

**IMPLICATIONS OF COMMERCIALIZATION OF PUBLIC TOILETS ON SOCIO-
ECONOMIC AND ENVIRONMENTAL STATUS OF KAKAMEGA TOWN**

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**A Thesis Submitted in Partial Fulfillment for the Award of Master of Arts Degree in
Geography, School of Arts and Social Sciences of Masinde-Muliro University of
Science and Technology**

APRIL, 2024

DECLARATION

This thesis is my original work with no other than the indicated sources and support and has not been presented elsewhere for a degree or any other award.

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ABSTRACT

Waste management has been and continues to be a major global challenge facing urban growth. Even though sanitation is a human right, managing sanitation level is still a challenge. Most public toilets are messy and unhygienic forcing most governments in different countries to incorporate private organizations into provision, management and maintenance. Since establishment of new counties in Kenya, such a study is yet to be done in Kakamega County and therefore would provide necessary information to the county for policy implementation. The main objective of this study was to examine the implications of commercialization of public toilets on socio-economic and environmental status of Kakamega Town. Specifically, the study sought to determine availability of commercialized public toilets in Kakamega Town, assess the utilization of commercialized public toilets in Kakamega Town and examine the implications of commercializing public toilets on the socio-economics and environmental status of Kakamega Town. The study adopted descriptive research design carried out in Kakamega Town. The target population comprised residents of Kakamega town and those on daily transit thus 63,426. Purposive sampling was done for Kakamega County, town and key informants. Simple random sampling of town residents and business people. Systematic sampling was conducted on individuals using public toilets. A sample size of 384 participants was used and data was collected using observation, interviews, questionnaires and document review. Data analysis utilized Statistical Package for Social Sciences (SPSS) version 28. Quantitative data was analyzed using descriptive and inferential statistics and qualitative data thematically. Majority of the respondents, 207 (58.97%) were of age bracket 21-30 years and males, 254 (72.36%). A total of fourteen (14) public toilets were located within the vicinity of Kakamega Town with 57.14% being commercialized and were not adequate. 265 (75.5%) of respondents knew of public toilets and their location with only 25.9% of females being very often users. There was a borderline significant relationship between age and disability status (OR: 0.7; 95% CI: 0.7 – 1.5; $p=0.06$) and toilet preference. Majority of respondents 256 (72.9%) chose public toilets because of their cleanliness and appearance. Each public toilet had an average of 500 users per day with total collection averaging ksh.44000/= per day. Hygienically, there were low incidents of open defecation, urination and flying toilets in places where commercialized public toilets were. Aesthetically the beauty of commercialized public toilets improved the general outlook of the town with other commercial activities being conducted on same premises. In conclusion, commercializing public toilets provided revenue and improved hygienic as well as esthetic value of the town. The study recommends the town to increase the number of public toilet facilities and the management of public toilets in the county government of Kakamega to enhance cleanliness and access to all public toilets within the town.

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ABBREVIATION AND ACRONYMS

CAGIEA	-	Care Givers East Africa.
CBD	-	Central Business District
CLTS	-	Community Led Total Sanitation
DDA	-	Disability Discrimination Act
ECO- SAN	-	Ecological Sanitation
FAO	-	Food and Agriculture organization
HRW	-	Human Right Watch
IG SACCO	-	Invest and Grow saving and credit co-operative society
JICA	-	Japan International Cooperation Agency
JMM	-	Job Market Monitor
JMP	-	Joint Monitoring Program
KANU	-	Kenya African National Union
KATECO	-	Kakamega Teachers Co-operative society currently called <i>IG SACCO</i> .
KEMSA	-	Kenya Medical Supplies Agency
KSH	-	Kenyan shillings
KNBS	-	Kenya National Bureau of Statistics
KNPC	-	Kenya National Population Census
KNPS	-	Kenya National Population Survey
MDGs	-	Millennium Development Goals
MMUST	-	Masinde Muliro University of Science and Technology
NEMA	-	National Environmental Management Authority
ND	-	Not dated

NGO	-	Non-Governmental Organization
OSH	-	Occupation Safety and Health act
SCOPE	-	Society Community Organization and Peoples' Education
SDGs	-	Sustainable Development Goals
SPSS	-	Statistical Package for Social Sciences
SuSanA	-	Sustainable Sanitation Alliance
TUC	-	Trade Union Coalition.
UK	-	United Kingdom
UN	-	United Nation
UNDP	-	United Nation Development Program
UNICEF	-	United Nation International Children's Emergency Fund
USA	-	United States of America
WASH	-	Water and Sanitation Health
WASREB	-	Water Services Regulatory Board
Wi-Fi	-	Wireless internet signals strength
WHSR	-	World Health Survey Report
WHO	-	World Health Organization
WRAPP	-	Water for Recovery and Peace Program
WSP	-	Water and Sanitation Program
WSSC	-	Water Sector Sanitation Concepts
WSTF	-	Water Services Trust Fund
WSUP	-	Water and Sanitation for the Urban Poor

OPERATIONAL DEFINITION OF TERMS

Commercialize:	To develop or organize something in order to make as much money as possible.
Cottaging:	Sexual activity between men in places such as public toilets
Environment:	The natural world in a particular geographical area especially as affected by human activity.
Privatization:	The act of selling an industry, company or service that was owned and controlled by the government so it becomes privately owned and controlled.
Transit:	To pass through or across a place, an area, or a country on the way to somewhere else
Vandalism:	Action involving deliberate destruction of or damage to public or private property

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Waste management has been and continues to be a major global challenge facing urban growth (Kumar et al 2017). UNICEF & WHO (2020) identifies safe sanitation as a foundation of healthy, comfortable and dignified life whose absence is costly to the economy of countries subsequent from sickness and death. It therefore requires proper management strategies from grassroots level, hence the need for legislation to control waste clearance and disposal. Uwamwezi (2016) points out lack of standardization on how to manage excreta waste in public areas as among justifications for the pathetic states in public toilets. To enhance proper human waste disposal, it is advisable to employ participative approach in order to address long term behavior change (Augsburg *et al* 2022). Municipal councils and local authorities ensured that public gathering places had access to public toilet facilities managed by the relevant town councils who maintained them using revenues collected within their jurisdictions (Kanuti *et al* 2019). Hardin (1968) in his theory of “Tragedy of the Commons”, notes that in a situation within a shared resource system such as public toilets, individual users act independently according to their own self-interests thus behave contrary to the common good of all users by depleting or spoiling that resource through their collective actions.

UN (2023) reports safe water, sanitation and hygiene as the most basic human need for health and well-being, which is a major concern in achieving Sustainable Development Goals (SDG). The rising situations such as inability to access toilet facilities due to lack of money, attached norms and segregations on toilets in urban areas and bus termini raises concern leading to people relieving themselves in unwarranted places. Most of these sites end up as nuclear dumpsites for solid wastes and nuisance urinating points (UNDP 2022).

UN (2019), encourage most countries to put much emphasis on waste management since it precedes tremendous environmental and economic benefits.

Globally, Human Right Watch (2013) reports on criminalization of homeless in Europe. This indicates an increase in public open urination in London. There are also indicators that different countries have set up measures to improve sanitation levels. For instance, Urilift International according to The Rural City of Murray Bridge (2017) is a designed toilet that rises from the ground during sociable nights and sinks during the day in Australia while in New Zealand, Kumutoto public toilets are designed to make them visible from far in order to increase their utility. Chisukey city in Japan is also identified as among areas having the best toilets. United State Transgender Survey (2022) shows that besides public toilets providing essential services, there are evidential traces of psychological, physical and sexual assaults reported to have taken place in these facilities. Similar cases of assaults have been reported by Police Foundation (2017) indicating harassment of female gender in UK public toilets thereby limiting accessibility. American Public Transportation Association –APTA (2021) points out that with proper lighting, alarms and cleaning, a sense of safety is enhanced thus a need for better management of public toilets to increase utilization.

In Arabic Africa, most public toilets have been given less attention and so are not well maintained (Aly *et al* 2022). Reynolds *et al* (2020) notes that, cases of women avoiding public toilets due to privacy among other concerns have been reported in some public toilets. In West African countries such as Nigeria, open defecation is still a common practice (UNICEF 2016a). Additionally, Akor *et al* (2016) points out that most public toilets are usually dirty and messy. In South Africa, Gibbs *et al* (2020) report sexual violence among young women in public toilets. Kieran (2015) records that rape cases, robberies and murder are rampantly reported in South African toilets and suggests for

better management and design of toilets towards promotion of dignity, safety and accessibility.

Commercializing public toilets is being employed as a way of maintaining clean public toilets as proceeds realized are regenerated to ensure its hygienic sustainability. Eastern Africa Region depicts mixed reaction as researches conducted indicate payment attached to toilet use as deprivation of human right. According to Katrina (2017), most of East African informal settlements lacks sanitation, privacy and doesn't have 24 hours a day access because care-takers lock doors at night. In Kigali, Kanamugire (2017) reports of Rwanda's rising urban population having put much pressure on the government thus the need to increase number of public toilets to boost accessibility. Sudan Sanitation Program had according to UNICEF (2016b) planned to adopt and generate guides for construction of public toilets, management and operation in order to improve their sanitation level. The Ministry of Health, Ethiopia (2021) report, indicates that in Addis-Ababa, Water and Sewerage Authority boosted public toilet facilities and commercializes them to promote development and sustainability.

In Kenya, commercialization is triggered by poverty, level of cleanliness and privacy among other range of negative reactions that encourage reluctance in use of public toilets (Hartigan *et al* (2020). Community Led Total Sanitation -CLTS Knowledge Hub (2017) shows that to minimize public outcry that ensue from open defecation mainly among the poor and vulnerable, stakeholders through (CLTS) such as 'IKO toilet' And Umande Trust – Goal Ireland partnership (Kenyan right –based organization) take initiative of bringing up affordable or free toilet facilities and the bio-center concepts to control human waste lying on paths and drains.

Sibanda *et al* (2017) describes waste management in Kisumu County as a challenge. He notes that dark streets among informal traders in Central Business District (CBD)

experience uncontrolled open defecation due to population pressure on public toilets which affect their availability and accessibility. A similar situation is witnessed in Nakuru Town, Mombasa Town and other towns in Kenya. This is an indication of a human need facing constrain as public toilets are disappearing, and that in towns they are almost equally rare with the few slightly paying for convenience (Banks 2019).

According to Cities in Andhra Pradesh (2016) in India, information on location need to be facilitated to users to promote decision making and ensure public toilet facilities avoid disorderliness and uncleanness. Carlos *et al* (2018) points out corruption, low income, clienteles, shallow capital markets and grabbing of public toilet land for private development as drivers of poor provision of public toilet services leading to commercialization. According to WSUP (2018), people have to pay for toilet services or walk longer distances in search of nearest free public toilet facilities. Gail *et al* (2023) reinforces that, many people cannot afford the levies attached to commercialized public toilets leading to formed attitude towards them.

According to UN (2019) for population of cities and towns, Kakamega Town is the largest town in Kakamega County. Economically, its poverty level stands at 39.6 percent indicating significant implications of commercialization of public toilets to the social, economic and their interrelation towards environment in Kakamega Town, putting in mind that toilets are basic necessities that cannot be avoided in any civilized society (National Bureau of Statistics, KNBS (2021).

1.2 Statement of the Problem

Human Right Watch, HRW (2017), indicate that, even though sanitation is a human right, managing sanitation level is still a challenge yet managing bodily function of urinating and defecation is core to human dignity. Rotowa (2022) study reveals worse state of

latrines, poor management of public toilets, lack of public toilet facilities for the physically challenged.

In Kenya, public toilets have received less attention than required as most of them are inaccessible, dirty or messy with little or no attention being given to them and with majority undergoing untimely commercialization, (Quora 2018). The cause for this is attributed to rising poverty levels, considerable social costs, loss of dignity and privacy, risk of users being attacked and social violence

In Kakamega Town, despite the attributed causes highlighted above, aesthetic aspects such as beauty and environmental cleanliness are more witnessed along the front areas of the CBD. Toilets appear smart and attractive and the trenches don't have foul smell that emanate from human wastes. However, contrasting situations are witnessed in corridors, abandoned buildings and illegal urinating points that are more pronounced in the back streets within the town's CBD. Anecdotal evidences revealed abandoned buildings that had been messed up with human waste, open illegal urinating points as well as concealed urinating points. Studies have advocated for commercializing public toilets to raise user fee that can help in management, limit walking distance from one toilet facility to the other, advertisement and making them stand-out uniquely as some of the solutions to alleviate the mess.

Approximately, 57.14% of these facilities are commercialized and includes all the clean, non-smelly facilities with the non-commercialized remaining in debilitated and inaccessible states

It is on this basis that the study sought to examine the implications of commercialization of public toilets on socio-economic and environmental status of Kakamega town.

1.3 Objectives of the Study

The main objective of the study was to examine the implications of commercialization of public toilets on socio-economic and environmental status of Kakamega town.

1.4 Specific objectives of the study

1. To determine availability of commercialized public toilets in Kakamega Town.
2. To assess the utilization of commercialized public toilets in Kakamega Town.
3. To examine the implications of commercializing public toilets on the socio-economics and environmental status of Kakamega Town.

1.5 Research Questions

The research questions in this study were;

1. What types of public toilets are found in Kakamega Town?
2. To what extent are commercialized public toilets used in Kakamega Town?
3. What are the socio-economics and environmental implications of commercializing public toilets in Kakamega Town?

1.6 Justification of the Study

According to WHO (2023a) millions of people are dying each year from waterborne diseases due to inadequate sanitation that leads to water sources getting contaminated with faeces. Globally, the importance of hygienic toilets lies in an effort to prevent diseases which can be transmitted through human waste. This is achieved through improved sanitation facilities such as Urilift in Amsterdam. This study provides reliable information that can enhance provision of free or subsidized public toilet services and free choice of public toilet facilities.

Rural-urban migration into town, high human population on transit at bus termini, bus stations has exerted pressure on existing public toilets, Ashish *et al* (2015). Peprah *et al* (2015) indicate that in Accra, 58% of people live in poorer urban areas, such as slums, where millions of people rely on public or shared toilets. They also practice open defecation, defecating into bags and buckets, ‘wrap and throw’ or “flying toilets.” (Lusambili, 2020). She also points out that open defecation has been exacerbated by the development of new county centers with rapidly growing population, a situation that calls for concern in areas of growing concentration of people with very low income who rely on public or shared toilets.

According to Ebikapade *et al* (2016), the aspects environmental management is very important as without it life would be full of challenges. Waste management is always the most daunting and challenging in any city or urban society experiencing rising number of families. In a society that commercializes public toilets, areas such as dark streets, abandoned buildings, congested stalls and open sewers are ready toilets for such families and any individuals under dire pressure from the call of nature. This study therefore sought to examine the implications of commercialization of public toilets on socio-economic and environmental status of Kakamega town.

The need to find more information on state of sanitation in Kakamega County led to literature review that revealed that such a study was yet to be done in Kakamega Town.

The study also provided vital information for policy formulation on sanitation in the Kakamega County since Kenya Laws (2012), under Public Health Act indicates that County Governments have been empowered to make by-laws that ensure proper sanitation is achieved. It also provided information on status of commercialization and use of public toilet in Kakamega county adding to the body of knowledge. This study

enlightens the public toilet users on environmental implications of commercializing public toilets as The Kenya Environmental Health and Co-ordination Act of 1999 part 2 section 3, entitles every Kenyan to a clean and healthy environment (Muigua *et al* 2018).

1.7 Scope of the Study

The study was conducted in Kakamega Town as from June 2019 to September 2019 and mainly focus on, determining availability of commercialized public toilets in Kakamega Town, assessing the utilization of commercialized public toilets in Kakamega Town and examining the implications of commercializing public toilets on the socio-economic and environmental status of Kakamega Town.

Kakamega Town exists as a County headquarters, housing all major government offices. It is the seat of major government offices in Western region of Kenya. It hosts County police headquarter offices, judicial court, county assembly building, a busy Webuye-Mumias-Kisumu road junction, Kakamega County Referral Hospital, educational institutions and a market among others and focused on commercialized public toilets found within Kakamega Town. The study targeted populations that are mainly the residents of the Kakamega town and those on transit (businessmen, tourist, and students on special occasions among others). These depict Kakamega town as a fast-growing town with a fast-growing town population.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter presented literature review by looking at findings from various studies and research findings. It determines the availability of commercialized public toilets, assesses the utilization of public toilets and examines the implications of commercializing public toilets on socio-economic and environmental status of Kakamega town.

2.2 Availability of Public Toilets

The term "public toilet" refers to a room or building with toilets (or urinals) that do not pertain to a specific household and are available for use by the general public, customers, travellers, business employees, school students, prisoners, etc. According to Maes *et al* (2023) citing Greed 2006, a public toilet is defined as inclusion of both traditional "on street" local authority public toilets and 'off-street' public toilets to which the public has a right of access, (also defined better as "away from home toilet").

