

**APPLICATION OF TOTAL QUALITY MANAGEMENT (TQM)  
TOOLS TO SOLID WASTE MANAGEMENT THE CASE OF MOMBASA  
MUNICIPAL COUNCIL <sup>f/</sup>**

BY

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A management research proposal submitted in partial fulfillment of the requirements for the award of Master of Business Administration (MBA) Degree, Faculty of Commerce, University of Nairobi

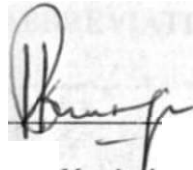
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## DECLARATION

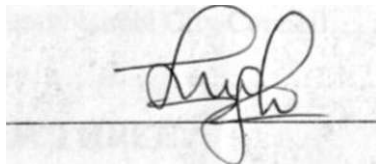
This Research project is my original work and has not been presented for a degree in any other university.



Irene Karimi Riungu

Date 0 f l u U.

This Research project has been submitted for examination with my approval as University Supervisor.



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## **DEDICATION**

I wish to dedicate this work first and foremost to my beloved parents. Mr. and Mrs. O.Riungu and my dearest siblings, Kim. Kiu. Nka and Tim. who encouraged me and were bulwarks of support throughout the whole course. May God indeed bless you. Then to the good people of Mombasa who deserve better services on tax payers money, than they are currently receiving.

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I take this opportunity to thank all those who have been resourceful in enabling me to complete this research. I wish to thank God for the strength of purpose He accorded me to not only start but also finish this work. I wish to thank Mrs. Zipporah Kiruthu, my Supervisor, whose enthusiasm and love for TQM not only as a subject but also as a way of living drew me to pursue Operations Management as a line of specialization.

I wish to acknowledge all my students who encouraged me both directly and indirectly to complete this task. Special mention goes to James Karanja, Kenn Munene and Lenai Kamario for their ingenious ideas and whose resourceful chatter, lit light bulbs of practicable ideas in me.

To those I have named above and many more, both family and friends, who in any way assisted me in this very noble endeavor, I humbly say thank you very much and may the Lord abundantly bless you.

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## **GLOSSARY OF ABBREVIATIONS**

MMCCD	- Mombasa Municipal Council Cleansing Department
IAAF	- International Association of Athletics Federations
MSW	- Municipal Solid Waste
TQM	- Total Quality Management
DEQ	- Department of Environment and Quality
AD	- Anaerobic Digestion
SSO	- Source Separated Organic
NEMA	- National Environment Management Authority
NCC	- Nairobi City Council
EMCA	- Environmental Management and Coordination Act
BBC	- British Broadcasting Corporations
CBDA	- Central Business District Area



## ABSTRACT

Today's globalized economy is fueled by competition. The firm/country with competitive advantage is the one that carries home the economic trophy. We have witnessed countries vying to host world events such as the Olympics and World Cup. South Africa won the bid to host 2010 world cup and so did Britain the 2008 Olympics. They won not only by the support of other countries, but because they presented a structurally fit environment suitable to host the games e.g., a working modern infrastructure, world-class tourist destinations and working systems. It is the researcher's belief that the most critical underlying factor of the success of these two nations is how well they have managed their solid waste.

Nairobi has been fortunate to host two major events. Mombasa will be hosting World Marathon Championships scheduled for 24<sup>th</sup> March 2007. As per the research, it is possible for the town to regain its lost glory by embarking on a serious campaign to rid itself of garbage.

The research focused on the operations of the MMCCD. The researcher sought to find out the reasons behind the dirty state of the town, paying attention to unswept streets and waste from estates. Questionnaires were distributed randomly to the four sections that made up the town. The objective of the research was to highlight by use of TQM tools the performance gaps in management and sweepers at the MMCCD and to recommend TQM practices that if implemented, would see an end to inefficient practice. The response rate was on average 80%.

The study revealed that the key causes of non-performance at the MMCCD were bureaucracy and politics at management level, which had a domino effect of laxity in sweepers. This presented itself through unswept streets, uncollected garbage along the roads and in the estates.

The research shows that should the recommendations be implemented, Mombasa will competitively vie and have high chances of winning bids to host major world events. By cutting down on the bureaucracy as demonstrated in the flowcharts and there being room for the supervisors to exercise their authority, work will be done. The major demotivator amongst the sweepers was lack of prompt pay for services rendered, non-availability of working tools and

protective gadgets. If these were provided on time, work would be done. Amongst the community, there were such suggestions for the council as;

- leadership *must* admit that a serious problem exists and that it is affecting performance of cleaners/sweepers
- In the short-run. the department must be overhauled including retraining and recruitment of staff at all levels
- In the medium term the Council's functions should be zoned and contracted to outside organizations on a competitive basis
- there should be workshops by the council for its residents on good waste management

The reason to the sorry state of the town that came out clearly amongst households was laxity amongst council sweepers at 19.2% followed closely at 19% by poor planning by the Council. Of the numerous challenges brought up by members of the public, as to what the council should do to restore sanity in the solid waste management exercisc, was to create awareness amongst all stakeholders on the best ways to handle waste. This factor was brought up by 27.8% of those interviewed.

# CHAPTER ONE: INTRODUCTION

## 1.1 Background

Mombasa is the second largest town in the country with a population of about 600,000 and the official gateway to the country. It has a history dating back to more than 2000 years when the Persians, Arabs, Greeks and Romans visited the East African coast and carried out trade between the Coast and the Mediterranean lands (<http://www.nationaudio.com>). The city of Mombasa is the gateway to East Africa. Its major known natural resource besides wildlife is a coastline stretching from south of Somalia to north of Tanzania and stretching 200 nautical miles into the open sea as per a Presidential directive. Tourism is the major economic mainstay of the city. Lately tourism has dropped drastically mainly due to the travel advisory issued against Kenya by American and British governments to its citizens.

The Municipal waste management system was established a century ago to protect public health in America's growing industrial cities ... Waste managers have been proven powerless at controlling the rising tide of waste... the infrastructure designed for the waste stream of 1900 is completely unsuited for the waste stream of 2000. The earliest municipal waste managers characterized municipal refuse using three categories; ashes, garbage and rubbish (Spiegelman, H. and Sheehan, B., 2006). In Kenya for instance Nairobi, Mombasa and Kisumu accommodates 53% of the national urban population. Yet. in 1979 there were only two cities with populations of over 100000 and by 1993 the number of such centers had increased by seven. But what is the cause for concern is the manner in which the urbanization process is taking place in East Africa. There is a range of intertwined forces that work against 'the above' economic argument namely 1. The largely unskilled labor forces 2. The municipal councils which started off as colonial institutions were never fundamentally transformed to cater for a growing African urban population 3. The revenue development and collection machinery has been ineffective and what little is collected tends to be mismanaged (<http://www.unchs.org/unhcs/planning>).

The 2007 World Cross-Country Championships are scheduled to take place in Mombasa starting 24<sup>th</sup> March 2007. Kamanda (Sports Minister) explained the role of his ministry saying

it was not concerned with the beautification, rehabilitation or cleaning up of Mombasa and its environs. "That is the work of the Municipal Council and the Ministry of Local Government but as a ministry we can liaise with you (council) to assist where we can" (D.N 26<sup>th</sup> September, 2006). "Town Clerk Shedd Simotwo said the council had started improving its infrastructure for the coming event through the unblocking of the drainage system, rehabilitating major roads and greening sections of the key areas leading to the venue. "In our cleansing department we have started a two shift cleaning programme by reviving our stalled vehicles and purchasing another three new ones to ensure Mombasa is sparkling before the event". "Simotwo warned that the council would use its by-laws (see appendices 7.4-7.7) to enforce the painting of buildings which should be done on a two-year basis. Already we have a special team of officers to arrest any public member found throwing solid or liquid waste illegally without following the existing by-laws." (D.N., 26<sup>th</sup> September, 2006, pp 50).

"The International Association of Athletics Federations (IAAF), will send an inspection team to Mombasa on October 24<sup>1</sup> to evaluate progress made in hosting the 35<sup>h</sup> World cross-country Championships...During the launch. Kamanda told Mayor Ali Shekue to ensure Mombasa was spruced up to receive the visitors. The government has already set aside Shs 200million for the improvement of the road network in Mombasa besides promising to sink in the boreholes," (D.N 23<sup>rd</sup> September, 2006, pp 32). "Kenya Breweries donated Shs 15 million towards the 2007 Mombasa World Cross Country Championships yesterday as Sports Minister... told Mombasa's acting Mayor... to shut up and start working... "Stop crying and start working.Go back to your town clerk and look for money because I don't have money to clean up Mombasa.He said whether Mombasa will be beautified or not, the championships will be held as all organizational work was right on schedule. As long as I have secured the ground at the Mombasa Golf Course, paid for the hotel bills and transportation, I am home, high and dry.Do your part, please. I am directing you now" (D.N. 22<sup>nd</sup> September. 2006). These strongly worded statements by the honourable Minister are suggestive of problems in the management of resources by the Council.

Solid waste from Mombasa Municipality and Lamu includes sludge from septic tanks and soakage pits, domestic rubbish and even industrial waste. This waste is disposed of at dumpsites located in the mangrove swamps. Mombasa... has separate sewage systems from

domestic sewage and storm water runoff. The domestic sewage system was designed to serve about 17% of the current population (<http://www.unep.org>). Building sustainable cities, where resource consumption and environmental impacts are minimized, is a challenging task for engineers, planners and decision-makers, and the process will affect all who live within urban communities. One important aspect to consider is the relationship between urban form, municipal infrastructure and the associated environmental impacts (Di Nino, T. and Baetz, B.W., 1996).

Urban waste management is drawing increasing attention, as citizens observe that too much garbage is lying uncollected in the streets, causing inconvenience and environmental pollution, and being a risk for public health. Although government authorities apply all the means at their disposal, the piles of wastes only seem to grow from day to day. Such means as bylaws and arresting tools. In an era of shrinking municipal budgets and a restriction on the scope of municipal government jurisdiction, the problem is likely to intensify unless alternate approaches can be developed ([www.gender and urban waste management.htm](http://www.genderandurbanwastemanagement.htm)).

#### Types of solid waste

Solid waste can be classified into different types depending on their source viz; household waste generally classified as municipal waste, industrial waste also referred to as hazardous waste and biomedical waste or hospital waste also referred to as infectious waste.

#### Municipal waste

This consists of household waste, construction and demolition debris, sanitation residue and waste from streets. This garbage is generated mainly from residential and commercial complexes. With rising urbanization and change in lifestyle and food habits, the amount of municipal solid waste has been increasing rapidly and its composition changing. Four broad categories of garbage are; 1. organic waste i.e. kitchen waste, vegetables, flowers, leaves, fruits etc. 2. toxic waste i.e. old medicine, paints chemicals, bulbs, spray cans, fertilizers, pesticide containers, batteries etc. 3. recyclables e.g. paper, glass, metals, plastics. 4. soiled waste; hospital waste e.g. cloth soiled with blood and other body fluids.

Hazardous waste

Industrial and hospital waste is considered hazardous as they may contain toxic substances. They would be highly toxic to humans, animals and plants; are corrosive, highly inflammable or explosive; and react when exposed to certain things e.g. gases.

## **1.2 Problem statement**

Mombasa would have a much needed facelift if it employed the services of landscape management professionals who can reduce waste by grass cycling, not over-watering or over-fertilizing since a good landscape design can reduce green waste and save money. The city has resources to assist develop the landscape industry by hiring its services to reduce waste. The preferred way to reduce waste is to not make it in the first place meaning, the less waste there is in the city, the less waste that will have to be managed through recycle, compost, reuse and so on. Writing on sides of a sheet of paper, using products that last longer, using voice- or e-mail are all good methods to trim waste. Other waste reducing ideas include using a mulching lawn mower, buying products with minimal packaging, removing your name from mailing lists and replacing incandescent lighting with fluorescent lighting. These however may not be methods preferred by the population of the City however there is need to change the public opinion about their view of waste and how to respond to the increasing need to manage waste not only for the resulting good ambience but also for the long-term effect it will have on the tourism industry. "Political interference also hampers smooth running of local authorities. Vulnerability of pollution of surface and groundwater is high because local authorities rarely considered environmental impact in siting Municipal solid waste (MSW) disposal sites. Illegal dumping of MSW on riverbanks or on the roadside poses environmental and economic threats on nearby properties' (Rotich, H.K. et al. 2006). According to Rotich (2006), for as long as politics interferes with the operation of the MMCCD. this will hamper achievement of quality service provision to members of the community.

Besides the terrorism threat to the tourism industry in Mombasa, there is the 'Kaya Bombo' cleansing insurrections, which are being well repressed and taken care of by the present government. Presently the city has litter dumped in every street corner, unswept streets and uncollected garbage. These are repulsive not only to tourists but to everyone else, portraying a

bad image of the city and as such a place to avoid altogether. The Mombasa Airport is in the suburbs and all the way from the airport through the town to the entrance of the hotels, the tourists cannot fail to see the masses of unattended litter. The Mombasa Municipal Council Cleansing Department (MMCCD) exists, so the question is posed why it cannot get the job done of ridding the city of filth. The directive by government to clear all shanties built next to roads helped to alleviate the problem but now the shanties are up again except along Airport Road. This is evident of enactment of good policies but lack of continuous enforcement of the same especially in area deemed of little economic interest. <sup>k</sup>... high quality means pleasing consumers, not just protecting them from annoyances. Product designers, in turn, should shift their attention from prices at the time of purchase to life cycle costs that include expenditures on service and maintenance-the customer's total costs. Even consumer complaints play a new role because they provide a valuable source of product information (Garvin (1987). ppl 04)".

The researcher was prompted to focus on this area because the situation can be reversed upon a disciplined application of Total Quality Management (TQM). "Total quality management may be defined as "managing the entire organization so that it excels on all dimensions of products and services that are important to the customer". It has two fundamental operational goals, namely i) careful design of the product and service, ii) ensuring that the organizations system can consistently produce the design. These two goals can only be achieved if the entire organization is oriented toward them-hence the term total quality management (Chase-Jacobs and Aquilano 2004. pp 274)". Also a strong culture- a set of shared values, norms and beliefs that get everybody heading in the same direction-is common to all the companies held up as paragons in the best seller *In Search Of Excellence* (Higginson and Waxier, 1993).

