ROLES OF INFORMATION PROVISION ON BOTTLED MINERAL WATER AND BEVERAGES IN ENVIRONMENTAL MANAGEMENT IN KINONDONI MUNICIPALITY

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN ENVIRONMENTAL AND NATURAL RESOURCE ECONOMICS OF SOKOINE UNIVERSITY OF AGRICULTURE.

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ABSTRACT

The study was conducted in Kinondoni Municipality, Dar es Salaam City, Tanzania. The aim of the study was to explore the potentials on provision of information on bottled mineral water and other beverages in order to improve its effective use in environmental management The specific objectives of the study were (i)To identify the existing information provided on the bottled mineral water and plastic bottled beverages (ii) to evaluate society's awareness on the information provision and its influence on buying the selected products (iii) to assess the use of information provision in bottled mineral water and plastic bottled beverages in environmental management (iv) to identify the possible challenges against provision of information in the field environmental management.A cross sectional research design was adapted for this study. Primary data was collected using semi-structured questionnaires administered to 150 households while interview and checklist were used for key informants. The data obtained was analysed using Descriptive Analysis and Binary Logistics Regression. The findings suggested that there is no sufficient knowledge of these information provided on the bottled mineral water and beverages Results of the study indicated that consumer's awareness on information provision on bottled mineral water and beverages is low. Understanding and lack of education on eco-labels have significant impact on awareness of eco-label. Also, government bodies involved in environmental management do not enforce much on information provision on these surveyed products. It is recommended that a government programme should be created to help improve households' awareness, educate more on the use of information provision with regard to labels placed on the bottled mineral water and beverages.

DECLARATION

I, Beatrice Muliahela, do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my own original work done within the period of registration and that it has neither been submitted nor being concurrently submitted in any other institution.

_____ _____

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The above declaration is confirmed

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DEDICATION

This thesis is dedicated to my late Parents Mr. and Mrs. L. E. Muliahela for being my inspiration and my Sister Mrs. Rose Maluila who devoted much of moral support.

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LIST OF ABBREVIATIONS AND ACRONYMS

CAC	Control and Command
EEC	European Economy Community
EIs	Economic Instruments
EL	Environmental Labels
EMA	Environmental Management Act
GEN	Global Eco labelling Network
IISD	International Institute for Sustainable Development
ISO	International Organization for standardization
KMC	Kinondoni Municipal Council
ML	Maximum likelihood
NEMC	National Environmental Management Council
NEP	National Environment Policy
NGOs	Non-Governmental Organizations
OECD	Organization for Economic Cooperation and Development
PACIA	Plastics and Chemicals Industries Association
RSC	Royal Society of Chemistry
SPI	Society of the Plastics Industry
SPSS	Statistical Package for Social Science
TBS	Tanzania Bureau of Standards
TFDA	Tanzania Food and Drug Authority
TZS	Tanzania Standards
EU	European Union
UNDP	United Nations Development Program
UNEP	United Nations Environmental Program

UNOPS	United Nations Office for Project Services
URT	United Republic of Tanzania
US EPA	United States of America Environmental Protection Agency
USA	United States of America
VPO	Vice Presidents Office

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

The importance of environmental management in all sectors and working areas is increasing at the highest rate due to the witnessed devastating impacts of pollution in all parts of the world (Hahn and Stavins, 1999; UNEP, 2002). Governments in many countries and nongovernmental organizations have been involved in tackling environmental problems. Mostly, command and control approach has been used to enforce environmental management but this approach of environmental management has shown to be ineffective due to poor enforcement and compliance (OECD, 2000; Bae *et al.*, 2010). Command and Control (CAC) approaches (through binding laws and regulations) often provide a framework governing a particular sector or matter.

Currently, environmental management in Tanzania is largely done through CAC approach using laws, regulations, rules and by-laws (UNDP, 2011). In developing and developed countries there is a drive to complement CAC with Economic instruments of which according to Robinson and Ryan (2002), economic instruments (EIs) are administrative mechanisms adopted by government agencies to influence the behaviour of those who value the natural environment, make use of it, or cause adverse impacts as a side-effect or externality caused by their activities. Property rights, market creation, charges systems, performance bonds, deposit refund systems, information provision and subsidies are forms of EIs. Generally, the use of economic instruments for environmental management is not very common in Tanzania although there are efforts to introduce them in different sectors of the economy (URT, 2004).

According to Environmental management Act, 2004 (URT, 2004) there are few economic instruments for environmental management currently employed in the country, particularly charges, tax allowance/exemption, information programmes/provision, performance bonds and property rights. According to Sartzetakis *et al.* (2008) the use of provision of information has positive impacts on both revenues and environment and is one of the economic instruments that work well with other instruments to tackle environmental problems. The provision of information on goods and services by the manufacturers brings positive environmental impacts by the behavior change of the informed consumers (Tietenberg, 1998).

Basically, provision of information should indicate the overall environmental quality of a product intended to act as a market instrument that attracts and influence consumers' choice. Labeling of products and public disclosure of environmental information of manufacturing processes provide signals to investors, consumers, regulators, and the general public about the relative and absolute levels of environmental impacts of polluters (Grafton *et al.,* 2004). There are several forms of provision of information depending on the degree of interpretations and aggregation of information as well as on the character of organisation that is responsible for certification that is, labelling, public disclosure or rating (Sterner, 2003). Such information may be provided through a legal requirement for products to be labelled with information on their environmental impact. Since environmental provision method has both marketing and environmental benefits many firms and industries in countries like USA, Sweden, Philippines, Canada, Australia and China have been using it (Anbumozhi *et al*., 2011).

Like many other countries, Tanzanian urban and rural areas face a big challenge with regards to coping with the increasing amounts of plastic wastes piled and dumped in uncontrolled areas, Laws and regulations and other policy instruments regarding solid

waste management are gradually developing in the country and will eventually lead to a stronger enforcement. Currently however, local authorities lack sufficient means to enforce the solid waste management regulations (URT, 2010).

Environmental conservation and protection is generally a primary objective. Through information provision programs, governments and/or non-governmental program authorities seek to influence consumer decisions and encourage the production and consumption of environmentally preferable goods and the provision and use of environmentally preferable services. In this regard, information provision serves as a market-based instrument intended to bring about environmental improvement.

1.2 Problem Statement and Justification of the Study

In Kinondoni District, like many districts in Tanzania, waste management is among critical challenges facing authorities responsible for environmental management. Such waste products include plastic bags and bottles, cans and other product packages (Simon, 2008). An increase in population has increased demand of locally and imported goods and services of which some of the products when disposed off do not easily decompose and others have direct impacts to soil and water resources. These challenges require people's awareness on handling of wastes after consumption. The best way to improve the awareness of consumers on waste handling is for the manufacturers to provide information on the products consumed and/or bought which is one of the economic instruments to manage environment pollution (Kim and Lyon, 2011).

There are products whose manufacturing process contributes highly to environmental pollution if the cleaner energy technologies are not applied. This is a challenge which involves consumers to be responsible to choose whether to buy an environmental

polluting or environmental friendly product. The idea is for information provided on products affects the choice of consumers and tend to increase the market shares of companies with relatively clean technologies or environment friendly products. Consumers who are concerned with environmental management make their decision on whether to buy a product or not which influences producers' behaviours in considering environment while producing their products (Shimshack *et al.,* 2007; Delmas *et al.,* 2010).

The environmental characteristics of products have become increasingly popular to consumers in many developed countries like Scandinavia, Canada, USA, Australia, China, France, German, Hungary and Japan (Stavins, 2000, Sterner, 2003). Even, in Tanzania, Provision of information has been applied in many companies such as the use of eco- labels on mineral bottled water, canned beverages and insecticides. Environmental messages are clearly provided on products indicating how they can be disposed but still there is a huge problem of littering of plastic bottles, plastic bags and other hazardous products. Some researchers, Mkenda and Ngaga (2003) mentioned that, effective use of information provision instrument can reduce environmental pollution that comes out of production to consumption of goods and services. Since its effective use can help in reduction of environmental pollution, understanding the society's knowledge on these environmental messages and the extent of its enforcement helps in giving clear picture of how the problem of littering of plastic bottles on the streets is handled in Kinondoni municipality.