Mutsawashe (2023) looks at the provision and accessibility of public toilets and their usability when needed. According to the report the facility may be restricted to a particular demographic, thereby excluding other marginalized groups. This implies that other facilities may be available but cannot be utilized due to their economic, aesthetic or hygienic state and religious attachment. According to House *et al* (2014), access to secure, functional toilets has a positive effect on public health, human dignity, and personal safety, particularly for women.

United Nations Children's Fund (UNICEF 2018) indicates that sanitation systems that do not treat excreta safely enable for the spread of disease. Poor sanitation can also result in severe soil-transmitted diseases and waterborne diseases such as cholera, diarrhea,

typhoid, and schistosomiasis as noted by the above organization. This can pose a threat to public health in any town.

According to UNICEF (2017), 2.1 billion people do not have access to safe potable water at home, and twice as many do not have access to safe sanitation. In SDG baseline update of 2017, the presence of adequately managed drinking water and sanitation services is limited, with the overarching conclusion being that too many people, particularly in rural areas, still lack access. This is an indicator that toilets and latrines are still undergoing significant transformation in modern society.

According to WaterAid (2017), public toilet demand continues to rise with increase in population. This explains why majority of them are being commercialized for economic value. It is now almost difficult or impossible to access a toilet facility in public areas without being a customer or a beggar, due to the importance placed on them as indispensable human needs. To use the public toilets or latrines of a church or educational institution, for instance, you must be a member of the congregation, a parent, or a student. Otherwise, they are typically off-limits to visitors for hygienic and safety reasons and are under lock and key. This forces one to seek out a nearby public toilet facility, regardless of whether it is commercial. Consequently, it disadvantages those who are caught unaware and without cash or a suitable denomination to pay for the service in response to a natural summons.

According to the findings of World Health Organization (2023a) more than half of the global population (57%) had access to well-managed improved sanitation facilities. As a result, the remaining population still practiced open defecation or used unsanitary facilities. This report further shows a significant improvement in sanitation coverage. To retain this improvement level World Health Organization controls global efforts to

prevent spread of pathogens by advising the authorities on health-based directions and services administration. Among the strategies set to realize this goal, is the necessity to increase the number of public toilets connected to a sewage treatment facility. SDG 6.2 focuses on providing all individuals with adequate and equitable access to sanitation and hygiene facilities, as well as eradicating the practice of open defecation. This objective place special emphasis on addressing the specific needs of women, girls, and individuals in precarious situations, putting in mind that they are aware of dangerous zones and not all safety considerations are friendly in accordance WSUP (2018) findings.

In Zambia, according to Meki *et al* (2021), poor provision of sanitary facilities was observed at market places. It can therefore be deduced that, many private and public places, such as bus stations, drinking places, offices, police stations, courts and government institutions, pay less attention to public toilets. This demonstrates the need to identify the level of care given to any public restroom facility.

Research conducted by Pasteur *et al* (2015) shows that, towns and other urban areas have a large number of public toilet but many of them are unsanitary. The main challenge being inadequate provision and unsustainable management of these facilities. These render majority of users to choose an urban public toilet based on the quality of the services provided. This study looked at reasons for preferring one public toilet facility over another and its findings indicate location and cleanliness as among other factors.

2.3. Utilization of Commercialized Public Toilets

The propensity and frequency with which a person utilizes a public toilet facility is determined by accessibility of both free and for-profit public toilets. The level of usage is likely to vary from one public toilet to the next due to various reasons. For instance, Fozouni *et al* (2019) observes that some public toilets are zones for substance abuse.

Reports on crime cases being evidenced in public toilets also has influence on utilization. According to a study by Wolfson *et al* (2017) in the United States, some public toilets have been identified as public injection sites and hide-out for drug abuse. In addition, *Ibid* 2017 reports sexual abuse to be a cause of fear to most women visiting public toilets since 10% of sexual assaults have been reported with the majority being women.

A study conducted by Afacan *et al* (2015) indicates that, an increase in mass transit such as rail, roads, trolleys and horse-drawn streetcars increases the need for public toilets. In addition, the changes in transportation technology has facilitated travel to both nearby and distant locations, highlighting the significance of public toilets in bus terminals, stations, and on-board flush toilets on trains, aircraft, and ships. This triggers the need to provision of public toilets that are accessible and ready for use.

In developed nations such as the United States of America (USA), the Department of Labour's Occupation Safety and Health (OSH 2019) shows that the amended Act 1989 mandate employees to avoid the adverse health effects that emanate from infrequent toilet use. In an effort to enhance independence and quality of life, some States have tried to managed and regulate public toilets. Others create national database of public toilets available within their area of jurisdictions. Furthermore, to improve on utilization, they create public toilet plan with an objective of sustaining a network of safe, accessible, clean, and environmentally sustainable public toilets. This contribute towards increasing the number of stocks of public toilets. Through these strategies, public toilets are located in areas that suit the needs of the community. Hochbaum (2020) records municipalities providing insufficient number of public bathrooms for the people away from home by comparing the number of available public toilets to the size of the city population. This calls for the town's progressive planning policies to enhance provision of adequate public toilets for its residents, transit users, employees, and visitors. Most developed countries

have employed a walking distance reduction strategy by placing public toilets at a given interval; for instance, in some countries public toilets are located eight-minute walk in busy CBDs to improve accessibility and level of utilization.

UNICEF (2021) reports that, billions of people will lack access to adequate sanitation facilities, a problem that persists in developing nations, an indication that the level of utilization is likely to be compromised.

Fikralem *et al* (2017) study on the level of sanitation, adoption and utilization, reveals the influential factors and comprehends the nature of their effects. He records that individual influential factors associated with necessity of defecation includes, house hold factors such as unaffordability, community factors and societal factors such as promotions and technology as determinants to open defecation. WHO (2018), therefore recommends in guidelines on sanitation and health that age level of users should be considered during establishment of public toilet facilities. Ali *et al* (2023) findings also shows that, age determines usability since children are likely to fear toilet environs as the elderly find squatting on the eastern type toilets a problem. Furthermore, training programs on public toilet utilization also plays a very important role as well as education level of users. WASH (2022) report shows that, facilities for ageing groups require them to be made more accessible. This reveals age as an influence to the use of public toilets in urban areas. Greed (2019) observes that cultural and historical factors contribute to the disparities in public toilet usage. He argues that this paradox should be utilized to establish inclusive, accessible cities for all thereby increasing utility of public toilets.

USAID (2021) report shows that many organizations are attempting to develop more manageable and cost-effective toilet facilities. These public toilets are supposed to be

sustainable, user-friendly, and protects the community from contamination. They are thus able to cut on cost resulting to increase in rate of use.

According to Goal 6 of the SDGs (UN 2018), the strategy is to enable and accelerate progress of achieving the target. Water sector is aiming to improve water management in order to enhance more coverage, putting in mind that water is a cornerstone determinant of sanitation level. WHO (2017) updates, indicate that 27 percent of the world's population (1.9 billion people) used private sanitation facilities that were connected to sewers from which waste water was treated. 2,300 Million People still lack access to essential sanitation facilities like toilets and latrines. As a result, WHO advocates for promoting the dignity and safety of women and girls, with the provision of separate sanitary facilities, boosting the school attendance of girls in particular. This study assesses the level of utilization in relation to Mildura Rural City (2018) report on public toilet strategy in Mildura, Victoria, Australia.

To clarify the importance of toilets and latrines, WHO and UNICEF (2017) reporting on Sustainable Development Goal (SDG) targets and indicators demonstrates that 4.5 billion people, or six out of ten people worldwide, lack access to safely managed sanitation. Joint Monitoring Program (JMP, 2017) updates to the SDG baseline indicate that a significant number of people still lack access to safe potable water and sanitation. According to Buor *et al* (2020) absence of public toilet facilities signifies a reflection of societal class before the consideration of income and education levels. This also displays the number of people who can acquire access to clean water and sanitation. Therefore, to decrease global inequalities, the new SDGs call for ending open defecation and achieving universal access to basic services by 2030, which can easily be accomplished through improving access to public toilets.

The effort to improve access to public toilet as spear-headed by the SDGs, may prove futile if special considerations such as study on level of utilization are not employed. Such studies envisage some issues that are likely to be assumed. The study by Ahuma-Smith *et al* (2020) on Wa Town in Ghana reveals that 20% of the physically challenged use public toilets frequently, while 27% have never used them because they are not user-friendly. Esmeraldo *et al* (2016) observe that proper signage allows physically disabled individuals to locate and use public toilets. She also notes that the physical inaccessibility of some public toilets is the greatest obstacle for the group. This prevents them from entering the metropolis. For example, according to the findings of Charlotte *et al* (2019) in the United Kingdom, many public toilets are inaccessible to persons with disabilities.

In South Africa, most people are likely to be afraid of using public toilets due to anonymous attacks. South Africa Police Service, SAPS (2020) indicates that murder cases are at 55.8% in public places and most of these cases are reported to have taken place from public toilets. According to Gonsalves *et al* (2015), sex and sexual violence are prevalent in public toilets. South Africa Police Service further report that, majority of these crimes are committed by individuals known to the victim, thereby influencing level of utilizing public toilet.

A report by WASH (2017) shows that the use of shared public toilets in Ethiopia is relatively low with only a few Amhara and Somali regions reporting 10 percent usage. Figures from UN-Habitat (2016) shows that more than one-third of the urban population of the developing world, or more than 863 million people, resides in slums, but city planning and infrastructure have not kept pace. Simiyu *et al* (2017), reports that in Kampala slums, approximately 78% of the population share a sanitation facility every day which compromise their state of hygiene. This is likely to explain why the usage of public

toilets is still low in most urban areas in Kenya since they share same characteristics (Mansour et al 2017).

Different studies show that, an average of 32 million Kenyans did not have access to basic sanitation services in 2015. According to a survey conducted by UN-WATER (2015), only 30 percent of the Kenyan population had access to essential sanitation facilities, including sewerage systems. This finding implies a significant underutilization of public toilets across the nation. This study investigates the prevalence of open defecation, unauthorized urination, and 'flying lavatory' usage in Kakamega Town, since 18% of urban Kenyans, according to a study by Mansour *et al* (2017), continue to use unimproved sanitation facilities. In addition, the study revealed that 3% of the population continues to defecate in the open, while 27% utilize communal latrines. World Bank report (2019a) shows that, approximately 12 percent of the population in rural areas continue to engage in open defecation. Kenya laws Org (2017) states that local authorities are required by Section 116 of the Kenyan Public Health Act to maintain sanitation and prevent nuisances. This can only be accomplished by implementing all legal, necessary and reasonably practicable measures to ensure that all of its districts or administrative zones are always kept clean and sanitary. These circumstances prevent situations that are harmful or hazardous to health.

According to World Bank (2019b) report, approximately 29.7% of urban population in Nakuru County have access to improved sanitation. This indicates that a large percentage of population were still concerned about hygiene. Hartigan *et al* (2020) indicates that females predominantly more often avoid public toilet use mostly when at work and out from home. This in collaboration with Abubakar (2018) affirms that majority of public toilet users are men. These findings indicate that a given percentage of public toilet users are motivated by the need to relieve themselves rather than the condition of the facility.

2.4 Implications of Commercialization of Public toilets on environmental status

In relation to Toilet Board Coalition (2017a) public toilets if accorded the importance they require, are supposed to be very clean such as those found in shopping malls and other prominent offices. This is because they have care attendants assigned to specific toilets and monitored through advanced monitoring systems which ensure that every employee is accountable and answerable to mistakes found arising from places of work.

According to Local Toilets Strategy guidance (2018) and Jaglarz (2020) research findings, the following assumptions apply to public toilet standards: Many of the buildings and their public toilets have been vandalized, and the costs of repairs and maintenance are likely deemed expensive at some point. Vandalism is mostly covered in graffiti or in other ways, such as broken locks, broken chains, missing toilet seats, or filthy floors and sinks, rendering them frequently inoperable. Often, public toilets are filthy, fragrant, and lack toilet paper. Frequently, toilet structures are unheated and, as a result, cold and decrepit. They mostly have stairs, making them inaccessible to people with disabilities or mobility issues. People cite uncleanliness, a general dearth of facilities in key locations, and safety concerns due to antisocial use and vandalism as reasons for not utilizing the service. They are pitiful and offer only polite service, particularly to wheelchair users. In addition to uncleanliness and insufficiency, the general quality of public toilets is poor. Frequently, hand cleansing facilities are limited and cubicles are inoperable.

The general view, whichever provider, is that the overall situation of services is inadequate. Those that are open are almost always unclean, unhygienic and unwelcoming and invariably unattended.

2.4.1 Economic Aspect of Commercializing Public Toilets

According to Beevor (2017), toilet resources can provide solution for food, agriculture, water, energy and health care. It's estimated that 7.6 billion people on the planet currently

create toilet resources (human excreta) every day to the tune of 3.8 trillion litres of resources (based on 500 litres of excreta generated per person each year). This resource can be very disastrous if not well managed.

WASREB (2023) reports that as a requirement to achieve SDG 6.2, national policies had to be made specifically for sanitation management. They were to ensure that sanitation issues were taken seriously. This made it possible for serious priorities to be taken during development. This explains why in Kenya, an allocation of approximately KShs11.2 Billion annually is directed towards water and sanitation programs. The achievement of this SDG target depends largely on demand and utilization of the services rendered and assessed through improved universal access by the underserved and the poor. This signifies a more vibrant micro-economic environments likely to emerge around the related water and sanitation facilities.

Toilet Board Coalition (2017b) lists some of the space utilization plans that include Wi-Fi enabled, monitoring of public toilet health indicators and application of smart technologies to waste management, sewage and waste water treatment. He also adds another opportunity as launching of an initial inquiry into the business opportunity in the digitization of sanitation. The study looks at space utilization economic value findings in Kakamega Town and gives a report of kiosks, food vendors, water points, hawkers, shoe shiners, hair designers among others are fully tapping their livelihood from the location of the public toilet. These findings, according to Toilet Board Coalition (2020) indicate that a public toilet is a market enriched by a variety of economic benefits, such as transportation and movement of wastes, supply of necessary materials, processing of wastes and service delivery.

Commercializing public toilets is a trend that is engulfing public toilet service provision. According to Nairobi County Assembly (2015) Kenya realizes a lot of cash as revenue

from licensing public toilets operation within its urban centres. Kenya Gazette supplement (2019) further indicates that County Governments also receives monthly rental fee from its public toilet facilities leased out. It's also worthy to note that Iftikhar (2020) study indicates the willingness of public toilet users to pay for service offered to enhance cleanliness. This explains why most countries in the world are employing commercialization of public toilet services. For instance, Toilet Board Coalition (2017a) reports that public toilets offer a good market economy which when well captured can promote economic growth at a larger scale. Mansour *et al* (2017) notes that, by trying to encourage commercialization of public toilet facilities, it has become an income generating venture as well as boosting a night economy in Kenya. Mansour also indicates Nairobi as being among other urban centers in Kenya that have a good number of public toilets that charge for their services.

Banks (2019) indicates that, most free public toilets and latrines facing extinction are from urban centers due to several reasons such as budget for their upkeep, anti-social behavior such as sexual and drug abuse that take place in these facilities and safety of user. Carmarthenshire County Council (2019) report in Wales, citing Greed 2003 state that, public toilets were centrally located to enhance accessibility. According to Greed, public toilets were sometimes sponsored by authorities of the time, an example being those sponsored by Queen Mathilda in mid-1350s and Dick Whittington in 1480 in London. History also reveals (Chadwick 1842) records that report Corbyn Morris –an administrator- in 1751 proposing some pretty radical steps in London to curb the rapid deterioration in level of sanitation and general quality of life. This necessitated Countries to call for establishment of municipal authority with powers to remove waste from as early as 1751. In mid-19th Century, a cholera outbreak in London led to establishment of waste removal and management of facilities to improve the health well-being of its

population. Formulation of laws to control sanitary levels such as in United Kingdom- “The Nuisance Removal and Disease Prevention Act of 1846” began. The UK public health department ensured that residents deposited weekly wastes in movable receptacles for disposal. By 1895, New York City became the first U.S city with public sector management. US has seen much advancement through the establishment of OSH Act in 1970. According Malima *et al* (2022) citing Greed (2006), the fear of environmental disease outbreaks among users led to many counties investing in public health facilities. These factors have encouraged commercialization of public toilet facilities thereby triggering economic implications. Bradley Corporation (2018) records that 56% of Americans consider paying as long as they are guaranteed a clean, well-stocked public restroom. On the other hand, *Ibid 2018* states that initiating pay and use public toilets into the system tend to increase the percentage of people who are unable to access available toilets. Looman (2015) identifies several factors that contribute to inappropriate waste disposal, including security level, large money denomination, and poverty level. These factors have been found to associate with a significant number of deaths caused by inadequate sanitation, to an estimate of 75,000 individuals perishing daily. Disturbingly, among this staggering figure, approximately 5,000 are children under the age of five.

