the harmful effects of SUPs on health and the environment, significant knowledge gaps remain, particularly regarding broader consequences such as their link to climate change (Uche, 2023).

According to Amankwaa (2022), a complete prohibition on plastic bags may generate numerous unintended obstacles. These include employment reductions due to disinvestment in the plastic sector, as well as health and sanitation concerns resulting from the increased use of unwashed reusable shopping bags. Another consequence has been the exploitation by merchants and entrepreneurs through the sale of bags with unverified environmental claims, alongside issues related to polybrominated diphenyl ethers (PBBs) (Rayne et al., 2003).

In Greater Accra, dealers in single-use plastics are aware of the environmental repercussions of their usage but face difficulties in reducing dependence on plastics due to the lack of cost-effective alternatives (Ocloo, 2014). This highlights the possibility that bans or restrictions without adequate substitutes can unintentionally burden traders and consumers. Furthermore, Jambeck et al. (2017) observed that unemployment may also arise as a consequence of reduced plastic production and distribution. Implementing educational and training initiatives, coupled with government restrictions and incentives, can help mitigate these unintended outcomes and foster a more sustainable transition away from single-use plastics.

2.9 Strategies for Reducing Single-Use Plastics Consumption

The typical methods for handling plastic waste include reuse, recycling, incineration, and landfill. Among these, the latter three are the most prevalent, with landfilling accounting for the largest portion. In 2015, it was reported that 79% of plastic waste was either disposed of in landfills, dumped, or became litter in the environment, while only 9% was recycled and 12% was incinerated (Geyer et al., 2017). Disposing of waste in landfills takes up valuable land while wasting large resources (Breyer et al., 2017). Traditionally, one of the primary ways to dispose of plastic waste has been through landfilling, and this practice continues in numerous locations worldwide (Jambeck et al., 2015). In 2015, about 137.7 million tons of municipal solid waste were sent to landfills in the U.S., with plastics making up 19% of this total. In Europe, the percentage of plastic waste within municipal solid waste is considerably greater, at 27.3% (Hsu et al., 2021). European policies aimed at tackling plastic waste heavily focus on reducing landfill use, leading to a notable decrease in landfilling over the last ten years (Hsu et al., 2021; Mrkajić et al., 2018).

Incineration represents another method of reducing single-use plastic waste, where organic materials are burned. In 2015, it was noted that 16% of the municipal solid waste incinerated in the U.S. consisted of plastics. The combustion process converts waste into heat energy, flue gas, and ash while reducing waste volume by 90–99% (Thanh et al., 2011; Mrkajić et al., 2018). However, due to the possible emission of harmful substances like volatile organic compounds and dioxins during incineration, expensive treatment

systems are required, which makes this approach difficult to implement widely, especially in developing nations (Adu-Kumi et al., 2010; Muposhi et al., 2021).

Recycling transforms waste into useful new products and is recognised as an essential aspect of the circular economy. Nevertheless, successful recycling encounters challenges, such as managing waste streams, since single-use plastic waste often goes into the general municipal solid waste stream without proper sorting, obstructing sorting machinery (Hopewell et al., 2009; Neef et al., 2023). In Europe, prioritising waste reduction and recycling has led to numerous policies (Mrkajić et al., 2018). In the U.K., data from the National Packaging Waste Database reveals that around 891 thousand tonnes of plastic packaging were recycled in 2015, a 50% increase since 2009 (Dominish et al., 2020).

Newer strategies such as thermal decomposition and carbonization also show promise. Thermal cracking breaks down plastic polymers into low molecular weight products that can serve as conventional fuels or valuable monomers. It is effective for mixed plastics like polypropylene and polyethylene but comes with high costs and technical demands (Breyer et al., 2017; Kasar & Ahmaruzzaman, 2018; Janajreh et al., 2020; Jeong et al., 2022). Carbonization, on the other hand, transforms polymer precursors into carbon-based materials such as porous carbon, carbon nanofibers, or graphene, offering benefits for both resource recovery and environmental protection. It does not require complex pre-treatments and is applicable to most plastics, though further research and scaling up are needed (Inagaki et al., 2016; Chen et al., 2021; Gong et al., 2019).

To diminish the utilisation of single-use plastics among merchants in Africa, a blend of legislative actions and educational initiatives is imperative (Heidbreder et al., 2019). Governments may impose prohibitions or levies on single-use plastics to encourage merchants to adopt sustainable options. Educational initiatives can enhance understanding of the environmental consequences of plastics and provide strategies for reducing their use. Dalu et al. (2020) highlighted the importance of education in shaping beliefs and actions, while Kaleli et al. (2017) found that incorporating plastic pollution topics into curricula may influence youth who will later

become traders. Engagement with stakeholders, including producers, retailers, and consumers, is also essential for advancing sustainable packaging alternatives (Eriksen et al., 2013; Janajreh et al., 2020). Collaborative efforts can generate demand for eco-friendly products and motivate traders to adopt them (Dalu et al., 2020). Furthermore, community engagement efforts that cultivate a collective vision among local stakeholders have been effective in advancing sustainable practices (Muposhi & Shamhuyenhanzva, 2021; Neef et al., 2023).



CHAPTER THREE

METHODOLOGY

The study aimed to assess traders' knowledge, attitudes, and practices regarding Sustainable Water Supply (SUPs) in Greater Accra using a cross-sectional design. The research targeted traders with over a year of experience, using a sample size of 385 participants and 30 participants as buffer. Data was collected using a semi-structured questionnaire covering socio-demographics, trading experiences, knowledge of SUP impacts, practices, and opinions on sustainable alternatives. The study adhered to ethical considerations, including informed consent and confidentiality.

3.1 Study Area

This work was conducted in the Greater Accra Region. The locations were at three market centres namely, Madina, Mokola and Dome markets. These market centres were selected because they are part of the major market centres in the Greater Accra Region. According to IQAir latest ranking published by various news outlets on the 4th February, 2024, Accra currently holds the dubious honour of having the world's worst air quality. This study adopted quantitative collection method. Participants for this study were traders who engaged in the sales of single used plastic bags and traders that used single used plastics as a packaging material.

3.2 Study Design

Cross sectional study was employed for this study. The participants were recruited from above market centres within the Greater Accra Region. In this study, traders, defined as women and men who were actively engaged in the selling of goods (such as foodstuffs, household items, clothing, and artisanal products) through the operation of small businesses or stalls in local markets were engaged. Data on the usage of single used plastics and knowledge on its public health implications were be collected.

3.3 Study population

The target population were market women and men in central markets, at Madina, Mokola and Dome markets in Accra, Ghana

3.4 Inclusion and exclusion criteria

3.4.1 Inclusion criteria

The study included only market women and men whose operation has been existence in selected markets for more than 12 months.

3.4.2 Exclusion criteria

This study excluded women and men who operates business in selected markets in less than 12 months will be excluded. Also, underage children who operate this business were not included (children below 18).

3.5 Sample size estimation

From an unknown population size (informal sector) of traders, the sample size (n) was calculated using Equation 1, as reported by (Singh et al., 2011).

$$n = \frac{Z^2 P (1 - P)}{e^2}$$

n = sample size

Z = Z score corresponding to the specified confidence level (1.96 for 95% confidence)

P = estimated proportion of the population (0.5 unknown)

e = margin of error (0.05 for ± 5%)

$$n = 384.16 = \frac{96^2 \times 0.5(1 - 0.5)}{0.05^2}$$

Therefore, the sample size to be considered as 385 (i.e. n = 385)

Proportions for each market

Using market size based on rankings by 'visitghana.com' to calculate the proportions for the total 385 traders for the three (3) markets. Among the three markets, Makola market is the largest followed by Madina before Dome market.

Assume 1200 traders in Makola Market Assume 800 traders in

Madina Market

Assume 500 traders in Dome Market

Total number of 2,500 traders

Total number of traders to be interviewed at Makola Market

$$\text{Proportion} = \frac{1200}{2500} = 0.48$$
$$n = 385 \times 0.48 = 185 \text{ traders}$$

Total number of traders to be interviewed at Madina Market

$$\text{Proportion} = \frac{800}{2500} = 0.32$$
$$n = 385 \times 0.32 = 123 \text{ traders}$$

Total number of traders to be interviewed at Dome Market

$$\text{Proportion} = \frac{500}{2500} = 0.20$$
$$n = 385 \times 0.20 = 77 \text{ traders}$$

With additional 30 participants as buffer. Therefore, the total sample size is **415** traders.

3.6 Sampling Strategy

Simple random sampling was used to select traders from various markets for the interview.

3.7 Study variables

The study variables were classified into two, that is dependent and independent variables. Based on the study objectives, classification of variables varied.