The study was designed so as to assess the awareness level of the society on environmental information provision on bottled mineral water and other beverages and how the use of information provision on bottled mineral water and beverages is enforced

by the authorities responsible for environmental management. The findings will help in developing improved environmental management strategies and plans that will be more effective to the society. The study is intending to suggest alternative strategies and management on the use of information provision and its enforcement. The study also gives recommendations on the better methods of providing information to the consumers in order to make environmental friendly choices when shopping.

1.3 Objectives

1.3.1 Main objective

The main objective of this study was to explore the potentials on provision of information on bottled mineral water and other beverages in order to improve its effective use in environmental management.

1.3.2 Specific objectives

The specific objectives of the study were to:

i. Identify the existing information provided on the bottled mineral water and plastic bottled beverages
ii. Evaluate the society's awareness on the information provision and its influence on buying the selected products
iii. Assess the use of information provision in bottled mineral water and plastic bottled beverages in environmental management.
iv. Identify the possible challenges against provision of information in the field environmental management.

1.4 Research Questions

1. What are the environmental massages on the selected beverages?
2. To what extent is information provision known to society and how does it influence on buying the selected beverages.
3. How is information provision on bottled beverages used with regard to policy and regulations?
4. What are the challenges facing the use of information provision in managing environmental problems?

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 The Use of Economic Instruments in Environmental Management

There is a wide range of economic instruments or incentives which can be used to internalize externalities of economic activities. Every incentive aims to induce a change of behavior of economic agents by internalizing environmental or depletion cost qualifies as an economic instrument. A very general classification of economic instruments is, to divide them into two groups. The first group is the so called market based instruments. This covers all instruments and incentives that work by a change of either product or factor prices, e.g. taxes or pollution charges. Such instruments generate in one or the other way income for the governments. The second group is the non-market based instruments, such as command and control activities or land reclamation bonds (Panayotou, 1995). In the international community, there is growing concern about environmental problems such as natural resource depletion and pollution and alarming loss of biological resources. The underlying causes of these problems are a mix of market and policy failures. There is a strong need to search for solutions which do not only address the symptoms but focus on the underlying causes for these problems.

Economic instruments can be viewed as important tools for sustainable development. These instruments try to close the gap between resource scarcity and resource prices by internalizing costs which are external to the producers and consumers. A lot of different economic instruments are available. All of them have their advantages and disadvantages and for using them a case by case approach is necessary to select the most appropriate one for a given environmental problem. This makes it necessary to look into economic, political, social and cultural effects in order to make sure that these instruments are target oriented and acceptable by the public as well as the target group concerned(Sankar,2002).

According to Mkenda and Ngaga (2003), economic instruments are not commonly used in Tanzania. According to National environmental Policy - NEP (1997) and Environmental Management Act - EMA (2004), economic instruments can be used in managing natural resources and some are used already like charges, tax allowance/ exemption, information programmes/provision, performance bonds and property rights. Generally, economic instruments introduce more flexibility, efficiency and cost-effectiveness into solid waste management measures. The economic instruments in use are not effective because they are not rigorously enforced or because they were not put in place for influencing behaviour change as such, but rather to generate revenue (Eskeland and Jimenez, 1992). There is however widespread support for the introduction of economic instruments (Mkenda and Ngaga, 2003). The impact of these instruments on changing behaviour regarding promoting sustainable use of natural resources and preventing environmental pollution and degradation has been minimal due to failure to impose sufficient penalties to induce compliance. In addition most of the fees, charges, taxes and fines are not adjusted frequently enough to reflect inflation and changing standards of living (Starvin, 2003). Therefore, Information provision as one of the economic instrument that is used in environmental management, serves another very important social function – they satisfy the belief that the public has the 'right to know' that they might be affected by third party pollution.

2.2 The Legal Basis for Using Economic Instruments

According to Rolfe (1993), regulations can be challenged on the basis that they go beyond what a Legislature or Parliament intended when they delegated a regulation making power. Enabling legislation for discharge fees, tradable permit systems, administrative penalties and deposit refund systems should be sufficiently comprehensive to allow all necessary aspects of a working system to be established. Legislation should also establish

basic principles that ensure environmental protection is the foremost goal of economic instruments. Enabling legislation for all instruments should ensure regulation making and administration of the systems is informed by an open discussion of public concerns (Grankvist *et al.*, 2004.)

For example, Canadian environmental law consists largely of regulations or permits and licenses which prohibit industries from exceeding prescribed levels of emissions, require industries to install certain abatement equipment or prohibit the use of substances for specific purposes. If a business exceeds permitted levels or breaches regulations it shall be charged with an offence and, if convicted, shall be punished by a fine or jail sentence. This "command and control" system of regulation has been successful in some areas of pollution (Rolfe, 1993).

In Tanzania the National environmental Policy- NEP (1997) stipulates that there are six major environmental problems for urgent attention which are land degradation; lack of accessible good quality water for both urban and rural inhabitants; environmental pollution; loss of wildlife habitats and biodiversity; deterioration of aquatic systems; and deforestation. Also EMA (2004), Article 80 clearly establishes a strong and comprehensive legal basis for the introduction of various economic instruments in support of the environmental policy in Tanzania. Thus the enforcement and compliance of information provision as one of the economic instrument in environmental management is very crucial for Tanzania (URT, 2004).

2.3 The Use of Environmental Provision of Information in Developed Countries

Provision of information is widely used in developed countries such as European Union (EU) established Eco-label requirement on products, United States energy and

conservation policy Act of 1975 specifies that certain appliances and equipment should carry labels with information on product's energy efficiency and estimate annual energy costs (Mkenda and Ngaga, 2003). OECD countries use labelling, for example, certification of food is applied in many countries and "Green" labelling of products is common in Northern Europe. Germany has started using eco- labelling since 1977. More than 4200 products in EU have EU eco-labels; Scandinavian countries started using Nordic Swan labels since 1989 (Stavins, 2000).

Consumer demand for green products in Sweden is very high since consumers are environmental friendly. Countries like USA, Canada, Australia, China, France, German, Hungary, Indonesia, Japan, Philippines, Taiwan and Thailand are using different forms of information programs (Sterner, 2003; Stavins, 2000).

According to Smith and Stancu (2002) labeling of paper to indicate the recycled content, the *Mobius loop* (triangular recycling symbol) that indicates that the packaging or product is recyclable, *Gruener Punkt* (Germany) or *Green Dot* (North America) indicates that the producer has paid for the recovery of the packaging, *TCO'99* (Sweden), *IT Eco Declaration* (Denmark, Norway, Sweden), *PC Green Label* (Japan) and the self-declared *EIZO Eco Products 2002* (USA) are electronic product environmental labels that include recycling criteria. *Greenguard* is a certification for low-emission products and *Carbon Neutral* and *Climate Care* labels indicate that carbon dioxide emissions associated with production and distribution has been offset. New Zealand has adopted much of the international labeling to indicate that packaging and products are recyclable, and the recent *Packaging Accord* is developing voluntary standards for packaging and its recovery. *CarboNZero* is a label for offsetting carbon dioxide emissions through the

restoration of indigenous forest on marginal agricultural land that has been taken out of production (Smith and Stancu, 2002).

Also, in Tanzania, Provision of information has been applied in many companies such as the use of eco- labels on mineral bottled water, canned beverages and insecticides. Such labels are like recycle, re-use, keep city clean and put it in dustbin but still there is a lot of littering of plastic bottles in the streets of Kinondoni (Mkenda and Ngaga, 2003).