Mara (2017) notes that open defecation is overwhelmingly poverty related with 60 percent of the poorest groups practicing open defecation compared to less than 1% in the wealthiest group. He still notes that, there is very little improvement being done to eradicate open defecation among the poorest compared to the richest.

Ssekamatte *et al* (2018) study in Kampala reveals that barriers or obstacles to operation and management of public toilets includes high operation costs, failure of public toilets to break even and lack of investment in occupational health. On the other hand, Crouch (2018) reveals that, some customers suffer when they don’t have liquid cash. This

situation results to land degradation such as a sludge and illegal dumping that ends up being a costly venture to any system of governance. These study findings identify the environmental pollution experienced in the area between fish market and Kakamega Bus Stage, a zone that has an illegal dumpsite as to be related to Crouch (2018) report. It also assessed the economic implications of commercializing public toilets in Kakamega town in relation to Toilet Board Coalition (2020) that encourages cashing out on public toilets,

2.4.2 Hygienic Aspects of Commercializing Public Toilets

UN Secretary-General (2016) citing a report of UN Deputy Secretary General Remarks of 2013 issued a call to action on sanitation that included elimination of open defecation by 2025. This was in response to trying to monitor global burden of disease, and sanitation level. The report also analyzed what helps and hinders the progress by giving member states and donors global data to help decide how to invest in providing toilets and ensuring safe management of water and excreta. It also noted that in 90 countries, progress towards basic sanitation was very slow, meaning they will not reach universal coverage by 2030. There is scanty information and data specifically that can enhance water and sanitation management. Many countries lack data on qualities of water and sanitation services. This was in accordance to UN-Habitat (2023) which estimate that only a few countries can access safely managed drinking water and countries on safely managed sanitation.

The level of hygiene of any public toilet is usually associated with contaminable diseases and infections. White (2021) findings indicate that, the implications of public toilets to the environment are reflected by various health issues. A similar report is presented by International Transport Workers' Federation (2019) which states that the inability to satisfy essential needs because of no toilet access contribute to health issues. These include; urinary tract infections, kidney infections and digestive problems which can later develop into severe health problems. Kipkoech *et al* (2023) also note that lack of

accessible public toilets promotes poor health, sanitation and environmental dilapidation. House *et al* (2022) states that the inaccessibility to toilet facilities worsens problems for men with swollen prostate, menstruating women or those going through menopause and anyone with urinary and fecal incontinence. It was on this note that this study sought to examine the hygienic implications (aspects) of commercializing public toilets on environmental status of Kakamega Town.

Antwi-Agyei *et al* (2022) in his study on Shared but Clean Household Toilets indicated how concerned many public toilet users were with public health standards in public toilets. The findings indicated that some of the public toilets were well maintained just as private or commercial public toilets and met healthy standards that attracted many users. This shows that public toilets had enhanced the standard of hygiene in Kakamega Town thereby corresponding to Njuguna *et al* (2017) findings that indicate the low rate of urban open defecation in Kenya at 3%. This is an indication that commercial public toilets lead to a better environment.

Kuoch *et al* (2020) study shows that, among reasons that make people to avoid using public toilet facility was because of anxiety and fear of having bowel movement in public that make them worry about smell, noises, negative cycle of stress, germs, avoidance and shyness when utilizing public toilets. Some of them fear being judged for soiling or causing the mess arising from the public toilet facility.

According to SDG-6 which aims at ensuring availability and sustainable management of water and sanitation for all, Joint Monitoring Program (JMP) (2017) monitors on the following two targets; target 6.1- by 2030, achieve universal and equitable access to safe water and sanitation for all. Target 6.2- by 2030, achieve access to adequate and equitable sanitation hygiene for all and end open defecation, paying special attention to the need of women and girls and those in vulnerable situation. In a study of other SDGs, they

emphasize on the essence of promoting good health through proper sanitation. For instance, SDG-3 aims at ensuring healthy lives and promoting well-being for all at all ages. UNICEF (2021) based on SDG-3.9 that aims at countries working to substantially reduce the number of death and illnesses from hazardous chemicals, air, water, soil pollution and contamination by 2030. The baseline of above SDGs was to ensure and maintain hygienic environmental standard that can foster a healthy pathogen free and aesthetically attractive environment.

Kenyan government with an aim of promoting a hygienic environment, took measures in setting up policies to encourage and promote hygienic environment. For instance, in Sessional Paper No.10 of 1965 on African Socialism and its application to planning in Kenya, government policy had to be directed towards the eradication of poverty, illiteracy and disease. This policy had an implication on sanitation since if not well managed can result to spread of pathogens. The 1960 Environmental Sanitation Program supported by WHO-UNICEF was carried out in Kenya with an aim of developing water supplies for small rural communities, improving waste disposal and providing sanitary education for the rural population (WHO-UNICEF 2017).

Further report as revealed by UNICEF (2023) records, shows millions of children facing lack of access to basic sanitation and die due to inadequate sanitation and improper toilet facilities. These findings prove that the importance of hygienic toilets lies in an effort to prevent diseases which can be transmitted through human waste that afflict both developed and developing countries. A study done by Bhatt *et al* (2019) in Nepal shows that people are compelled to practice open defecation due to constraints of norms restricting latrine use and hygienic issues in general. According to Osumanu (2019), financial constraint is a challenge that hinders an individual from using public toilet resulting to open defecation. He also notes that; social norms may allow children to

defecate freely anywhere. Sclar et al (2018) findings indicate that, open defecation has considerable impacts on dignity, privacy and unforeseen social costs not leaving behind safety from assault and sexual violence. Vyas (2015) citing Deslypere 2004 also points out that, the chances of pathogen transmission are very high even in toilets that may appear to look very clean.

A study by Alexander *et al* (2016) shows that in urban areas the number of people able to access a toilet is always more than 60% whereas in most parts of rural areas open defecation was at 55.4%. Globally, 28 percent of the population has access to functioning toilets. According to Webber (2018) policies on public toilets determine public health since a dirty environment is a recipe for outbreak of communicable disease. To promote level of hygiene, a study by Myers *et al* (2018) in relation to Sanitation Policy encourages the building of public toilets linked to sewers or septic tanks since this prevents waste from flowing into rivers or contaminating the environment. He also observes that a public toilet linked onto a sewer and plenty of water supply meets SDG's baseline sanitation standards and principles.

According to Japan International Corporation Agency –JICA (2015) poor management of public toilets results to open defecation which is very high in India, leading to a compromised hygiene state. The consequences are diseases, lack of dignity and environmental degradation. Furthermore, the impact is high health expense that triggers high taxes by respective governments to overcome the costs incurred as explained by Darlington's theory.

Based on the findings of UN (2015) and the United Nations' population forecast in 2017, it is projected that the global population would reach 9.8 billion by the year 2050 and 11.2 billion by the year 2100. The reason behind this phenomenon is the annual addition of

around 83 million individuals to the global population. In light of population projections, it is anticipated that the ongoing waste management issue will have specific implications on the state of public toilets, leading to persistent challenges in sanitation and management. This research highlights on health implications of commercializing public toilets in Kakamega Town.

2.4.3 Aesthetic Aspects of Commercializing Public Toilets

According to Hobsons Bay City Council (2021), in Melbourne City of Victoria, access to high quality public toilet facility plays an important role in our lives, it improves customer expectations and services delivery. As population increases and urban areas population rises, pressure force people to require toilets that are accessible, clean and safe. These categories of toilets are attractive and make the environment a better place and admirable.

According to Yin *et al* (2020), most public toilets centrally located and well planned can enhance user efficiency and improve experience. Iftikhar *et al* (2020) findings shows that aesthetically built public toilets that are hygienic and adequate provide humble and comfortable environment to users. This enables them to engage in extensive economic activities and also spend more time outside on recreational activities, an indication that beautifully decorated public toilet designs promote accessibility and satisfaction. Mildura Rural City (2018) reveals that, in Victoria Australia, several facilities are recorded as being in excellent condition overall despite signs of cracking and weathering being at 15%. It can therefore be noted that Public toilets rated as best in the world have been designed to add beauty to the natural environment even though they may be having minor limitations.

According to Bibri (2020) to enhance intensity and diverse land use, sustainable transportation and public toilets require core design strategies. This fosters a hospitable

atmosphere that encourages traffic in town centers, hence augmenting the potential for commercial expansion among stores and other businesses. Effective strategic planning facilitates the development of environmentally sustainable sanitation facilities that are aesthetically pleasing within their surroundings. This study reveals a selection of public toilets in Kakamega Town that exhibit a close alignment with the aforementioned findings.

According to Collis' (2021) strategy, establishing public toilets ought to adhere with structured plan to enhance assessment of each facility giving priority to any improvement usage and authority's desire to supply well valued facilities to the users. For instance, public toilets such as those located in Wembley, Wychavon, West Hampstead, and Universal Superloos in London, necessitated the implementation of effective strategic planning by the relevant authorities. This planning process should encompass the consideration of diverse demands across all levels. This study proposes the need for research to identify effective ways that might optimize the utilization of public toilets in order to enhance aesthetic value. According to a study conducted by Odagiri *et al* (2017), the provision of community support mechanisms can contribute to the stabilization and long-term sustainability of public toilet usage by alleviating perceived constraints. Hence, it can be inferred that the effective strategic planning and commercialization of public toilet facilities are key factors to be considered in the pursuit of enhancing aesthetic value. In accordance with the findings of Njuguna *et al* (2017), the average rate of open defecation in Kenyan counties was wanting and requires special attention to curb it. This was in relation to UN-WATER (2015) findings indicating urban open defecation rate at 3%. If permitted to persist, these statistics have the potential to jeopardize the visual integrity of any urban set-up. This study elucidates the evident aesthetic ramifications on the surroundings that arise during the process of designing and promoting commercial

public toilet facilities. Additionally, this study highlights the need for further investigation into the effective planning and strategic placement of public toilets in Kakamega Town, with the aim of enhancing the overall utilization of these facilities.

2.5 Theoretical Framework

The study was conducted basing on the Contract Theory by Harts *et al* (1986). This study was then guided by Garret Hardin's Theory of Tragedy of Commons with the main objective being to bring out implications of commercialization of public toilets on socio-economics and environmental status of Kakamega Town.

Contract Theory according to Harts *et al* (1986), is about design of moral agreements that motivate people with conflicting interest to take mutual beneficial action. In reference to implications of commercializing public toilets on socio-economic and environmental status of Kakamega town, we are bound to look at financial motivational gain, cost-cut effectiveness and quality of service offered by the toilet facilities. This is at the expense of the main objective of setting up public toilet facilities that are readily available and accessible to satisfy the need of its users and their effects to the environment. Harts *et al* (1986), analyze incomplete contracting in which various parties invest to increase the productivity of an asset and when unforeseen contingencies arise, the parties have to bargain over what to do even if it is through litigation service. These, on many occasions have led to multiple implications on social, economic and environmental status of a given set-up, within a space and time, thus affecting flexibility of service provision to the tax payer. For instance, poor sanitation in free public toilets may result to an outbreak of a given disease. It will then force the government to step in by providing medical necessities to curb the epidemic thus rising costs of medication that can only be recovered through increase in taxation.

The theory of Tragedy of the Commons according to Hardin (1968), helps in one way of accounting for overexploitation. Hardin discusses problems that cannot be solved by technical means. He argues that if individuals acting in self-interest by using common resources for their own gain and with no regard for others, all resources would be eventually depleted. He therefore points out against relying on conscience as a means of policing commons (public toilet for our case). He suggests that this favors selfish individuals over those who are altruistic. He further states that open access to resources with such selfish interests requires management. Hardin's theory relates to a need (freedom) for public toilets as necessity that may be misused if not managed well. Shaw *et al* (2019) recommends involvement of stakeholders in designing a public toilet facility. Encouraging dialogue enhance relationship, exposes challenges while creating awareness, enforce a sense of ownership and ensures that peoples' desires, demand and need are met. Shaw *et al* further note that involving the stakeholders at the beginning enhances willingness to pay and use the public toilet facility.

Through participation, stakeholders are also motivated to appreciate the design rationale and rules as they are mostly assigned the role of supervising approving the establishment's sustainability. If these guidelines are embraced, then segregations of some societal members such as street families and the poor are minimized. Hardin thus recommends for special assessment before commercializing a Common. These economic theories fall short of addressing the rightful entrepreneur that is able to consider the degree of freedom or need rather than the economic value in term of proceeds realized. They also point out most government's solutions as, 'to do nothing in management' resulting to crises that calls for commercialization or privatization of common. It is worth noting that, some of the entrepreneurs are bound to lock out the poor and vulnerable since they are driven by proceeds from the venture rather than the addressing state of sanitation within a given set-

up. At this point in time, respective governments should have policies in place to motivate the system through incentives or any other.

2.6 Conceptual Framework

The theories inform the conceptual framework for this study in such a way that, if the 'Commons' (toilet) issue is not managed well it results into contracts. The Private or the Government contracting has to be employed in order for the services to become effective. Most of the contractors aim at motivational gain out of their output such as clean public toilets and clean environment. Anything that results when not included in their contract will be met by signing of new contract. These outcomes are well highlighted by the conceptual framework. Darlington (2006) describes them using an "Agitator's model". When the model is analyzed in terms of feedback, and it is found that the objectives of the contract (clean environment) have not been fully addressed, it's then called "a zero-sum game". This game can lead to industrial strikes whereby the residents of a given community may organize a demonstration to call for their right to sanitation be addressed or just try to avoid using the facility in such filthy state.

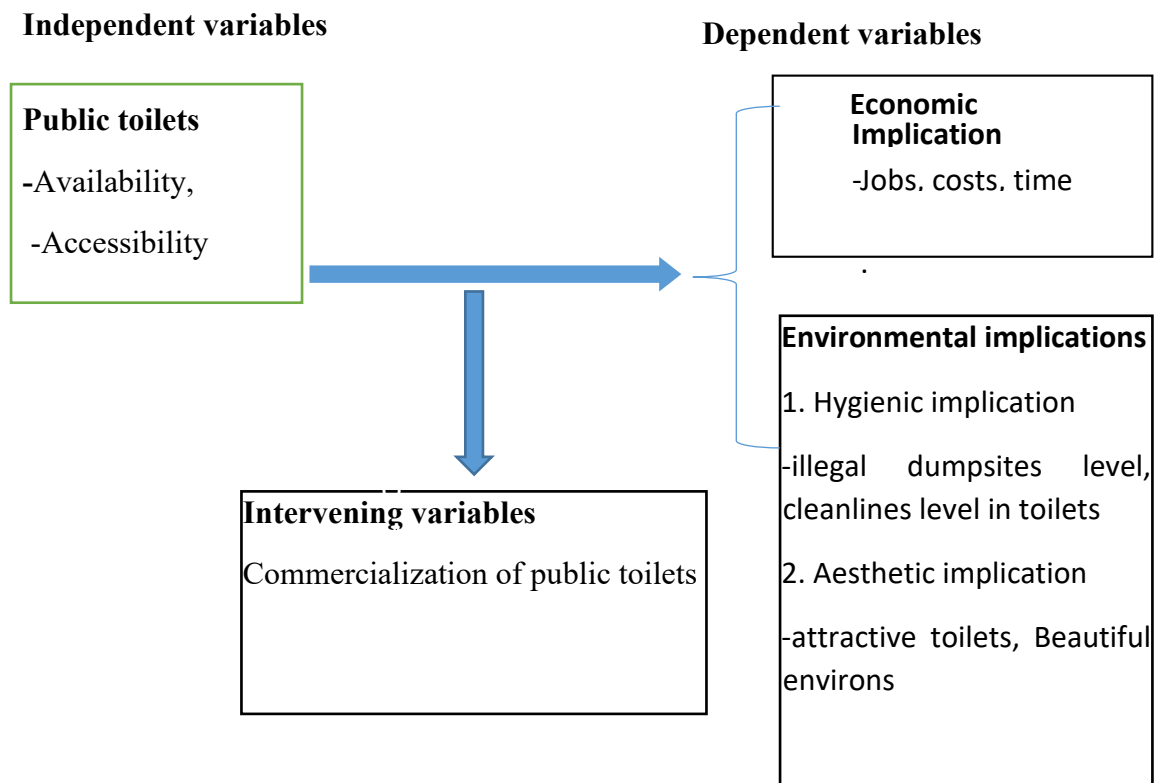


Figure 2.1: Conceptual Framework.