Table 1: Study Variables

Variable	Definition	Type	Dependent/Independent	Scale of Measurement
Level of Knowledge on Single-Use Plastics	Knowledge and understanding of single-use plastics, including their environmental and public health effects.	Categorical (Ordinal)	Dependent	Ordinal (Low, Moderate, High)
Age	The trader's age, which may influence their knowledge and practices related to plastic use.	Continuous	Independent	Ratio (Measured in years)
Educational Attainment	The highest level of formal education completed by the trader, which may impact their knowledge and decision-making regarding plastics.	Categorical (Ordinal)	Independent	Ordinal (No formal education, Primary, Secondary, Tertiary)
Gender	The trader's sex (male or female), which may influence their level of knowledge and approach to plastic waste management.	Categorical (Nominal)	Independent	Nominal (Male, Female)

Income Level	The amount of money a trader earns monthly, affecting their ability to afford sustainable alternatives.	Categorical (Ordinal)	Independent	Ordinal (Less than 500 GHS, above 500 GHS)
Cost of Sustainable Alternatives	The perceived affordability of environmentally friendly alternatives to single-use plastics.	Continuous	Independent	Ratio (Measured in Ghana Cedis)
Policy Awareness	Knowledge of existing policies and regulations regarding the use and disposal of single-use plastics.	Categorical (Nominal)	Independent	Nominal (Yes, No)
Access to Waste Management Facilities	Access to adequate waste disposal and recycling facilities should be readily available and easy to obtain.	Categorical (Ordinal)	Independent	Ordinal (No access, Limited access, Full access)
Environmental Education	Exposure to training or programs related to environmental sustainability and waste management.	Categorical (Ordinal)	Independent	Ordinal (None, 1-2 times, 3+ times)

Source: Researcher's Field Survey, Jan2025

3.8 Data collection

Data was collected using a semi-structured questionnaire, which was divided into five sections. Section one (1) focused on the socio-demographic characteristics of the traders. The second section (2) addressed the experiences of market women in their respective businesses.

Section three (3) covered knowledge of single-use plastics. Section four (4) included questions regarding practices related to single-use plastics. The final section solicited alternative options to single-use plastics from both market women and men.

3.9 Data analysis

Data was collected using Google Sheet - a free open-source tool for mobile data collection and extracted to Microsoft Excel 2016 and Stata 16/MP for analysis. Characteristics of market traders were described using means, standard deviation, numbers and proportions. Appropriately, the Welch's two sample t-test, one-way ANOVA, chi-squared test, Fisher's exact test, and bivariate regression were used to investigate the relationship between knowledge on single use plastic and sociodemographic characteristics. A pvalue <0.05 was considered significant.

3.9.1 Descriptive Statistics

Descriptive statistics was used to summarize the demographic profile of respondents and their overall knowledge about public, environmental and economic implications of single use plastics. Frequency distributions and percentages were used to describe the knowledge levels, while means and standard deviations were used for continuous variables such as years of business and household size.

3.9.2 Cross-tabulation

To explore the relation between demographic factors and knowledge or practices, cross tabulations was performed. For example, knowledge of health risks associated with single use plastics was cross tabulated with years in business, gender and educational background. This allowed for the identification of any significant associations between demographic factors and knowledge.

3.9.3 Inferential Statistics

Chi-square tests was conducted to assess whether there are statistically significant relationships between key demographic variables (e.g. education, years in business) and respondents' knowledge or practices regarding single use plastics. Additionally, logistic regression analysis was employed to identify factors that predict support for the ban on single use plastics.

3.9.4 Analysis for Open-ended Responses

Qualitative data from the open-ended question on suggesting alternatives to single use plastics was analysed using thematic analysis. Responses were grouped into themes such as biodegradable materials, paper packaging and reusable containers with frequency counts for each theme to identify the most commonly suggested alternatives.

3.10 Ethical Clearance

Ethical approval was obtained from the Institutional Review Board of the Noguchi Memorial Institute for Medical Research. Participation in the research adhered to the necessary ethical standards concerning the involvement of human subjects (traders). Prior to the interviews, consent was secured from the traders through a documented informed consent process after clarifying the potential benefits and risks associated with participation in the study. Traders across different market centers were made aware that their involvement in the research was entirely voluntary and they could withdraw at any point. The criteria for eligibility included traders with over one year of experience in the business and those who were 18 years old or older.

3.10.1 Consent Process

Traders received enough information regarding the research, the kinds of questions that were posed, and, most critically, the impact or significance of the study for the future research community.

CHAPTER FOUR

RESULTS

This chapter shows the findings of the data analysis, focusing on what market traders know, how they act, and what they think about single-use plastics (SUPs) in selected Accra markets. It begins with a summary of the groups of people within the sample, then looks at what traders understand about the effects of SUPs on public health, the environment, and the economy. The analysis further examines market habits, specifically if they support a ban on plastics and a tax on manufacturers of SUPs, and finishes by looking into what traders think about possible options instead of single-use plastic bags. A range of statistical methods—including independent samples t-tests, one-way ANOVAs with Tukey's HSD post-hoc tests, and chi-square tests of independence—were used to fully answer the research questions.

4.1 Respondent Rate

A total of 415 market traders participated in the study. Their collective responses provided a robust dataset, enabling a detailed examination of traders' knowledge levels, practices, and attitudes towards SUPs. The breadth and diversity of the responses ensured that the analysis could capture a wide range of perspectives from across the selected markets.

4.2 Sample Demographics

The study sample comprised 415 market traders, with a majority located in Mokola Market (n = 219, 52.8%), followed by Madina Market (n = 116, 28%) and Dome Market (n = 80, 19.3%). This distribution reflects the relative prominence of these markets within Accra's trading landscape. The demographic profile reveals a predominantly female sample (n = 253, 61%), consistent with the gender dynamics often observed in Ghanaian market settings. The age distribution was concentrated in the 31–40-year range (38.3%), suggesting a relatively young and active trading population, with smaller proportions in the older (51+ years, 7.5%) and younger (18- 20 years,

4.8%) age brackets.

Table 2: Demographic Characteristics of Market Traders

Category	Subcategory	Count	Percentage (%)
Age Group	to 30	106	25.5
	to 40	159	38.3
	to 50	99	23.9
	and above	31	7.5
Gender	Between 18 and 20	20	4.8
	Female	253	61
Education Level	Male	162	39
	Tertiary	153	36.9
	SHS	149	35.9
	JHS	61	14.7
	Not Specified	27	6.5
	Primary	25	6
Marital Status	Married	250	60.2
	Single	113	27.2
	Divorced	33	8
	Widowed	19	4.6
Years of Experience	Between 11 to 15 years	167	40.2
	Between 6 to 10 years	97	23.4
	Between 16 to 20	92	22.2



	21 years and above	45	10.8
	Between 1 to 5 years	14	3.4
	Between 4 and 6	204	49.2
Household Size	Between 1 to 3	203	48.9
	Between 7 to 9	8	1.9
	Between GHC1000 - GHC2000	165	39.8
	Between GHC500 - GHC1000	157	37.8
Daily Sales	<GHC500	48	11.6
	GHC2000 and above	44	10.6
	Between GHC1000 - GHC2001	1	0.2
	Mokola Market	219	52.8
Market Location	Madina Market	116	28
	Dome Market	80	19.3

Source: Researcher's Field Survey, Jan2025

A notable characteristic of the sample was its relatively high educational attainment. The largest proportion of traders had completed tertiary education (36.9%) or senior high school (SHS) (35.9%), indicating a significant level of formal education within the trading community. This contrasts with potentially lower educational levels expected in a general population sample in Ghana and highlights the importance of considering education as a key variable in understanding knowledge and attitudes related to SUPs. Smaller percentages had Junior High School (JHS) education (14.7%), no specified education (6.5%), or primary education (6%).

The majority of traders were married (60.2%), reflecting prevailing societal norms. In terms of trading experience, the largest group reported between 11 and 15 years of experience (40.2%), indicating a substantial level of established trading activity. Household sizes were predominantly between 4 and 6 members (49.2%) or 1 and 3 members (48.9%). Daily sales varied considerably, with the largest groups reporting sales between GHC1000 and GHC2000 (39.8%) and between GHC500 and GHC1000 (37.8%). This variation in sales provides an opportunity to

explore the potential influence of economic factors on attitudes towards SUPs and alternative packaging options.

4.3 Knowledge of Single-Use Plastics

This section overviews market traders' knowledge of the negative impacts of single-use plastic (SUP) bags. It serves as an introductory exploration into their overall understanding of SUP impacts across three key domains: Public Health, Environment, and Economy. For each domain, composite knowledge scores were created by summing affirmative responses to specific knowledge items that capture the diverse negative effects of SUPs.