Waste is not just garbage: it is also energy, water, food, air. transportation, landscaping, time and money. Waste Management works toward reduction, reuse and recycling of all resources. By encouraging the reduction of energy consumption, water conservation, the purchase of reused and recycled products, the reusing and recycling of products on campus, and alternate transportation methods, the university reduces its environmental impact and operating costs, ([www.history\\_of\\_waste\\_management\\_at\\_the\\_University\\_of\\_Waterloo.htm](http://www.history_of_waste_management_at_the_University_of_Waterloo.htm)). "On-time delivery was also critical for Ford: the desire to keep workers and machines busy with material flowing constantly made scheduling critical. Product, processes, material, logistics and people were

well integrated and balanced in the design and operation of the plant (Chase-Jacobs-Aquilano. pp15, 2004)", the same should be the case of the MMCCD.

Odera (2000) sought to establish the existence of non-quality situations in the training process at Kabete Technical Training Institute, identify the root causes of poor examination performance in diploma courses and to come up with TQM based suggested improvement for examination performance. Kinuthia (2005) documented environment management practices among manufacturing firms in Kenya to determine the relationship between environmental management and manufacturing strategy in Kenyan firms. On competitive priorities of firms Kinuthia. P.M., (2001). establishes that all firms surveyed were competing on cost, flexibility, dependability, quality and innovation and that quality was the major competitive strategy to most of the firms. Omufira (2001) sought to establish the extent of TQM implementation in the construction industry in Kenya. From the studies highlighted, it is evident that very little has been done to establish the root causes of quality problems in service delivery. Therefore, this study of the operations of the MMCCD by use of TQM tools wishes to answer the questions;

1. What are the fundamental causes of unswept roads and uncollected garbage in the city?
2. What recommendations if implemented will see to the alleviation and subsequent end to this solid waste management problem?



### **1.3 Objectives of the study**

The general objective of this study was by use of TQM tools, to establish the root causes of the problem of uncollected litter in the streets of Mombasa and its environs so as to come up with quality measures, which if integrated in the MMCCD's routine operations, would solve this problem. Subject to this overall objective were the specific objectives as follows:

- i) to highlight the quality gaps in the performance by management and sweepers
- ii) to recommend measures which if implemented would streamline activities in such a way as to ensure efficient and effective use of available resources.

### **1.4 Importance of the study**

The results of this research project were of significance in the following ways,

- Establishing operations with in built checks and balances, which will ensure effective and efficient garbage collection by the city council.
- Highlighting the problems of sweepers who stand to gain incase their wishes /woes if any, are addressed adequately resulting in an increase to their motivation to work even hard, own the processes this leading to quality performance as defined by their customers.
- Engineering a turnaround of domestic and international tourism so that the city experiences rejuvenation as a result of its sparkling streets and working sewage systems.
- Being a role model to all other cities, county councils and municipalities in the country thus creating a conducive National environment for both local and foreign investment.

## CHAPTER TWO: LITERATURE REVIEW

### 2.1 TQM defined

'Total quality management may be defined as "managing the entire organization so that it excels on all dimensions of products and services that are important to the customer". It has two fundamental operational goals, namely i) careful design of the product and service, ii) ensuring that the organizations system can consistently produce the design. These two goals can only be achieved if the entire organization is oriented toward them-hence the term total quality management' (Chase-Jacobs and Aquilano. 2004. p274). Fundamental to the TQM philosophy is the idea of defect prevention versus defect detection. Traditionally, quality control efforts have concentrated on detection of defects through inspection after the product is manufactured. This process results in rework and waste. Under the TQM philosophy quality control is an ongoing activity through out the entire process cycle: it focuses on understanding the causes of problems and seeks to reduce or eliminate their impact in the most cost effective manner. By making use of employee familiarity with work problems, TQM taps into the creative capabilities of employees to find solutions to the problems. TQM focuses on people: it encourages the formation of teams and empowerment of employees (www.webdocs .nyc council, info).

'An organization that chooses to pursue quality as the path to productivity should be cognizant of the traps that befall many well-intended productivity improvement efforts. Just as a productivity "program" has little chance of fostering lasting improvement, so any superficial attempt to improve quality will fail to ultimately boost productivity' (Belcher J.G., 1987, pi53). Total Quality Management is an approach to the art of management that originated in Japanese industry in the 1950's and has become steadily more popular in the West since the early 1980's (www.johnstark.com, 2003). As the pace of change accelerates in the 21<sup>st</sup> century as a result of technological opportunities, liberation of world markets, demands for innovation, quality and speed, organizations have to readjust and realign their operations to counter all these challenges (Jarrar and Zairi, 2001). It is upon application of TQM philosophy and techniques when businesses undertake continuous improvement across all operations by seeking to discover the reasons for poor quality performance and customer service and

implementing methods to reduce and/or eliminate the causes of poor quality (www.p2pays.org, 1994). 'Operations management is defined as the design, operation, and improvement of the systems that create and deliver the firms' primary products and services' (Chase et al., 2004, p6). Zero waste is a philosophy and a design principle for the 21<sup>st</sup> century. It includes recycling but goes beyond recycling by taking a "whole systems" approach to the vast flow of resources and waste through human society. Zero waste maximizes recycling, minimizes wastes, reduces consumption and ensures that products are made to be reused, repaired or recycled back into nature or the market place (www.webdocs.nycouncil.info). Solutions to waste management problems can be found using different approaches and methods. The waste approach to the design and implementation of waste management systems is based upon two important observations:

1. People are at the heart of the waste management problem. People generate waste and without their active cooperation and participation it is not possible to implement sustainable integrated waste management systems.
2. Waste management is an income-generating activity offering both large and small scale enterprises, as well as thousands of waste pickers, the opportunity to make a living from the collection, recovery, recycling, treatment and disposal of waste (www.waste.nl/page/167.org).

Dale and Johnson (1986) state that, at the incremental end of the spectrum lie minor improvements, waste elimination and cutting out no value -added activities such as redundant or duplicated tasks. These yield useful benefits, especially in quality and lead-time and sometimes cost but are usually limited to improvements within a department or function. They are made either top down by management controlled initiatives or bottom up by those who work in the process. If done bottom up by improvement groups, this is very much the province of total quality, involving everyone in business improvement. Schonberger et al (1981) states the world seems to shrink as global competition grows and jolts one solid firm after another. Informed consumers are in a position to demand the best-quality goods and services offered by global companies. Low prices, short delivery lead times, and flexibility are in demand as well. In addition, consumers prowl the landscape seeking friendly, honest and helpful services from service providers. Costin, H., (1999) also states that, one of the most widely used terms and concepts in the quality literature is, of course, quality. Definitions of quality range from

narrowly defined, primary operating characteristics of a manufactured product (e.g., acceleration or cruising speed for a car) to customer-defined quality. Of quality. Naylor. J. (1996), says that over the past twenty years or so. the critically significant importance of quality has been recognized as industry after industry has been challenged by innovation and international competition. While manufacturing and service organizations that could not keep up have suffered in the new climate, those who have absorbed the quality message have prospered. Success has bred success as customers respond to rising standards and have their demands satisfied like never before.

What increasingly differentiates success and failure is how well you locate, leverage and blend available explicit knowledge with internally generated tacit knowledge (Meyer. 1998). As for principles of quality management, according to Rashad and Massoud. there are four main principles of quality improvement, focus on the client i.e. services should be designed to meet the needs and expectations of clients and community: understanding work as systems and processes i.e. providers need to understand the service system and its key processes in order to improve them: teamwork i.e. because work is accomplished through processes and systems in which different people fulfill different functions, it is essential to involve in the improvement, representatives of the people who fulfill this function: focus on the use of data to analyze processes, identify problems, and measure performance, changes can then be tested and the resulting data analyzed to verify that changes have actually led to improvements.

## 2.2 Solid waste management and TQM in cities of the world

### 2.2.1 Comparative look at Kuala Lumpur (Malaysia) and towns in Kenya

In Malaysia the privatization exercise is aimed at reorganizing existing solid waste management system used by most local authorities into a system prepared to undertake disposal of wastes from expanding urban localities, incorporating recycling and safe environmental management measures. Laws and regulations will be streamlined at the federal, state and local government levels to ensure proper disposal including mandatory separation of recyclable waste by households. Efforts in solid waste management are given high priority, considering the adverse effect of environmental degradation from waste that is left unattended, especially in cities. Taking into account the related problem such as finance, lack of expertise and myriad functions that need to be carried out by local authorities ([www.unescap.org](http://www.unescap.org)). In Kenya not to mention Mombasa most dumping sites are next to rivers and roadsides. Rivers carry this garbage downstream to reserves and end up endangering the lives of wildlife e.g. rhinos when drinking, choke upon intake of polythene bags. Among several recommendations, Odera (2000) recommends that management should streamline duties and responsibilities of support staff that are directly related to the training process. That their duties should be clearly defined so that each is responsible for a particular process, and personally responsible to the next recipient in the line. On the recycle of waste, it happens informally in most rural Kenya especially where farming forms the backbone of people's livelihood.

An Indian toilet proprietor featured in Ripley's 'Believe it or not', said that people are more concerned with eating and forget that there's the other end to manage which in most governments is an issue relegated to the backburner, whereas for a country like Kenya, if taken seriously could make her realize its industrialization goal by 2020. In Kuala Lumpur, privatization alongside training has enabled the company to improve productivity. When solid wastes were managed directly by city hall at times the job was carried out by ill-equipped, under trained and understaffed individual private contractors who covered fragmented collection areas in the federal territory ([www.unescap.org](http://www.unescap.org)).

Like many other cities all over the world, land is scarce in Kuala Lumpur and the landfill method is increasingly becoming an unacceptable option. Some states or districts are not in favor of having such sites in their areas of jurisdiction for obvious reasons, and particularly from an environmental perspective ([www.unescap.org](http://www.unescap.org)). Landfills are the most favorite option for waste disposal. This is the least favored method by residents for example there was an outcry by the residents of Mwakirunge (Kilifi district) when the Kibarani dumping site was relocated to their area. In Nairobi, the city council is looking for another site, now that the Dandora site's capacity is overwhelmingly exhausted.

### 2.2.2 Maharashtra

In Maharashtra, India, the poor availability of equipment sometimes affects the primary collection and small capacity of trolley induces many sweepers to burn waste in the streets. This is harmful for the health and for the environment. Sweepers should be educated about waste related issues, like the harmfulness of burning waste ([www.unescap.org](http://www.unescap.org)). Omufira (2001), in her study on the extent of Total Quality Management implementation in the construction industry, found out that workers feel they do not receive fair pay for work done and outstanding performance is not always recognized. "It is also the feeling of the majority of the workers (67%) that they are not equipped with the right tools to get the work done" (Omufira, 2001, p29). In her research she identified communication channels in the industry as not being clear and that for the success of any TQM program, communication is vital.

A close look at the roots of the quality movement shows that it has always been about learning. Costin, H. (1999), reporting on what Dr Deming says: that the prevailing system of management has destroyed our people because people are born with intrinsic motivation, self-esteem, dignity, curiosity to learn, joy in learning. Chakraborty, S.K., (1987) says that workers in the universal, generic sense know how to work, and it is only the organizations and their systems, which stultify their work, know how. Dewey canonized the simple fact that all real learning occurs over time, as we move between the world of thought and the world of action. Learning is never simply an intellectual exercise. Nor is it a matter of changing behavior. It is an interactive process linking the two, in a spiral of continually expanding our capabilities. "People do what they are rewarded for" is actually antithetical to the spirit of quality management. This does not imply that rewards are irrelevant rather, it implies that no set of

rewards, neither carrots nor sticks, can ever substitute for intrinsic motivation to learn. A corporate commitment to quality that is not based on intrinsic motivation is a house built on sand and that from an intrinsic perspective, there's nothing mysterious at all about continuous improvement. People, if left to their own devices, will naturally look for ways to do things better. What they need is adequate information and appropriate tools. From the intrinsic perspective people's innate curiosity and desire to experiment, if unleashed, creates an engine for improvement that can never be matched by external rewards.

### 2.2.3 Oregon

The state of Oregon adopted a solid waste management plan in 1979. which sets priorities for managing both municipal solid waste and hazardous waste. During the next ten years, the states municipal solid waste efforts concentrated on closing dumps bringing land fills into emphasizes, and increasing residential recycling participation and with these program underway, it was clear in the generation, recycling and disposal in the next decade. Half the wasteland filled each year in Oregon comes from the commercial sector about 1.3 million tons. Implementing waste prevention and re-use techniques will help preserve our natural resources and prevent pollution. This clearinghouse was created to provide the commercial sector with the tools needed to save capital rather than filling a dumpster with unused by-products and printable wastes ([www.deq.state.or](http://www.deq.state.or)).

Development of the plan was a two year process and to solicit a range of public input, DEQ (Department of Environment and Quality) staff, organized 13 local workgroups comprised of both public and private solid waste and recycling professionals and interested local citizens. At the outset of the planning process, staff met with these groups to assess critical solid waste issues that needed to be addressed in the plan. The local work groups were instrumental in keeping urban and rural issues identified separately and ensuring that the plan included measures to address them ([www.deq.state.or](http://www.deq.state.or)).

### 2.2.4 New York City

What would New York City do to achieve zero waste? Increase recycling: recycle more types of items: compost organic waste; promote and fund re-use programs: enact producer responsibility legislation requiring producers to be responsible for end of life management of their products and packaging and /or bear the cost of disposal: encourage the purchase of

environmentally beneficial products and products containing high post consumer recycled content, create incentives to promote the establishment of resource conservation and recycling industries ([www.webdocs.nyc.council.info](http://www.webdocs.nyc.council.info)). Regardless of the overall system, collection systems must have clear accountability linked to service area. Anyone in the service area must know what body has jurisdiction over their collection, and how to give feedback to that system. Naylor, J., (1996) on quality personally defined says the definition is given through the eyes of the customer. It's particularly critical in the delivery of personal services, where it is expected that each customer come along with individual needs and criteria. Quality to guide processes; operations managers need standards, preferably defined by or agreed with the customer, to provide clear yard sticks. They can then decide whether they have achieved their targets of getting it right first time. Drucker. P.F., (1963) on what is the manager's job. says it is to direct the resources and the efforts of the business toward opportunities for economically significant results. Workers are remarkably alike in two crucial respects; what does not work in raising their productivity and what does. "Measurement is integral to the productivity management process. If productivity is to be integrated into the organizational culture as a vehicle for monitoring progress, providing feedback, setting quantifiable objectives, and evaluating managerial performance is a sine qua non (Belcher J.G., p513).