Source: Adopted from Darlington, (2006)

In this study, the outcome from assessment of availability and utilization public toilets are going to determine the implications of commercialization of public toilets on socio-economics and environmental status of Kakamega Town and necessary policy formulation. According to Darlington (2006), the spiral effect from agitator's model, are determined by the attention given to the policies and recommendation put forward. If these intervening variables are negatively addressed, they attract negative implications leading to public outcry and loss of corporate image. People become demotivated, unproductive and with potential of new conflicts such as industrial strikes or avoiding the use of public toilets, and in any case, the poor state or constrains attached to the use

of public toilets is addressed, then the public toilet users are motivated into utilizing the facilities thus improving level of sanitation. These circular motion of results from this model are called “zero-sum game.”

The availability of public toilets is of great importance to urban population in Kakamega Town. Enhancing availability of public toilets and flexibility in accessing its services is very essential in ensuring sustainable environment. Asutifi North District Assembly (2018) report in Ghana indicates that, by enhancing good public toilet facilities, there is improvement in accessibility that likewise improves sanitation. It also shows improving access raises the demand for the public toilet facilities due to the increasing population of citizens in urban areas meaning that even more people will require more toilet facilities that are accessible, clean and safe.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Overview

This chapter focused on research methodology that was used in the study. It consisted of; research design, study area, target population, sampling procedure, sample size calculation, development of data collection instruments, reliability and validity of instruments, data collection procedure, data management, data analysis, ethical considerations and dissemination of results.

3.2 Research Design

The study adopted descriptive research design. Aggarwal *et al* (2019) argues that descriptive designs allow individuals to describe one or more variables without much regard to hypothesis and thus describes, analyses and interprets conditions as they exist. This design was appropriate for the study as it enabled the researcher determine the availability of commercialized toilets, assessing the utilization of commercialized toilets and examine the implications of commercializing public toilets on the environmental status of Kakamega town. The study employed use of both quantitative and qualitative approaches to collect data.

3.3 Study Area

The study was carried out in Kakamega Town. The town lies between longitude 34°44'0 degrees E and longitude 34°46'0 degrees E, latitude 0°18'0 degrees N and latitude 0°16'0 degrees N. The town is in Kakamega County in the western region of Kenya, along Kisumu- Webuye Highway. It is situated 52 kilometers away from Kisumu town in the south and belongs to Lurambi sub-county. It serves as the county headquarters for Kakamega County. The town has witnessed a high increase in population growth in recent

years (Ngome *et al* 2018). The current population of Kakamega town is at 63,426 (UN 2019). The town is cosmopolitan with the Luhya community forming the largest ethnic group followed by Luo (National Cohesion and Integration Commission, 2023). Other groups include Kalenjin, Kikuyu, Kamba, Gusii, European, Asian, among others.

3.4 Target Population

The target population comprised the town residents of Kakamega Town. According to UN (2019) on World Population Prospect report, the expected target populations was 63,426 people living in Kakamega town plus those on transit. These individuals were anticipated to utilize the public toilets at some point in time. Toilet operators within the town formed part of the key informants.

3.5 Sampling Procedure

The study area, Kakamega town, was purposively selected for this study from several towns that make up Kakamega County. This was because the town comprises a cosmopolitan society and has many economic activities that influence the use of public toilets. We employed random sampling of pedestrians, drivers, residents and businessmen to obtain respondents of questionnaires in Kakamega Town. Systematic sampling was conducted where by every fourth individual visiting a public paid toilet was requested to respond to the questionnaire. The study selected a sample of toilets purposively out of public toilets found at law courts, hospitals, Stadium, CBD and county offices.

3.6 Sample Size Determination

Sample size was calculated using the formula by Mugenda and Mugenda, (2003) where;

$$n = \frac{z^2 pq}{d^2}$$

Therefore:

Z= the standard normal deviate at confidence interval of 95%, (1.96).

P= proportion in the target population estimated to have the characteristic being measured.

$$Q= 1-p$$

D= level of statistical significance set of Alpha (0.5).

Therefore, if the proportion of the target population with a certain characteristic is 0.5, the z statistic is 1.96 and the desired accuracy level is at 0.5 level, then sample size will be;

$$n = \frac{(1.96^2)(0.5)(0.5)}{0.05^2}$$

$$= 384.16$$

A sample frame of 384 respondents from the study area was arrived at as follows; the sample size (n) for respondents was estimated using the formulae

Where n= desired sample size (if the population is greater than 10000).

Therefore, a sample size of 384 was used.

3.7 Development of Data Collection Instruments

Data collection instruments were adopted from Tanujaya *et al* (2023) and revised to suit the study. The quantitative tool comprised of a structured questionnaire comprising of yes or no questions and Likert scale responses. The qualitative tool comprised open-ended questions administered as interview guide.

3.8 Validity of the Data Collection Instruments

Validity is defined as the degree to which results that are obtained from data analysis do represent the actual desired phenomena through the ability to measure the extent to which

they purport to (Mohajan, 2017). It was used to find the level of accuracy of the instruments of measurement employed. To achieve internal and external validity, piloting was conducted (Rohatinsky *et al* 2017). Refining of the tool was done with help of supervisors. To ensure face and content validity, the questionnaires and measurement process was guided by the conceptual framework in order to measure key socio- economic aspects and commercialization of public toilets in Kakamega Town. Content validity and relevance was ensured through a pilot test conducted in Luanda Town (Kenya). This enabled the researcher to assess the clarity and relevance of the questions in the questionnaire. Items that were unable to measure given variables were discarded and others modified to improve the quality of research instrument such as wording and bias.

3.9 Reliability of Instruments

Heale & Twycross (2015) notes that, reliability is the measure of degree to which research instrument would yield same result after repeated trials. A test reliability method was administered on same instrument to establish a Cronbach alpha coefficient value (KR20 or (a)). After conducting a pilot test, inadequate items on the instruments were modified or discarded to improve on the consistency of the items in generating the required data.

Forty-eight (48) participants were used for pilot testing. The reliability was then computed from the formulae

$$(a) = kR20 = \frac{k(S^2 \sum Si^2)}{S^2(k - 1)}$$

Where k=number of items in the instrument

S^2 = variance of all scores

Si^2 = variance of individual items.

The result from the pilot test calculation gave an alpha (α) Cronbach value coefficient of 0.727 which is well above the lower limit of acceptability of 0.6. The results indicate that the questionnaire used in this study had a high level of reliability (Cronbach = 0.727). To increase reliability in this study and minimize errors, the researcher trained the research assistants for a period of one week to acquaint them with necessary skills for the study. The researcher also worked closely with the assistants to ensure that relevant skills were mastered and correct information entered. For qualitative data, the researcher collected the information in person.

3.10 Data Collection Procedures

Primary data was collected using observation, interviews and questionnaires while secondary data was obtained from unpublished anecdotal reports and documents from related offices.

To determine the availability of commercial public toilets, an observation checklist was used to check against observed presence of toilet and similarly the questionnaire was used to triangulate the information.

To assess the utilization of the commercialized public toilet, a structured questionnaire was used.

To examine the implications of commercializing public toilets on environmental status of Kakamega town, both structured questionnaire and interview guides were used.

Questionnaires were administered to 384 respondents randomly selected using systematic sampling. Interview guides for key informants were administered to capture vital information on implications of commercializing public toilets on environmental status of Kakamega town. Interviews were employed through face to face and phone calls to the key respondent such as public health officials, county planning officers, water

and sanitation officers and public toilets operators to collect information that were not easily accessed.

Document review was carried out to capture information in key documents from offices such as county offices and media as related to the subject of study. The basic language of the questionnaire was English but was subject to interpretation into the local language or Kiswahili by the researcher. Data was collected over a one-month period.

3.11 Data Management and Analysis

Both quantitative and qualitative data were collected from respondents and stored securely. Data was then coded and entered in excel for processing. The study involved 384 respondents residing in Kakamega Town. A total of 351 questionnaires were clean and complete for data analysis. This represents 91.4% response rate which was considered adequate and formed an acceptable basis for drawing conclusions. A few questionnaires were incomplete in most of the survey questions and were therefore excluded.

3.12 Data Analysis

Data was then analyzed using the Statistical Package for Social Sciences (SPSS) version 28. Quantitative data was analyzed using descriptive and inferential statistics. Demographic characteristics were analyzed using descriptive statistics of means, frequencies and standard deviation. To determine the availability of commercial public toilets within Kakamega town frequencies and subsequent percentages were elicited from the data. To assess the utilization of commercialized public toilets frequency data was collected and analyzed in percentages. Bivariate analysis for demographic factors associated with use of commercial public toilets was done and the P-Value of $P \leq 0.05$ was considered significant and the qualitative data analyzed thematically. To examine the

implications of commercializing public toilets on environmental status of Kakamega town, descriptive statistics employing use of percentages were done and thematic analysis of qualitative data.

3.13 Limitation of the Study

The following were limitation of the study;

The study design was descriptive and hence limited the study to one-point data collection. This posed a limitation in examining continuous behavior of participants thus posing a threat to generalization of the findings.

Unwillingness of respondents to share out some information was experienced such as from County environment offices, public health offices and public toilet operators. This was minimized by the researcher employing use of key informants and research assistants from the study site who were willing to give out the required information.

Non-availability of latest records from Kakamega County Healthy Offices on usage of commercialized public toilets and latrines after the 2010 devolution in Kenya was also a limitation. This was solved by use of detailed questionnaires to obtain primary data.

3.14 Ethical Considerations

Helsinki declaration proposed that any research conducted should ensure that the human rights of participants are protected (Al Tajir, 2018). The researcher therefore adhered to ethical principles in the entire process. The researcher sought approval to carry out the study from Masinde Muliro University of Science and Technology (MMUST) Directorate of Post Graduate Studies to ensure conformity to all protocols in conduct of study as guided by institutional policies. The researcher then sought a permit from National Commission of Science Technology and Innovation (NACOSTI). Informed consent was

obtained from participants to ensure the autonomy of participants was secured. Participants voluntarily confirmed their willingness to participate by verbally consenting. They were allowed freedom to withdraw from study at any point without coercion. Confidentiality was assured throughout the process and data used for research purposes only. To treat all subjects equally, the principle of justice was upheld and thus participants randomly sampled into the study.

3.15 Dissemination of Findings

Information generated will be disseminated in scientific conferences, strategic meetings in different institutions as well as published in refereed journals for general public consumption.

CHAPTER FOUR

4.0 RESULTS

4.1 Overview

This chapter presented data analysis, presentation and interpretation of the results from the study. The study examined the implications of commercialization of public toilets on the socioeconomic and environmental status of Kakamega town. It begun by providing information of sociodemographic characteristics of respondents that participated in the study. The chapter therefore provided information on availability and utilization of commercialized public toilets in Kakamega Town as well as examining the implications of commercializing public toilets on socio-economic and environmental status of Kakamega Town.

4.2 Socio-Demographic Characteristics of the Respondents

The study obtained the socio-demographic characteristics of the respondents. This included the age, gender, and educational level, reasons for being in town and disability status as indicated in table 4.1. The study found out that majority of the respondents, 207 (58.97%) were of age bracket 21-30 years. Age 41 and above had the lowest response rate of 22 (6.26%). Similarly, with regard to gender, 254 (72.36%) male against 97 (27.64%) female used public toilets. This implies that majority of the commercial public toilet users were males.

Concerning marital status, majority of the married respondents were married males at 130 (72.2%) followed by singles whereby single males dominated by 68 (68.0%) while the least were separated females at 8(34.8%). Regarding education level, majority of the respondents had tertiary level education at 185 (72.0%) for males and 72 (28.0%) for females. The least respondents were primary level with males at 10 (76.9%) and females at 3 (23.1%).

Table 4.1 Socio-demographic characteristics of Study Participants

Variable	Gender	
	Male	Female
	N (%)	N (%)
Age groups	20 years and less	47(71.2)
	21-30 years	19(28.8)
	31-40 years	147(71.0)
	41 years and above	60(29.0)
Marital status	35(71.4)	14(28.6)
	19(86.4)	3(13.6)
	Married	130(72.2)
	Single	50(27.8)
Education Level	68(68.0)	32(32.0)
	Widowed	30(62.5)
	separated	18(37.5)
	15(65.2)	8(34.8)
Reason for being in town	Primary Level	10(76.9)
	Secondary Level	3(23.1)
	Tertiary Level	59(72.8)
Are you physically challenged	185(72.0)	72(28.0)
	Traveler	21(63.6)
	Work/job	12(36.4)
	Business	45(62.5)
	Shopping	27(37.5)
	Resident	37(82.2)
Are you physically challenged	8(17.8)	30(30.3)
	Driver	69(69.7)
	24(92.0)	2(7.7)
Are you physically challenged	Yes	14(63.0)
	No	8(36.4)
	240(72.9)	89(27.1)

Source: Researcher, 2019

4.3 To Determine Availability of Commercialized Public Toilets in Kakamega Town

4.3.1 Availability of Public Toilets in Kakamega Town

A total of fourteen (14) public toilets located within the vicinity of Kakamega Town were identified. The management of these public toilets was further categorized into two groups with initial category comprising of entities providing complimentary services, while the subsequent category encompassed organizations selling services for a fee as in table 4.2. The entities providing complimentary services were classified as free public toilets, totaling six (6) accounting for 42.86% in quantity while those giving services for a fee, categorized as commercial public toilets were eight (57.14%). Customers were required to remunerate for the services they receive. This implied that majority of the public toilets in town were commercialized.

Table 4.2 Showing availability of public toilets by location and characteristics in Kakamega town

S.n	FREE PUBLIC TOILETS		COMMERCIAL PUBLIC TOILETS	
	Location	Characteristics	Location	Characteristics
1.	The county office headquarters situated at Milimani	-Multiple public toilet facilities. -The urinals for both males and females are connected to the sewer pipe. -Pit latrines present. -Offer free services	Muliro Garden public toilet facility (-Iko toilet facilities)	- Owned and operated by the Iko toilet organization. -Offer multiple toilet facilities -Clean and connected to sewer line -Levies its services
2.	Bukhungu Stadium	-Multiple toilet facilities -Connected to a sewer line. -It has two pit latrines. -It is free -Maintained by the management of Bukhungu Stadium.	The power-line public toilet.	-Owned and managed by Water and Sanitation department of Kakamega County. -It was a make-shift facility on road reserve. -Levies its services
3.	Kakamega County Referral Hospital	-Multiple public toilets facilities. -It is under hospital management. - offering complimentary toileting services to the hospital.	Municipal Market both old and new each has separate facility	-Owned and managed by Water and Sanitation Department -Clean and neat -Levies its services -Offers multiple services
4.	The Law Courts of Kakamega	-Provides complimentary services -Offer free services	Kakamega fruits and vegetable Market	-Owned and operated by the Water and Sanitation Department -Levies its services -Offer multiple of services -Are clean and neat.
5	The Kakamega County Assembly grounds	-Provide complimentary free services but not to all -Security guarded	Kakamega Bus Station has two facilities (Kakamega Traders Association Toilets and Iko toilet	-Offer multiple of services - Are clean -Levies their services
6	Masinde-Muliro University of Science and Technology	-Has multiple public toilet facilities, including pit latrines -Situated within its main campus and lecture halls in Kakamega Town, such as Shivas and Star Annex. -connected to a sewer line -Provide complimentary services.	The Kakamega Fish Market	-The facility is maintained and operated by the Water and Sanitation Department. -Its clean -levies its services

Source: Researcher, 2019

When asked how readily available public toilets were in Kakamega town, 136 (78.6%) males and 37 (21.4%) females said they were readily available, giving an average availability of 173 (49.3%) public toilets ready for use at any convenient time. This indicated a lower than average availability of the facility. When asked if the facilities they used had a special site for physically challenged people, 79 (22.5%) of the respondents said yes. This indicates that they are scarcely available. All the respondents felt that the number and distribution of public toilets in Kakamega town was not adequate to address the needs.

Table 4.3 showing availability of commercial public toilets and presence of site for the physically challenged

Variable	Category	Gender		Total (N)
		Male N (%)	Female N (%)	
Facility have a special site for the physically challenged	Yes	55(69.6)	24(30.4)	79
	No	199(73.2)	73(26.8)	272
Readily available for use	Yes	136(78.6)	37(21.4)	173
	No	118(66.3)	60(33.7)	178

Source: Researcher, 2019

4.4 To assess utilization of commercialized public toilets in Kakamega town

In this objective the respondents were expected to demonstrate their understanding of what a public toilet is, location of a public toilet and indicate their preference in using a given type of public toilet.