4.3.1 Descriptive Analysis of Knowledge Scores

The descriptive statistics reveal that traders generally exhibit high knowledge of SUP impacts, particularly in public health and environmental domains. On average, traders scored 5.56 out of 6 on public health knowledge, with 76.6% of the sample achieving a perfect score. Similarly, the Environmental Knowledge score averaged 5.79 out of 7, with nearly half of the respondents (48.7%) scoring a perfect 7. Although the economic knowledge score was relatively high, with an average of 2.97 out of 4, it showed slightly more variability.

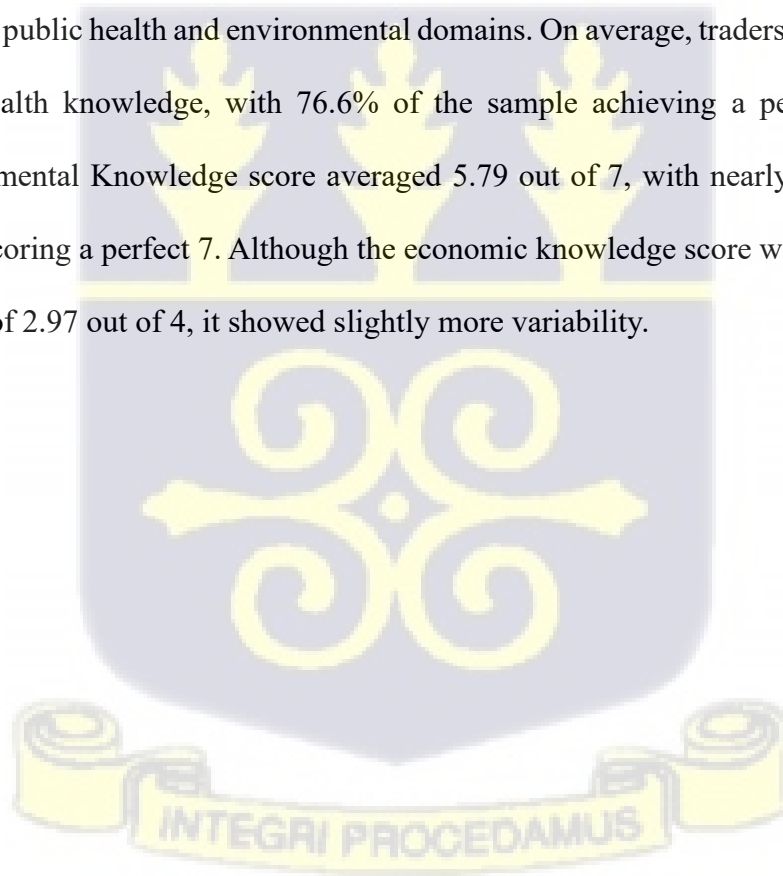


Table 3: Descriptive Statistics for Knowledge Scores

Statistic	Public Health Score	Environmental Score	Economic Score
Count	415	415	415
Mean	5.559	5.793	2.969
Std Dev	0.968	1.655	1.192
Minimum	0	0	0
Maximum	6	7	4
25th Percentile	6	5	2
Median	6	6	3
75th Percentile	6	7	4
Mode	6	7	4
Perfect Scores	318	202	191
Zero Scores	2	6	22
Skewness	-2.725	-1.597	-0.962
Kurtosis	8.382	2.066	-0.042

Source: Researcher's Field Survey, Jan2025

Both public health and environmental scores were notably negatively skewed, indicating that most traders scored near the maximum, while the economic domain exhibited less pronounced negative skewness. Overall, these findings suggest a strong general knowledge of SUP impacts among traders, with particularly robust knowledge in public health and environmental areas.

4.3.2 Average Achievement Across Domains

Traders showed high overall knowledge, especially regarding public health and environmental impacts. The mean public health score was 5.56/6 (SD

= 0.97), with an average achievement of 92.7% and 76.6% of traders (318) scoring a perfect 6. The environmental score averaged 5.79/7 (SD = 1.66), with an 82.8% achievement rate and 48.7% (202 traders) scoring a perfect 7. The economic score was somewhat lower, with a mean of 2.97/4 (SD = 1.19) and 74.2% achievement, as 46% (191 traders) scored 4. Both public health and environmental scores were negatively skewed, indicating clustering at the high end, while the economic score showed less pronounced negative skewness.

Table 4: Average Achievement Across Knowledge Domains

Domain	Average Achievement
Public Health Score	92.7%
Environmental Score	82.8%
Economic Score	74.2%

Source: Researcher's Field Survey, Jan2025

4.3.3 Correlations Between Knowledge Domains

The relationships between the three knowledge domains were explored through correlation analysis. The results indicate:

- A strong positive correlation between Public Health and Environmental knowledge ($r = 0.625$),
- A moderate correlation between Public Health and Economic knowledge ($r = 0.509$), and
- A moderate correlation between Environmental and Economic knowledge ($r = 0.685$).



Table 5: Correlations Between Knowledge Domains

	Public Health Score	Environmental Score	Economic Score
Public Health Score	1.000	0.625	0.509
Environmental Score	0.625	1.000	0.685
Economic Score	0.509	0.685	1.000

Source: Researcher's Field Survey, Jan2025

4.4 To assess the level of knowledge among traders about the public health implications, environmental, economic and social impact of the usage of single-use plastic bags

This section looks at how traders understand the effects of single-use plastic bags on public health, the environment, the economy, and society, and how this understanding changes based on different demographic groups.

4.4.1 Gender and Knowledge Scores

Independent samples t-tests were used to compare mean knowledge scores between males and females. In the public health domain, males scored an average of 5.63, while females scored 5.51 ($t(413) = 1.189, p = 0.235$), indicating no significant difference. Similarly, in the environmental domain, the average scores were 5.91 for males and 5.72 for females ($t(413) = 1.190, p = 0.235$). However, in the economic domain, males scored significantly higher (mean = 3.13) than females (mean = 2.87; $t(413) = 2.211, p = 0.028$).

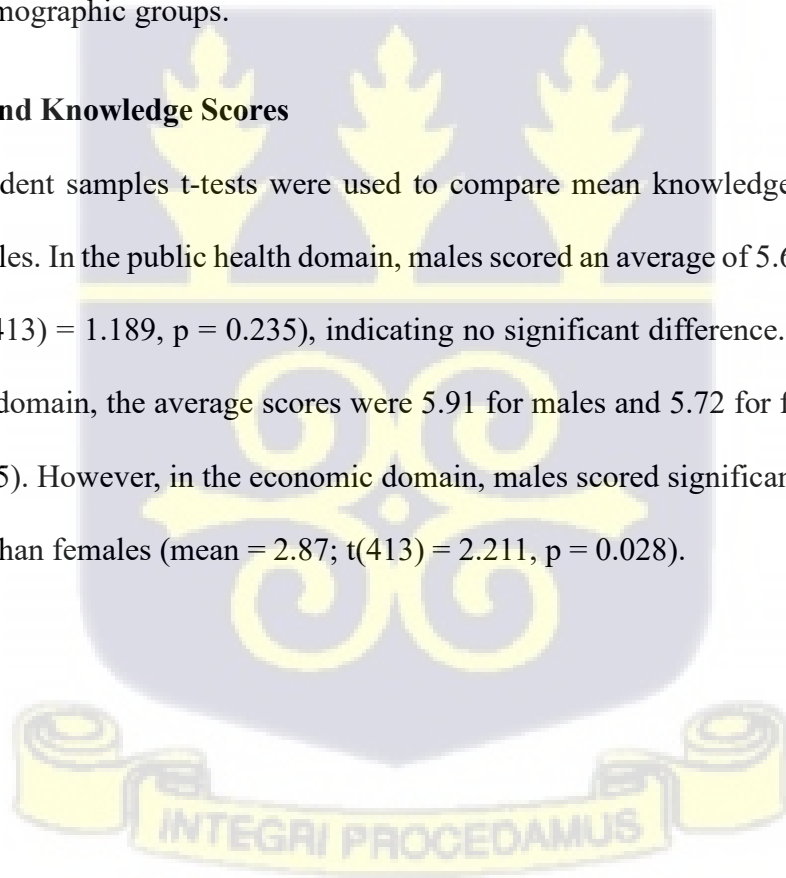


Table 6: Gender Differences in Knowledge Scores

Knowledge Domain	Gender	Mean (SD)	t-statistic (df)	pvalue	Significant Difference (p < 0.05)?
Public Health	Male	5.63 (SD_M)	1.189 (413)	0.235	No
	Female	5.51 (SD_F)			
Environmental	Male	5.91 (SD_M)	1.190 (413)	0.235	No
	Female	5.72 (SD_F)			
Economic	Male	3.13 (SD_M)	2.211 (413)	0.028	Yes
	Female	2.87 (SD_F)			

Source: Researcher's Field Survey, Jan2025

4.4.2 Education Level and Knowledge Scores

One-way ANOVAs were conducted to evaluate the relationship between education level and knowledge scores. Significant differences were found across education levels in all domains. For Public Health, scores ranged from 4.48 (Not Specified) to 5.86 (Tertiary) ($F(4, 410) = 17.858, p < 0.001$), with Tukey's HSD post-hoc tests showing that traders with tertiary education scored significantly higher than those with lower or unspecified education levels. In the environmental domain, scores ranged from 3.70 (not specified) to 6.54 (tertiary) ($F(4, 410) = 32.876, p < 0.001$), and similar significant pairwise differences were observed. In the economic domain, scores ranged from 1.67 (not specified) to 3.61 (tertiary) ($F(4, 410) = 36.046, p < 0.001$), again with higher education levels associated with greater knowledge.