## 2.3 Operational Performance

The operations function (system) is that part of the organization that exists primarily to generate and produce the organizations products. Ideally a process is any part of an organization that takes inputs and transforms them into outputs that, it is hoped, are of greater value to the organization than the original inputs. Understanding how processes work is essential to ensuring the competitiveness of a company. A process that does not match the needs of the firm will punish the firm every minute that the firm operates\* (Chase et al., 2004, p102).

'On-time delivery was also critical for Ford: the desire to keep workers and machines busy with materials flowing constantly made scheduling critical. Product, processes, material, logistics and people were well integrated and balanced in the design and operation of the plant' (Chase-Jacobs-Aquilano, 2004, pi5). Information from the marketplace concerning the requirements of customers is likely to be available from the following sources i.e. feedback on the performance of current products, customer complaints, reports of market research agencies, data obtained by a firm's own marketing research department. In Oakland J. (2000), for an organization to be truly effective, each part of it must work properly together. According to Ahlstrom and Blackmon. (1997). this refers to the measurable aspects of the outcomes of organizations processes such as reliability, production cycle time and inventory turns.

Operational performance in turn affects business performance measures such as market share and customer satisfaction. Production capability is the ability to operate production facilities, investment capacity is needed to upgrade the existing production facilities or establishing new production facilities and innovation capabilities is concerned with the developing technologies (Raouf, A., 1998). Johns, D.T, and Harding H.A, (1989) note that experience has shown that firms that do not actively position themselves in the market place, but instead, adopt an "all things to all men" approach are constrained to mediocre or below par performance. They state that the first structural choice made by the operations manager is the process choice decision. The effects of this choice, are far reaching, as supporting structural choices will need to be made in the areas of facilities infrastructure and industry linkages. If these complimentary

decisions are not made, the operation as a whole will not be focusing on the needs of the customer and will be vulnerable to any competitor who has targeted that same market sector for competition.

Implementation of operator process ownership ought to be a part of the MMCCD operations strategy. The specifics of carrying that out along with decisions about what operations management tools and procedures to use depend on the types of operations (Schonberger et al, 1981). Many technically adequate waste management systems have failed because of conflicting bureaucratic claims or jurisdictional boundaries. Peters, T., (1992) provides twelve attributes of a quality revolution amongst them a management obsessed with quality.

### 2.3.1 Anaerobic digestion facilities in Switzerland

While most people associate Switzerland with stunning scenery, great cheese and watches, few link the country with leading edge waste processing technology. But in quiet efficient Swiss style, the country has a number of operational anaerobic digestion (AD) plants generating natural gas and electricity from organic residuals...incoming waste is shredded then sorted to remove contaminants such as plastic and glass. A magnetic separator is used to recover any ferrous metal material ahead of the digester... After two days the solid digestate is sent to farmers' field for land application. Kampogas pays the transportation costs to the land application sites and does not receive any revenue for the material...Residuals go to a second shredder, then to an intermediate bunker, which is used as a storage unit for mixing and regulating the flow to the digester. The shredded materials stay in this intermediate storage tank for two days. Water from the dewatering unit is added to source separated organic household waste (sso) in the storage unit to adjust the feedstock moisture content to 28% dry solids content, 72% moisture content. A piston pump delivers the shredded waste to the digester, which is a concrete tank with a capacity of 1000 cubic meters... (Kelleher, M., 2001). This could be the case for a privately run recycling plant supplying for the district and indeed the province much needed organic fertilizer.

## 2.4 TQM Tools

On determining what data and information to collect, 'A company's measurement system, like its entire quality system, must be driven by its customers. As you determine your customer's requirements and decide how you will meet those requirements, you will want to construct a measurement system that aligns all activities with improving customer satisfaction' (George and Weimerskirch. 1994, pi95). 'A high-quality health care or-Quality Organization develops data about itself and its performance for both internal and external use. Such data are an integral part of the quality improvement process, and this important idea has not gone unnoticed by the marketplace' (Enthoven and Vorhaus, 1997,p 4). The following are examples of TQM tools:

### 2.4.1 Quality Circles

The Japanese for quality circles means literally 'the gathering together of wisdom of the people (Doidge et al 1996 cited by Abbot. 2000) and the term was used to describe the voluntary grassroots team working which operated in the workplace (Abbot, 2000). Oakland (2000). defines quality circle as a group of workers doing similar work who meet voluntarily, regularly, in normal working time' under the leadership of their "supervisor" to identify, analyze and solve work-related problems, to recommend solutions to management. 'Once a problem situation has been recognized and before it is attacked, an inter-disciplinary problem solving or quality improvement team must be created. This team will be given the task of investigating, analyzing, and finding a solution to the problem within a specified timeframe. Sometimes called a quality circle, this problem solving team consists of people who have knowledge of the process or problem under study' ( Summers, 2000. p69).

Quality circles or variants of them have been found to contribute significantly to increased staff involvement in problem solving, in a variety of sectors and types of enterprise (Martin and Nichols 1987 cited by Abbot 2000). Finding appropriate ways of involving staff in decision-making and problem solving is one of the more intractable problems faced by any large institution. In a multifunctional organization with a broad mission and large numbers of

staff, there is inevitably considerable distance in experience, understanding and professional priorities-between senior managers and support staff(Abbot, C.M.. 2000).

According to Naylor J. (1996), quality improvement relates to improving products and making them more suited to customer's needs. According to Chase et al., (1995) the quality improvement team should strive to improve the quality of their products and services. Then with all information collected the research will seek to establish those operating systems that will be able to meet the needs of the various stakeholders at the same time, while ensuring efficient and effective delivery of service.

#### 2.4.2 Brainstorming

In Oakland (2000) brainstorming is defined as a technique used to generate a large number of ideas quickly, and may be used in a variety of situations. Each member of a group, in turn, may be invited to put forward ideas concerning a problem under consideration. Wild ideas are safe to offer, as criticism or ridicule is not permitted during a brainstorming session. The people taking part do so with equal status to ensure this. The main objective is to create an atmosphere of enthusiasm and originality. All ideas offered are recorded for subsequent analysis. The process is continued until all the conceivable causes have been included.

#### 2.4.3 Parcto Analysis

Its originator was an Italian scientist who discovered that 80% of the wealth of Italy at that time was in the hands of 20% of the population. Summers (2000) states that the Pareto Chart is a graphical tool for ranking cause of problems from the most significant to the least significant. In Oakland 2000, this is an analysis of data to identify the major problems. "... a Pareto analysis can often point to significant areas to investigate' (Summers, 2000, p70). It prioritizes areas of weaknesses so that effort is not wasted on what's not very important and can therefore be dealt with later. 'Joseph Juran rescued this analysis from obscurity in the 1950's and coined the phrase "the significant few vs the trivial many"...Pareto analysis is essentially based on the 80/20 principle, which states that 80% of all effects come form 20% of possible causes. It's simply a method of breaking down a quality issue into its representative parts according to their frequency or magnitude of occurrence. The purposes of the Pareto Chart include allowing an organization to identify those important few causes that

tend to make the largest contribution to a given quality problem and allowing for a visual presentation of a given quality problem (Lau. M., 2002).

#### 2.4.4 Histograms

Oakland 2000, describes them as diagrams which show in a very pictorial way, the frequency with which a certain value or group of values occurs. They can be used to display both attribute and variable data, and are an effective means of letting the people who operate the process know the results of their efforts.

#### 2.4.5 Cause and effect analysis

In Oakland 2000, this is a useful way of mapping inputs that affect quality also called Ishikawa diagram (after it's originator) or the fishbone diagram (after its appearance). The effect or incident being investigated is shown at the end of a horizontal arrow. Potential causes are then shown as labeled arrows entering it, as the principal factors or causes are reduced to their sub causes and sub-sub causes by brainstorming. 'A chart of this type will help identify causes for non-conforming or defective products or services. Cause-and-effect diagrams can be used after flowcharts and Pareto charts to identify the causes of the problem. This chart is useful in a brainstorming session because it organizes the ideas that are presented. Problem solvers benefit from using the chart by being able to separate a large problem into manageable parts' (Summers, 2000, p 83).

#### 2.4.6 Process Flowcharts

"In a systematic planning or detailed examination of any process, whether that be a clerical, manufacturing or managerial activity it is necessary to record the series of events and activities, stages and decisions in a form that can easily be understood and communicated to all...The statements defining the process should lead to its understanding and will provide the basis of any critical examination necessary for the development of improvement" (Oakland, J., 2000, p 66). According to Summers (2000), she states that flowcharts are fairly straightforward to construct. She identifies the steps to creating a flowchart as defining the process steps by use of brainstorming. Sorting the steps into the order of their occurrence in the process, placing steps in appropriate flowchart symbols and creating the chart and finally evaluating the steps for completeness, efficiency and possible problems.

## **2.5 National Environment Management Authority and Nairobi City Council (N.C.C) Environment Dept.**

Kenya became party to the Stockholm convention on persistent organic pollutants on 25<sup>th</sup> Dec., 2004. The National Environment Management Authority (NEMA) has been challenged to identify sections of the Environmental Management and Coordination Act (EMCA) that need amendment so as to improve efficiency in its operations (Nema Magazine Vol.III, April, 2005). Selection, design and implementation of instruments in the Kenya solid waste management sector, jointly prepared by various bodies of the government of Kenya and Unep is a requirement. A package of instruments rather than a single instrument is required; a combination of command and control, and economic strategies, including seven instruments one of them being a ban on plastic shopping bags that are less than 30 micros in thickness ([www.nema.go.ke](http://www.nema.go.ke)).

In order to maximize the opportunity for direct comparisons (state by state and nationally), the next step was to calculate the municipal solid waste (MSW). only portion of total solid waste generated, recycled, combusted and land filled...Biocycle is pleased to produce the State of Garbage in America Report, providing a picture on how municipal solid waste is handled throughout the United States (The state of garbage in America, 2006). This shows how seriously garbage issue is taken in other countries to the extent of preparing reports to this effect. In the N.C.C., The department of Environment is responsible for the local environmental planning and management in Nairobi City and also provides solid waste management and parks management services to the people. The objectives of the department are to make Nairobi a clean, green and tidy city. Protect the environment against effects of pollution through monitoring and assessment and also protect the public health from effects of pollution. It's important to highlight that the park services are provided by the park section located at City Park, the cleansing services offered by the cleansing superintendent located at Lagos Road, whereas policy issues are carried out at \*the environmental planning and management section, City Hall, all in different locations. This raises a serious issue on whether or not coordination is compromised and how performance in the different departments is being affected as a result.

Over the years, the quality of social services rendered by the Nairobi City Council (NCC) have gradually been deteriorating, particularly management of domestic solid waste. Despite the fact that residents pay for the services and have continually complained, haphazard heaps of uncollected garbage is noticeable at the doorstep and along the streets. Currently, Nairobi is among some of the cities experiencing problems of solid waste management (Ngari 1994, Gacheru, 1996, cited by Mwanthi, M.A et al, 1997). Fast population growth has overstretched the NCC resources allocated for social services including the resources for the management of solid waste (Gacheru 1996, Mirza 1996 cited by Mwanthi, M.A. et al 1997). It appears that lack of proper managerial inputs and misappropriation of resources by the NCC may be the major contributing factors to the problems of solid waste in Nairobi. The situation is also made worse by the public who litter all over the city and appear to be little concerned with the beauty of the city (Mwanthi, 1992). Regrettably Nairobi city once known as the 'Green City in the Sun\*' has lost its beauty and has become "Garbage city in the Dark' (Schirnding and Yach, 1991/92, Gacheru, 1996).

## **2.6 Summary**

The literature review has touched on those issues deemed appropriate in this particular research study viz; definition of TQM. solid waste management and TQM in cities of the world, operational performance, TQM tools. Nema and the N.C.C. The idea being to show the need for this particular study and how it compares to related studies in other cities of the world. Also, the definition of TQM and the various TQM tools to be used in analyzing the data collected for purposes of bringing to light the quality problems within the operations of the MMCCD.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Research design**

Exploratory research design was used to learn who, what, when and how of operations in the MMCCD highlighting the non-quality issues by use of TQM tools.

### **3.2 Population**

Population was management and sweepers of the MMCCD and members of public who fell under its jurisdiction. Approximately 500 subordinate staff and one overall manager worked for MMCCD. The number of households served by the department was about 100,000.

### **3.3 Sampling design**

The research collected data from the manager responsible and from five sweepers. This was because they were scattered all over the city hence economical to interview only this number. Convenience sampling was used when collecting data from these sweepers and manager because it was economical and time saving for the researcher. Cluster sampling was used to collect data from members of the public falling under the MMCCD's jurisdiction. The research divided Mombasa into five zones, east, west, north, south and central. From each zone, collect at random data from approximately 100 households.

### **3.4 Data collection**

Primary data was collected by use of a structured questionnaire (See appendix 7.2). There were three sets of questionnaires designed to capture relevant data for study from Management of MMCCD, the sweepers in the department and the community. Hence questionnaires I to III for the respective data source. Each consisted of three parts; part one was designed to collect bio-data and part two designed to collect data pertaining to process improvement and part three collected challenges the respondent felt were in the way of realizing TQM. All the questionnaires were made up of open and closed response questions. The researcher used questionnaire I and II (appendix 7.2) as tools to guide the interview-process. Questionnaire III was distributed to members of the public through the drop and pick



later method. Secondary data was sought from the interviewed manager, to provide that data which was not possible to capture in the questionnaire.