4.4.1 To determine the knowledge on the presence and location of public toilet

Regarding knowledge of presence and location of public toilets in Kakamega town, out of the total 351 respondents, 265 (75.5%) reported being able to identify a public toilet with only 86 (24.5%) not able to identify. Furthermore, 97 (27.6%) of the participants specifically mentioned that the public toilets they utilized were situated within the

university premises (MMUST). These finding suggests that a significant proportion of the population residing in Kakamega Town possess knowledge regarding the presence of public toilet facilities and possess the ability to utilize them when necessary. The findings also indicate that the location of the public toilets influenced their utilization with most used being in MMUST and CBD respectively.

To assess participants' understanding of a public restroom, respondents were required to fill open-ended questions. One respondent responded....

“A public toilet is a toilet used by the public.” R20

While another said...

“It is a place to help yourself on short or long call in town.” R11

Another also responded...

“It is a government property meant to serve the citizens.” R7

Additional responses on that question included....

“A toilet that does not belong to a particular household.” R13

And...

“It is a facility used by humans for human waste disposal.” R23

Concerning how the participants located the public toilets for the first time, majority who were 221 accounting for 62.96% reported to have located the public toilets using signage and maps.

Table 4.4 Knowledge on Availability and Location of Public Toilets in Kakamega Town

Variable	Response	Male (%)	Female (%)	Total
Ability to identify a public toilet in Kakamega town	Yes	185 (69.8)	80 (30.2)	265
	No	69 (80.2)	17 (19.8)	86
Ability to locate a public toilet using a map or signage	Yes	158 (71.5)	63(28.5)	221
	No	96 (73.8)	34 (26.2)	130
Location of public toilet used	School	15 (75.0)	5(25.0)	20
	MMUST	72(74.2)	25(25.8)	97
	KCTRH	6 (100.0)	0 (0.0)	6
	Stadium	2 (15.4)	11 (84.6)	13
	Colleges	30 (90.9)	3 (9.1)	33
	County offices	10 (83.3)	2 (16.7)	12
	CBD	37 (59.7)	25 (40.3)	62
	Market	55 (76.4)	17 (23.6)	72
	Government offices	22(81.5)	5 (18.5)	27
	Muliro Gardens	4 (50.0)	4 (50.0)	8
	Bank	1 (100.0)	0(0.0)	1
	Bus stage	0 (0.0)	0 (0.0)	0

Source: Researcher, 2019

4.4.2 To Determine the Use and Preference of Public Toilets in Kakamega Town

Table 4.5 present findings on use of public toilets by residents in Kakamega town.

Findings reveal that the use of commercialized public toilets in Kakamega town was very high at 222 (87.4%) for males and 81 (83.5%) in females. The findings further indicate that 158 (73.1%) male rarely used public toilets and 20 (74.1%) used public toilets very often. With regard to the females, 58 (26.9%) reported to rarely use public toilets and only 7 (25.9%) reported to use them very often. When asked if the facilities they used had a special site for physically challenged people, 55 (69.6%) of males and 24 (30.4%) of females said yes. Respondents were also asked to name any abuses they saw in public toilets, males reported to seeing rape by 18 (94.7%) compared to females. Also 86 men

and 36 women said they witnessed drug abuse. Respondents were also 51.3% (180) comfortable with the rate being levied on commercial public toilet services.

Table: 4.5 Use and Preference of Public Toilets in Kakamega Town

Variable		Gender		Total
		Male N (%)	Female N (%)	N (%)
Payment for use of facility	Yes	144(74.6)	49(25.4)	193
	No	110 (69.6)	48(30.4)	158
Comfortable with rates levied against the services	Yes	132(73.3)	48(26.7)	180
	No	122(71.3)	49(28.7)	171
Facility has a special site for the physically challenged	Yes	55(69.6)	24(30.4)	79
	No	199(73.2)	73(26.8)	272
Type of toilet preferred for use	Commercial	176(75.2)	58(24.8)	234
	Free	78(66.7)	39(33.3)	117
Level of use of public toilets	Yes	222(73.3)	81(26.7)	303
	No	32(66.7)	16(33.3)	48
Frequency of use of public toilet in Kakamega	Never	31(67.4)	15(32.6)	46
	Rarely	158(73.1)	58(26.9)	216
	Often	45(72.6)	17(27.4)	62
	Very Often	20(74.1)	7(25.9)	27
Witnessed any of the following abuse of public toilets in Kakamega	Cottaging	1(25.0)	3(75.0)	4
	Rape	18(94.7)	1(5.3)	19
	Drug Abuse	86(70.5)	36(29.5)	122
	None	149(72.3)	57(27.7)	206

Source: Researcher, 2019

Out of the total respondents that took part in the study, 22 (6.27%) were physically challenged and only 6 (27.3%) of them use public toilets as indicated in table 4.6.

Table 4.6 Showing Commercial Public Toilet utilization level Based on Physical Ability

	N	Use of public toilets	
		No (%)	Yes (%)
Disability status			
Disabled	22	(16) 72.7%	(6) 27.3%
Not disabled	329	245 (74.5%)	84 (25.5%)

Source: Researcher, (2019)

On the open-ended questions, the respondents were asked for their reasons for being happy or not being happy with the services levied at public toilets and below are their responses. One of the respondents who was dissatisfied with the services said...

“Public toilets are poorly cleaned and have no cleaning material.” R31

Another one said...

“Considering their decent price, they are still not up to standards.” R17

One respondent sought assurance of anonymity and said...

“This facility lacks enough water and some of us are worried about infections from the toilets.” R22

Among other reasons cited for dissatisfaction were...

“Some of the facilities lack flashing system or are faulty and are mismanaged while some experience overcrowding” R33

With regards to those who said they were satisfied with the services, their reasons were that the toilets were charging a good amount, the services were average and there were availability of hand washing facility at the toilets.

When asked what can be done to motivate people to use public toilets, one respondent said....

“Making all of them or some free will enable those not able financially to use them,” R18.

Another respondent said...

“Keeping the toilets clean, constructing more toilets and educating the public could go a long way to motivate the users.” R15.

Majority of the respondents felt that proper management could work and also putting of tissue papers in the toilets could be very useful.

When asked the reason why people avoid using public toilets, 28% of respondents said that cleanliness was their major reason, 12% sighted water, 17% reported fear of communicable disease, while others said overcrowding and lack of accessible services for individuals with physical disabilities in the majority of public restroom facilities limits the number of individuals visiting a public toilet.

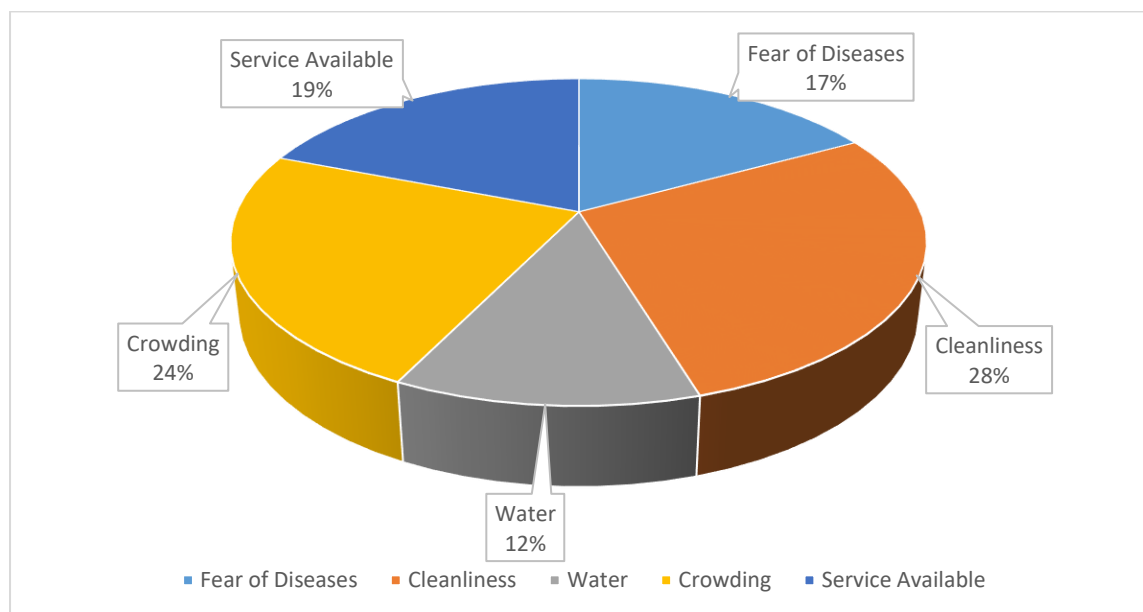


Figure 4.1: Reasons for choice of Commercialized Public Toilets over the others

Source: Researcher, 2019

4.4.3 Public Toilet Preferred in Relation to Demographic Characteristics

Bivariate analysis on demographic characteristics associated with type of toilet preferred shows that there was a borderline significant relationship between age and disability status in the study area (OR: 0.7; 95% CI: 0.7 – 1.5; p=0.06) as shown in Table 4.7. Those of 30 years and below were 1.1 times more likely to use commercial toilets compared to those above 30 years. Men were one-point-three times more likely to use commercial toilets (OR: 1.3; 95% CI: 0.7 – 2.3; p=0.97). Education level was not statistically significant with type of toilet preferred with the results showing that respondents with education of secondary and below being 70% less likely to use commercial toilets compared with their counterparts (OR: 0.3; 95% CI: 0.2 – 0.9; p=0.14). Similarly, physically challenged respondents were about 60% less likely to use commercial toilets in contrast to the able-bodied respondents (OR: 0.4; 95%CI: 0.2 – 0.8; p=0.008)

Table 4.7 Demographic characteristics associated with type of toilet preferred

Risk factor	N	Commercial N (%)	Free N (%)	Overall OR	95% CI	p value
Age groups						
≤ 30	273	176 (64.4)	97(35.6)	1.1	0.7 – 1.5	0.06
≥ 30	78	58 (74.4)	20 (25.6)			
Gender						
Male	254	176 (69.3)	78 (30.7)	1.3	0.7 – 2.3	0.97
Female	97	58 (59.7)	39 (40.3)			
Education level						
Secondary and below	94	71 (75.5)	23 (24.5)	0.3	0.2 – 0.9	0.14
Tertiary and above	257	163 (63.4)	94 (36.6)			
Physically challenged						
Yes	22	6 (27.2)	16 (72.8)	0.4	0.2 – 0.8	0.008
No	329	228 (69.3)	101 (30.7)			

Source: Researcher, 2019

4.4.4 Reasons for Choice of Commercial Toilets

Respondents were also asked to give their reasons for choice of either commercial public toilet. For those who choose commercial toilets some of the reasons cited included cleanliness, good management, good serviced and affordability. Majority of the respondents chose commercial public toilets because they had good workmanship whereas 256 (72.9%) chose commercial public toilets because they were clean as in table 4.8. An almost equal percentage was realized in operation time which indicated 51.0% choice against those who did not consider the time when choosing the facility to use.

Table: 4.8 Showing Reason for Choice of the Commercial Public Toilet Facility

Variable	Yes N (%)	No N (%)
Cleanliness	256 (72.9%)	95 (27.1%)
Operation time	179 (51.0%)	172(49.0%)
Affordability/ costs	217 (61.8%)	134 (38.2%)
Safety	198 (56.4%)	153 (43.6%)
Craftsmanship and Architectural Design	301 (85.7%)	50 (14.3%)

Source: Researcher, 2019

Some reasons cited by those who felt the management was good included;

“Friendly workers, clean personnel, reasonable price, accountable workers.” R6

“These facilities are noteworthy due to their commendable decorations and strategic locations.” R9

“These toilet facilities were staffed by gregarious individuals who had a pleasant attitude towards their employment and the surrounding environments.” R4

The majority of commercial toilets in Kakamega town exhibit enhanced service accessibility features, including the presence of lighting fixtures, glass tiled flooring, equipped showers, proper disposal facilities for clinical waste, absence of structural fissures, and several other accessible amenities.

Table 4.9 shows a summary of responses on service access in public toilets. With regards to utility passage, 74.1% (n=260) said it was available, sensors 82.6% (n=290) said they were not available, coat hooks 77.8% (n=273) said they were not available and 10.5% (n=37) said bulbs were not available.

Table 4. 9 showing Service access offered in public toilets

Presence of variable		Gender	
		Male N (%)	Female N(%)
Seat Covers	Yes	117(73.1)	43(26.9)
	No	137(71.7)	54(28.3)
Clean dry environment	Yes	166(72.2)	64(27.8)
	No	88(72.7)	33(27.3)
Toilet paper dispenser	Yes	112(80.6)	27(19.4)
	No	142(67.3)	69(32.7)
Hand Driers	Yes	50(63.3)	29(36.7)
	No	204(75.0)	68(25.0)
Soap Dispenser	Yes	98(70.5)	41(29.5)
	No	156(73.6)	56(26.4)
Sanitary towel dispenser	Yes	67(80.7)	16(19.3)
	No	187(69.8)	81(30.2)
Mirror	Yes	183(71.2)	74(28.8)
	No	71(75.5)	23(24.5)
Condom Dispenser	Yes	119(82.1)	26(17.9)
	No	135(65.5)	71(34.5)
Coat Hook	Yes	61(78.2)	17(21.8)
	No	193(70.7)	80(29.3)
Diaper Dispenser	Yes	89(78.1)	25(21.9)
	No	163(69.7)	71(30.3)
Air Freshener	Yes	89(74.2)	31(25.8)
	No	165(71.4)	66(28.6)
Clinical Waste bin	Yes	72(62.1)	44(37.9)
	No	182(77.4)	53(22.6)
Flushing Trough	Yes	208(74.6)	71(25.4)
	No	46(63.9)	26(36.1)
Utility passage	Yes	184(70.8)	76(29.2)
	No	70(76.9)	21(23.1)
Water tank	Yes	225(73.1)	83(26.9)
	No	29(67.4)	14(32.6)
Bulbs	Yes	229(72.9)	85(27.1)
	No	25(67.6)	12(32.4)
Sensors	Yes	49(80.3)	12(19.7)
	No	205(70.7)	85(29.3)
Urinal-male	Yes	218(72.2)	84(27.8)
	No	36(73.5)	13(26.5)
Urinal- female	Yes	166(74.1)	58(25.9)
	No	88(69.3)	39(30.7)
Equipped Showers	Yes	88(71.0)	36(29.0)
	No	166(73.1)	61(26.9)

Source: Researcher, 2019

The respondents were asked what they thought was a public toilet. There was variability in responses. One of the respondents said....

“A public toilet is a toilet used by anybody at will” R3

While another said that....

“It is a place to help yourself on short or long call in town”, R12

Another said...

“It is a government property meant to serve the citizens”. R 9

On the other hand, another said...

“A toilet that does not belong to a particular household...pause...It is a facility used by humans for human waste disposal.” R6

4.4.5 Bivariate Analysis of Demographic Characteristics Associated with Use of Toilet Preferred

Table 4.10 reveals a significant relationship between age and rate of use of public toilets. Respondents aged 30 and above were 60% more likely to rarely use public toilets compared to respondents aged below 30 years (OR: 1.6; 95% CI: 1.4- 3.5; p=0.01). Similarly, men were 20% less likely to rarely use public toilets compared to the women (OR: 0.8; 95% CI: 0.7- 1.4; p=0.02). The response on disability status was statistically associated with disability status and disabled respondents were 80% less likely to rarely use public toilets compared to their counterparts (OR: 0.2; 95% CI: 0.1- 0.9; p=0.00).

Table 4.10: Demographic Factors Associated with Use of Commercial Public Toilets

	n	Rate of use of public toilets		Overall OR	95% CL	P value
		No	Yes			
Age groups				1.6	1.4 -3.5	0.01
Less than 30	273	215 (78.7%)	58 (21.3%)			
Above 30	78	49 (62.8%)	29 (37.2%)			
Disability status				0.2	0.1-0.9	0.00
Disabled	22	16 (72.7%)	6 (27.8%)			
Not disabled	329	246 (74.7%)	83 (25.3%)			
Gender				0.8	0.7–1.4	0.02
Male	254	189 (74.4%)	65 (25.6%)			
Female	97	73 (75.2%)	24 (24.8%)			

Source: Researcher, 2019

4.5 To Examine the Implication of Commercializing Public Toilets on Socio Economic and Environmental Status of Kakamega Town

Commercializing public toilets had several implications identified in this study that were either economic or environmental.

4.5.1 Socio-Economic implications of commercializing public toilets

Commercialized public toilets in Kakamega town had an average 500 users per day seeking various services as indicated in the table 4.11. Similarly, the total collection averaged at ksh.44000/= per day from the eight commercialized public toilet facilities.