2.4 Provision of Information in Environmental Management

Provision of environmental information is an increasingly popular instrument of regulation throughout the world and the most basic and effective economic instruments for improving environmental performance (Aidt and Dutta, 2004; Jordan *et al.,* 2003; Stavins, 2003). The general idea of provision of information is that the information will affect the choice of consumers and tend to increase the market shares of companies with relatively clean technologies or environment friendly products. This may influence producers in changing their behaviour by considering that many consumers are informed thus they will not buy products that have impacts on the environment (Shimshack *et al*., 2007; Delmas *et al*., 2010). The forms of provision of information depend on the degree of interpretation of information and the character of organisation responsible for certification. Such forms are Labelling, rating and disclosure, and certification (Sterner, 2003). Efforts to make information about facilities and products available to the public, especially consumers, can lead to greater accountability and voluntary improvement in performance on the part of industry. To draw conclusions about the environmental performance of a particular company, a consumer might want to have information about its pollution discharges, hazardous waste generation, energy sources, regulatory compliance record and environmental management practices (Stavins, 2003).

2.4.1 Environmental labelling or Eco-labelling of products

2.4.1.1 History of ecolabelling

The concept of eco-labeling came into existence to create a market based incentive for environment-friendly products and services and this concept was introduced in Germany for the first time in the late 1970s in the name of the Blue Angel Programme. The concept of Ecolabelling schemes became popular gradually in Germany and it took off completely in the 1990s when the industrialized countries around the world started developing these schemes for a wide range of products and services (RSC, 1998).

The products so labeled meet the criteria established within the relevant system as having been manufactured by processes and procedures with low or minimal environmental impact. Examples of such labels include “Blue Angel” (first ecolabel, Germany, 1977), “Green Seal” (US, 1989), “Nordic Swan” (Sweden, 1989), “Eco-mark” (Japan, 1989) (RSC, 1998).

In 1992, an EU Regulated Eco-label was announced under Council Regulation (EEC) No. 880/2 of 23 February 1992 on a Community Award Scheme. The Regulation established a voluntary eco-label scheme intended to promote the design, production, marketing and use of products which have a reduced environmental impact during their entire life cycle & provide consumers with better information on the environmental impact of products (RSC, 1998).

2.4.1.2 Definition of eco labelling

According Piotrowski and Kratz (2005) there is a difference between “Environmental labels” and “Ecolabels”. The term Environmental labelling is rather broad and imprecise, whereas the term eco-labels refer to special group of environmental labels. There are

many labels and declarations of environmental performance and should be referred to as "environmental labels"; ecolabels are a sub-group and they respond to special criteria of comprehensiveness, self-determination and reliability. In brief, the term "eco- label" has been used for a range of labels which are used to convey environmental information about a product to the consumer. On the other hand, environmental labels focus on consumption rather than the production of a given product; e.g. recyclable material; eco -labels are used to communicate that the environmental impacts are reduced over the entire life cycle of a product without specifying the production practices (Morris, 1997).

Global Ecolabelling Network (GEN) (2004) defines, -

*"*An ecolabel is *a label which identifies overall environmental preference of a product (i.e. good or service) within a product category based on life cycle considerations".*

There are several other definitions of the word "eco-label", and all of them highlight aspects and characteristics that are considered important to mark the difference between a simple logo or product declaration and a proper ecolabels.

Egyptian Environmental Affairs Agency (1999) says,

"An eco-label provides brief information on environment related product qualities. It enables consumers to identify products that are environmentally safe; that has been manufactured using eco-friendly materials and do not contain chemicals that are harmful to the user. Since, eco -friendliness, is an additional product quality which can be used for marketing and advertising purposes".

Organization for Economic Cooperation and Development (OECD) identifies:

““an ecolabel is the voluntary granting of labels by a private or public body in order to inform consumers and thereby promote consumer products which are determined to be environmentally friendly than other functionally and competitively similar products”.

As has been identified by the International Organization for Standardization (ISO), the overall goal of these labels and declarations is:

"...through communication of verifiable and accurate information, that is not misleading, on environmental aspects of products and services, to encourage the demand for and supply of those products and services that cause less stress on the environment, thereby stimulating the potential for market-driven continuous environmental improvement".

In brief an Eco label;- Identifies the overall environmental preferences of a product; Provides information on environment related product qualities; Are tool for consumers to identify whether product is environmentally safe; Enables manufacturers to use eco-friendly raw materials and ingredients; Is an additional product quality which can be used as a marketing tool; Can be issued by private or public body; Causes less stress on the environment and Enables to earn premium on products.

Eco-labelling is one of the main instruments emerged from green marketing which intends to be means for consumers to make choices that will reduce environmental impact and enable them to influence how products are made. There is widespread interest in eco labels and academically much effort has been invested in their design and use and how to make eco labels more effective. Other studies include whether or not consumers recognize various labels, if they understand their meanings and if they trust the labels message (Rex and Baumann, 2007).

During the last 30 years, an increasing amount of eco labels has been developed by individual companies, industrial sectors and non-governmental organizations (NGOs) as well as national and international organizations (EU, 2001). Only in Europe there are 126 labels for eco-friendly products and services. A Company uses labels to legitimize its business practice, protect it from public regulation and help to gain competitive advantages. From a consumer's point of view it is important that labels reduce uncertainty about environmental performance of products and enable people to choose products causing less damage to the environment (Pedersen and Neergaard, 2006). Thus, having the knowledge of these environmental labels on goods is very crucial for environmental management especially in places that show littering of these empty packages in the streets.

2.4.1.3 Types of Eco-labelling

According to US EPA (1998), Eco-labels are part of Environmental Labels (EL) and EL`s are classified as follows (Fig. 1). Based on classification, one of the most important is whether or not the program relies on first-party or third-party verification. The third-party verification is performed by marketers on their own behalf to promote the positive environmental attributes of their products. Third-party verification is carried out by an independent source that awards labels to products based on certain environmental criteria or standards. EL programs can also be characterized as positive, negative, or neutral;

Positive labelling programs typically certify that labeled products possess one or more environmentally preferable attributes.

Negative labelling warns consumers about the harmful or hazardous ingredients contained in the labeled products.

Neutral labelling programs simply summarize environmental information about products that can be interpreted by consumers as part of their purchasing decisions.

Third-party environmental labelling programs can be further classified as either mandatory or voluntary. Mandatory programs include hazard or warning labels, and information disclosure labels. Whereas voluntary labels are typically positive or neutral, and are further classified as report cards, seal-of-approval, or single-attribute certification programs (US EPA, 1998).

The following list includes some of the government sponsored and some private labelling schemes (Hyvarinen, 1999):

Government sponsored schemes: Blue Angel , Eco Mark (Japan), Environmental Choice (Canada), White Swan (Nordic Countries), EU, Eco-Mark (India), Green Label (Singapore)

Private labelling schemes: Eco-tex, Oeko-Tex (textiles and clothing). Green Seal (USA), Bra Miljöval (Sweden), Britta Steinmann Collection .