### **3.5 Data analysis**

Data was analyzed using descriptive statistics such as frequencies and percentages, and presented using tables and TQM tools such as flow charts and Histograms etc Histograms displayed the pattern of variation of data, hence shed light on where to focus improvement efforts. Cause and effect analysis analyzed and communicated cause and effect relationships thus facilitated problem solving from symptom to cause to solution. Process flowcharts facilitated the description of existing processes and helped design a new process.

## **CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATIONS**

### **4.1 Introduction**

This chapter contains summaries of data findings and their interpretations. It is divided into three sections two of which are directly linked to the objectives of the study. The first section analyses the respondent's general information. The second section analyses the operations of the MMCCD. The third section analyses quality gaps evident in the performance of management and sweepers.

#### 4.1.1 Response rate

The response rate was 100% of the management and the five sweepers the researcher interviewed. However, 80% of the community members to whom questionnaires were distributed responded.

Therefore, the Manager in charge of cleansing Old Town Department ( Mombasa Central), the five sweepers the researcher followed around the streets of Mombasa central business district and the 500 members of the public gave sufficient input that were analyzed to give meaning to the research. The following sections show the results of the analysis of data collected.

## 4.2 Analysis of general information

The general information included in the study included, number of years worked in the department, previous station and reason for transfer. The manager had been in office for two weeks. His previous department was Public Health Department. Of the sweepers on average, they had been on the job for 3 years. The table 4.1 below shows that, most of the respondents had lived in the area for less than five years.

Table 4.1 Length of stay

			Length of stay as resident						Total	
			Less than 5 years	6 - 10 years	11 - 15 years	16 - 20 years	21 - 25 years	More than 25 years	NA	
Male/ Female	Female	Count	52	51	13	13	26	26		181
		Column %	33.5	57.3	100.0	12.9	40.6	40.0		362
	Male	Count	103	38		88	38	39	13	319
		Column %	66.5	42.7		87.1	59.4	60.0	100	638
<b>Total</b>	<b>Count</b>		<b>155</b>	<b>89</b>	<b>13</b>	<b>101</b>	<b>64</b>	<b>65</b>	<b>13</b>	<b>500</b>
	<b>Column %</b>		<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>1000</b>

Source: Primary data

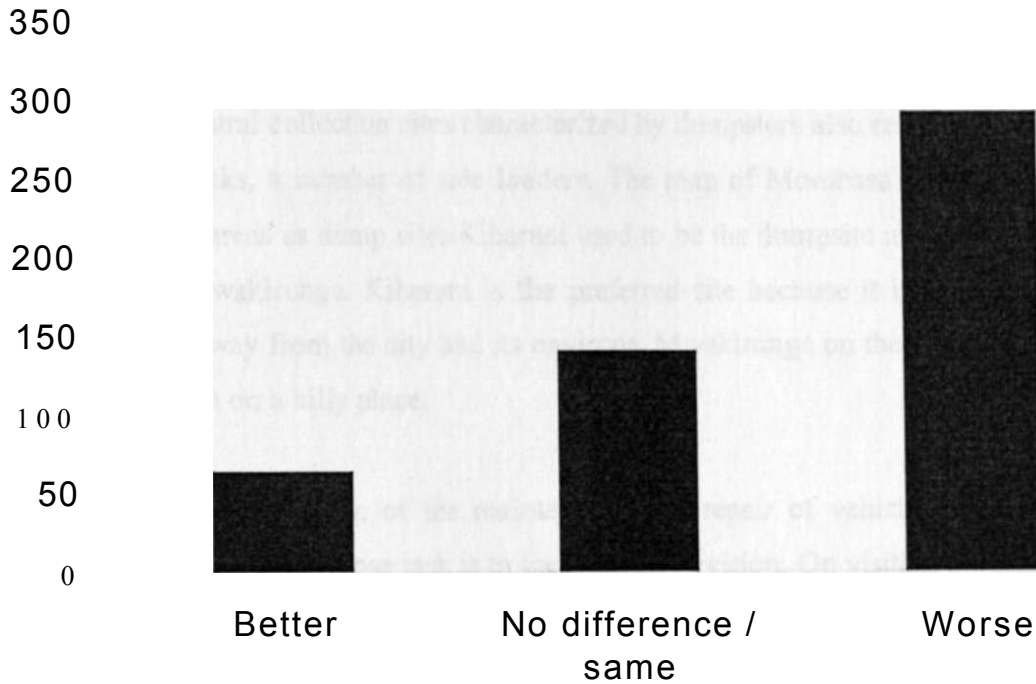
Females made up 31% of the respondents. Males made up 63.8% of the total respondents whereas females made up 36.2% This may have several implications, that;

1. men. as main providers of the home, they are most affected by the cleanliness problem
2. male literacy is higher than that of women
3. women are too busy with other more pressing issues
4. women have given up on the overall state of community cleanliness and have decided to concentrate on their homes.

The other group of respondents, which actively participated in the exercise, was those that had lived in the area for 16-20 years, they made up 20% of the respondents. The implication being they were the optimistic lot, that something good would come up someday. Those that had lived in the area for 21 years and above made up 26% of the respondents. Figure 4.1 below

shows an observable comparison between those who said the situation had grown worse and those that said it had gotten better.

Figure 4.1 Column graph showing the number of people with respect to their opinions about present level of cleanliness as compared to time of moving into the area



Key:

| Number of People

Source: Primary data

The number of those that said it had gotten worse was 143% more than the total number of those who said there was no difference plus those who said that the situation had grown better. This is suggestive of the fact that the situation may actually have grown worse, this can only be ascertained by analyzing the operation of the MMCCD. This is discussed in the next section.

### 4.3 Analysis of the operations of the iMMCCD

The MMCCD being under the broad Department of Environment, dealt with the following operations;

- Transport operations
- Personnel

#### 4.3.1 Transport Operations

This constitutes central collection sites characterized by dumpsters also referred to as batteries three hydraulic trucks, a number of side loaders. The map of Mombasa (see Appendix III ) shows two shaded areas as dump sites. Kibarani used to be the dumpsite until recently when it was changed to Mwakirunge. Kibarani is the preferred site because it is situated along the causeway not far away from the city and its environs. Mwakirunge on the other hand is 15km away from the town on a hilly place.

The transport unit is made up of the maintenance and repair of vehicles which constitute besides trucks, motorbikes whose task is to facilitate supervision. On visiting the offices of the MMCCD, located in the MwembeKuku area of Mombasa Central, behind the Council's fire department, the researcher counted more than 15 broken down, not in use trucks and small cars. The Officer interviewed stated that only one truck was in use servicing the town and its environs. People in the Magongo area had not had their garbage collected since the beginning of the year.

#### 4.3.2 Personnel

The bulk of personnel of the MMCCD constitute road sweepers and garbage collectors. The Officer stated that the cleaners are to start work in the morning at 6.30 am. He said normal working hours run for eight hours but he said that *sweepers had a right*. In this case to work. That is why it was so difficult for the researcher to trace them in the field. Generally no work is done. The officer explained that there existed a structure that established chain of command. The researcher was informed that there was in-service training for subordinates to better their remunerations and other benefits. He gave the example of the driver who was taking us round

the route for a regional motorcycling championship (see Appendix IV) that he started as a sweeper.

Work, under normal circumstances, began on a Monday morning at 7:30am. where sweepers reported for duty, collected tools, and set off to their various working areas. Trucks were fuelled and set off to collection points, emptying dumpsters, collecting garbage from households. This was especially conveniently done when a pattern had been established that households left their bins outside for collection on a particular day or time in the day.

#### **4.4 Analysis of the quality gaps in the performance by Management and Sweepers**

##### 4.4.1 Response to complaints

The Officer interviewed mentioned the following reasons for slow or no response to complaints made;

- lack of finances
- bureaucracy
- lack of enough equipment
- political influence
- old transport equipment

It was observed by the researcher that the office had a disconnected telephone line, making direct access to the officer in charge impossible. The room was old with a fan that dated back to colonial days.

##### 4.4.2 Factors affecting street cleansing services

The officer identified the following factors that he cited to be affecting cleansing services starting with the one that affected the most;

1. Carelessness by members of the public
2. Lack of political goodwill
3. High population
4. Cleaners are not motivated
5. Unlicensed hawkers contribute to unauthorized waste

6. Lack of enough equipment
7. Lack of proper supervision of sweepers
8. Residential streets not up to the approved plans which restricted access to households
9. A lot of traffic
10. Narrow streets especially in the Old Town area

Sweepers had no way of knowing whether they had done a good job. They rarely met with their supervisors. They reported in the morning and had no tools to work with so they loitered around in the yard and left after some time. The five the researcher interviewed, two she found on the road and three at the yard awaiting further instructions about availability of cleaning equipment. They swept as per how they felt like. The researcher made an observation of the sweepers lack of enthusiasm for their job. Not having been paid for the last three months, it became very difficult not only working but also having directives carried out. The procurement procedure would take long so that from the time of placing requisition for a broom and the time of actually receiving it would take very long over a month. There was general lethargy bordering anger, a palpable desperation of the prevailing circumstances and a keen sense of anger at management. One would report to work because he wishes to remain in the payroll after which he goes to do other paying work. One would say that he has not been paid now for three months, what is he expected to feed on. take his children to school with.

#### 4.4.3 Analysis of quality gaps in the performance by sweepers

The following table 4.2 shows responses by sweepers to various questions asked to gauge their attitudes towards management.

Table 4.2 Frequencies to responses to questions posed to sweepers gauging their attitude-

##### Enjoy the work

		<b>Frequenc y</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>Valid</b>	<b>Strongly disagree</b>	<b>2</b>	<b>40.0</b>	<b>40.0</b>	<b>40.0</b>
	<b>Disagree</b>	<b>3</b>	<b>60.0</b>	<b>60.0</b>	<b>100.0</b>
	<b>Total</b>	<b>5</b>	<b>100.0</b>	<b>100.0</b>	

Source: Primary data

60% stated they strongly did not enjoy their work. This meant that either they did not work at all or did as little as they could. This could be a reason towards the unwept roads.

**Work can be made better**

		<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>Valid</b>	<b>strongly agree</b>	<b>1</b>	<b>20.0</b>	<b>20.0</b>	<b>20.0</b>
	<b>Agree</b>	<b>1</b>	<b>20.0</b>	<b>20.0</b>	<b>40.0</b>
	<b>Disagree</b>	<b>2</b>	<b>40.0</b>	<b>40.0</b>	<b>80.0</b>
	<b>strongly disagree</b>	<b>1</b>	<b>20.0</b>	<b>20.0</b>	<b>100.0</b>
	<b>Total</b>	<b>5</b>	<b>100.0</b>	<b>100.0</b>	

Source: Primary data

40% said that their work could not be made better. This meant that they had a negative attitude towards management and it would take time to create a paradigm shift in the sweepers towards a cleaner city.

**Access to management**

		<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>Valid</b>	<b>Agree</b>	<b>1</b>	<b>20.0</b>	<b>20.0</b>	<b>20.0</b>
	<b>Disagree</b>	<b>3</b>	<b>60.0</b>	<b>60.0</b>	<b>80.0</b>
	<b>strongly disagree</b>	<b>1</b>	<b>20.0</b>	<b>20.0</b>	<b>100.0</b>
	<b>Total</b>	<b>5</b>	<b>100.0</b>	<b>100.0</b>	

Source: Primary data

60% said that they did not have ready access to management to lodge complaints relating to difficulties experienced at work. This meant that their views especially those meant to make work more effective were not reaching the decision makers, rendering communication incomplete. It was basically downwards, in terms of orders, directives and disciplinary action. The rule behind quality circles is that both camps listen to each other. In the case of MMCCD, this did not happen.



### Incorporating suggestions by sweepers

		Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>strongly agree</b>	<b>3</b>	<b>60.0</b>	<b>60.0</b>	<b>60.0</b>
	<b>Agree</b>	<b>2</b>	<b>40.0</b>	<b>40.0</b>	<b>100.0</b>
	<b>Total</b>	<b>5</b>	<b>100.0</b>	<b>100.0</b>	

Source: Primary data

60% strongly agreed that if their suggestions were given due considerations there would be lots of improvement.

### Pecuniary motivations

		Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>strongly agree</b>	<b>2</b>	<b>40.0</b>	<b>40.0</b>	<b>40.0</b>
	<b>Agree</b>	<b>3</b>	<b>60.0</b>	<b>60.0</b>	<b>100.0</b>
	<b>Total</b>	<b>5</b>	<b>100.0</b>	<b>100.0</b>	

Source: Primary data

60% agreed they would do more if there were pecuniary motivations. This meant that quality could be achieved significantly by use of pecuniary motivations.

### People are hostile

		Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>strongly agree</b>	<b>3</b>	<b>60.0</b>	<b>60.0</b>	<b>60.0</b>
	<b>Agree</b>	<b>2</b>	<b>40.0</b>	<b>40.0</b>	<b>100.0</b>
	<b>Total</b>	<b>5</b>	<b>100.0</b>	<b>100.0</b>	

Source: Primary data

60% strongly agreed while 40% agreed that at times they never felt like coming to work because people were hostile. Therefore it is correct to say that all sweepers that made the

population of the MMCCD, sometimes never felt like showing up for work because of the hostility of the publics they met on the course of duty.

**Current management doing good job**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	5	100.0	100.0	100.0

Source: Primary data

Of the five sweepers interviewed, all of them (100% of the sample), strongly agreed that the current management was not doing a good job.

**Need for change in how things are done**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	3	60.0	60.0	60.0
	Agree	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

Source: Primary data

All of them (100% of the interviewed sweepers) agreed that there was need for change on how things are done.

**Changes for the better**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	2	40.0	40.0	40.0
	Agree	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

Source: Primary data

The sweepers were asked whether, if there were change for the better in the MMCCD, they would stay on the job. 100% agreed to stay on the jobs in the event of changes in the operations of the MMCCD.

**Hate what I am doing**

		<b>Frequenc y</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>Valid</b>	<b>Strongly agree</b>	<b>3</b>	<b>60.0</b>	<b>60.0</b>	<b>60.0</b>
	<b>Agree</b>	<b>2</b>	<b>40.0</b>	<b>40.0</b>	<b>100.0</b>
	<b>Total</b>	<b>5</b>	<b>100.0</b>	<b>100.0</b>	

Source: Primary data

The sweepers were also asked whether they hated their jobs and were only there because there was no alternative on offer. There was 100% agreement that they were holding on to their jobs because there were no forthcoming alternatives.