Table 4.11 Commercialized toilet services and their cost

Type of service	Cost of service	Average users per day	Average total income per day	Facility & location	Operation time
Urinal	ksh5	300	ksh1500	Iko Toilet Garden	5.30AM-8.30PM
Bathroom	ksh30	50	ksh1500	Iko Toilet Bus Stage	5.30AM-8.30PM
Toilet	ksh10	150	ksh1500	Water & Sanitation Toilet Fish Market	8AM-6.30PM
Others	ksh20	50	ksh1000	Kakamega Traders Association Toilet Bus Stage	6AM-8PM
				Old Municipal Market Toilets	8AM-8PM
				New Municipal Market Toilets	8AM-8PM
				Power-Line Toilet	8AM-6P.30PM
				Fruits & vegetable mkt	8AM-6.30PM
Total			Ksh. 5,500		

Source: Researcher, 2019

One key informant was asked about the economic implications of commercialized public toilets and replied...

“We have cereals and groceries next to the facility, we also have shops and other people are going on with their businesses near the facility...We sell water at five (5/=) Kenyan shillings, bathroom service at thirty (30/=) and toilet services at 10/=.” (KII 8)

Another respondent said....

“We do not have different prices for different toilets in town but maintain standard charges.” (KII 2)

When queried about their perspective and suggestion regarding the commercialization of public toilets and latrines in Kakamega Town, one informant said...

“Commercializing public toilets helps us offer good services since we can buy chemicals, water and pay caretakers.” (KII5).

On the contrary, another respondent said....

“We hardly provided services for the physically challenged. This is because the facilities use a lot of water, which were very expensive to install and require special attention.” (KII3)

Some of the toilet facilities run by Water and Sanitation department had facilities for the physically challenged but were vandalized, not completed for operation or converted into stores.

When asked about time the facility operates, one key informant said...

“We start to operate from 5.30 A.M or 6.00 A.M to 6. 30P.M or 8.30P.M., just as other commercial public toilets. These are the main business hours in Kakamega Town and the management has no concern of where the public finds services after these hours. Our services are free and are controlled by the management.” (KII7)

On average, one key informant said...

“Our services are paid for.” (KII5)

According to the key informant above, the approximate revenue collected in a day amount to an average of Ksh. 5500/= per day. This value adds up to an approximate of Ksh. 165000/= per month from each toilet facility. He also said,

“This amount is subject to fluctuation depending on location of the facility, day of the week and the occasions within Kakamega Town such as; agricultural shows, exhibitions, trade fares and promotions, sports and seminars.” (KII5)

Another informant said...

“...It is good to commercialize public toilet service in order to create jobs, pay for water and electric bills, earn an income for the Iko initiative and add beauty to the town. This is because we provide beautiful Iko toilet facilities across the country.” (KII6)

When asked how they manage customers who don't have lower denominations of money or have no money, one of the respondents said....

“If a customer doesn't have money, we listen to them understandingly and respond accordingly. Those without smaller denomination, we look for change and balance for them from other sources if we don't have. Those who genuinely don't have money, we allow them to utilize the facilities in order to protect their health and environment.” (KII15)

When asked if commercialized public toilets are managed well or poorly, 71.8% of the respondents said that they are being managed well. Some reasons cited by those who felt the management was good included friendly workers, clean personnel, reasonable price and accountable workers.

When asked for their opinion on commercializing public toilets and latrines in terms of economic implications, 70.4% of the respondents wrote that; creation of employment would happen, promotion of trade and it would be an income generating activity for the government. Those who were against noted that, lack of cash posed a risk to those who had no cash or lacked the required currency.

4.5.2 Environmental Implications of Commercializing Public Toilets in Kakamega town

Environmental implications identified were grouped as hygiene and aesthetics implications.

4.5.2.1 Hygienic implications

To measure the hygienic implications, respondents were guided by the items in the questionnaires as indicated in the table below

Table 4.12 shows responses on hygienic implications of commercialization of public toilets in Kakamega town. 88 (66.7%) of males and 44 (33.3%) of females agreed that they had noticed open defecation, urination points and flying toilets in Kakamega. However, this was mainly noted in areas with less commercialized toilets. In addition, 84 (70.6%) of males and 35 (29.4%) of females know of a place where people urinate along streets/ corridors. Majority of the respondents did not witness any presence of wastes such as used pampers, sanitary pads nor condoms nor the flying toilets around areas with commercialized toilets.

Table 4.12: Hygienic Implication of commercializing public toilets in Kakamega town

Variable		Gender		
		Male	Female	Total
		N (%)	N (%)	N (%)
Presence of open defecation, urination and flying toilets in Kakamega	Yes	88(66.7%)	44(33.3%)	132(37.6%)
	No	166(75.8%)	53(24.2%)	219(62.4%)
Presence of open urination points along streets and corridors in Kakamega town	Yes	84(70.6%)	35(29.4%)	119(33.9%)
	No	170(73.3%)	62(26.7%)	232(66.1%)
Presence of human wastes (used pumpers, pads and condoms) in unwanted points	Yes	57(64.8%)	31(35.2%)	88(25.1%)
	No	197(74.9%)	66(25.1%)	263(74.9%)

Source: Researcher, 2019

Among challenges encountered in maintaining hygienic levels were lack of water and deliberate soiling of the premises by some clients.

These responses on challenges were also echoed by an informant at one commercial public toilet, who said...

“Authorities should ensure the toilets are well painted and not smelly.” (KII7)

4.5.2.2 Aesthetic Implications

In order to determine the aesthetic implication of commercializing public toilets in Kakamega town, respondents were expected to express their views by filling in an open-ended questionnaire.

One informant when asked how commercialized public toilet had influence on environment in terms of aesthetic said...

“...It is attractive to the eyes and has attracted many clients thereby keeping the environs clean.” KII8

Another respondent with regards to aesthetic implications said...

“It would add beauty to the town and improve appearance,” R4.

Respondents were also asked what advice they would give the government with regards to commercialization of public toilets and they said that; the government should increase the number of public toilets, equip them with latest toilet technologies, reorganize supervision of public toilets and put in place better money collection structures. Finally, some said cleanliness should be the government's first priority.

CHAPTER FIVE

5.0 DISCUSSIONS

5.1 Overview

This chapter provided discussions of the findings in relation to findings of other researchers. It provided information on demographic characteristics, availability of commercialized public toilets, utilization of commercialized public toilets and implications of commercializing public toilets on socio-economic and environmental status of Kakamega town.

5.2 Socio-demographic Characteristics

The findings of this study revealed that majority respondents were male which was comparable to the findings of Osumanu (2019) and Abubakar (2018) reflecting dominance of males as house hold heads and engaged in labour that keeps them out of the homes for the most parts of the day.

Concerning age, the study found out that the majority of population utilizing commercialized public toilets in Kakamega town were youths aged between 21-40 years at 72.9%. This was mainly associated with the number of students attending institutions found within Kakamega town, the active working age of youths within Kakamega town economy and on transit within Kakamega town. These findings concur with UN (2023) report that places majority of students in tertiary institutions at age bracket of 18-23 years and hence found in town most of the time during the day. This is reinforced by the fact that Kakamega town has among others one of the major learning institutions, Masinde Muliro University of Science and Technology (MMUST). Similarly, a study by WASH (2022) shows that, public toilets for ageing groups require them to be made more accessible due to physical immobility factors. This is mainly because aging limits time and distance they leave their home for town. Furthermore, a study by Ali *et al* (2023)

exploring on demographics, social and economic factors indicate that there is a positive association with age in terms of responses.

5.3 Availability of Public Toilets in Kakamega Town

The study found out that majority (57.14%) of the public toilets in Kakamega town were commercialized and found within the CBD, an indication of availability of the mentioned facilities although they were not adequate. These findings concur with a research conducted by Njagi *et al* (2017) that shows 48% of public toilet facilities are found within Nairobi city's CBD and most of them charge for their services. Similar findings are presented by Osumanu (2019) indicating that approximately 58.5% of public toilets are located in the central business district (CBD) and its adjacent areas and customers pay for their services.

The study also found out that only 22.5% of the commercialized public toilets in Kakamega town had facilities for the physically challenged people, a component totally lacking in the non-commercialized toilets. This proved insufficient therefore corroborating assertions made by Mutsawashe (2023) regarding public toilets provision and accessibility and their usability when needed. The findings were also in contravention of Haves (2018) citing Equality Act 2010 in the United Kingdom which emphasized that accessible toilets must be available and adequately address all individuals' requirements. These study findings also show that in relation to commercial public toilets, Kakamega town contradicts WHO (2018) guidelines on sanitation and health that toilets ought to be safe and suitable for use, putting in mind users age, physical mobility and gender.

5.4 Utilization of Commercialized Public Toilets in Kakamega Town

The study looked at level of respondent's knowledge on what a public toilet is, location of public toilets, their use and preference in using a given type of public toilet and reasons for choice of commercial toilets.

5.4.1 Knowledge on Presence and Location of Public Toilet in Kakamega Town

The study found out that majority (75.5%) of people found in Kakamega town had knowledge regarding public toilet facilities and were able to identify and utilize them effectively when in need. These findings concur with Muhele's (2016) study that 46.8% of people using public toilets are able to be known and locate them through mass media, while others know of their availability through health promotional campaigns and other means. According to Buor *et al* (2020), absence and presence of public toilet facilities reflects the societal status. This presents an implication of knowledge on public toilet facilities to a certain level.

The study also found out that location of the public toilet facilities determined their level of utilization in Kakamega town. For instance, those located within educational institutions attracted high level of usage. This finding aligns with the results reported by Seattle University Free Way Park (2016), that most of the public toilets are located in business establishment, indicating that that location influenced usage. This study likewise concurs with Yin *et al* (2020) findings that, strategic location of the facility needs to be made to ensure that public toilets are located where there is large number of people who need to use the toilet facility within a short space of time.

The study found out that signage and maps determined the utilization of public toilets with those having signage and maps being mostly used. Similarly, findings by Esmeraldo *et al* (2016) demonstrates that location and signage affected the accessibility of public toilets. These findings similarly correspond to findings of Mildura Rural City (2018) which

indicated that in Victoria, Australia, limited usage of certain facilities might have been improved through the implementation of signage, maps, and online communication tools in order to enhance their easy location. Ahuma-Smith *et al* (2020) further points out that, promoters must provide additional accessible information on location to improve the level of knowledge during designing and constructing of public toilet facilities and further additional accessible information on location need to be provided to enhance users make informed choices. On this account, Hallberg (2021) study findings recommended that public toilets be located in areas with high demand and more visible for them to satisfy the need. These finding are further emphasized by City of Hobart (2017) reports that in Australia location of public toilets be every 400 meters from each to enable users access them easily. Results presented by Esmeraldo *et al* (2016) shows that lack of enough information on location of public toilets renders them physically inaccessible hence posing challenges to individuals with disabilities. These finding concurs with the current study explaining why the study found a low level of utility of some of the public toilet facilities.

5.4.2 Use and Preference of Public Toilets in Kakamega Town

These study findings indicated that a total of 303 respondents representing 86.3% of the population in Kakamega town use public toilets and majority of males utilized public toilets more than females. These study findings show a close similarity to a study conducted by Peprah *et al* (2015) in Accra Ghana which reveals that 72% of urban population use public facilities. These similarities is an indication of improved sanitation level in urban set-ups with Kakamega town not being an exception.

This study revealed that 25.9% of female are very often users of public toilets in Kakamega town, an indication that the level of utilizing public toilets by female was low. These findings concurs with a research conducted by Hartigan *et al* (2020) indicating that a small percentage of individuals using public conveniences are women. Greed (2019)

justifies the findings by stating that cultural diversities are among other main reasons for this gender inequalities in utilization of public toilets. Greed further note that women are particularly in need of public toilets as they are the ones who are out and about in the day time, travelling on public transport more than men and are often accompanied by children or by elderly and often by disabled relatives. However, it is worth noting that many cities have an imbalanced allocation of facilities, with a greater emphasis on male facilities compared to those catering to female needs.

The findings of this study also show that only 27.8% of physically challenged people use public toilets in Kakamega town. This corresponds with the findings of a study by Ahuma-Smith et al. (2020) which revealed that 20% of the physically challenged use public toilets frequently, while 27% had never used them because they were not user-friendly. There was a statistically significant relationship between disability status and preference of public toilet with disabled being 60% less likely to use public toilets; $P \leq .05$. This low response to the preference of public toilets among the disadvantaged in Africa, particularly in Ghanaian and Kenyan cities, suggests that the facilities may not be user-friendly.

This study also established that 66.7% of people in Kakamega town preferred using commercial public toilets due to a number of reasons which included fear of contracting diseases, levels of cleanliness of the facilities among others. These results concur with Iftikhar *et al* (2020) that 64.66% of public toilet users were willing to pay for a service that enhances their convenience thus showing their preference to commercial public toilets.

5.4.3 Reasons for choice of commercial toilets in Kakamega town

This study found out that, cleanliness drew more people to commercial public toilets in Kakamega town because of their good management. The study found out that people associate level of cleanliness with safety from certain diseases and that majority of these commercial toilets are managed well. This study finding concurs with WHO (2023b) that Poor sanitation is associated with transmission of diseases such as dysentery, cholera and typhoid. The study also affirms Vyas (2015) citing Deslypere's findings of 2003 which indicates that chances of pathogen transmission are very high even in toilets that may appear to look clean and the fear of acquiring new diseases limits people's access to the public toilet facilities. This aspect of cleanliness is supported by the findings of Hartigan *et al* (2020) that women self-restrict themselves from public toilet use or may decide not to use despite the need to urinate or defecate to avoid unclean and smelly facilities. To emphasize these findings, Osumanu (2019) highlights the level of cleanliness in public toilets as among reasons as to prevalence of diseases.

The study additionally substantiates concerns raised by Jaglarz (2020) regarding many negative factors such as improper waste disposal and lack of cleanliness, which are found to be widespread and thus restrict utilization of public toilets. These study findings therefore signify that cleanliness is the root cause of commercializing public toilets and concurs with Iftikhar *et al* (2020) report that 57.33% of public toilet users are willing to pay any extra costs for a service to promote cleanliness in public toilet facilities.

This study also found out accessibility of a public toilet being among determining reason for utilizing the facility in Kakamega town. For instance, operation time of these commercial public toilets made some 49.0% of users fail to utilize them at the time of need indicating the need for flexibility in time of operation. These findings concur with Wollongong City Council (2019) in New South Wales, Australia, that open time for users

determine usage of the facility. According to the report, assessing opening time ensures that community expectation, maximum usage and safety are met. Cities in Andhra Pradesh (2016) guideline report in India also affirms that operation time ought to be adjusted in consultation with stakeholders to minimize interruptions and suit demands.

This study found that, costs of services levied attracted 61.8% of the population liking the services levied in Kakamega town. This was slightly higher than respondents that were against the services being levied. The study noted that lack of proper denomination, lack of money, economic status of the user, customer relation by attendant, type of service offered, being dictated by the urgency of the need determined use of a given commercial public toilet. In support of this findings Crouch (2018) study in Sweden indicate that failure in online payment services can incapacitate someone's ability to utilize commercial public toilet services. On the other hand, almost similar findings by Bradley Corporation (2018) in America indicate that 56% of Americans consider paying if only guaranteed a clean and well stocked public toilet. This indicate that the population that found it not convenient to pay for the services being levied were likely to seek it from somewhere else. It concurs with Osumanu (2019) study findings that financial constrains is a challenge that hinders individuals from using public toilet. The finding by Winter *et al* (2018) indicates that being unable to pay influences sanitation practices making people to resort to use of buckets, bags and other open defecation means. These finding imply that those who cannot pay for the services and the poor people are not allowed to use the facilities within the CBD thereby influencing choice of users such as street families.

This study found out that safety or fear of uncertainties by users was among reasons as to why they chose to utilize a given commercial public toilet in Kakamega town. This study reported 5% rape and 34.8% drug and substance abuse as having been witnessed in public

toilets in Kakamega town. According to research finding, such evidences instill fear in public toilet users or encourages them for that purpose thereby influencing their reason for choosing a given public toilet facility. Supporting findings include Wolfson *et al* (2017) research in the United States which justify the use of public toilets for substance abuse. In this incidence, public toilets are reported to be used by some users as narcotic injection sites because they are private and frequently visited by staff and customers who can provide emergency services to victims. Other findings by Police Foundation (2017), indicates that majority of sexual assaults reported from public toilets by women, amounted to 10%. According to Machunda *et al* (2020) user safety can be realized by ensuring that the public toilet facilities are well located, visible and have well separated marked doors or sides for male and female gender. Furthermore, American Public Transportation Association (2021) points out that lighting, alarms, maintenance and cleaning frequency provide a sense of safety to users. A study by United State Transgender Survey (2022) in India found that out of 24% of respondents' presence in the toilet questioned, 12% had experienced, sexual assault, physical assault and verbal harassment, when attempting to use a public toilet. Similar findings by Price *et al* (2021) and Sutton (2016) reports that preventing transgender from using public toilets promotes suicide. This clearly signifies that safety consideration of a public toilet facility influences choice of the facility.