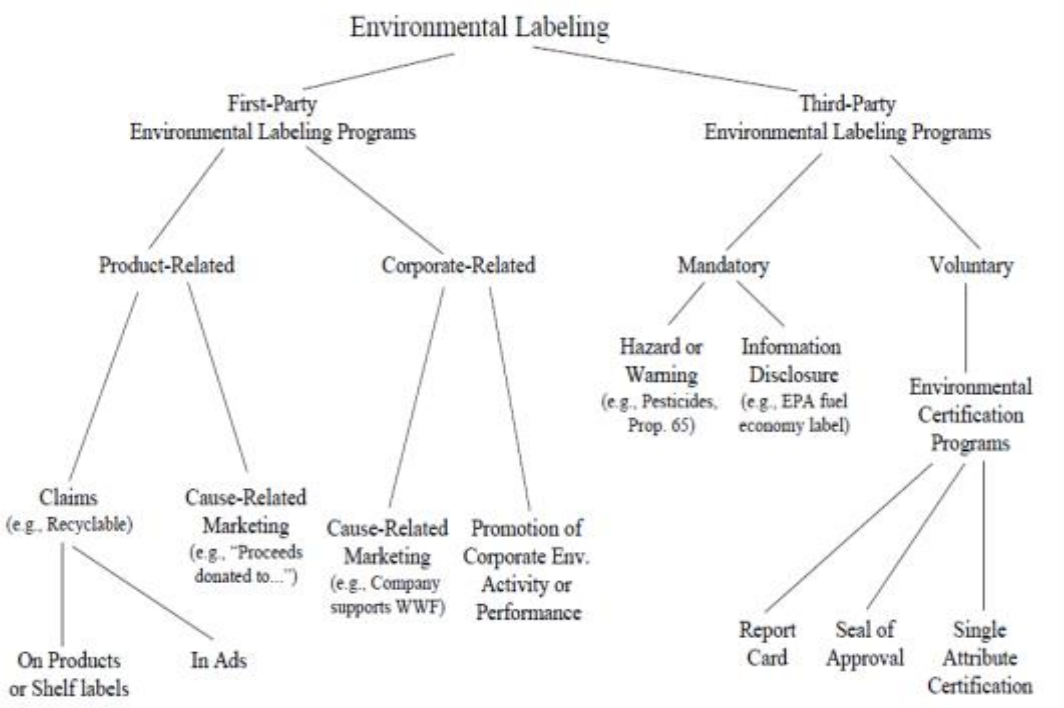


Figure 1: Classification of environmental labels

Source: US EPA (1998)

Like environmental labels, ecolabels are even classified as mandatory and voluntary labels. One example of mandatory label is the EU energy label, assessing the energy consumption for household appliances on the scale from A to F, where A means least energy consumption and F most energy consumption. Voluntary labels are classified according to International Standards Organisation (ISO) (Rex and Baumann, 2007). ISO is the world's largest non-governmental organization that develops and publishes International Standards. ISO is a network of the national standards institutes of 163 countries. ISO enables a consensus to be reached on solutions that meet both the requirements of business and the broader needs of society (ISO, 2010). There are now eco-labelling schemes both in developed and developing countries.

According to UNEP handbook (2005) eco-labels tell us about the environmental impacts of producing or using a product or service. Most eco-labels are voluntary products or services and are not forced to use the label, but in some markets they are becoming an important competitive factor. There are many different labeling programs, run by governments, private companies and non-governmental organizations, but all go down to three basic types of labels. The Geneva-based International Organization for Standardization (ISO) has established definitions and principles for developing each type (Mukhopadhyay, 2008).The ISO has classified the existing environmental labels into three typologies –*Type I, II and III* and has specified the preferential principles and procedures for each one of them.

Type I - Ecolabels (ISO 14024:1999): labels refer to the environmental quality of a product compared with the rest of the products and are meant to encourage a switch towards more environmentally friendly consumption habits. These labels are the products of third party certification programmes and they are usually government supported. Their aim is to certify both products and production processes according to different criteria that relate to the entire life cycle of the product. These labels are voluntary. Examples of such labels are the Blue Angel (Germany) and the EU eco-label (OECD, 1997).

Type II- Self-declaration claims (ISO 14021:1999): The labels belonging to this group do not share some of the usual characteristics of environmental labels, the main difference being that they are not awarded by an independent authority. These labels are developed internally by companies, and they can take the form of a declaration, a logo, a commercial, etc. referring to one of the company products (UNOPS, 2009).

Type III- Environmental impact labels (ISO 14025:2006): Type III labels belong to qualified product information based on life cycle impacts. Environmental parameters are fixed by a qualified third party, and then companies compile environmental information into the reporting format and these data are independently verified. The environmental impacts are expressed in a way that makes it easy to compare different products and sets of parameters, for example for public procurement purposes (UNOPS, 2009).

The three types of environmental labels (and declarations) can be adapted to create a variety of different environmental labelling programs. Their design characteristics can vary to support different program objectives, such as: increasing environmental awareness; identifying dangerous ingredients; assessing the overall environmental impacts associated with a specific product; or judging the adequacy of a company's environmental policy.

Therefore, Companies that produce goods in Tanzania such as bottled mineral water and beverages have labelled their products for consumers to read. Thus, knowing what types of eco-labels are present in those bottled beverages and mineral water is important for the society.

2.4.1.4 Types of eco labels symbols on plastics

The Society of the Plastics Industry (SPI) resin identification coding system is a set of symbols placed on plastics to identify the polymer type. It was developed by the SPI in 1988, and is used internationally. The primary purpose of the codes is to allow efficient separation of different polymer types for recycling.

Table 1: Eco-labels on plastics

Symbol	Type of plastic	Product
	PETE or PET Polyethylene terephthalate	Polyester fibres, thermoformed sheet, strapping, and soft drink bottles
	HDPE High-density polyethylene	Bottles, grocery bags, milk jugs, recycling bins, agricultural pipe, base cups, car stops, playground equipment, and plastic lumber
	PVC or V Polyvinyl chloride	Pipe, fencing, shower curtains, lawn chairs, non-food bottles and children's toys.
	LDPE Low density polyethylene	Plastic bags, 6 pack rings, various containers, dispensing bottles, wash bottles, tubing, and various moulded laboratory equipment
	PP Polypropylene	Auto parts, industrial fibres, food containers, and dishware
	PS Polystyrene	Desk accessories, cafeteria trays, plastic utensils, toys, video cassettes and cases, clamshell containers, packaging peanuts, and insulation board and other expanded polystyrene products (e.g., Styrofoam)
	OTHER or Other plastics, including acrylic, fiberglass, nylon, polycarbonate, and polylactic acid (a bioplastic), and multilayer combinations of different plastics	Bottles, plastic lumber applications, Headlight lenses, and safety shields/glasses.

Source: PACIA (2003)

2.4.1.5 Types of recycling logos on products

There are many recycling labels that can be found in many products. Any company has a mandate to use a recycling logo according to the contents that he/she uses and some of the logos are worldwide or country wise used. Table 2 shows logos that can be found in products worldwide such as papers, toilet papers, food packages and drinking bottles.

Table 2: Recycling logos

Recycling logos	
Logo	Meaning
Mobius Loop 	This item can be recycled where correct facilities exist.
Mobius loop (with percentage) 	This item contains x% of recycled material and can be recycled where correct facilities exist.
Green dot ` 	In participating countries this means the manufacturer is funding a recycling program for products with this label. The UK isn't a participating country.
	Shows that a product can be recycled separately from other household waste under special directive.
Aluminium 	This product (usually a drinks can) is made from recyclable aluminium.
Glass 	Please put this recyclable glass container in a bottle bank.

Source: PACIA (2003)

2.4.1.6 Benefits of eco-labeling

Eco-labeling has a number of major benefits such as;-

Informing consumer choice: Eco-labeling is an effective way of informing customers about the environmental impacts of selected products, and the choices they can make. It empowers people to discriminate between products that are harmful to the environment and those more compatible with environmental objectives. An eco-label makes the customer more aware of the benefits of certain products, for example, recycled paper or toxic-free cleaning agents. It also promotes energy efficiency, waste minimization and product stewardship (Thidell 2009).

Promoting economic efficiency: Eco-labeling is generally cheaper than regulatory controls. By empowering customers and manufacturers to make environmentally supportive decisions, the need for regulation is kept to a minimum. This is beneficial to both government and industry (DeFerran and Grunert, 2007).

Stimulating market development: When customers choose eco-labeled products, they have a direct impact on supply and demand in the market place. This is a signal which guides markets towards greater environmental awareness (Kotchen, 2006).