Besides the sweepers, there were members of the public whom the researcher also collected data from. They were asked whether they visited the department and for those who did, how well they were received. This section of the questionnaire was seldom answered. On average, they were received indifferently. The table 4.3 below shows that of all the respondents, 61% had never visited the MMCCD offices whereas 39% had. This meant that the MMCCD did not encourage members of the public to visit their offices to make suggestions or lodge complaints, therefore denying itself useful advice that would enable them make good decisions. One description of quality is a service or a good meeting the requirements of the clients. If this is not the case, then quality is denied the consumer.

Table 4.3 Visit to waste department

Visits	Frequency	Percent	Valid Percent	Cumulative percent
None	305	61	61	61
Yes	195	39	39	100
Total	500	100	100	

Source: Primary data

The table 4.4 below shows frequency of garbage collection derived from the responses made as to whether or not the MMCCD collected garbage from estates.

Table 4.4 Frequency of Garbage Collection

Garbage Collection	Frequency	Percent	Valid Percent	Cumulative Percent
Frequently	89	17.8	17.8	17.8
Hardly	65	13.0	13.0	30.8
Never	294	58.8	58.8	89.6
N/A	52	10.4	10.4	100
Total	500	100	100	

Source: Primary data

58.8% of the respondents said they never had their garbage collected 10.4% never bothered to fill to suggest the question held no meaning at all. 13% hardly ever visited the offices while the remaining 17.8% frequented the offices to no avail. 10.4% of those interviewed, who answered not applicable. Garbage collection by MMCCD was regarded by them as a hazy memory. The table 4.5 below shows how often the roads are swept, 31.6% of the respondents never had their roads swept. 42% of the respondents occasionally had their roads swept. The researcher observed plenty of litter on the road fronting the offices of the MMCCD responsible for their removal.

Table 4.5 How often roads are swept

Sweeping of roads	Frequency	Percent	Valid Percent	Cumulative Percent
Daily	53	10.6	10.6	10.6
Blank	158	31.6	31.6	42.2
Occasionally	210	42.0	42.0	84.2
Weekly	79	15.8	15.8	100
Total	500	100	100	

Source: Primary data

Most roads in the area were in need of repair, especially those in the estates where the researcher sourced most of the respondents. 10.6% had theirs swept on a daily basis. 15.8% had their roads swept weekly.

#### 4.4.4 Reasons for solid waste problem

Laxity by sweepers was cited by 19.2% of the respondents to be the reason behind the cleansing problem. Poor planning was cited by 9% of the respondents to be the other major reason behind the chaos at the MMCCD. The third major reason to be cited was lack of proper equipment by 6% of those interviewed. Lack of personnel was cited by 7.4% of the respondents as one of the reasons to solid waste problem. As it will become clear this is what seemingly is the problem on the ground as perceived by service receivers but is not the reason in itself. This is because they are not aware of the underlying problems facing the MMCCD. Another reason identified by a comparatively significant number of respondents at 13.8% was an ignorant population. Ignorance about the fact that they could;

- lodge complaints,
- find out the location of the MMCCD offices,
- drop garbage at designated locations and not anyhow
- cultivate due consideration to the sanitation issue of the city by avoiding littering

The above information is summarized in the table 4.6 below showing reasons for solid waste management as identified by members of the community. It also shows the frequency each reason was cited.

Table 4.6 Reasons for the solid waste problem

Rank	Reasons for solid waste problem	Frequency	Percent	Valid Percent	Cumulative Percent
1	Laxity of sweepers	96	19.2	19.2	43.8
2	Poor Planning	95	19.0	19.0	96.8
3	Lack of Proper Equipment	80	16.0	16.0	64.0
4	Ignorant Population	69	13.8	13.8	77.8
5	Lack of Personnel	37	7.4	7.4	13.8
6	Pay	32	6.4	6.4	6.4
7	Corruption	27	5.4	5.4	19.2
8	Increase in Refuse Due to Increase in Population	27	5.4	5.4	24.6
9	Low Frequency of Refuse Collection	21	4.2	4.2	48.0
10	Other Reasons	16	3.2	3.2	100.0
	<b>Total</b>	<b>500</b>	<b>100.0</b>	<b>100.0</b>	

Source: Primary data

#### 4.4.5 Analysis of quality gaps in the performance by Management

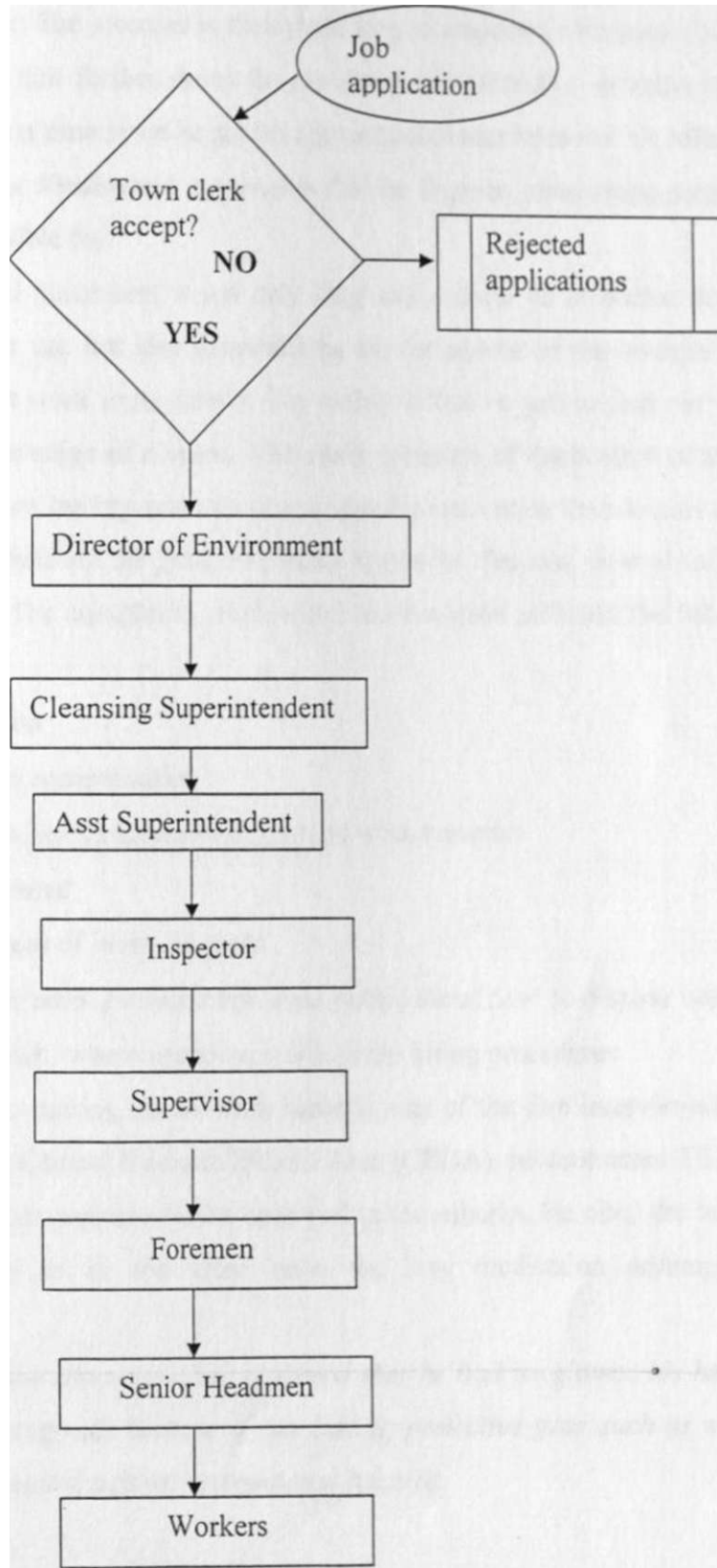
It was hard locating the sweepers unless one availed herself at the yard by 6.30 am. when most reported for duty. The researcher interviewed five respondents, from observation they swept with no commitment for the job. Citing the fact, that pay more often than not was a problem. There was no way they could commit to work on empty stomachs. There was the issue of equipment that was not ideal for the work they were doing. For example sweeping required hard long bristled brooms with long handles. Sweeping a 2km stretch daily, on coir soft bristled brooms was not proper. They cited harassment by *matatus*. They cited the fact that *having* worn out equipment replaced took ages. They ceased lodging complaints because they never were dealt with. Of the five interviewed there was an air of resignation to their work, doing the little they could to hold on to the job, while they did other things to meet their economic needs for the better part of the day.

#### 4.4.5.1 Hiring decision making process at the MMCCD

The following figure 4.2 shows hiring decision-making process at the MMCCD.

As per the flow chart process, the Town Clerk is the person responsible for the hiring and firing of the sweepers. He goes through the applications, considers whom to, and not hire. Whoever is hired is passed on to the Director of Environment for deployment. The Department of Environment encapsulates several sections one being roads section and the other being cleansing.

Figure 4.2 Flow chart showing hiring decision-making process at the MMCCD



Source: Primary data



The sweeper is passed to the cleansing Superintendent then to the Assistant Superintendent and then to the Supervisor. The sweeper is then passed on to Inspector who passes him on to the foreman ,who passes him further down the cleansing administrative structure to Senior Headman where for the first time since he got his appointment letter he meets his colleagues. It is here, under the Senior Headman's supervision that he is given instructions pertaining to the area he will be responsible for.

The process of hiring and placement is not only long and a drain on resources that would otherwise be put to better use but also demoralizing on the psyche of the sweeper. He has reported expecting to start work immediately. The reality is that he gets to find out where he will be working after an average of a week. The chain is replete of duplication of tasks with most of the designations not having substantive and specific tasks other than to pass decisions made up the chain. The chain on the ground operates as per the diagram; flow of information is one way, *downwards*. The complaints received by the sweepers included the following in the order of urgency;

- Timely remuneration
- Upward revision of compensation
- Cater adequately to health issues arising out of work hazards
- Appropriate equipment
- Efficient replacement of worn out tools
- Creating awareness amongst members of the public about how to dispose waste
- Not politicizing work, where nepotism is rife in the hiring procedures

Pertaining to health issues arising out of work hazards, one of the five interviewed narrated how while working in the Central Business District Area (CBDA), he contracted TB. He could not work for some time. He requested to be deployed in the suburbs. He cited the fact that he has never felt his body to be the same since the long medication accompanied by hospitalization.

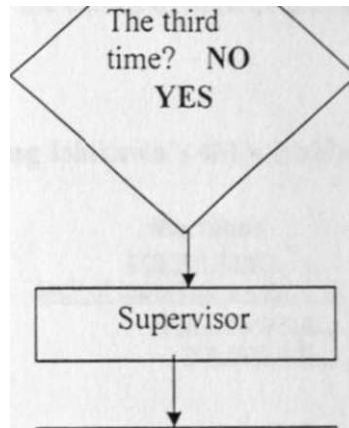
*At the time of the interview the researcher observed that he had no gloves, his hands were blistered and skin very rough all because of not having protective gear such as well fitting gloves and dust masks to guard against occupational hazards.*

4.4.5.2 Disciplining decision-making process at the MMCCD

Figure 4.3 Process flow chart showing a case of disciplining a sweeper who is persistently late to work

Complaint launched by Headman

Foreman



Asst. Superintendent

• Issue warning letter	
	i>
	Record issue

Superintendent  
 Recommends Action e.g  
 sacking.

Director of Environment

Town Clerk  
 Investigates and takes action  
 like sacking the worker and  
 communicates it to the  
 superintendent

End

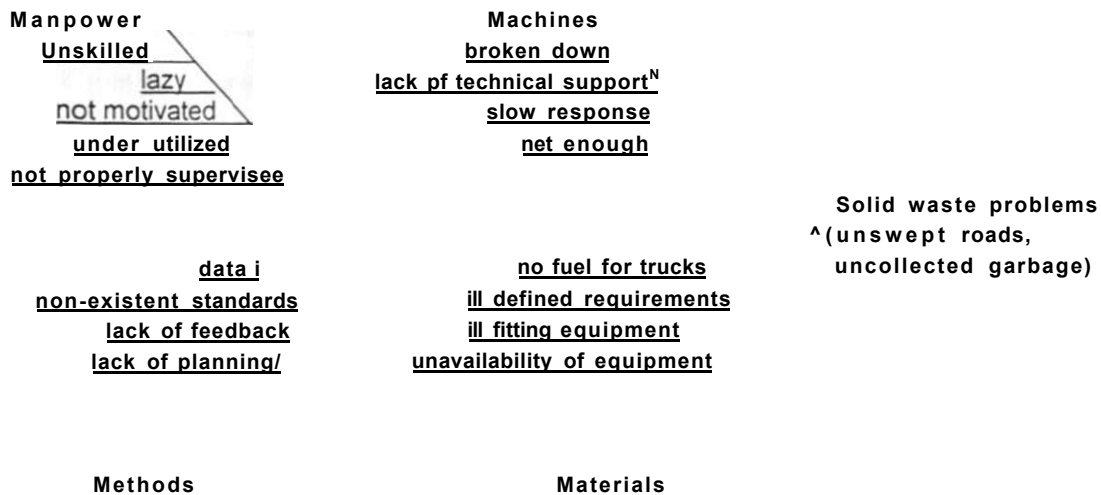
Source: Primary data

As per the above figure 4.3, no discipline measures may be taken on the sweeper. This frustrates the efforts of the headman. The first and second times he is reported by the headman to the superintendent through the foreman, he is warned. The third time he is written for a warning letter. If the sweeper persists in wrong doing then he is passed on to the other ranks until he finally reaches the Town Clerk who makes an investigation and decides to take the ultimate sacking action. This process is long.

#### 4.5 Cause and effect analysis

The figure 4.4 below shows the causes of various problems evident in the MMCCD that result to the solid waste problem.