This study further found out that craftsmanship and architectural design plays a role in influencing choice made in using a given public toilet facility. Availability of additional amenities and services such good passage, lighting and ventilation will make a given public toilet facility record varying level of usage. The outcomes of this study receive support from Mildura Rural City's (2018) assertion that in Victoria state, Australia, facilities have the potential to enhance user experience, safety, accessibility, and hygiene

thus increasing level of usage. WASH (2022) records that conventional toilet facilities may present challenges for certain individuals, such as women with strollers, individuals with baggage, pregnant women, and the elderly. These challenges arise due to factors such as narrow entrances, small cubicles, turnstiles, and step access, among others thereby having an influence on choice of the facility.

5.5 Implication of commercializing public toilets on Socio Economic and Environmental Status of Kakamega Town

This study found out that the implications of commercializing public toilets on socio-economic and environmental status of Kakamega town to be evident and discussed them as either socio-economics or environmental.

5.5.1 Socio-economic implications of commercializing public toilets in Kakamega Town

This study found out that, commercializing public toilets generated a source of livelihood by 70.4% as it provides employment to some of the people in Kakamega town. Commercialized public toilets had created direct employment to people who were offering their services as attendants or caretakers and enabling them to be able to sustain their families. These study findings are supported by Kumar (2016) showing a direct employment of more than 60,000 people under Sulabh International Organization with an average of 7500 public toilet facilities. This study also found out that, commercialized public toilets created a micro-business environment that many people depended on its existence. For instance, shoe shiners and repairers, hawkers, groceries, money venders and food kiosks were more prevalent as indicated by KII8. This concurs with Birhanu *et al* (2020) that public toilet facilities offer business oriented solutions to enhance generation of income and a friendly environment. A report by City of Hobart (2017) presents

corresponding evidence of a thriving economy in Australia that extends into early hours on night around public toilets.

The study found out that commercializing public toilets also generated revenue to the government that was able to sustain the toileting services operation costs in Kakamega town. These corresponds to the findings from the Nairobi County Assembly (2015), where Nairobi county government was able to collect an average of Ksh.10, 000/= per year as operation license fee from every commercial public toilet unit besides rental income. On the other hand, Kenya Gazette Supplement (2019) indicated that Meru County generates between Ksh.5, 000/= to ksh.20, 000/= per month as rental income from each commercial public toilet facility. Furthermore, Ssekamatte et al (2018) revealed that barriers to operation and management of public toilets included high operation costs, failure to break even and a lack of investment in occupational health which called for public toilet operators revisiting strategies on how to ensure sustainability of their facilities.

5.5.2 Implications of Commercializing Public Toilets on Environmental Status of Kakamega Town

5.5.2.1 Hygienic Implications

This study found out that, by commercializing public toilets in Kakamega town, the hygienic level of commercial public toilets and their environs improved. 62.4% of the respondents reported that the environment around commercial public toilets were free from open defecation. The study findings concur with those of Food and Agriculture Organization -FAO (2015) to a higher level of 37.6% while the Ministry of Health was 14% at national level and also UN-Habitat (2023) which shows open defecation rate in Bandung city of Indonesia at 40%. Similarly, Njuguna *et al* (2017) reported a mean open defecation rate of 23.5% across 47 counties in Kenya by 2017. The study contradicts with the rate of urban open defecation that remained at 3% as indicated by Mansour *et al* (2017)

citing JMP report on water and sanitation of 2015. This study found out that the controversy in the outcome is likely to have been caused by difference in the research item and time the study took place. However, the finding from researchers mentioned concurs with these study findings by indicating that human waste ends up in the environment. A study done in Uttar Pradesh India by JICA (2015) shows that the rate of open defecation is 63.0%, which is an indication that open defecation is still at alarming rate in different parts of the world.

This study also found out that, the management of commercial public toilets did not have a provision for where the public finds services after the stipulated operation time and failure to use a public toilet due to financial constraints. These findings contributed to sanitation issues such as open urination reported to be at 33.9%, open defecation at 37.6% and presence of other human waste (used pumpers, pads and condoms) reported to be at 25% in Kakamega town. Similar results have been reported by Bhatt *et al* (2019) in Nepal that people are compelled to practice open defecation due to constraints of norms restricting latrine use in general. A study by Osumanu (2019) concurs with the findings that, financial constraints is a challenge that hinders individuals from using public toilet thereby encouraging open defecation and that children defecate freely anywhere.

Asesh *et al* (2023) report that when people visit urban areas on outing with their families, they experience psychological satisfaction or mental well-being when accessible public toilets are available. Concurring with these findings is The International Transport Workers' Federation (2019) highlighting that, the inability to satisfy essential physiological needs because no toilet is accessible or available contributes to health issues which can develop into severe health problems.

5.5.2.2 Aesthetic Implications

This study found out that enhancing the aesthetic features of commercial public toilets in Kakamega Town had a positive impact such as cleanliness of environment of Kakamega town as responded to by 65.5% of participants and beauty by 54.1%. These concurs to the findings of the study by Webber (2018) which revealed that clean environment contributed to the public in feeling comfortable. According to Bibri (2020), the placement and aesthetically pleasing design of public toilets contributed to the enhancement of the surrounding natural environment. A study by Iftikhar *et al* (2020) affirms that 65.5% of people are willing to pay for services in aesthetically furnished public toilet facilities. All these findings imply that aesthetically built public toilets are likely to enhance increased utilization and attractively-friendly environment. Furthermore, corresponding results by The Rural City of Murray Bridge (2017) shows that in Australia beautiful public toilets encourage ranking from best to worst, promoting aesthetic value, pride and security in areas of natural beauty. Jaglarz findings presents a variety of public toilets in different cities globally as having adorable facilities denoting the aesthetic implications of commercializing public toilets.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Overview

This chapter draws conclusions and provides recommendations basing on the results of the three objectives of the study.

6.2 Conclusion

Basing on determining Availability of Public Toilets in Kakamega Town, the study concludes that Kakamega town had inadequate public toilets with majority being commercialized.

Concerning utilization and preference of public toilets in Kakamega town, commercialized public toilets were preferred due to their cleanliness, location and access.

Regarding the implications of commercializing public toilets on the economic and environmental status of Kakamega town, the county was able to draw revenue from the commercialized public toilets thus enhancing their maintenance. On environment, commercializing public toilets did not achieve an improvement in reducing open defecation averaged at 23% and this was attributed to the timings of operation. However, there was notable agreement that commercializing public toilets increased aesthetic value of Kakamega town.

6.3 Recommendations

1. The County Government of Kakamega should increase the number of public toilet facilities within Kakamega Town.
2. The management of public toilets in the County Government of Kakamega should enhance cleanliness and access to all public toilets within the town.
3. The management of public toilets in Kakamega Town should increase the hours of operation so as to decrease the level of open defecation.

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APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

Masinde-Muliro University of Science and Technology,

Department of

P.O.BOX.....

KAKAMEGA.

TO WHOM IT MAY CONCERN.

Dear sir/madam,

RE: REQUEST FOR PERMISSION TO CARRY OUT RESEARCH.

I am a post graduate student at Masinde-Muliro University of Science and Technology currently conducting a study on ‘Environmental Implication of commercialized public toilets in Kakamega town.’

I kindly request for your precious time to allow an interview/complete the attached questionnaire, which can be done at your convenience. The information you give is confidential and will only be used for purpose of this study. The finding will assist in making recommendation aimed at improving service delivery of public toilets facilities for the betterment of health welfare of people in urban areas.

Your cooperation will be highly appreciated.

Thanks in advance.

Yours faithfully,

.....

Philip Mutambi Okang’a

Masinde-Muliro University of Science and Technology.

APPENDIX II: INTERVIEW GUIDE FOR COUNTY PUBLIC HEALTH OFFICERS.

Introduction

The purpose of this interview guide is to seek information on environmental implication of commercialized public toilets in Kakamega town. The information which you give in this questionnaire will strictly be confidential and will only be used for research purposes. Kindly respond to the questionnaire by ticking in the appropriate boxes or filling in the required information. Please feel free to respond to the following questions as openly as possible. Your cooperation is highly appreciated.

AGE.....

GENDER.....

DEPARTMENT.....

OCCUPATION.....

1. How many free to use public toilets and latrines do you have in Kakamega town under your control?

2. Do you have any bi-laws governing location of public toilets?

.....

3. How many free to use public toilets in town are in good working condition?.....

4. How do you regulate the sanitation level of these public facilities?.....

5. What factors influenced the county government into commercializing public toilets?

6. How do you regulate the commercialization of public toilet services?

7. What strategies have been put in place to increase access and rate of use of public toilet facilities?

8. What remedies have been set up for those who cannot afford commercialized public toilet services?

9. What are environmental implication being realized in relation to commercialization of public toilet services in terms of;

I.Health Benefits..... Challenges..... Recommendation.....

II.Economic Benefits Challenges Recommendation....

III.Aesthetic Benefits..... Challenges..... Recommendation.....

10. Do you have a special facility for the physically challenged? Yes.....

No..... (*tick one*)

11. If not, what plans do you have?

12. Does your facility have the service access? Mark × if yes and 0 if not.

Utility passage...

Flushing trough...

Sensors...

Water tank...

Corridor...

Coat hook...

Passage way...	Clinical waste (menstrual products)
Bulbs...	Seat covers...
Windows...	Mirror...
Glass bricks...	Garbage can...
No cracks...	Urinal –male...
Soap dispenser...	Urinal –female...
Hand driers...	Condom dispenser...
Paper towel dispenser ...	Diaper dispenser...
Safety of electric shocks...	Air freshener...
Toilet paper dispenser...	Equipped showers...
Infant changing table...	Clean...

13. What are your future strategic plans and policies in regard to the provision of public toileting services?

14. What are your current population estimate of Kakamega town?
.....

15. What are the town's population-toilet facility ratio as by your town plan?
.....

16. How do you manage your sewage systems and disposal?

17. Have you experienced any health-related disease outbreak associated to sanitation in Kakamega town?

18. If yes, how did you manage the outbreak?

19. What are some of the preparedness policies you've set to curb any sanitation related disaster in Kakamega town?.....

20. Do you have special advertisement or awareness creation on location and availability of public toilets in town?

21. If not, what plans do you have?

22. How do people rate your services in terms of sanitation and toilet management;

Hygiene: Good. Very good.

Bad. Worst.

Aesthetic: Good. Very good.

Bad. Worst.

Management: Good. Very good.

Bad. Worst.

APPENDIX III: SURVEY QUESTIONNAIRE FOR PUBLIC TOILET USERS.

AGE GENDER

OCCUPATION

EDUCATION LEVEL.....

INSTRUCTION; write a short answer in the space or tick in the box provided.

1. What is your main reason for being in town?

Traveler..... Shopping..... Work/job..... Resident.....

Business.....

2. Are you physically challenged? Yes No.

3. What is a public toilet?.....

4. Can you identify a public toilet in Kakamega town? Yes. No.....

5. How often do use a public toilet in Kakamega town? Never..... Rarely.....

Often..... Very often.....

6. Are all public toilets in Kakamega town readily available for use by anyone?

Yes.... No....

7. The public toilet you used was located?

School..... College. Government office..... University.....

County offices..... Hospital..... CBD..... Stadium..... Market..... Muliro

gardens..... Bank..... Any other.....

8. Did you pay for the service? Yes..... No.

9. Were you happy of services levied? Yes..... No.....
10. Give reason for your answer in Q9 above.....
11. Which type of toilet would you prefer to use? Commercial.....
Free/municipal.....
12. Give reasons for your choice above (Q11) ...
13. What do you think should be done in order to motivate people in using public
toilets as at where it is?
14. Have you ever noticed open defecation, urination points and flying toilets in
Kakamega town? Yes..... No.....
15. Do you know of any place in Kakamega town where people urinate along streets
or in corridors? Yes..... No.....
16. If yes give the name of the place or corridor.....
17. Are the available public toilets accessible? Yes.... No....
18. What are you reason for the answer above in Q17...?
19. Why do you think people avoid using public toilet facilities?
20. Are management of free public toilets good or bad? Good..... Bad.....
21. If good or bad what are your reasons?
22. Are management of commercialized public toilets good or bad? Good....
Bad.....
23. Give reasons for your answer in Q22.....

24. Did the facility you used have a special site for the physically challenged? Yes....
No.....

25. Did the facility you used have the following services access? Mark × if yes and 00 if not.

Utility passage.....	Flushing trough...
Sensors.....	Water tank.....
Corridor.....	Coat hook.....
Passage way.....	Clinical waste (menstrual products)
Bulbs...	Seat covers
Windows...	Mirror....
Glass bricks...	Garbage can....
No cracks...	Urinal –male....
Soap dispenser...	Urinal –female....
Hand driers...	Condom dispenser...
Paper towel dispenser...	Diaper dispenser....
Safety of electric shocks...	Air freshener....
Toilet paper dispenser...	Equipped showers...
Infant changing table...	Clean...

26. What do you think you can do to assist in management of free public toilets in Kakamega town?.....

27. What is your recommendation for improvement on commercialized toilets?
.....

28. What is your advice to the government concerned towards management and commercialization of public toilets?.....

29. Have you ever noted the following abuse of public toilets in Kakamega town?
Cottaging. Rape. Drug abuse

30. Have you ever witnessed closure of public toilet in town?

31. If yes what was the reason

32. What are your views on commercializing public toilets and latrines to the environment in terms of;

(a) Health implications

(b) Economic implications

(c) Aesthetic implications

33. What is your recommendation on the above stated implications;

Health..... Economic..... Aesthetic.....

APPENDIX IV: INTERVIEW GUIDE FOR PUBLIC TOILETS OWNERS OR OPERATORS AND KEY INFORMANT.

AGE..... GENDER.....

LOCATION OF FACILITY.....

POSITION HELD.....

1. How many people on average use your facility in a day?

2. Which group of people mainly use your facility in a day?

Men.

Women.....

Children.....

3. What time do you open and close the public toilet facility? Opening.

Closing.

4. How do you think people acquire toilet services when the public toilets are closed?

.....

5. Which days of the week are your toilets mostly busy?

6. How do you cater for days when customers are many?

7. Have you ever witnessed a deliberate soiling of the premises by the clients?

8. If yes, how do you manage such situation?

9. Have you ever located or noted illegal urination point near your premises?
10. If yes, how many?
11. How do you manage customers who don't have loose/ liquid money or have no cash?
12. What are challenges you face in this toileting industry?
13. What are advices and recommendation you would like to put forward to challenges raised?
14. How many facilities are under your control.....?
15. What is approximate revenue collected in;
A day. Ksh... Week. Ksh... Month. Ksh...
16. Do you have different service prices for different toilets in town? Yes. ...
No.
17. If yes, what are customers' response in terms of use; high priced....
Average.... Low.....
18. How has initiation of your services influenced environmental implication in terms of;
Health.....
Economic.....
Aesthetic.....
19. Do you have special toilet facilities for the challenged/people with special needs?
.....

20. What plans or challenges do you have for the challenged group/customers?

21. What are your opinion and recommendation towards commercializing public
toilets and latrines in Kakamega town?

APPENDIX V: RESEARCH GUIDE FOR FIELD OBSERVATION.

1. Observe and make physical count of all public toilets in Kakamega town.
2. Identify all public toilets offering toilet services at a fee in Kakamega town.
3. Identify all public toilets offering free service in Kakamega town.
4. Identify the exact location of all public toilets in Kakamega town.
5. Observe and take picture samples of public toilets and their environs.

APPENDIX VI: IKO COMMERCIAL PUBLIC TOILETS.



Picture 1 shows an attractive Iko toilet at bus stage in Kakamega Town.



2

Goods at display at an Iko Toilet



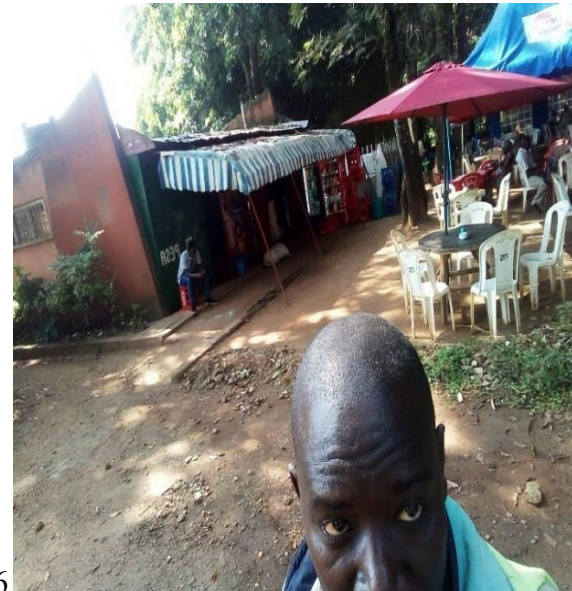
3



4



5



6

Picture3 shows shoes display, pictuer4-6 shows attractive hotel catering service outside IKO Toilets at Muliro Garden. Picture2-6 shows in general the space utilization economy around Iko toilet at Muliro Gardens and bus stage. 3-5 shows the researcher at Iko toilet Muliro Garden in Kakamega Town. Source; Field Data 2019.