Table 7: Mean Knowledge Scores by Education Level and ANOVA Results

	Education	Mean	F-Statistic	p-value	Pairwise Domain Comparisons Tukey's HSD
Public Health	JHS	5.44 (a)	17.858 410)	(4, < 0.001	Tertiary > JHS,
	Not Specified	4.48 (b)			Tertiary > Not Specified,
	Primary	4.88 (c)			SHS > Not Specified,
	SHS	5.61 (d)			Primary > Not Specified
	Tertiary	5.86 (e)			
Environmental	JHS	5.10 (a)	32.876 410)	(4, < 0.001	Tertiary > JHS,
	Not Specified	3.70 (b)			Tertiary > Not Specified,
	Primary	4.52 (c)			SHS, SHS > JHS,
	SHS	5.90 (d)			SHS > Not Specified, SHS >
	Tertiary	6.54 (e)			Primary, JHS > Not Specified
Economic	JHS	2.43 (a)	36.046 (4, 410)	< 0.001	Tertiary > JHS,
	Not Specified	1.67 (b)			Tertiary > Not Specified,
	Primary	1.96 (c)			SHS, SHS > JHS,
	SHS	2.93 (d)			SHS > Not Specified, SHS >
	Tertiary	3.61 (e)			Primary, JHS > Not Specified, Primary > Not Specified

Source: Researcher's Field Survey, Jan2025

4.4.3 Market Location and Knowledge Scores

ANOVAs were also performed to assess differences in knowledge scores across market locations. As shown in Table 7, no statistically significant differences were found in any of the domains. For Public Health, the scores were similar: Dome Market (5.49), Madina Market (5.50), and Mokola Market (5.62) ($F(2, 412) = 0.818, p = 0.442$). Similarly, the environmental domain ($F(2, 412) = 0.879, p = 0.416$) and the economic domain ($F(2, 412) = 1.606, p = 0.202$) showed no significant differences across locations.

Table 8: Market Location Differences in Knowledge Scores

Knowledge Domain	Market Location	Mean (SD)	F-Statistic (df1, df2)	pvalue
Public Health	Dome Market	5.49 (SD_DM)	0.818 (2, 412)	0.442
	Madina Market	5.50 (SD_MM)		
	Mokola Market	5.62 (SD_MKM)		
Environmental	Dome Market	5.58 (SD_DM)	0.879 (2, 412)	0.416
	Madina Market	5.82 (SD_MM)		
	Mokola Market	5.86 (SD_MKM)		
Economic	Dome Market	2.76 (SD_DM)	1.606 (2, 412)	0.202
	Madina Market	2.97 (SD_MM)		
	Mokola Market	3.04 (SD_MKM)		

Source: Researcher's Field Survey, Jan2025

4.5 To determine practices associated with single-use plastic among market women

This section addresses the second research objective: to determine practices associated with single-use plastic among market women. Two key practices

were examined: support for a plastic ban and support for a manufacturer tax on single-use plastics.

4.5.1 Support for a Plastic Ban

The initial analysis explored market women's support for a plastic ban. The quantitative data indicate that a majority (67.2%) support the ban, while 32.8% oppose it. This distribution is presented in Table 9.

Table 9: Frequency of Support for a Plastic Ban

Response	Count	Percentage
Yes	279	67.2%
No	136	32.8%

Source: Researcher's Field Survey, Jan2025

Chi-square tests of independence were conducted to examine the relationship between support for the plastic ban and various independent variables, including environmental and economic knowledge as well as demographic characteristics. The first set of tests revealed that support for a ban is strongly associated with higher environmental knowledge ($\chi^2(1) = 33.59, p < 0.001$) and economic knowledge ($\chi^2(1) = 60.58, p < 0.001$). In addition, gender ($\chi^2(1) = 17.64, p < 0.001$), education level ($\chi^2(4) = 16.32, p = 0.003$), daily sales ($\chi^2(4) = 18.60, p = 0.001$), and market location ($\chi^2(2) = 22.25, p < 0.001$) also showed significant associations with support for the ban. No significant associations were found for public health knowledge, age group, marital status, years of experience, or household size. These results are summarized in Table 10.

Table 10: Chi-Square Test Results for Support for a Plastic Ban (Analysis Set 1)

Independent Variable			Chi-Square (χ^2)	Df	p-value	Significant Association?
Public Health Knowledge (H/L)			0.00	1	1.000	No
Environmental Knowledge (H/L)			33.59	1	< 0.001	Yes
Economic Knowledge (H/L)			60.58	1	< 0.001	Yes
Age Group			0.93	4	0.920	No
Gender			17.64	1	< 0.001	Yes
Education Level			16.32	4	0.003	Yes
Marital Status			1.29	3	0.732	No
Years of Experience			1.32	4	0.859	No
Household Size			2.29	2	0.319	No
Daily Sales			18.60	4	0.001	Yes
Market Location			22.25	2	< 0.001	Yes

Source: Researcher's Field Survey, Jan2025

A second set of chi-square tests was also performed to further investigate these relationships. In this analysis, support for the ban remained strongly associated with environmental knowledge ($\chi^2(1) = 32.45$, $p < 0.001$) and economic knowledge ($\chi^2(1) = 22.15$, $p < 0.001$). However, unlike the first analysis, gender did not show a significant association ($\chi^2(1) = 0.00$, $p = 1.000$). Instead, education level ($\chi^2(4) = 39.98$, $p < 0.001$), marital status ($\chi^2(3) = 14.19$, $p = 0.003$), years of experience ($\chi^2(4) = 10.51$, $p = 0.033$), and daily sales ($\chi^2(4) = 18.34$, $p = 0.001$) were significantly associated with support, while household size ($\chi^2(2) = 0.20$, $p = 0.907$) and market location ($\chi^2(2) = 0.56$, $p = 0.757$) were not. These findings are presented in Table 11.

Table 11: Chi-Square Test Results for Support for a Plastic Ban (Analysis Set 2)

Independent Variable	ChiSquare (χ^2)	Df	p-value	Significant Association?
Public Health Knowledge (H/L)	0.00	1	1.000	No
Environmental Knowledge (H/L)	32.45	1	< 0.001	Yes
Economic Knowledge (H/L)	22.15	1	< 0.001	Yes
Age Group	8.20	4	0.084	No
Gender	0.00	1	1.000	No
Education Level	39.98	4	< 0.001	Yes
Marital Status	14.19	3	0.003	Yes
Years of Experience	10.51	4	0.033	Yes
Household Size	0.20	2	0.907	No
Daily Sales	18.34	4	0.001	Yes
Market Location	0.56	2	0.757	No

Source: Researcher's Field Survey, Jan2025

Multivariate Logistic Regression Analysis of Factors Related to Support for a Plastic Ban

Table 12 presents the results of the multivariate logistic regression analysis of factors associated with support for a plastic ban. After controlling for potential confounders, respondents with high economic knowledge were significantly more likely to support the plastic ban compared to those with low economic knowledge (AOR = 2.42; 95% CI: 1.05–5.55; $p = 0.038$). Similarly, married respondents had higher odds of supporting the ban compared to divorced respondents (AOR = 3.46; 95% CI: 1.22–9.85; $p = 0.020$).

Age was also associated with support for the plastic ban. Respondents aged 51 years and above were significantly less likely to support the ban compared to those aged 21–30 years (AOR = 0.16; 95% CI: 0.03–0.93; $p = 0.042$). In terms of years of experience, respondents with 1 to 5 years of experience were significantly less likely to support the ban compared to those with 21 years and above (AOR = 0.03; 95% CI: 0.004–0.24; $p = 0.001$).

Additionally, market location was a significant predictor. Respondents from Mokola Market had lower odds of supporting the ban compared to those from Dome Market (AOR = 0.11; 95% CI: 0.03–0.46; p = 0.002). Public health knowledge, gender, education level, household size, and daily sales category were not significantly associated with support for the plastic ban after adjusting for other variables.