Encouraging continuous improvement: A dynamic market for eco-labeled products encourages a corporate commitment to continuous environmental improvement. Customers can expect to see the environmental impacts of products decline over time.

Promoting certification: An environmental certification program is a seal of approval which shows that a product meets a certain eco-label standard. It provides customers with visible evidence of the product's desirability from an environmental perspective. Certification therefore has an educational role for customers, and promotes competition among manufacturers. Since certified products have a prominent logo to help inform customer choices, the product stands out more readily on store shelves. Coveting the logo may induce manufacturers to re-engineer products so that they are less harmful to the environment (Morris, 1997).

Assisting in monitoring: Another benefit of an official eco-labeling program is that environmental claims can be easily monitored. Competitors and customers are in a better position to judge the validity of a claim, and will have an incentive to do so should a claim appear dubious.

2.4.1.7 Challenges to eco- labelling

Information provision as an eco-labeling has its own challenge that can be direct to the consumer or a producer. These are the challenges facing eco labels;-

Misleading or fraudulent claims: An eco-label has no value to the environmentally-conscious customer if it is misleading or fraudulent. Trust is a major component of a labeling program's credibility, and the label must be above suspicion. Terms such as 'recyclable', 'biodegradable' and 'ozone friendly' must be used accurately. When claims are used arbitrarily in advertising and labeling, customers will be confused, discouraged, and skeptical even of legitimate claims.

Uninformative claims: Labels that provide trivial or irrelevant 'green' information do nothing to reduce environmental impacts (IISD, 1996).

Unfair competition: Some companies are concerned about unfair competition. They are reluctant to rely on the assurance of an overseas eco-labeling program that specifies environmental criteria to be met. Indeed, some companies may intentionally misrepresent their products as 'environmentally friendly' in order to boost profits. This amounts to unfair competition for those companies which must spend the time and money to adhere to regulations (Hyandye *et al*., 2010).

Green consumerism: Many environmentalists are critical of consumerism. They argue that 'green consumerism' is a self-contradicting term, and believe that the goal should be to reduce consumption, not merely redefine it. 'Green shopping' will do little to bring about the more fundamental economic and social changes that are required to protect the planet, they claim. Indeed, consumer preference and market forces cannot, by them, guarantee environmental protection (Lefébure and Muñoz, 2011).

Feasibility: Another concern is that only a small number of products can realistically be labeled as 'green'. Since the vast majority of goods will not be covered by eco-labeling programs, some critics point to regulation as a more effective tool than the development of voluntary standards.

Methodologies: Differences in testing and certification methods have created difficulties in the application of an eco-label to a particular product category. For example, should the label represent an overall assessment of a product's environmental burden over its entire life cycle, or some subset of it? What techniques can be used to measure environmental impact? Who determines what specific environmental impacts are the most important? And what criteria are appropriate in rating impacts?

2.4.2 Environmental rating and disclosure programs

Environmental rating and disclosure programs used in several developing countries (e.g., China, Indonesia, and the Philippines) can also be an effective tool to build community pressure on polluters by evaluating and making public their environmental behaviour (Schwarte, 2008). Colour-rating environmental performance based on a set of simple and transparent criteria reinforces the government’s policy objectives and makes them understandable to the broad public. Thus, the increasing availability of environmental information has permitted stakeholder involvement to take on new, expanded roles. At the facility level, information can help empower a local community to take actions such as opposing a new permit or beginning a meaningful dialogue on issues of concern with nearby industrial facilities (Cohen, 2000).

2.4.3 Environmental certification

Environmental certification is a form of environmental regulation and development where a company can voluntarily choose to comply with predefined processes or objectives set forth by the certification service (Nebel *et al.,* 2005). Most certification services have a logo which can be applied to products certified under their standards. This is seen as a form of corporate social responsibility allowing companies to address their obligation to minimise the harmful impacts to the environment by voluntarily following a set of externally set and measured objectives (Thompson *et al.,* 2009).

The primary motivations for many companies which choose to implement environmental certification schemes are, to provide an ethical product for the consumers, increase sustainable development, improve the image of the company, gain a better relationship with stakeholders and to make higher profit. Many companies believe that the implementation of environmental certification programmes can lead to an improved company image and generate competitive advantage (Gonza´ and Gonza´, 2005). In Tanzania, TBS and TFDA is dealing with standard certification of goods that are sold in the country.

2.5 Consumer Awareness, Understanding and Acceptance of Eco-Labels

Consumers need awareness and understanding of the information provided on eco-labels. The objective of eco-labels is to reduce information asymmetry between the producers of green products and consumers; if eco-labels fail to communicate adequately they will not diminish the information gap between seller and buyer (Thøgersen *et al*., 2010). For example, studies have shown that the presence of competing eco-labels has led to consumer confusion (Leire and Thidell, 2005). The awareness of the community on the

presence of information provision in Kinondoni District will be important due to improper disposal of plastic bottles.

2.6 Demands for Eco-labelled Products

The idea of providing environmental information to consumers is based on the goal of empowering consumers to act on their preferences for environment-friendly and energy-saving (often referred to as "eco" or "green") products and services. Previous studies have shown that consumers have exhibited interest in "green" goods of various categories (household products, appliances, foods, etc.) and are willing to pay more for these goods than for conventional alternatives with similar product attributes Bjørner *et al.* (2004); Loureiro *et al.*, 2001; Cason and Gangadharan, 2002; Amacher *et al.*, 2004; Banerjee and Solomon, 2003).

The motivation that drives consumers to make such "green" purchasing choices could come from a variety of sources, such as the public benefits associated with reduced emissions and better environmental quality or the private benefits associated with cost saving in energy consumption and monetary rebates. Theoretical models assume that people generate higher utility from such diverse sources as: better environmental quality (Kennedy *et al.*, 1994), the money they can expect to save with the use of energy-saving products (Banerjee and Solomon, 2003), a better self-image or an improved moral reputation achieved by conforming to social norms (Bénabou and Tirole, 2006).

Environmental consciousness does not necessarily affect buying behaviour directly, meaning that someone who is concerned about the environment is not automatically a green consumer. Factors that affect the consciousness of consumption patterns are consumer satisfaction, values and identification. But consumer satisfaction is not always compatible with environmental consciousness as many green products do not meet

important criteria such as price, performance or quality. Social values might result in environmentally friendly actions and identification might create positive green purchasing behaviour. But, due to the overuse of green terms, such as "bio," the credibility of environmentally friendly declarations has been undermined, affecting customers' perceptions on eco labels negatively. So, eco labels need to create an easily identifiable and reliable mark of credibility in order to promote green consumerism successfully (Brekke *et al.*, 2007).

2.7 Importance of Eco-labelled to Manufacturers

Manufacturers have attempted to capitalize on consumer interest in green goods by telling consumers how green their products are in advertisements (Mason, 2006). This type of environmental information is often referred to as "self-labeling" (Baski and Bose, 2007) or "first party information" (OECD, 1997), as it comes directly from the manufacturer and directly targets potential consumers without the involvement of government agencies or other third parties. But many may doubt the reliability of first party information, as manufacturers would be motivated to exaggerate the environment friendly nature of their products (Harbaugh *et al.*, 2010). Many studies such as Mason, 2006, Amacher *et al.*, 2004; Baski and Bose, 2007 noted that such risks of moral hazards and imperfect competition could degrade the quality of such information and reduce consumer interest in green products, resulting into market failures.

In situations, the presence of misleading environmental information could even force the "honest" environment-friendly manufacturers out of the market, leading to adverse selection or the "Lemons" effect (Li, 2011).