7

Picture 7 shows space utilization around Kakamega Traders' Association public toilet (bus stage). Source; Field Data 2019.

APPENDIX VII: SAMPLED PRICE TAGS IN PUBLIC TOILETS.



Payment price tags at commercial toilets in Kakamega Town

APPENDIX VIII: PUBLIC TOILETS UNITS FOR THE CHALLENGED/DISABLED IN KAKAMEGA TOWN.



1



2



3



4

Picture 1 shows a public toilet unit for disabled, Picture 2 shows payment service in a commercial toilet and picture 3&4 shows a disabled toilet facility at a public toilet being used for storage purpose at Fish Market and iko toilet respectively in Kakamega Town.

APPENDIX IX: VANDALISM IN PUBLIC TOILETS IN KAKAMEGA TOWN.

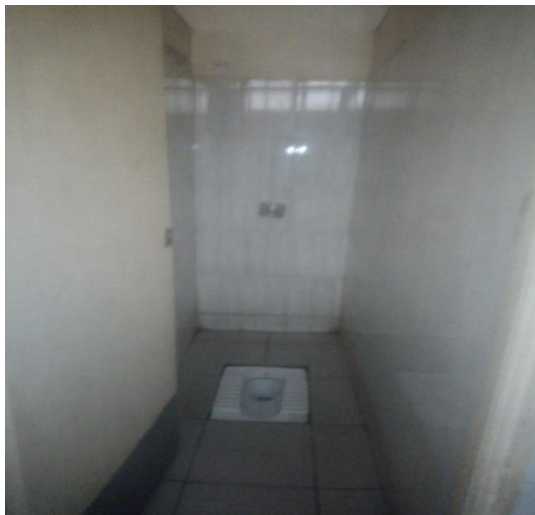


Picture 1 shows vandalism of public toilet at fish market and picture 2 &3 shows its internal state. Picture 4 shows state at one of Iko toilet in Kakamega town.

APPENDIX X: AN ATTRACTIVE COMMERCIAL TOILET IN KAKAMEGA TOWN.

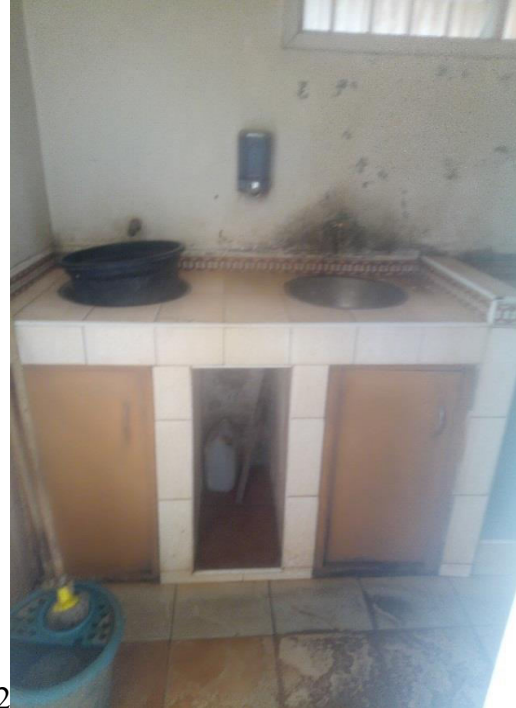


Picture 1 shows Beautiful and attractive environs of commercial public toilet at Fish market.



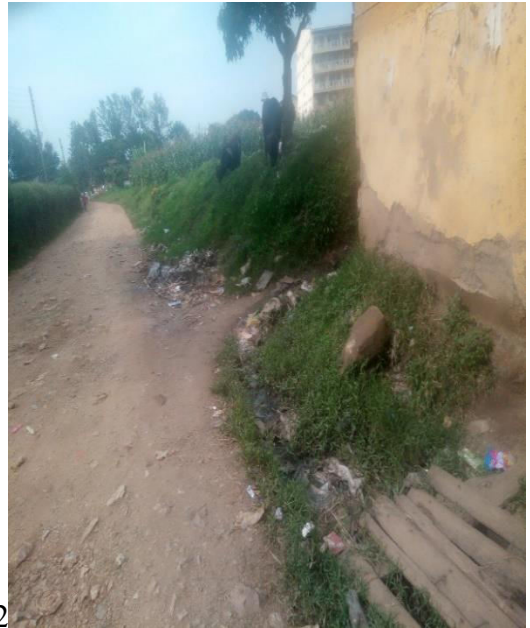
Picture 2 shows an attractive toilet cubicle and picture 3 show an illegal urination point outside new and old Kakamega county municipal market in Kakamega town

APPENDIX XI: STATE OF PUBLIC TOILETS IN KAKAMEGA TOWN.



Picture 1 &2 shows worn-out glass tiles at male urinal and tables in an iko toilet in Kakamega town, an implication of pathetic environs in public toilets.

**APPENDIX XII: ILLEGAL URINATING AND FLYING TOILETS POINTS
NEXT TO VEGETABLE AND FRUITS MARKET COMMERCIAL TOILET.**



Picture 1, 2, 3&4 shows area around Bondeni primary school gate polluted with flying toilet, open defecation and illegal urination point. It's located behind commercial public toilet at fruits and vegetable market in Kakamega town.

APPENDIX XIII: ILLEGAL URINATING AND FLYING TOILETS ALONG SORE AND MAZIWA ROADS IN KAKAMEGA TOWN.



1



2



3



4



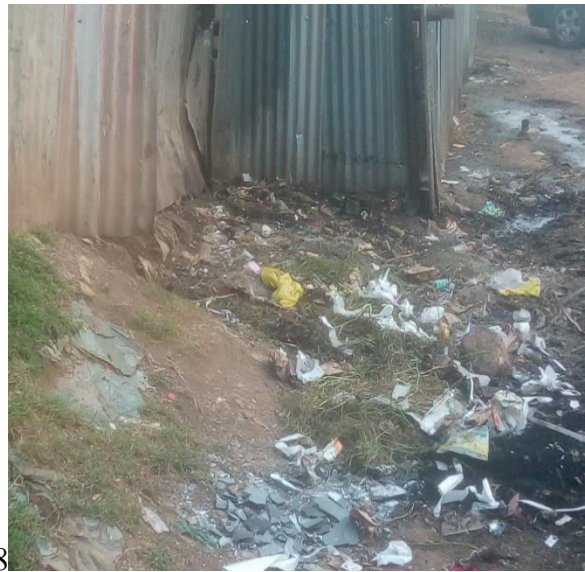
5



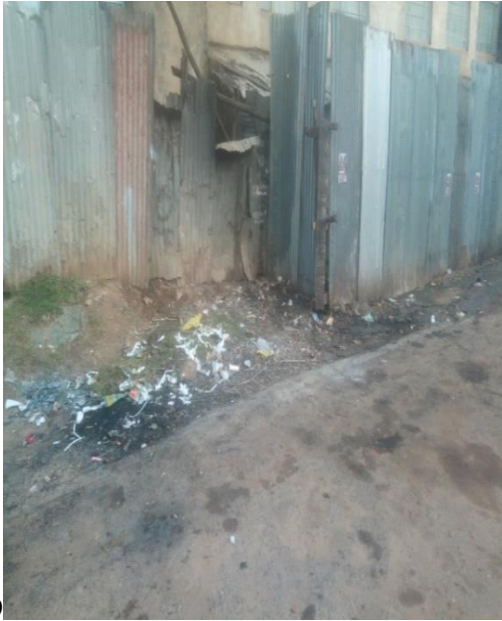
6



7



8



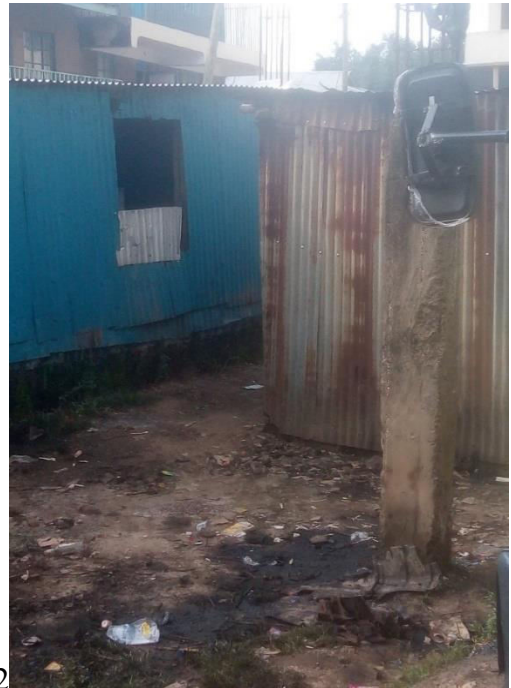
9



10



11



12



13



14



15



16

Pictures 1-15 show illegal urinating and flying toilet points within congested stalls/kiosks, corridors and abandoned construction buildings along Maziwa road and Sore road in Kakamega town.

APPENDIX XIV: ILLEGAL URINATING POINT AT KAKAMEGA GENERAL POST OFFICE.



Picture 1&2 shows an illegal urinating point at General Post office, 3&4 shows an illegal urinating point at Kakamega referral hospital junction along Kakamega-Kisumu highway in Kakamega town.

APPENDIX XV: ENVIRONMENT AROUND A FREE PUBLIC TOILET.



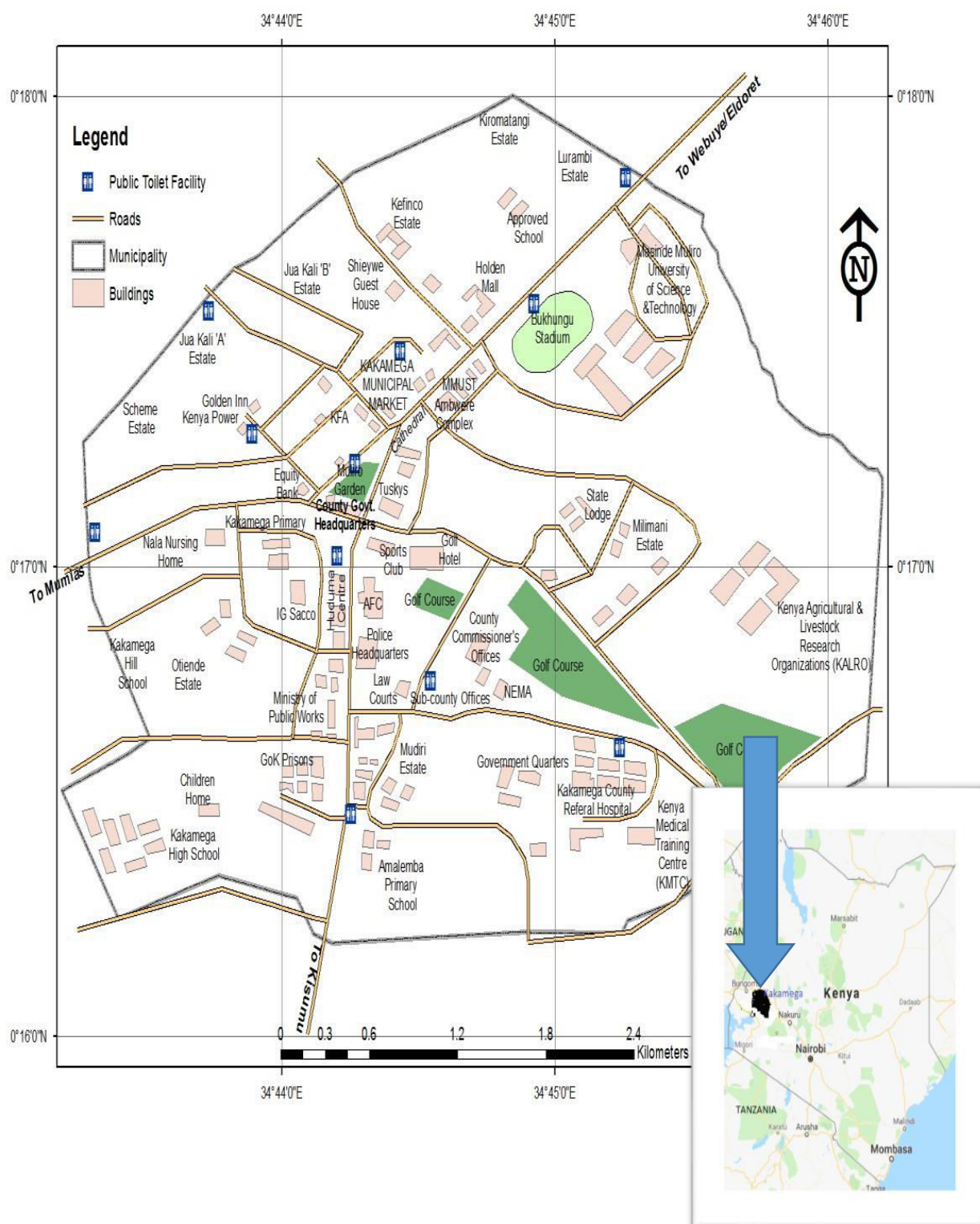
Picture 1-3 shows external state of a public toilet next to KANU offices near Kakamega Round-about.

APPENDIX XVI: SAMPLE PICTURE OF TOILET FACILITY FOR THE PHYSICALLY CHALLENGED.



SOURCE; ACCESSIBLE TOILET ONLINE.

APPENDIX XVII: STUDY LOCATION SHOWING KAKAMEGA TOWN



Map of Kakamega Town Showing Spatial Distribution of Public Toilet Facilities

Source: Researcher (2019). Version; ESRI ArcGIS 10.0

APPENDIX XVIII: APPROVAL TO CONDUCT RESEARCH AND RESEARCH PERMIT.

(a) approval letter.



MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

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P.O Box 190
Kakamega – 50100
Kenya

Directorate of Postgraduate Studies

Ref: MMU/COR: 509099

29th March, 2019

Philip Mutambi Okang'a
GEO/G/07/2016
P.O. Box 190-50100
KAKAMEGA

Dear Mr. Okang'a,

RE: APPROVAL OF PROPOSAL

I am pleased to inform you that the Directorate of Postgraduate Studies has considered and approved your Master's proposal entitled: *'Assessing the Socio-Economic and Environmental Implication of Commercializing Public Toilets in Kakamega Town'* and appointed the following as supervisors:

1. Dr. Margaret M. Immonje
2. Mr. Silvester Makhulo

You are required to submit through your supervisor(s) progress reports every three months to the Director of Postgraduate Studies. Such reports should be copied to the following: Chairman, School of Arts and Social Sciences Graduate Studies Committee and Chairman, Department of Geography and Graduate Studies Committee. Kindly adhere to research ethics consideration in conducting research.

It is the policy and regulations of the University that you observe a deadline of two years from the date of registration to complete your Masters thesis. Do not hesitate to consult this office in case of any problem encountered in the course of your work.

We wish you the best in your research and hope the study will make original contribution to knowledge.

Yours Sincerely,

Prof. John Obiri
DIRECTOR POSTGRADUATE STUDIES

(b) Research Permit.

THIS IS TO CERTIFY THAT: **Permit No : NACOSTI/P/19/16196/29712**
MR. PHILIP MUTAMBI OKANGA **Date Of Issue : 24th May, 2019**
of MASINDE MULIRO UNIVERSITY OF **Fee Received :Ksh 1000**
SCIENCE AND TECHNOLOGY, 0-50307
LUANDA, has been permitted to conduct
research in Kakamega County

on the topic: ASSESSING THE
SOCIO-ECONOMIC AND ENVIRONMENTAL
IMPLICATION OF COMMERCIALIZING
PUBLIC TOILETS IN KAKAMEGA TOWN

for the period ending:
23rd May, 2020

Applicant's Signature **Director General**
National Commission for Science, Technology & Innovation

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *"Assessing the socio-economic and environmental implication of commercializing public toilets in Kakamega Town"* I am pleased to inform you that you have been authorized to undertake research in Kakamega County for the period ending **23rd May, 2020**.

You are advised to report to **the County Commissioner and the County Director of Education, Kakamega County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a **copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

G. Kalerwa
GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Kakamega County.

The County Director of Education
Kakamega County.

National Commission for Science, Technology and Innovation is ISO9001: 2008 Certified