Table 12: Multivariate Logistic Regression Analysis of Factors Related to Support for a Plastic Ban

Variables	Crude OR (95%CI)	P-Value	Adjusted OR (95%CI)	P-Value
Public Health Knowledge				
Low	Ref		Ref	
High	1.85 (0.49-6.94)	0.360	1.41 (0.29-6.78)	0.668
Economic Knowledge				
Low	Ref		Ref	
High	2.98 (1.59-5.55)	0.001	2.42 (1.05-5.55)	0.038
Age Category				
21 to 30	Ref		Ref	
31 to 40	0.75 (0.36-1.59)	0.460	0.42 (0.17-1.07)	0.070
41 to 50	1.02 (0.43-2.43)	0.962	0.37 (0.11-1.19)	0.096
51 and above	0.44 (0.16-1.23)	0.117	0.16 (0.03-0.93)	0.042
Between 18 and 20	0.30 (0.10-0.92)	0.036	1.27 (0.29-5.66)	0.753
Gender				
Female	Ref		Ref	
Male	0.85 (0.49-1.49)	0.571	1.11 (0.55-2.21)	0.774
Education Level				
JHS	Ref		Ref	
None	0.77 (0.25-2.35)	0.647	0.76 (0.19-3.13)	0.709
Primary	0.88 (0.27-2.86)	0.831	1.11 (0.26-4.74)	0.885
SHS	1.51 (0.67-3.39)	0.323	0.96 (0.36-2.55)	0.940
Tertiary	1.65 (0.73-3.74)	0.230	0.61 (0.21-1.76)	0.362
Marital Status				
Divorced	Ref		Ref	
Married	3.16 (1.28-7.80)	0.013	3.46 (1.22-9.85)	0.020
Single	1.25 (0.50-3.14)	0.631	1.74 (0.51-5.91)	0.374
Widowed	0.90 (0.25-3.27)	0.868	1.70 (0.27-10.62)	0.573
Years of Experience				
21 years and above	Ref		Ref	
Between 1 to 5 years	0.07 (0.02-0.29)	<0.001	0.03 (0.004-0.24)	0.001
Between 11 to 15 years	0.92 (0.32-2.60)	0.873	0.52 (0.12-2.26)	0.384
Between 16 to 20 years	1.15 (0.36-3.66)	0.810	1.11 (0.27-4.58)	0.883
Between 6 to 10 years	0.63 (0.22-1.85)	0.403	0.34 (0.06-1.75)	0.196
Household Size				
Between 1 to 3	Ref		Ref	
Greater or equal to 4	0.74 (0.42-1.28)	0.279	0.73 (0.36-1.48)	0.384
Daily Sales Category				
<GHC500	Ref		Ref	

Between GHC1001 - GHC2000	3.13 (1.36-7.18)	0.007	1.57 (0.50-4.90)	0.436
Between GHC500 - GHC1000	1.41 (0.66-3.03)	0.378	1.14 (0.44-2.99)	0.788
Above GHC2000	14.33 (1.78-115.59)	0.012	8.60 (0.83-88.91)	0.071
Market Location				
Dome Market	Ref		Ref	
Madina Market	0.41 (0.11-1.55)	0.190	0.32 (0.07-1.47)	0.143
Mokola Market	0.15 (0.04-0.49)	0.002	0.11 (0.03-0.46)	0.002

Source: Researcher's Field Survey, Jan2025

4.6 To investigate the opinions of market women on potential alternatives to single-use plastic bags

This section looks at the third research goal, by exploring the opinions of market women about other options instead of single-use plastic bags. Traders were given an open-ended question about their suggestions, resulting in many different answers.

4.6.1 Descriptive Overview of Suggestions

A total of 415 responses were collected, with no missing data, indicating a high level of engagement with the question. The suggestions provided were diverse, ranging in length from 3 to 53 characters, with an average length of 11.3 characters. The most frequently mentioned specific alternatives included "stainless steel," "bamboo," and terms related to "bio-based" plastics.



Table 13: Top 10 Most Frequently Suggested Alternatives

Suggested Alternative	Count
Stainless steel	38
Bamboo	31
Bio plastic	21
Clay	14
Coir	12
Beeswax	12
Wood	12
Copper	12
Stainless	11
Ceramics	11

Source: Researcher's Field Survey, Jan2025

4.6.2 Thematic Analysis of Suggested Alternatives

To better understand the suggestions, a thematic analysis was conducted. Responses were categorized into broader themes based on the materials and approaches proposed. Table 14 presents these themes along with their frequencies and example responses. The analysis revealed that the most common theme, labelled “Other” (33.5%), included a variety of suggestions such as paper-based products, traditional materials like calabash, and other less conventional options. Other notable themes were stainless steel (12.3%), bamboo (9.6%), and bio-based materials (7.5%), suggesting a preference for durable, reusable, or biodegradable alternatives. Additional themes included wood, ceramics, clay, beeswax, coir, metal/aluminum, foil/tinplate, and copper, with very few respondents (0.7%) indicating no alternative.



Table 14: Thematic Analysis of Suggested Alternatives

Theme	Frequency	Percentage	Example of Responses
Other	139	33.5%	"Papers," "Paper wrap," "Calabash for making bottles"
Stainless Steel	51	12.3%	"Stainless steel," "Stainless," "Stainless steel or copper"
Bamboo	40	9.6%	"Bamboo," "Bamboo fiber," "Pampro or bamboo"
Bio-based	31	7.5%	"Bio plastic," "Bio plastic or paper," "Bioplas"
Wood	25	6.0%	"Wood recycling," "Wood and cocoa fibers," "Wood"
Ceramics	24	5.8%	"Ceramics", "Ceramics fibers"
Clay	22	5.3%	"Clay", "Ceramics and clay"
Beeswax	20	4.8%	"Beeswax wrap," "Beeswax," "Natural Beeswax"
Coir	17	4.1%	"Cocoa coir,"
Metal/Aluminum	16	3.9%	"Metal bottles," "Aluminum bottles and bowls," "Aluminum"
Foil/Tinplate	13	3.1%	"Foil", "Foil bowls"
Copper	13	3.1%	"Copper," "Natural fibre and copper"
No Suggestion	3	0.7%	"Nothing in mind," "No alternative," "No alternatively but I don't support plastic products"
Canned Containers	1	0.2%	"Canned containers"

Source: Researcher's Field Survey, Jan2025

4.6.3 Relationship between Suggested Alternatives and Support for a Plastic Ban

To explore potential links between the suggested alternatives and attitudes toward plastic regulation, a cross-tabulation was performed. Table 15 shows the percentage of

respondents who supported a plastic ban within each alternative category. Notably, respondents who suggested alternatives such as coir (94.12%) and bio-based materials (80.65%) exhibited the highest support for a plastic ban. In contrast, those who proposed foil/tinplate alternatives showed the lowest support (38.46%). While further statistical tests (e.g., chisquare) could more formally assess these associations, the descriptive data suggest that traders favouring environmentally friendly alternatives are more likely to support policies aimed at reducing plastic use.

Table 15: Cross-Tabulation of Alternative Category and Support for Plastic Ban

Alternative Category	Percentage Supporting Plastic Ban
Bamboo	80.00%
Beeswax	70.00%
Bio-based	80.65%
Canned Containers	100.00%
Ceramics	58.33%
Clay	68.18%
Coir	94.12%
Copper	61.54%
Foil/Tinplate	38.46%
Metal/Aluminum	62.50%
No Suggestion	66.67%
Other	58.27%
Stainless Steel	76.47%
Wood	68.00%

Source: Researcher's Field Survey, Jan 2025

4.7 Conclusion

In conclusion, this chapter has given a full review of the data that was collected from market traders in Accra. The results show that traders generally have good knowledge about the effects of single-use plastics on public health and the environment, although their understanding of economics was somewhat lower. Also, important links were found between various demographic factors such as level of education, gender, and location of market and traders' knowledge and practices. Looking into practices showed considerable support for things like plastic ban and taxes on manufacturers, while the information gathered on alternative suggestions showed that traders were ready to think about more sustainable options. These results provide useful information for policymakers and stakeholders who are looking to deal with the issues of SUPs and to encourage more sustainable practices in trading.



CHAPTER FIVE

DISCUSSION

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The results of this research offer vital understandings regarding the factors that affect traders' knowledge and management of single-use plastics in selected markets in Accra. This chapter reviews the major findings within the framework of existing literature, emphasizing their significance for policy, practice, and future studies. The discussion starts with an evaluation of the sociodemographic characteristics of the market vendors. Afterward, the chapter explores the extent of knowledge and evaluates practices related to single-use plastics, as well as the traders' views on possible alternatives to single-use plastic bags and suggestions for policy improvements.