Figure 4.4 Diagram showing Ishikawa's 4M's Fishbone Diagram



Source: Primary data

Manpower problems results from unskilled sweeper. When it comes to sweeping roads and collecting garbage, there is little skill required to carry out the activities. The issue is taking instruction, commitment to the vision, and mission of the MMCCD, which is to be communicated'to the sweepers as often as possible in quality circles organized by supervisors. The cleaners are underutilized and are not properly supervised .As for Machines, most of them are broken down, with no mechanics to repair the more than 15 that lay unused at the yard at the time of the interview. Very slow response to complaints or requests because of few trucks, or outdated ones that almost do -10'km per hour. Besides the majority being almost

obsolete to perform tasks, they are grossly insufficient in view of the enormous work required to be performed everyday. However, with proper planning, what seems enormous and hence intimidating becomes routine. Methods include need for reliable data entry methods, quality standards, commitment to encouraging and efficiently responding to feedback. Materials include lack of fuel for trucks. One of the complaints by a truck driver was that they could not go on their usual morning rounds because they lacked fuel. The presence of inefficient procurement processes that would see sweepers unable to work for days because of absence of tools for days on end.

#### **4.6 Challenges to the solid waste problem**

Respondents were asked to cite those factors that posed a challenge to the MMCCD and which had to be dealt with if at all the waste management problems were to be things of the past. Creation of awareness amongst all the solid waste management stakeholders emerged as the biggest challenge at 27.8% of all the respondents interviewed. Second biggest challenge cited by 15.6% of the respondents was poor strategies and third at 9% was corruption. The others included;

- Old drainage systems
- Inadequate finances and
- Lazy employees

The other challenges that were mentioned but did not feature significantly amongst the respondents were road improvement, population, improving sweepers' conditions, poor planning, street families, resource mismanagement among others. The following table 4.7 shows the frequencies of the challenges in percentages. These challenges were perceived by members of the community, to be obstacles that had to be surmounted to realize a certain level of what may be deemed as quality service.

Table 4.7 Frequency of Challenges

Ranked Challenges		Frequency	Percent	Valid Percent	Cumulative Percent
1	Create awareness	139	27.8	27.8	38.6
2	Strategy	78	15.6	15.6	95.6
3	Corruption	45	9.0	9.0	10.8
4	Old drainage systems	41	8.2	8.2	63.8
5	Lazy employees	36	7.2	7.2	55.6
5	Finance	36	7.2	7.2	45.8
7	Road improvement	27	5.4	5.4	80.0
8	Population growth	23	4.6	4.6	72.8
9	Planning	13	2.6	2.6	66.4
9	Street families	13	2.6	2.6	98.2
9	Improving sweepers conditions	13	2.6	2.6	48.4
10	Suggestion Boxes	9	1.8	1.8	100.0
10	Politics	9	1.8	1.8	68.2
10	Resource mismanagement	9	1.8	1.8	74.6
11	Ban Plastics	5	1.0	1.0	1.0
12	Chemical disposal	4	.8	.8	1.8
	<b>Total</b>	<b>500</b>	<b>100.0</b>	<b>100.0</b>	

Source: Primary data

Planning was cited as a challenge at 2.7%. Good planning (2.6%) in terms of good road network to facilitate access to households. Good planning of sweepers to ensure that at the end of each day work was well done. Ensuring that each sweeper was adequately equipped with the necessary equipment to do work. Planning in the sense of ensuring that whatever resource was available was put to optimal use to meet the daily objectives and as such the overall objective in the specified long-term. Politicising work (1.8%) was also identified by the officer as one of the major reasons as to why the MMCCD was in its current dilapidated state.

There was the challenge of population (4.6%), managing a growing population and the

corresponding increase in garbage. Managing available resource was another. Taking care the street families (2.6%) who were identified as a nuisance to the cleansing operations.

## **CHAPTER FIVE: CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS**

This section gives summary of the findings of the exploratory research in relations to the stated objectives. The first study objective was to identify quality gaps in the performance by sweepers and management of the MMCCD by use of TQM tools. The second was to recommend measures which if implemented would help streamline activities in such a way as to ensure efficient and effective use of available resources.

### **5.1 Conclusions and Recommendations**

The study clearly showed an urgent need to incorporate quality tools in the day to day operations of the MMCCD to bolster economic use of scarce resources to meet predetermined objectives within the set time limits. Being a tourist destination to be able to attract the following;

- more tourists from all over the world
- become a regional destination attracting tourists from Sudan, Rwanda, Burundi
- become an international destination for world conferences like the case of Nairobi which played host to a global (World youth forum) and regional conferences (Africities) which saw revenue generation to the tune of millions of shillings

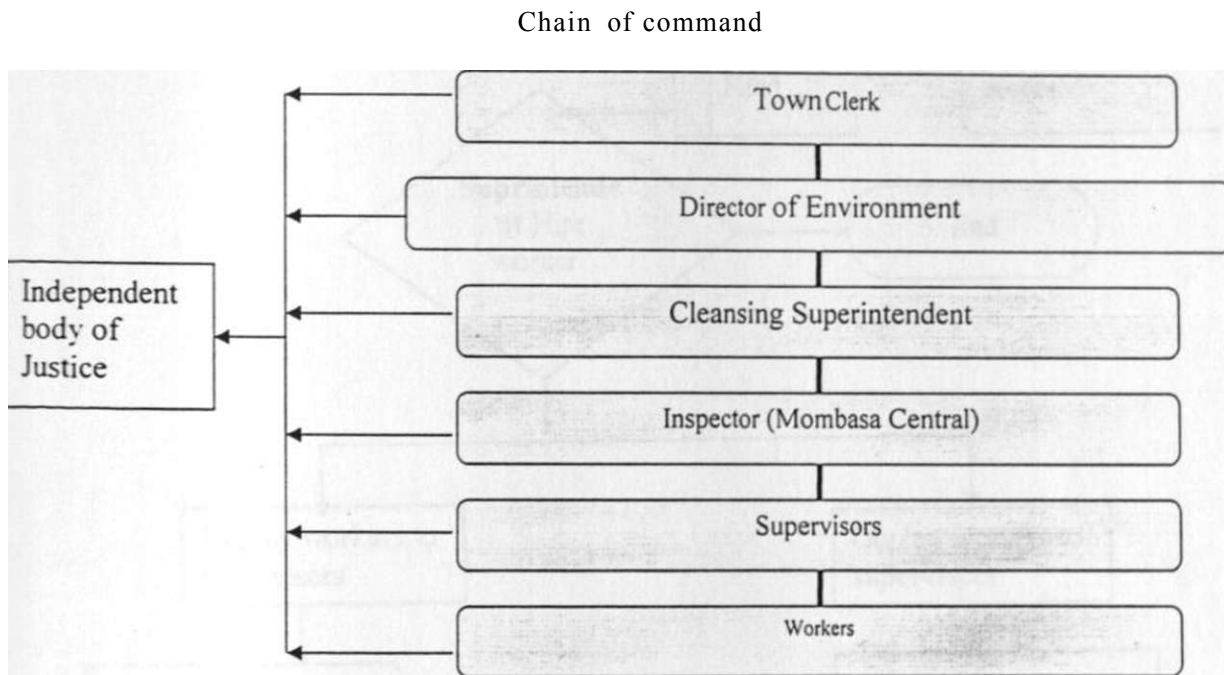
This is the reason why today they are having problems coming up with the necessary cash to prepare the city for the forthcoming world marathon championships scheduled for 24<sup>th</sup> March 2007. It's a reason why there are floods whenever it rains as the drainage systems are clogged by plastic bags and so the storm water has no access to the pipes leading them to the sea or some treatment plant or a reservoir.

#### **5.1.1 Ideal organizational structure**

It was evident in this research that there was need to restructure the chain of command and by so doing give more decision making power to those who were directly involved with the work on the ground: to give a certain amount of independence to the cleansing superintendent to hire and fire. Only in those situations that he was unable to handle, to do with policy, was he to pass to the relevant authority. The following diagram figure 4.5 depicts the ideal organizational structure where each performs their functions as per their job descriptions and

in consultation where they will need advice from the other. The independent body of justice is an arbitrator who will settle disputes and will do so in a way as to be seen as being non partisan.

Figure 4.5 Process Flow chart showing the ideal organizational structure i.e. a restructured Council



Source: Primary data

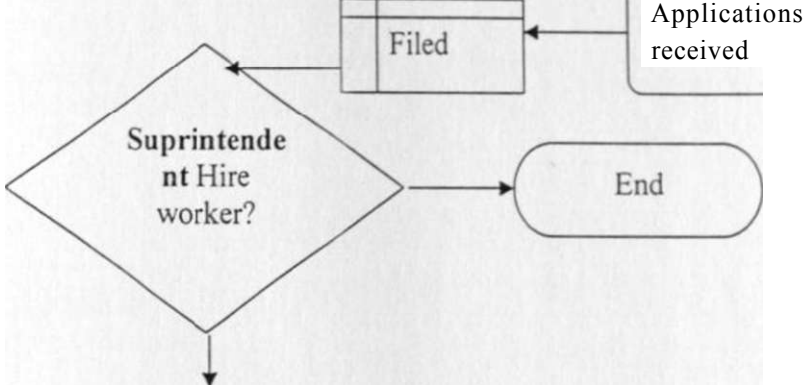
### 5.1.2 Ideal hiring procedures

For instance when hiring, the Cleansing superintendent is the officer responsible and should someone be brought who has not gone through the required staffing procedures and is not qualified, he has access to an independent body that will see to it that his authority is not jeopardised. He has recourse to justice without fear of intimidation whatsoever. Figure 4.6 is a process flow chart showing the ideal procedure for hiring sweepers. The Superintendent goes through the applications and decides whether or not to hire an applicant based on his qualifications. Should the applicant satisfactorily meet the requirements he is hired and is deployed to the supervisors who attach them to the foremen directly responsible over the performance of the sweeper. The procurement procedure should be equally efficient,



purchasing equipment that are of the required standard having consulted with the sweepers to identify what they consider ideal equipment in their work. Hence form quality circles which provide a forum for various departments to share ideas for the betterment of their operations.

Figure 4.6 Process flow chart showing the ideal procedure for hiring of sweepers



Deploy workers to supervisors

Deploy workers to supervisors

Supervisors  
Deploy workers to foremen

Supervisors  
Deploy workers to foremen

Supervisors  
Deploy workers to foremen

Supervisors  
Deploy workers to foremen

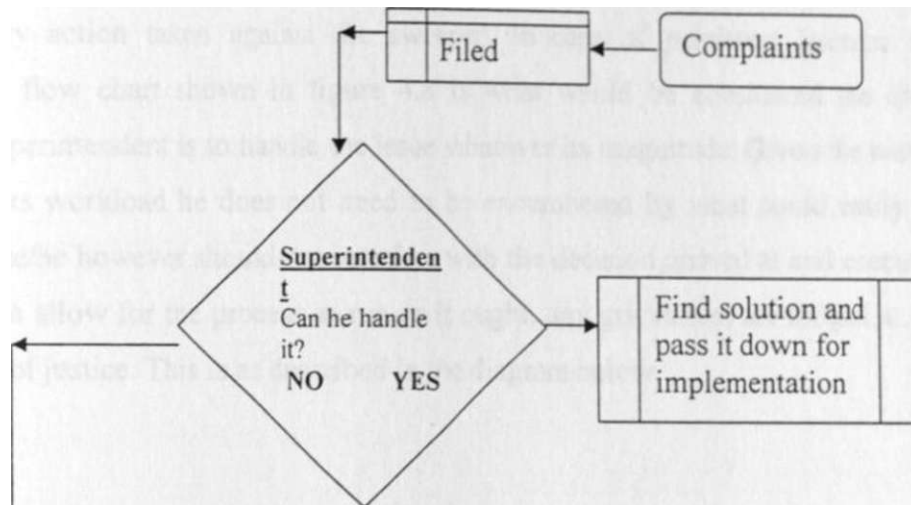
Source: Primary data

5.1.3 Ideal case of handling complaints

Figure 4.7 shows a flow chart process showing ideal case of handling complaints from members of the public. Members of the public should be made qware to whom they can lodge their complaints. That they can address their complaints to the superintendent who finds a solution for it if it's within his jurisdiction. If not he passes it on to the Town Clerk through the Director of Environment. The Town Clerk having identified a solution passes it on down to the Superintendent for action. He, the Town Clerk, is responsible for among many other tasks to ensure collection of revenue for the council and also to budget for the same. Hence for

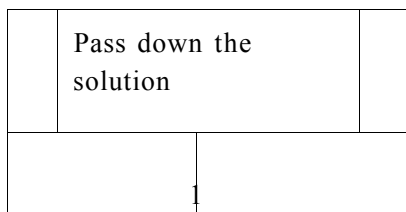
circumstances that would require finances, he is the one to identify source and apportionment of the required finances to tackle the problem. He calls the superintendent to instruct on how he wants the work done or passes the solution to him through the Director of Environment.