2.9 Eco Label Awareness with Relation to Socio-Demographic Data

Generally, there is some descriptive knowledge on eco-label oriented purchasing, but little on its social determinants. Few studies on social differentiation of sustainable behavior show that environmental consciousness is differentiated by socio-structural determinants like education, having a positive effect and age having a negative on pro environmental consciousness (Papastefanou, 2001). On the other side they found a positive gender effect on consciousness, after control for age, education and presence of children, but a negative net gender effect on environmental relevant knowledge. In earlier analyses gender effects could not be observed but there were too few studies for conclusion (Papastefanou, 2001).

Zaiem and Jeddi (2010) reported that framework of gender has a weak and even neutral influence on the consumer's awareness of the label, however, Papastefanou, (2001) have shown that women are often more concerned about signals of quality than men, because, as main buyers and housewives, they often go to molls and department stores, consequently they have a direct and permanent contact with the labelled products.

2.10 The Role of Government to Ecolabels

With uncertainty and asymmetry of information between manufacturers and consumers in the market for green products, there is a role for government agencies in the provision of environmental information. For example, an "official" label, operated by a government agency, could help alleviate the information irregularity and uncertainty associated with first party information. In fact, according to a study reported by OECD (1997), Type I labels are the most common type of eco-labels around the world, such as Der Blaue Engel ("The Blue Angel") initiated in Germany (then West Germany) in 1977, Environmental Choice originated in Canada in 1988, Nordic Svanen ("Nordic Swan") initiated in Nordic

countries in 1989, and European Flower started in the European Union in 1992. An eco-labeling program initiated in the United States is the ENERGY STAR program. Home appliances products sold in the United States have to meet basic energy efficiency standards set forth by the U.S. federal and/or state governments.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Description of the Study Area

3.1.1 History of the area

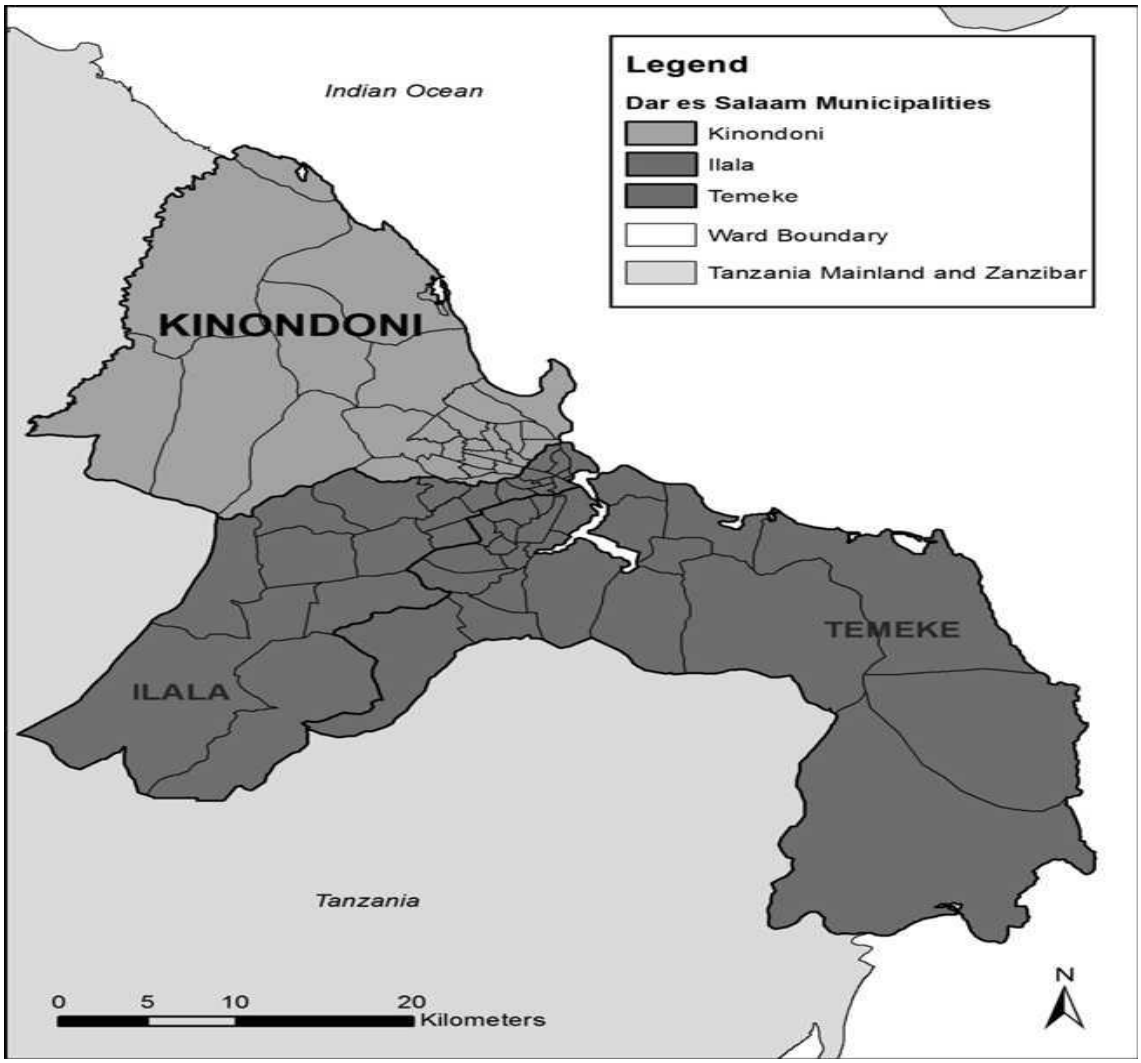
The study was conducted at Kinondoni Municipal in Dar es Salaam city in Tanzania. Kinondoni Municipal council was established by local government Act 1982 which merged and amended the municipalities' ordinance Cap 105 Local government ordinance Cap 333 and Urban Council Act no 11 of 1978. It was later established as an autonomous body by the government Notice No 4 of the year 2000 (KMC, 2000). The site is selected due to its massive population and it is the biggest industrial and commercial Centre in the country, and has 37 industries which include food industries.

3.1.2 Location of an area

Kinondoni Municipal is situated to the west of Indian Ocean coast line with the coordinates 6 47'0"S, 39 16' 0" E It is bordered by Ilala and Temeke Municipals to the North , Indian Ocean to the East and North, Bagamoyo District to the North, Kibaha and Kisarawe Districts to the west and southeast respectively. Fig.2 shows the map of Dar es salaam which indicates Kinondoni as one of her district.

3.1.3 Climates

Kinondoni Municipality lies in the tropical coastal belt of Tanzania. Therefore, it experiences high temperature throughout the year ranging from 25° C in June – August to 35° C in January – March, with rainfall of 131.5 mm per annual. There are two rain seasons, short rains from October to December and Long rains between March and May. The average rainfall is 1300 mm.



Source: Kassenga and Mbuligwe (2012).

Figure 2: Kinondoni Municipality Map, spatial distribution by wards

3.1.4 Administrative structure

Administratively, Kinondoni Municipality is divided into four divisions namely Kinondoni, Kawe, Magomeni and Kibamba. It has 113 urban location (mitaa) and 14 villages. Kinondoni Municipality with 27 wards is wholly urban in Magomeni and Kinondoni divisions, while Kibamba and Kawe divisions are mostly rural with 14 villages. Kinondoni Municipal Council has a total of 41 Counsellors under the Chairmanship of the Lord Mayor.

3.1.5 Population

According to the 2012 population census, Kinondoni Municipal had a population of 1 775 049 with a growth rate of 5%. The municipality covers an area o 531square kilometers, with a population density estimated at 2051 persons per square kilometre. Table 3 indicates the population of Dar es Salaam City from 2002 to 2012 in each district.

Table 3: Population size of Dar es Salaam according to districts

Municipal	Population 2002[1]	Population 2012[2]	Absolute increase	Average annual growth rate
Kinondoni	1 083 913	1 775 049	691 136	5.0
Ilala	634 924	1 220 611	571 359	6.8
Temeke	768 451	1 368 881	614 758	5.9
Dar es Salaam	2 487 288	4 364 541	1 877 253	5.8

[1]Source: National Bureau of Statistics Tanzania (2006).
[2]Source: National Bureau of Statistics Tanzania (2013).