5.2 Discussion of Findings

5.2.1 Demographic Characteristics

The study revealed that the majority of traders were women (61%), a finding consistent with previous research in Ghana and other Sub-Saharan African countries where women dominate informal trade (Asiedu & Agyei-Mensah, 2008; Clark, 2010). This dominance reflects the central role of women in sustaining household income through trading activities, particularly in urban markets where selling is often viewed as an accessible economic opportunity for women. The predominance of middle-aged traders (31–40 years) also reflects earlier findings that individuals in this age group are more financially stable and capable of sustaining small-scale trading (Gong et al., 2019). Middle-aged individuals typically have both the experience and

social capital required to succeed in competitive market environments, and their participation underscores the importance of this age bracket in driving informal economies.

Compared to Steel et al. (2014), who reported lower levels of formal education among informal traders, this study observed relatively higher educational attainment, suggesting a shift in recent years as more educated individuals join the informal sector due to limited formal employment opportunities. This finding highlights how economic pressures and insufficient formal job creation continue to push even educated individuals into trading as a viable livelihood option. The high proportion of married traders mirrors trends reported by Abor et al. (2019), who emphasized the role of family networks in sustaining trading activities. Marriage and family ties may provide additional resources, labor support, and resilience against income fluctuations, thereby strengthening women's ability to engage consistently in trading.

Overall, the demographic findings suggest that market women in Accra share similarities with broader regional trends, particularly in terms of gender and age distribution. However, the relatively higher education levels among these traders may be unique to urban centers, reflecting evolving dynamics in Ghana's informal economy.

5.2.2 Knowledge of Single-Use Plastics

The traders demonstrated high knowledge levels in public health and environmental issues related to single-use plastics (SUPs). This aligns with findings from Thompson et al. (2010), who emphasized that awareness of plastic pollution is often strongest in health and environmental domains. Their high scores in these domains suggest that messages around the risks of plastics to the environment and human health have been widely disseminated and understood, possibly through media coverage, environmental campaigns, and direct observation

of pollution in their communities. However, the relatively lower scores in economic knowledge parallel observations from Dalu et al. (2020), where traders acknowledged health and environmental effects but were less informed about the financial and economic implications of plastic waste. This indicates that while traders may understand the visible and immediate effects of SUPs, such as pollution or health risks, they are less likely to connect these issues to broader economic costs, including waste management expenses or losses in tourism and trade.

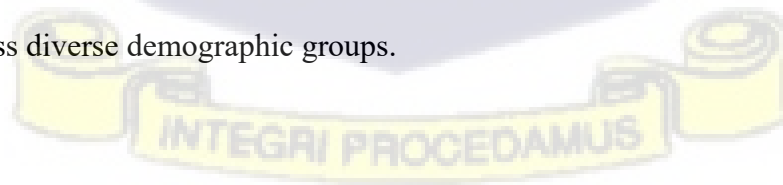
The strong correlations between knowledge domains in this study support the notion that awareness is multidimensional, a trend also highlighted in Eriksen et al. (2013). This suggests that gains in one area of knowledge may influence or reinforce others, making education and sensitization efforts more impactful when they present information holistically. For example, linking environmental degradation to economic costs could enhance traders' appreciation of how SUPs affect livelihoods and community resources. The findings therefore suggest that while awareness campaigns have succeeded in improving understanding of health and environmental risks, more emphasis is needed on the economic costs of SUPs, particularly for traders who are directly affected by policy measures such as bans or levies. Addressing this knowledge gap would contribute to more informed decision-making and stronger support for sustainable alternatives.

5.2.3 To assess the level of knowledge among traders about the public health implications, environmental, economic, and social impact of the usage of single-use plastic bags

The lack of gender differences in health and environmental knowledge contrasts with the findings of Adu-Kumi et al. (2010), who reported gendered disparities in environmental awareness, often attributing this to differences in access to environmental education and participation in community initiatives. However, the observed gap in economic knowledge between men and women in this study supports earlier research by Kaleli et al. (2017), which

highlighted that women engaged in informal trade often have less access to financial information, training, and policy-related discussions compared to their male counterparts. This knowledge gap may be partly explained by systemic inequalities in information dissemination, where economic and policy updates are more likely to reach men through formal networks, while women remain excluded due to their concentration in informal and small-scale trading activities.

The strong positive association between education and knowledge found in this study aligns with the work of Dominish et al. (2020), who demonstrated that higher levels of education significantly enhance the capacity to understand, interpret, and act on environmental policies. Educated traders are more likely to connect broader environmental issues with their daily practices, leading to stronger advocacy for sustainable approaches. Interestingly, the lack of variation across market locations in this study stands in contrast to Muposhi and Shamhuyenhanzva (2021), who argued that traders in larger, urban markets tend to have higher exposure to environmental campaigns, primarily due to the presence of NGOs, government agencies, and media coverage in those spaces. The uniformity in knowledge observed in Accra may indicate that awareness campaigns by municipal authorities and environmental organizations have been more evenly distributed across different markets, thereby reducing location-based disparities. This finding highlights the effectiveness of widespread communication strategies and suggests that targeted campaigns can bridge traditional gaps in awareness across diverse demographic groups.



5.2.4 Determine practices associated with single-use plastic among the market women

Support for a ban on SUPs (67.2%) among market women is consistent with studies in other African contexts. For example, Xanthos and Walker (2017) reported strong public support for bans where awareness of environmental harm was high, indicating that perceptions of ecological damage are central to shaping attitudes. The significant association between knowledge (environmental and economic) and support for bans further supports the argument by van Rijn and Timmis (2023) that informed citizens are more likely to endorse restrictive policies. This finding highlights the critical role of knowledge dissemination in influencing behavioral change and shaping public support for environmental legislation.

However, the lack of association between public health knowledge and ban support contrasts with findings in Asian contexts (Thanh et al., 2011), where health risks were a primary motivator for policy acceptance. This divergence suggests that in Ghana, economic and environmental consequences may resonate more strongly with traders than health-related arguments. The public health effects of plastics may be less visible or less directly linked to daily livelihoods compared to the financial and ecological burdens of waste accumulation, which traders experience more immediately in their working environments.

The associations with demographic factors, particularly education and daily sales, reinforce prior findings (Eriksen et al., 2013) that socio-economic stability enhances willingness to adopt sustainable practices. Traders with higher education may be better positioned to access and interpret information about environmental policies, while those with higher daily sales may possess greater financial flexibility to transition toward sustainable alternatives. These findings align with observations by Heidbreder et al. (2019), who emphasized that socio-economic and educational differences shape willingness to reduce single-use plastics. Overall, the evidence

suggests that while knowledge and socio-economic status drive support for bans, culturally tailored education and affordable alternatives remain essential to sustaining long-term behavioral change.

5.2.5 To investigate the opinions of market women on potential alternatives to single-use plastic bags

The range of suggested alternatives, such as stainless steel, bamboo, and bio-based plastics, aligns with global preferences for reusable and biodegradable materials (Hopewell et al., 2009). The reliance on traditional materials like calabash reflects findings from Neef et al. (2023), who emphasized the importance of culturally relevant alternatives in driving sustainable practices. The inclusion of calabash, gourds, and other indigenous materials suggests that local knowledge and cultural heritage can play a vital role in shaping modern solutions to plastic waste. Such alternatives may also foster community ownership of environmental initiatives, making them more sustainable in the long term. The high support for eco-friendly options, such as coir and bio-based plastics, resonates with Geyer et al. (2017), who argued that acceptance of alternatives depends largely on perceived environmental benefits. These findings highlight that traders are more likely to embrace substitutes when they recognize clear advantages for both human health and the environment.

On the other hand, the relatively low support for foil and tinfoil alternatives reflects practical concerns. This pattern is consistent with Mrkajić et al. (2018), who noted that the feasibility and cost of alternatives strongly influence acceptance. Traders often balance environmental concerns with issues of durability, affordability, and accessibility, meaning that substitutes perceived as expensive or impractical are less likely to gain widespread use. Overall, the findings illustrate that market women are open to alternatives when they are affordable,

practical, and culturally relevant, suggesting that successful interventions must combine innovation with local traditions and economic realities.

5.3 Implications

The results of this research hold important consequences for policymakers, environmental groups, and stakeholders focused on decreasing the use of SUP and fostering sustainable practices among market women in Accra. The notable link between higher education levels and increased knowledge of SUP-related issues highlights the necessity for educational initiatives, especially for women with limited formal education, to boost understanding and promote sustainable habits. The observed gender disparity in economic knowledge, with male traders outperforming female traders, points to the need for specific campaigns aimed at equipping women with information about the economic effects of SUPs. The variety of suggested alternatives, including stainless steel, bamboo, and biodegradable materials, shows a clear preference for durable and eco-friendly choices, indicating that policymakers should focus on making these materials both affordable and accessible.