Figure 4.7 Flow chart process showing ideal case of handling complaints from members of the public



Director of Environment  
Passes the Problem to the Town  
Clerk

Town clerk decides on a  
plan of action



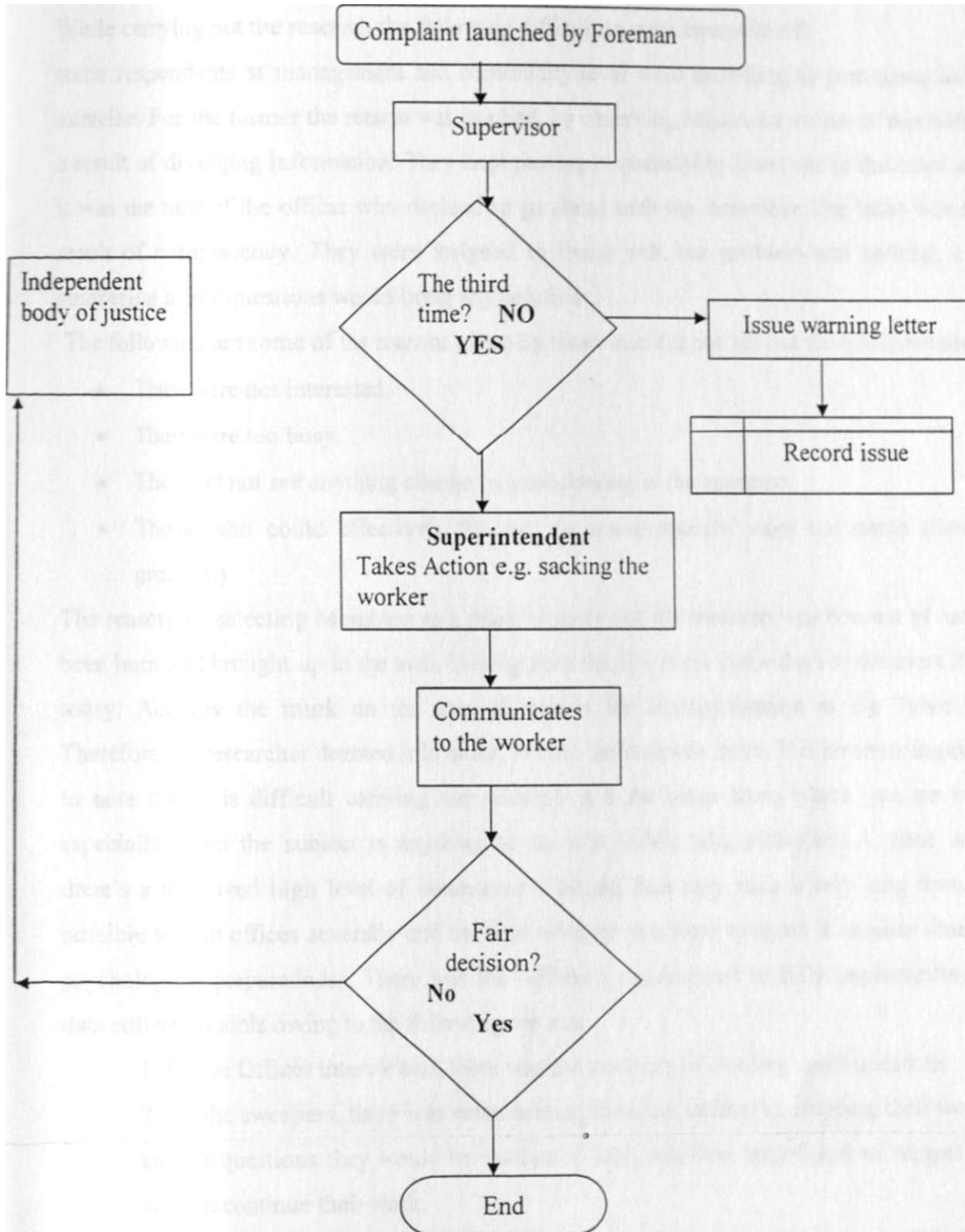
End of problem

Source: Primary data

#### 5.1.4 Ideal procedure for disciplining a sweeper

There are many mistakes that a sweeper may do either accidentally or intentionally that may require disciplinary action taken against the sweeper. In case of persistent lateness the following process flow chart shown in figure 4.8 is what would be considered the ideal procedure. The Superintendent is to handle the issue whatever its magnitude. Given the nature of the Town Clerks workload he does not need to be encumbered by what could easily be done by others. She/he however should not interfere with the decision arrived at and executed by the delegate. To allow for the process to run as it ought, any grievances are lodged at the independent body of justice. This is as described in the diagram below.

Figure 4.8 Flow chart process showing the ideal procedure for disciplining



Source: Primary data

## 5.2 Limitations

While earning out the research the following difficulties were encountered; some respondents at management and community level were unwilling to participate in the exercise. For the former the reason was implied, by observing behaviour as fear of reprisals as a result of divulging information. They kept passing responsibility from one to the other until it was the turn of the officer who decided to go ahead with the interview. The latter was as a result of complacency. They were resigned to living with the problem and nothing, even answering a few questions would bring any solutions.

The following are some of the reasons given by those who did not Fill out the questionnaires;

- They were not interested.
- They were too busy.
- They did not see anything change by participating in the exercise.
- Those who could effectively Fill out the questionnaires were not home (literacy problem)

The reason for selecting Mombasa as a place to carry out the research was because of having been bom and brought up in the area. Having seen the city in its clean days to the mess it's in today. Actually the murk on the ground reflects the disorganization at the Town hall. Therefore the researcher deemed it in order, to base her research there. It is however important to note that it is difficult carrying out research at a far place from where you are based especially when the subject is anything to do with public administration. A place where there's a perceived high level of bureaucracy, getting data may take a very long time. It's possible to visit offices severally and not Find whoever you were to meet. It requires time and psychological preparedness. There was the difficulty experienced in fully implementing the data collection tools owing to the following reasons;

1. for the Officer interviewed, there was the tendency of evading some questions
2. for the sweepers, there was noise coming from the traffic, by stopping their work to answer questions they would be hesitant at First, and then later Fidget to suggest they want to continue their work.
3. for the members of the community who were left with questionnaires to Fill at their pace, there was the impression in some respondents to suggest that the questions were not understood.

### 5.3 Suggestions for further research

TQM is relatively new in the public sector. In the private sector many corporations have worked towards receiving ISO's i.e. international recognition for embracing conventional quality standards in their operations to impress clients of their commitment to quality. Therefore TQM has been embraced as a global tool for creating and sustaining competitive advantage in any type of business. The following therefore are suggested areas for further research .Some came up in the process of the research, some arising from interest;

- Aligning the activities of Nairobi City Council to world class standards
- Application of TQM as a solution to the hawker problem in the city/town (any)
- Establishing a link between cost of health and state of hygiene (garbage related diseases) and advising government to focus on sanitation to be able to cut down on the annual budget allocated to health
- Solid waste management the answer to reducing budgetary allocations channelled to roads repair
- Poor solid waste management the reason behind flooding in towns
- Application of TQM in the fire brigade department servicing a particular area or generally in Kenya (also the police, maternities, hotels; the idea being to scrutinize current operations and recommending better ways of doing these operations. These recommendations derived from TQM practices)
- Application of TQM procedures in streamlining revenue collection activities in municipal markets for a stated municipal council
- Application of TQM in ensuring quality service delivery by municipal council to traders in markets.
- Application of TQM in delivery of service to pupils in secondary schools with special emphasis on the different abilities of pupils i.e. exceptionally bright, bright, good, average and special cases or blind, deaf, mute and physically handicapped.
- A case study of Nairobi City Council. It works towards ridding the city of hawkers, embarks on a serious beautification programme. Could it be it was a campaign to win the opportunity to play host to World youth forum and the Africities conferences which were held a week apart? After about two weeks pause after these conferences, hawkers come back in full gear. Why the lapse by the city council, could the past

skirmishes have been avoided? Was the revenue earned too good to forget to proceed with work as usual and sustaining the new hard won status quo?

- A thesis to be carried out to study some or all the consultancy work done in Mombasa (in the field of HR, Solid waste Management, Operations in various departments e.g. Law courts, hospitals etc) to test the hypothesis as to whether or not they are true representation of what is actually happening on the ground, emphasis on quality of service delivered.
- Hiring retirees to handle waste management as a way of both cutting down operational cost at the MMCCD, following in the precedent of a retired Briton featured on BBC documentary who picks litter as a hobby. To show how this will be for the council, a unique way of showing social responsibility, a virtue espoused by word class businesses, even as it acts as a tool for cutting down costs.



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<**URL: <http://www.nema.go.ke>**>

## CHAPTER SEVEN: APPENDICES

### Appendix I Introduction Letter

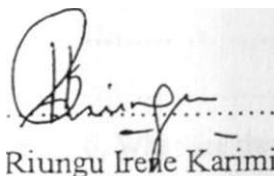
Dear Sir/Madam,

This questionnaire is designed to study operating systems of the MCCCCD for purposes of identifying those procedures, which if improved and then integrated in the day-to-day activities of the department will ensure continuous quality in all areas of the department, especially in the effective and efficient utilization of scarce resources and in the provision of quality services to its esteemed customers, you included.

I wish to request that you respond to the questions sincerely, also I wish to assure you that your responses will be held in confidence. It's only I, the researcher, and the project supervisor who will have access to the information given. I will ensure that upon request, the summary of the results is mailed to you after the information collected is duly analyzed.

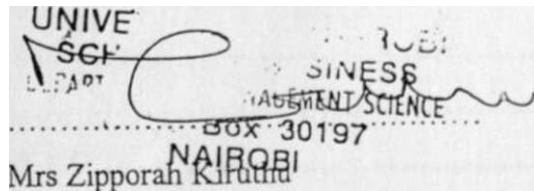
I wish to thank you very much not only for your valuable time but also cooperation. My appreciation goes to you and your organization in helping me in my research endeavors.

Sincerely,



Riungu Irene Karimi

(Student)



UNIVERSITY OF NAIROBI  
SCHOOL OF BUSINESS  
DEPARTMENT OF MANAGEMENT SCIENCE  
P. O. Box 30197  
NAIROBI

Lecturer/Supervisor

Dept. of Management Science



UNIVERSITY OF NAIROBI  
SCHOOL OF BUSINESS  
DEPARTMENT OF MANAGEMENT SCIENCE  
P. O. Box 30197  
NAIROBI

## Appendix 2: Questionnaire I

### Part A

#### General information

1. Name (optional)

2. Sex

3. Number of years worked in the department

**a) 1 year**                    [   ]

b) 1 to 4 years            [   ]

c) 5 to 10 years        [   ]

d) 7 to 10 years        [   ]

4. a) Which was your previous station?

b) If you transferred to this department, what was/were the reasons for the transfer?

### Part 13

#### Problem areas

5. What do you think are the reasons to the solid waste problems in the city? List them down in the space provided

6. What are those activities that make up the MMCCD?

7. What have you done to reduce the solid waste problem in the city?

8a) How many times per month do you meet to discuss issues pertaining to performance of sweepers, machinery?

- not at all [ ]
- once [ ]
- twice
- severally (specify)

b) i. Are the sweepers supervised? Yes/ No

ii. How do you know that work scheduled for the day has been properly done?

9 a) How do you receive information from the stakeholders i.e. community, traders (especially hoteliers) and others?

b) How many times per day do stakeholders call or stop by to complain?

c) What sort of complaints do you receive from the stakeholders?

10. How fast do you respond to these complaints? Tick/check the correct response.



- a) **not at all**                    [   ]
- b) slowly                            (   J
- c) **moderately fast**           [   ]
- d) **fast**                            [   ]

**11 Give reasons to your answer**

12. What in your opinion do you think the MMCCD should do, to solve the solid waste problem?

13. Identify as many measures, which in your opinion if implemented would streamline activities in the department

**Part C**

14. What challenges do you face in running the department?

**Thank you for taking time to fill out this questionnaire**

## Questionnaire II

### Part A

1 Name (optional)

2. Sex

3. Number of years worked in the department

a) 1 year [ ]

b) 1 to 4 years [ ]

c) 5 to 10 years ( )

d) 7 to 10 years [ ]

4. a) Which was your previous station?

b) If you transferred to this department, what was/were the reasons?

### Part B

5. How do you know you have done a good job?

6. How often do you meet with your supervisor?

7. How often do you sweep/ collect garbage from the street?

8. How long in kms do you sweep/collect garbage?

9. How many hours do you sweep/collect garbage in a day?

10. How long does it take a tool/pn" to be spoiled?

11. a) Are the tools used designed <sup>for</sup> the task? Yes/No

b) If no, what difficulties do you experience while using them?

12. When it is spoilt, how soon is it repaired?

13. a) Should it get spoilt completely how soon is it replaced?

b) i. Should a problem arise in the course of duty, do you report it and to whom?

ii. How soon is it attended to?

c) i. How many times do you lodge complaints before they are addressed?

ii. How soon is the issue dealt with?

d) Depending on answers to b) and c) above, how does this influence the way you do your work? Tick whichever is necessary

i) Not at all [ ]

ii) Moderately ( )

iii) very much [ ]

14. To be able to measure the attitude of respondents (only cleaners and sweepers) they are required to complete the scale below by ticking /checking on the appropriate box. The points are awarded as follows: -

i) strongly agree I point

ii) agree 2 points

iii) disagree 3 points

iv) strongly disagree 4points

FACTOR	Strongly Agree	Agree	Disagree	Strongly disagree
1) I enjoy doing this work				
2) Something can be done to make this work better				
3.) I have access to management				

to lodge complaints relating to difficulties encountered at work.				
4) If my suggestions were given due considerations there would be lots of improvement				
5) I would do more if there were pecuniary motivations				
6) Sometimes I never feel like coming to work because people are hostile				
7) The current management is doing a good job.				
8)There's need for change in how things are done				
9) Supposing there were changes for the better, I would stay in the job.				
10) I hate what I am doing, but there's no alternative.				

15. List down in the order of priority what you would wish management to do to improve your work conditions and as a result end the garbage problem?

16. What would you like to see change in the way of motivating you to work more effectively and efficiently?

Part C: Challenges.

1a) What poses as a problem to you cleaners and sweepers that unless dealt with, will see no end to the solid waste management?

b) How can the above be remedied by Management?

Thank you for taking time to fill out this questionnaire

### **Questionnaire III**

#### **Part A**

1. Name (optional)
2. Sex
3. How long have you lived here?
4. How would you compare the time you moved in to now, in terms of cleanliness by the MMCCD?

#### **Part B**

5. List down reasons that in your opinion are reasons to the solid waste problem in the city.

6. How do you get your waste disposed?.

7. How often is your garbage collected by the MMCCD?

8.a) Have you ever complained about waste collection to the cleansing department? Yes/No.

b) If yes how often?

9. Have you ever visited the offices of the MMCCD to lodge a complaint? Yes/No...

a) If yes, how long did it take for your complaint to be dealt with?

b) How were you received at the department? (Check/tick whichever is relevant)

i. Hostilely [ ]

ii. Indifferently [ ]

iii. With concern [ ]

c) If no, why haven't you had reason to complain?

10. What in your opinion do you think the MMCCD should do, to solve the solid waste problem in the city once and for all?

11.a) Are the roads you use cleaned? Yes/No

b) If yes, how often?