3.1.6 Social-economical activities

Being part of Dar es Salaam City that is the biggest industrial and commercial centre in the country, the Municipality has industries, which offer significant job opportunities. However, the majority of the people in the urban part of the Municipality engage in self-employment activities such as trading, fishing and small-scale manufacturing in the informal sector.

3.2 Data Collection

3.2.1 Research design

This study employed cross-sectional research design method where data was collected once in the selected population. The study adopted this method due to its strength over other designs in providing the overall picture of the relationships among variable of interest. Also the cross-section study design provides useful data for simple statistic description and interpretations and it requires little resources (Bailey, 1994).

3.2.2 Methods and tools

Both primary and secondary data were collected in this study whereby a variety of data collection techniques were used. These include questionnaire survey and interviews approach with respondents. All these methods were complimented by secondary data collected from literatures.

3.2.2.1 Sampling procedure

In order to get the required study sample, a multistage sampling technique was used. One division out of four was randomly selected. The wards within the selected division were listed and one ward that is Makumbusho was selected purposely due high level of plastic bottles littering on the streets.

Makumbusho has 5 streets namely Makumbusho, Kisiwani, Mchangani, Mbuyuni and Minanzini with their population according to 2012 population census as shown in the Table 4 from the list. The number of sample from population was 150 as described by Bailey (1994), 30 cases is a minimum recommended number enough to represent a population under study. Although general rules are hard to make without knowledge of the specific population, around 30 cases seems to be the bare minimum for studies in which statistical data analysis is to be done, although some techniques can be used with fewer than 30 cases (Champion 1970). Since Makumbusho had 5 Streets, on each 30 households were randomly selected to be used to draw a representative sample of 150 households, where the respondents were obtained basing on willingness to participate.

Table 4: Population sample

Street	No. of Households	Population	No. of Households Interviewed
Makumbusho	560	10669	30
Kisiwani	2035	19192	30
Mchangani	1012	13427	30
Mbuyuni	5041	16464	30
Minanzini	434	8288	30
Total	9082	68040	150

Source: 2002 population Census

According to Tanzania Food and Drugs Authority (TFDA) list of registered pre-packaged food products in Tanzania from 2009 to December 2011 contains 312 food products. According to Tanzania Food, Drugs and Cosmetics Act (2003), the objective of food registration is to safeguard public health by ensuring that all foods meet national standards before being allowed to circulate in the Tanzanian market. Out of 312 food products, there are 49 beverages that are manufactured in Dar es Salaam city. In identifying environmental messages and identification of manufacturers in order to find out their knowledge on information provision, mostly plastic bottled water and beverage that were found on the shops were randomly selected and used as the sample products for the research.

Data about eco-label and environmental message on products was collected. Data was collected from the selected 15 mini and supermarkets in Makumbusho area. The shops were purposively selected due to their existence in Makumbusho ward and sale bottled mineral water and beverages products. Permission to examine the products was sought from the shop keepers prior to convenient sampling of products in the shop. Also these shops were visited so as to assess whether provision of information has influence on their purchase of bottled mineral water and beverages present in their stores.

3.2.2.2 Questionnaire survey

Structured questionnaire with both open and closed-ended questions was used in order to obtain both qualitative and quantitative information to consumers and sellers of selected manufactured goods. The questionnaires were both pre-tested and pilot tested before the study was carried out. The questionnaire was pre-tested in order to check its validity and reliability. Pre-testing was done to see if it works and whether changes were necessary before the actual study. It brought room to correct mistakes and add important information. The advantage of pre-testing the questionnaire included improvement on the wording of the questionnaire, correct and improve translation of technical terms, checking the accuracy and adequacy of the questionnaire, eliminated unnecessary questions and added necessary ones and estimate the time needed to conduct the interview (Presser and Blair, 1994). Also the questionnaire was pilot tested before it was administered in real situation. Then the questionnaires were administered to respondents. Data collected included consumers' attitude towards information provision during shopping, final actions taken to dispose products wastes based on information provided on bottled beverages labels and their knowledge on the presence of information provision and its contribution to environmental protection.

3.2.2.3 Personal Interviews with key informants

Personal interviews were done with relevant stakeholders such as Environmental officers, Natural resources officers at the district and regional levels and experts from Tanzania Food and Drugs Authority (TFDA), Tanzania Bureau of Standards (TBS) and National Environmental Management Council (NEMC). Regulations and by laws on information provisions on products and its contribution towards environmental management are some of the information collected during interviewing the key informants. Another feedback

was on how effective is the enforcement and compliance of these information programs on products.

3.2.2.4 Secondary data collection

Secondary data was collected through literature review, internet surfing, library (thesis/dissertations, journals, papers) and reports from National Environmental Management Council (NEMC), Vice Presidents office (VPO) , Tanzania Bureau of Standards (TBS) and Tanzania Food and Drugs Authority (TFDA). The data provided inputs on the potential and limitations of applying provision of information on goods in environmental management and provided additional information for supplementing the primary data.

3.3 Data Analysis

Data obtained was analysed by statistical package for social science (SPSS) computer programme and Microsoft Excel. Descriptive statistics were used to analyse socio-economic characteristics of interest and to assess the influence of socio-economic status of a household towards the awareness of provision of information on bottled beverages and mineral water to consumers. Binary logistics was used to test out the socio-economic factors that influence the awareness of provision of information on bottled mineral water and beverages to consumers.

(a) Binary logistic model

A logistic regression was used to determine the factors that influence awareness of provision of information on bottled beverages and mineral water. This study used a binary regression model in order to understand people's awareness towards environmental information on bottle mineral water and beverages.This model was used because there

were only two possible outcomes (0, 1) people's awareness of eco labels and people's unawareness of ecolabels. . The binary regression model is expressed as follows:

Logit (Y) = ln [p/ (1-p)] = $\alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 \ldots$ ..... (1)

Let *Y* be a binary response variable (Aware and Unaware of ecolabels)

Where P is the probability of the event of interest, α is the *Y* intercepts, β_n are regression coefficients, and X_1, X_2, X_3 and X_4 are a set of predictors. α and βs are typically estimated by the maximum likelihood (ML) method, which is preferred over the weighted least squares approach by several authors, such as Peng *et al*. (2002) and Schlesselman (1982). The ML method is designed to maximize the likelihood of reproducing the data given the parameter estimates. Data are entered into the analysis as 0 or 1 coding for the dichotomous outcome, continuous values for continuous predictors, and dummy codings (example 0 or 1) for categorical predictors.

The null hypothesis underlying the overall model states that all βs equal zero. A rejection of this null hypothesis implies that at least one β does not equal zero in the population, which means that the binary logistic regression equation predicts the probability of the outcome better than the mean of the dependent variable *Y*. The interpretation of results is rendered using the odds ratio for both categorical and continuous predictors.

Hypothesis

H_0: $\beta_1 = \beta_2 = ... \beta_p = 0$ (society's socio-economic factors have no effects on awareness)

H_a: At least one of the $\beta_i \neq 0$ (society's socio-economic have effects on awareness)

Model was made to focus on awareness of environmental information on mineral bottle water and the variables used in the model are presented in Table 5.

Table 5: Variables used in regression model

Variable	Description
Y	People's awareness on environmental information (0=aware, 1=unaware)
X_1	Sex of the respondent (0=male, 1=female)
X_2	Age of respondents
X_3	Occupation of the respondent (0=working, 1= business, 2=student)
X_4	Education of the respondent (0=illiterate, 1=primary, 2=secondary, 3=college)

CHAPTER FOUR

4.0 RESULTS AND DISCUSSIONS

This chapter highlights the socio-economic and demographic characteristics of the households' in the study area such as age, sex, and level of education. The discussion in this chapter covers the role of information provision on bottled mineral water and beverages This chapter also identifies the types of environmental information labels on bottled mineral water and beverages, awareness of information provision to respondents. Furthermore, this chapter highlights the challenges to consumers understanding environmental labels.