It is essential to customize interventions to fit the socioeconomic conditions of market women, many of whom earn modest daily incomes, and offering financial incentives or subsidies could facilitate the shift to sustainable options. The consistent levels of knowledge across different market sites suggest that larger markets like Mokola and Madina could serve as models for wider implementation of interventions. The strong backing for a plastic ban among market women, particularly those with greater environmental and economic knowledge, highlights the potential for policy measures that fill knowledge gaps and involve traders in the decision-making process. Promoting community involvement, given the creativity and eagerness of market women to suggest alternatives, could create a sense of ownership and enhance the effectiveness of sustainability efforts.

Addressing concerns related to specific alternatives, such as foil or tinplate, while ensuring their practicality and environmental advantages are crucial for garnering broader support. Ultimately, promoting long-lasting behavioral change requires ongoing efforts, including continuous education, improved waste management systems, and strict regulation enforcement. These findings extend beyond local implications for urban sustainability, providing insights for reducing plastic waste in comparable settings and aiding the establishment of more sustainable urban markets. By addressing these implications, stakeholders can formulate effective strategies to minimize SUP usage, advocate for sustainable practices, and improve the economic and social welfare of market traders and their communities.



CHAPTER SIX

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

This chapter presents a detailed description of the key findings from the study on factors influencing the level of knowledge on single-use plastics and management among traders in selected markets in Accra. It begins by summarizing the main results, including the level of knowledge among traders about the public health implications, environmental, economic, and social impact of the usage of single-use plastic bags, determining practices associated with single-use plastic among market women, and the opinions of market women on potential alternatives to single-use plastic bags. This chapter also draws conclusions based on the findings and offers recommendations.

6.2 Summary of Key Findings

The research conducted on market vendors in Accra offers an in-depth examination of their demographic traits, knowledge of single-use plastics (SUPs), attitudes towards sustainable practices, and preferences for SUP alternatives. The predominant age among traders is 31-40 years (38.3%), followed by those aged 21-30 years (25.5%) and 41-50 years (23.9%), indicating a mostly middle-aged trading community with a notable representation of younger individuals. Women comprise most of the trading population, accounting for 61% with 36.9% having attained tertiary education. A significant portion of traders are married (60.2%) with 40.2% reporting having 11-15 years of experience. Nearly half of the traders (49.2%) live in households of 4-6 members, and most report daily earnings ranging from GHC500 to GHC2000. Most traders are located at Mokola Market (52.8%).

The traders demonstrate a strong knowledge of the health and environmental implications of SUPs. Regarding public health, they achieved an average score of 5.56 out of 6

(92.7% achievement rate), with 76.6% scoring perfectly, showing widespread acknowledgment of the health risks associated with SUPs, such as contamination of food and water. In terms of environmental knowledge, traders scored an average of 5.79 out of 7 (82.8% achievement rate), with 48.7% achieving perfect scores, reflecting a solid understanding of the environmental damage caused by SUPs, which includes pollution of aquatic habitats and threats to marine life.

However, their knowledge on the economic effects of SUPs was slightly lower, with an average score of 2.97 out of 4 (74.2% achievement rate). Male traders outperformed female traders in this area, indicating a gender disparity in economic knowledge, potentially due to differences in information access or traditional gender roles. A strong positive correlation exists between knowledge of public health and the environment ($r = 0.625$), suggesting that traders knowledgeable in one area tend to be informed in the other. Moderate correlations were also noted between public health and economic knowledge ($r = 0.509$) and between environmental and economic knowledge ($r = 0.685$).

Education level significantly predicts knowledge across all domains, with traders who have completed tertiary education scoring notably higher in public health, environmental, and economic knowledge compared to those with lesser education. This underscores the importance of formal education in increasing knowledge of SUPs. Gender disparities were evident in the economic knowledge domain, with male traders scoring higher than their female counterparts; however, no significant differences were found in public health or environmental knowledge. The location of the market did not significantly affect knowledge levels, indicating that understanding of SUP-related issues is consistent across various markets.

A considerable majority of market women (67.2%) advocate for a ban on single-use plastics, motivated by heightened levels of environmental and economic knowledge. This indicates an increasing recognition of the negative impacts of SUPs and a readiness to embrace more sustainable practices. Education level and daily sales are significant factors influencing

support for a ban, with more educated women and those with higher earnings being more inclined to endorse it. Interestingly, knowledge of public health did not significantly affect support for the ban, suggesting that while traders are aware of the health risks linked to SUPs, this knowledge does not necessarily lead to policy endorsement. Married women and those with more trading experience are more likely to support a ban, possibly due to their greater exposure to the long-term impacts of SUPs or their adaptability to changes in market practices.

Market women have suggested various alternatives to SUPs, including stainless steel, bamboo, and bio-based plastics, which are valued for their durability, reusability, and biodegradability. Traders proposing eco-friendly options, such as coir and bio-based materials, are more likely to advocate for a plastic ban, indicating a strong link between support for sustainable alternatives and policy endorsement. This finding has important implications for policymakers and stakeholders seeking to reduce plastic usage, as promoting the adoption of locally sourced sustainable materials can facilitate the transition away from SUPs and advance broader environmental objectives.

6.3 Conclusion

The research conducted on market traders in Accra has uncovered several important insights regarding their demographic traits, understanding of single-use plastics (SUPs), attitudes towards sustainable practices, and preferences for alternatives. Many traders are middle-aged, with a notable number of younger adults, and women represent 61% of the sample. Educational attainment is generally high, with 36.9% of traders having achieved tertiary education, although there is a portion with limited formal education. Most traders are married and possess considerable trading experience, which may enhance their stability and adaptability to new practices. Nonetheless, their modest daily earnings and medium-sized households indicate financial limitations that could hinder their ability to invest in sustainable practices.

Traders demonstrate a strong knowledge of the public health and environmental consequences of SUPs, achieving high scores in both areas. However, their understanding of the economic impacts is somewhat lower, particularly among female traders, suggesting a gender disparity in economic knowledge. Educational attainment significantly influences knowledge across all areas, with those holding tertiary qualifications scoring notably higher. The location of the market does not appear to affect knowledge levels, indicating a uniform knowledge across various markets.

A large majority of market women (67.2%) express support for a ban on single-use plastics, motivated by higher levels of environmental and economic understanding. Educational background and daily sales figures are key indicators of support for the ban, with more educated women and those with higher sales being more inclined to back the ban. Interestingly, knowledge of public health does not significantly affect support for the ban, implying that while traders acknowledge the health risks associated with SUPs, this knowledge does not automatically lead to support for policy changes. Married women and those with greater trading experience are more likely to endorse a ban, potentially due to their increased exposure to the long-term impacts of SUPs or their adaptability to market changes.

Market women have put forward a range of alternatives to SUPs, such as stainless steel, bamboo, and bio-based plastics, indicating a preference for materials that are durable, reusable, and biodegradable. Traders advocating for eco-friendly alternatives tend to be more supportive of a plastic ban, highlighting a strong link between sustainable options and policy endorsement.

In conclusion, although traders show a high level of knowledge regarding the public health and environmental effects of SUPs, there is a need for targeted educational initiatives to fill the gaps in economic understanding, especially among women. The robust backing for a plastic ban and the inclination towards sustainable alternatives reflect a willingness among market women to adopt more environmentally friendly practices. Policymakers and stakeholders can utilize these

insights to develop effective strategies aimed at decreasing plastic usage and enhancing sustainable waste management in Accra's markets. By addressing the deficiencies in economic knowledge and facilitating access to sustainable alternatives, it is feasible to cultivate a more environmentally aware trading community and contribute to wider environmental objectives.

6.4 Recommendations

Based on the study's results, the following recommendations are suggested to tackle the issues associated with single-use plastics (SUPs) in Accra:

1. There is a need for educational initiatives that highlight the economic effects of SUPs, especially aimed at female traders who demonstrated lower knowledge. Workshops and training sessions can be arranged to improve their understanding of waste management expenses, the economic advantages of sustainable methods, and the lasting effects of SUPs on local economies.
2. Incentives should be implemented for traders who transition to sustainable practices, such as tax reductions, subsidies, or recognition programs. This approach can encourage traders to move away from SUPs and towards environmentally friendly choices.
3. Policy-Level Considerations

While not directly emanating from the study's findings, the following broader measures may complement long-term efforts to reduce SUP use:

- Enhancing regulatory monitoring in markets to ensure adherence to environmental policies, including tracking SUP use and encouraging sustainable practices.
- Upgrading market infrastructure to facilitate waste management and recycling through sufficient disposal options and recycling initiatives.