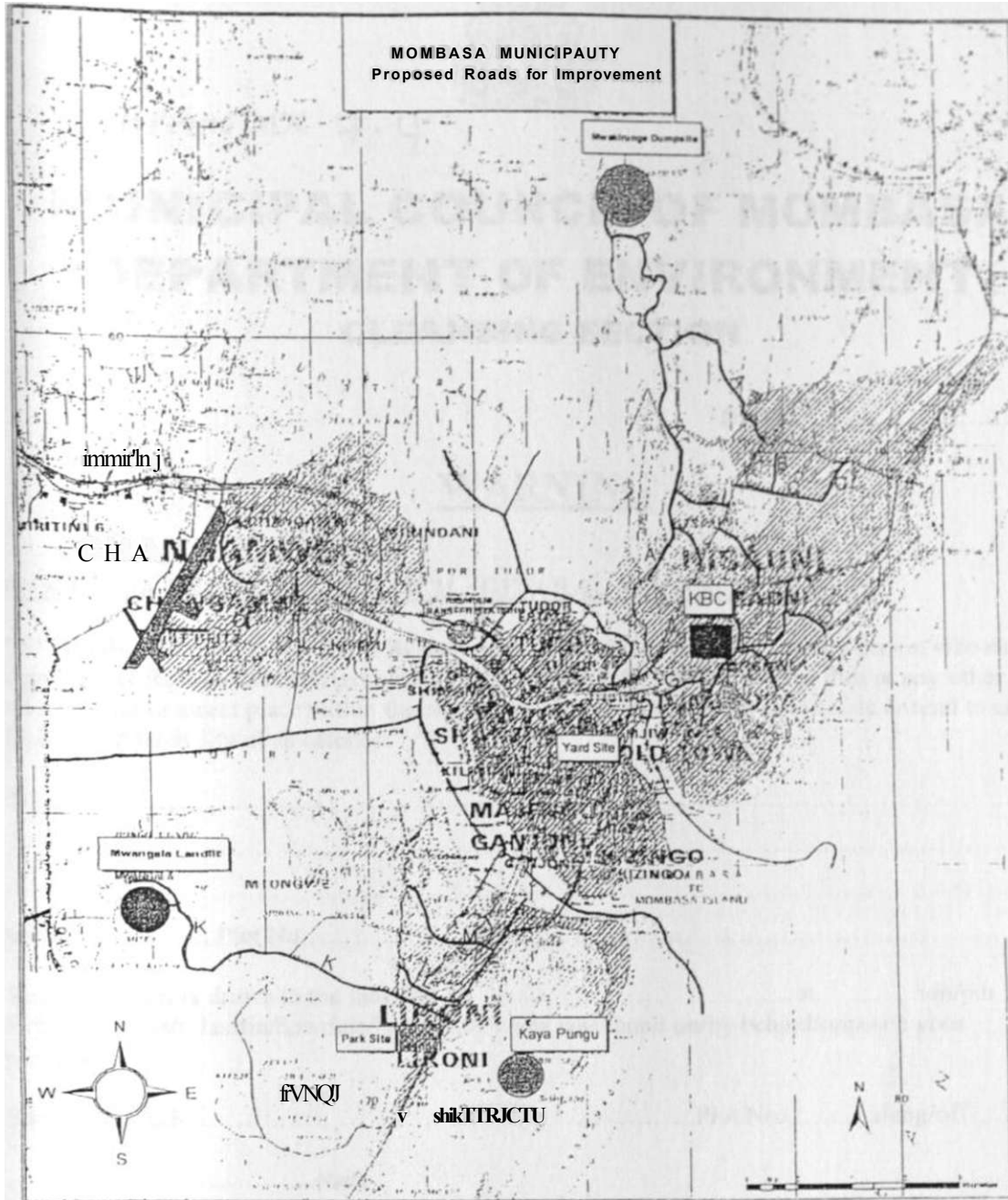
c) What would you recommend as points to improve by the council cleaners/sweepers?

Part C

12. What in your view would you list down as being challenges of getting Mombasa City into a clean city?

Thank you for taking time to fill out this questionnaire





Name of Area	Road Description	Length(km)	
Mwakijunye	<u>Mwakitunge</u>	riZ	
Bamburi lake View	Bamburi lake View		
<u>Mtopanga</u>	Mtopanga-malisini		
Maweni	<u>Ziwa La Ng'ombe</u>		
	<u>Sea Lobo- Rama Square</u>		
<u>Kongooa&amp;Kisimani</u>	<u>Ralna square</u>		Ctftni AfM
	<u>Kongoea market- karambuzi</u>		
<u>Bombolulu</u>	Juici B8 - Barisfieba		
M isHomqioni	<u>MwandoniMisftomoroni</u>		FCPOMj jnr)kl
	<u>Mishomoroni Corner Mlaleo</u>		
<u>Mwarigala</u>	<u>Mwarigala land till</u>		
Lkoni	<u>Jmct Mlongwe Ro-Junct A14</u>		
	<u>Old Mlongwe</u>		I*jeoMd Pom* kit
Porneit*	<u>Mwangosi close</u>		
	Maqonqo • [unction airport road		

**LEGEND**

**CLIENT**  
 director of urban development  
 MINISTRY  
 OF LOCAL  
 GOVERNMENT

LEAD CONSULTANT;

**BEIWE'ENnnENT**

**JAAKKD PDYIFY INFRA**

CitifiMriCifAM

C A I ' K  
 x ' con mill

S&B and Water

fB M M

**MUNICIPAL COUNCIL OF MOMBASA  
DEPARTMENT OF ENVIRONMENT  
CLEANSING SECTION**

DATE:

**WARNING**

**MOMBASA MUNICIPAL COUNCIL (CENTRAL NUISANCE) BY-LAW**

NOTE: By-Law part II No. 9 and By-Law part III No. 21(g) provides that any person who shall deposit any Refuse/Debris/Glass chirc/Eartliwarc/Papcr/Sawdust/Charcoal dust or any other ware on any land or street placc within the Municipal area of Mombasa so as to create or tend to ereale litter, shall be guilty of an offence.

To:

section.....Plot No..... road.

Your attention is drawn to the fact that on.....at ani/pni  
Refuse Debris/G 1 asstin/Sawdust/iuirtliware china was found on/by behind/opposite your  
premises.

Situated on L.R.....section.....Plot No.....along/off....

road.

You are advised to remove above rubbish within 48 hours of this notice and if said rubbish or any other rubbish is again discovered anywhere on or near your premises, legal proceedings will be instituted against you without further notice.

**For: DIRECTOR OF ENVIRONMENT**

NB: The Council provide special collection of all waste materials by arrangements. For further information, see Cleansing Superintendent at Municipal yard near Fire Brigade.



**MUNICIPAL COUNCIL OF MOMBASA**  
**DEPARTMENT OF ENVIRONMENT**  
**CLEANSING SECTION**

r.O.BOX 0441  
MOMBASA

REF: CS/RD/3603/.

DATE:

M/S:

**KE: NOTICE UNDER MUNICIPAL COUNCIL (CONSERVATION)**  
**BY-LAWS 3 OF 1970**

I hereby give you notice under by Law 3 of the Municipal Council of Mombasa (Conservancy) by-law 1970, that you being the occupier of the above mentioned premises plot NO.....Section.....road..... are hereby required within seven days (7) of service of the notice to provide and maintain upon the above mentioned premises the refuse receptacles specified hereunder>

**NUMBER OF RECEPTACLES**

2.5 cubic meter nominal capacity complying with British standard specification No. 792 for mild steel dustbins Failure to complying with this notice a court summon will be issued.

**SENIOR CLEANSING SUPERINTENDENT**

NB: If you have bought or obtained the above required dustbin(s)

Please present a copy of the receipt to the above named Office before the expiry of the notice so as to avoid court summons being issued to you.

**MOMBASA CITY COUNCIL**

**ENVIRONMENT DEPARTMENT**

**NOTICE**

**DATE.**

**Ref. 'ED/CS/RDG/2107/318**

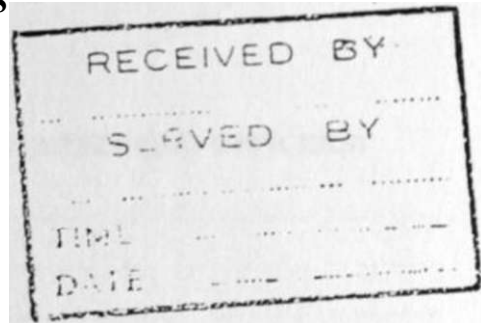
**TO ALL BUSINESS OWNERS/RESIDENTS**

**NAME.....!**

**T/A**

**P.O.BOX**

**/LOCALITY-**



**Dear Sir/Madam,**

**RE: NOTICE UNDER LOCAL GOVERNMENT AC CAT 205 - SECTION 267 OF THE LAWS OF KENYA WHICH GOES WITH THE MOMBASA MUNICIPAL COUNCIL BY-LAWS GENERAL NUISANCE PART XXXIV(e)**

**Please be informed that everybody, is concerned about sanitation. Therefore those with premises are hereby advised to warn their Agents/employees against indiscriminate throwing of garbage/refuse along or within as it is jeopardising not only the beauty of this very important ancient city, but also the health of its inhabitants.**

**Take note that if you do not act as per the information under the said by-laws, correct measures shall be taken.**

**Please co-operate and avoid prosecution**

**INSING SUPFTINTENDANI  
SUPERINTENDENT**



**MUNICIPAL COUNCIL OF MOMBASA**  
**DEPARTMENT OF ENVIRONMENT**  
**CLEANSING SECTION**

P.O.BOX 90441  
MOMBASA

• DATE:

POLICE STATION:

O.B:

TIME:

MUNICIPAL COUNCIL OF MOMBASA OFFICERS (ARRESTING OFFICERS)

- 1.
- 2
- 3
- 4

PRISONERS

- I
- > Aii
- 3
- 4
  
- 6
- 7

PARTICULARS: Arrested

along..... a .... \*

Near

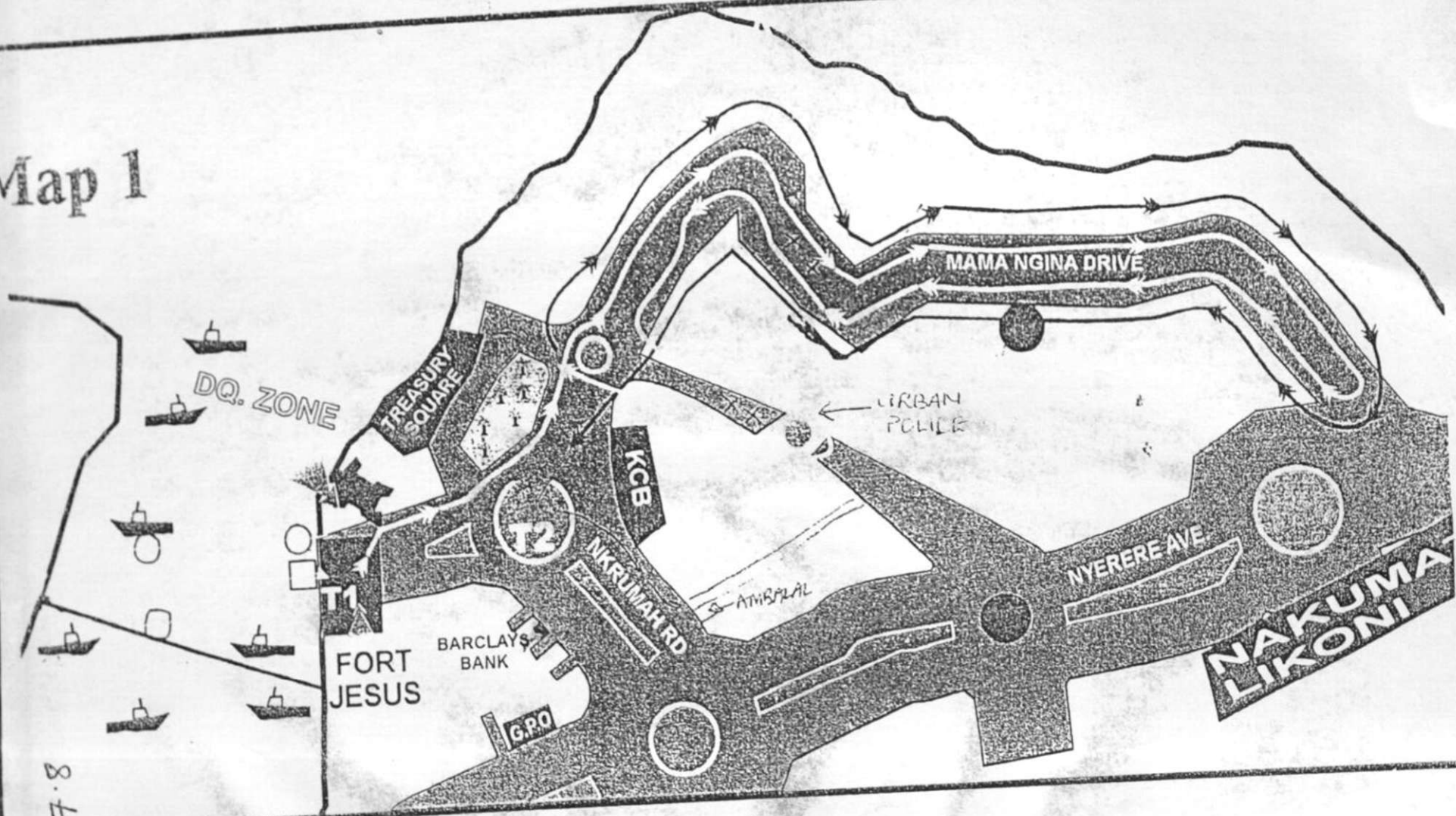
CHARGE: Illegal dumping of refuse at a Public place.

NB: Illegal dumping of refuse contract Municipal By-laws (under General Nuisance of 1969)

# 2006 110 MOMBASA AFRICAN CUP TRIATHLON

UNIVERSITY OF NAIROBI  
JOYNER KABETE LIBRARY

Map 1



76

APPENDIX 7.8

0 1 2 3 4 5 6 7 8 9 10