- Promoting cooperation among government bodies, NGOs, market associations, and traders to design and implement sustainable waste management strategies.

6.5 Areas for Future Research

To expand on the study's findings and address existing gaps, the following areas are suggested for future research:

1. Explore how cultural and social factors influence traders' attitudes and behaviors toward SUPs and sustainable practices. Understanding these factors can assist in designing culturally relevant interventions that resonate with traders and their communities.
2. Investigate how technology can enhance waste management practices, such as utilizing mobile applications for waste collection, recycling initiatives, and digital platforms to educate traders on sustainable methods.
3. Evaluate the effects of policy measures, such as bans and taxes on plastics, on traders' behaviors and the overall reduction of SUP use. Research should examine the success of these policies and identify optimal practices for their implementation.
4. Examine the economic consequences of adopting sustainable alternatives to SUPs, including the cost-effectiveness of different materials and their effects on traders' livelihoods. This can aid in creating economically feasible strategies to reduce plastic use.
5. Finally, future studies should be tailored to specific markets to understand the challenges and opportunities present in different locations. This can help customize interventions to meet the specific needs of traders, considering factors such as market size, infrastructure, and regulatory environments.

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APPENDIX B: QUESTIONNAIRE ON FACTORS INFLUENCING KNOWLEDGE ON SINGLE-USE PLASTICS AND ITS MANAGEMENT AMONG TRADERS IN SELECTED MARKETS IN ACCRA

Questionnaire

KNOWLEDGE AND PRACTICES ON SINGLE-USED PLASTICS AMONG TRADERS IN SELECTED MARKETS IN ACCRA

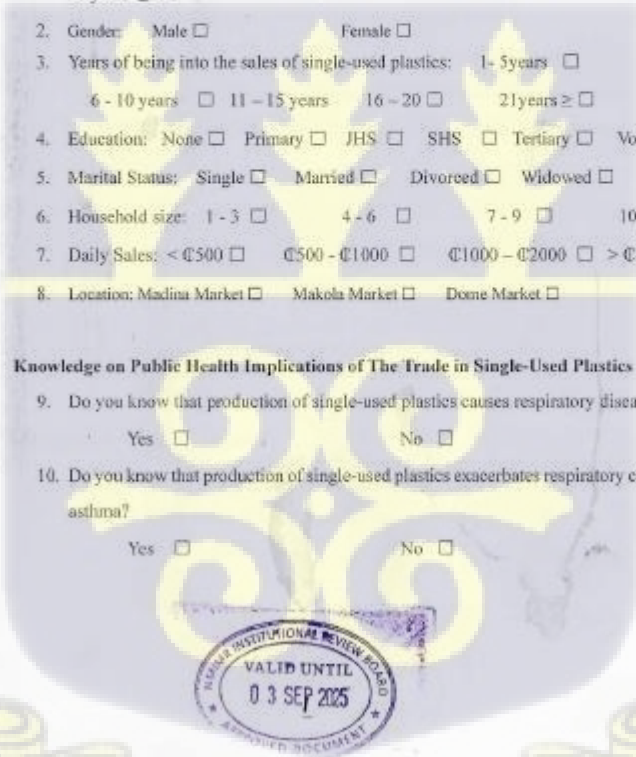
This questionnaire is to be answered by traders in Makola, Madina and Dome market centers in the Greater Accra Region. Participants are to express themselves about the environmental, economic and social impact of the usage of this single-used plastics. Moreover, the adverse effect of the use of single-used plastics on health of the ecosystem will be examine together with the proposed ban by various stakeholders.

Social Demographic Profile

- Age: 18 – 20years 21 – 30years 31 – 40years 41 to 50years 51 years ≥
- Gender: Male Female
- Years of being into the sales of single-used plastics: 1- 5years
6 - 10 years 11 – 15 years 16 – 20 21years ≥
- Education: None Primary JHS SHS Tertiary Vocational
- Marital Status: Single Married Divorced Widowed
- Household size: 1 - 3 4 - 6 7 - 9 10 ≥
- Daily Sales: < ₵500 ₵500 - ₵1000 ₵1000 – ₵2000 > ₵2000
- Location: Madina Market Makola Market Dome Market

Knowledge on Public Health Implications of The Trade in Single-Used Plastics

- Do you know that production of single-used plastics causes respiratory diseases?
Yes No
- Do you know that production of single-used plastics exacerbates respiratory conditions like asthma?
Yes No


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INTEGRI PROCEDAMUS

11. Do you know that production of single-used plastics exacerbates respiratory conditions like bronchitis?

Yes No

12. Do you know that contamination of water bodies by single-used plastics cause waterborne diseases?

Yes No

13. Do you know that contaminated water bodies and gutters by single-used plastics leads to spread of cholera?

Yes No

14. Do you know that contaminated water bodies and gutters by single-used plastics leads to spread of dysentery? Yes No

Environmental Implications of Trading in Single-Used Plastics

15. Do you know that single-used plastics contaminates the ocean, rivers, lakes and other inland water bodies? Yes No

16. Are you aware that single-used plastics negatively affect aquatic lives e.g. fishes?

Yes No

17. Are you aware that these plastics are not degradable?

Yes No

18. Are you aware that these plastics negatively affect the habitat of soil microorganisms?

Yes No

19. Are you aware that incineration of these plastics release pollutants into the atmosphere, which causes air pollution?

Yes No

20. Overall are you aware that these plastics has made our environment dirty?

Yes No



Economic Implications of Trading in Single-Used Plastics

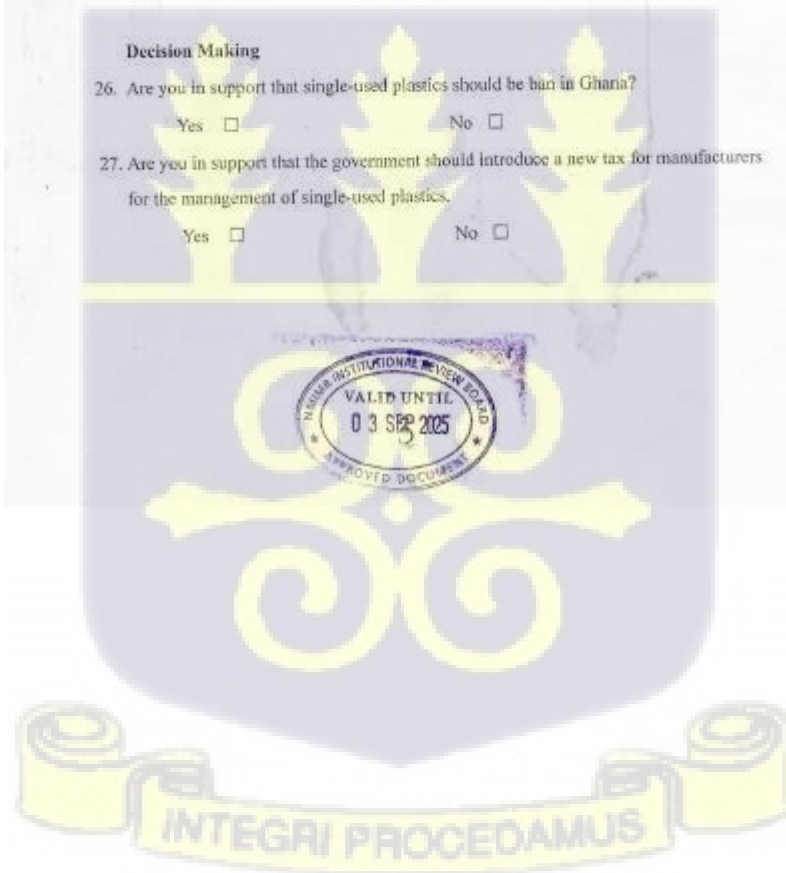
21. Are you aware that cleanup of these nuisance by plastics cost the state a huge amount of money?
Yes No
22. Are you aware that these plastics clog drainage systems, leading to flooding which cause destruction of properties?
Yes No
23. Are you aware of the economic losses due to the decrease in catchment of fishes in the marine sector due to the pollution by single-used plastics?
Yes No

Social Implications of Trading in Single-Used Plastics

24. Are you aware that due to the pollution of our surroundings, Accra ranks as one of the dirtiest cities in the world?
Yes No
25. Are you aware that a lot of social activists are against the use or production of single used plastics?
Yes No

Decision Making

26. Are you in support that single-used plastics should be ban in Ghana?
Yes No
27. Are you in support that the government should introduce a new tax for manufacturers for the management of single-used plastics.
Yes No



Alternatives for Single-Used Plastics

28. What other alternatives do you suggest should be used in place of single-used plastics?

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THANK YOU