4.1 Demographic Characteristics of the Communities in the Study Area

Majority of the respondents (66%) were aged between 19 and 35 years and 5.5% were teenagers and the rest 30.7 % were 36 to 65 years of age (Table 6). Also the study assessed a total of 150 households ,the respondents who were interviewed 91 were male and 59 were female as shown in (Table 7)., About 61% of males were interviewed since most of them were found at home either having their own businesses such as little shops at their homes.

According to the sample about 43.3% of the respondents were of secondary level, 19.3% College level, 34.7% primary level and 2.7% were illiterate (Table 7). This indicated that people of age 19-35 have secondary level education and are involved in business activities since about 70% of the respondents were business people. This kind of sample can give a clear picture of the role of information provision since respondents who spent most of their time in their shops or businesses have high chance of buying mineral drinking water and beverages compared to the respondents who are not working.

Table 6: Age of Respondents (n=150)

Age	Frequency	Percent
0-18	5	3.3
19-35	99	66.0
36-65	46	30.7
Total	150	100.0

Table 7: Characteristics of respondents in the study sample (n=150)

Sex of Respondent	Frequency	Percent
Male	91	61.0
Female	59	39.0
Total	150	100
Occupation		
Working	37	24.7
Business	105	70.0
Student	4	2.7
None	4	2.7
Total	150	100
Education level		
Illiterate	4	2.7
Primary level	52	34.7
Secondary Level	65	43.3
College level	29	19.3
Total	150	100

4.2 Types of Environmental Information in Bottled Water and Beverages

Environmental messages placed on bottled mineral water and beverages can helps in environmental conservation for the environmental conscious consumers. This study showed that among the bottled mineral water and beverages surveyed about 93% had environmental message or label on their packaging materials while 7% of products had no any environmental message. This implies that the enforcement of information provision to manufacturers is minimal. Companies like Coca cola and Bakhresa have managed to place these symbols since they are internationally well known and have to follow the requirements put forward by the company but not Tanzania government. The messages found on product labels are summarized in (Fig. 3-8). Common environmental labels found on products labels are Recycle symbol (84%) and another popular symbol is the

dust bin symbol (78%). These symbols are commonly known and most of the beverages used on this research were of plastic materials hence the recycle symbol has been used more and due to littering in the country, manufacturers wants to keep the country clean thus have managed to illustrate on how to dispose the empty bottle after use. The following symbols were found in most of the bottled mineral water and beverages that are sold in the surveyed shops.

The Mobius loop indicates that the bottle should be recycled after use only when there are proper facilities. ISO 14021 states that when a recyclable claim is made, the use of a symbol is optional. However, it recommends the use of the Mobius loop if a symbol is going to be used. According to ISO 14021, 'The Mobius loop may apply to the product or the packaging. If there is any potential for confusion about whether it applies to the product or the packaging, the symbol shall be accompanied by an explanatory statement.' The 'Tidyman' symbol is widely used to encourage responsible disposal (and avoid litter). Some just put only this symbol without putting any words. This means do not liter, put it in a dust bin (Fig. 4, 5 and 6). Symbol with phrase "Please Recycle" is mostly used by Coca cola plastic bottles beverages (Fig. 7). Other bottles put this label with the words put it in a dust bin. The symbol indicates Recycle Now to encourage recycling and do something to save our environment for the future before it is too late (Fig. 8).

Figure 3: Mobius loop symbol

Keep your

Country clean

Figure 4: Tidy man symbol with phrase “keep your country clean”

Put it in a dust bin

Figure 5: Tidy man with the phrase “Put it in a dustbin”

Figure 6: Tidy man

TM

Please recycle

Figure 7: Please recycle symbol

Figure 8: Chasing arrow symbol with word "recycle"

4.3 Awareness Level of Environmental Information in Bottled Water and Beverages

About 86.7% use beverages and water without the knowledge of environmental information provided (Fig. 9). Also, the results show that only 13.3% of interviewed people have enough information and understand about environmental information and eco-labelling in Kinondoni Municipality (Fig. 9).

Due to the importance of environmental information, there is a need for more people to have awareness about it in each product taken including bottled water and beverages. There have been no efforts from either the government or producers in Tanzania on educating the society about the environmental labels placed on the products.

Other developed countries have government owned eco labels and most of their citizens will have the knowledge; such countries like Germany have the Blue Angel eco-label program. It was the first government sponsored Eco labelling scheme, was launched in Germany in 1977 (Reisch, 2001). Since then, the idea has spread and a large number and variety of Eco labelling schemes have surfaced (Scheer and Rubik, 2005). According to UNEP (2002) Eco-labels are intended to educate and increase consumer awareness of the environmental impacts of a product and bring about environmental protection by encouraging consumers to buy products with a lower environmental impact.

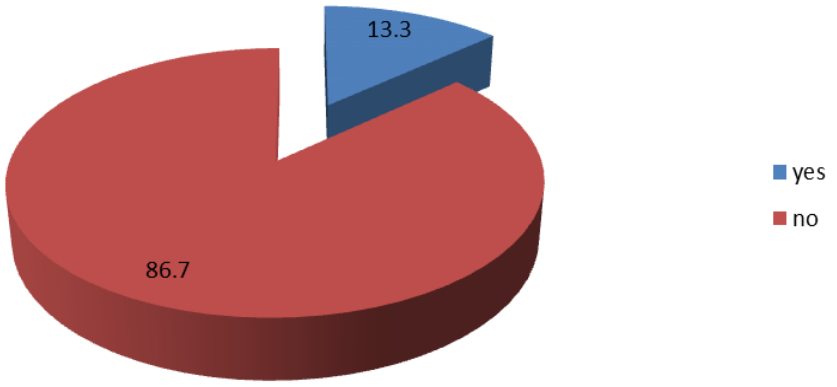


Figure 9: Responses on awareness of information on labels of products

The small percent of people with awareness of environmental information include different groups who check the bottle labels and information for different reasons. The study went further to identify the specific type of environmental information known by these customers who have awareness. From the 13.3% of the people who understand about environmental information either in form of words or symbol, high percent (38%) understand the dust bin symbol followed by recycle symbol (24%). Other symbols recognised include are keep city clean (17%), dust bin symbol and keep city clean (14%), re-use symbol and care for environment (4%) each and last is proper disposal (3%) (Fig. 10). There is still a long way to go before a sufficient understanding of the causes of variation in consumer responses has materialised (Galarraga, 2002; Thøgersen, 2002). As argued by Leire and Thidell (2005) there is a need for clearer understanding of consumer decision-making with regard to eco labelled products and services. This indicates inadequate awareness level to most of customers/ users of bottled mineral water and beverages in Dar es Salaam hence likely influence improper disposal methods used.

In developed countries, eco-labels have been present in their respective markets for a longer period of time and this makes the awareness and understanding among costumers to be high, which explains why customers are more aware of, understand better and have a higher likelihood to have recently purchased a product with eco-labels. Eco labels can be related to culture effects, which can be viewed as an influencing factor in the eco-label adoption process (Thørgesen *et al.,* 2010). The reasons why customers choose products with eco-labels are diverse and have been studied by authors such as Bashkaran *et al*. (2006). Some of the reasons are related with sustainability, decreasing the impact on the environment, reducing the carbon footprint, contributing to society (UNEP, 2002). Thus, it is important to note that, even though consumers cannot force companies to offer eco-labelled products, a products' success depends greatly on the final customer and their needs should be kept in mind (UNEP, 2005).

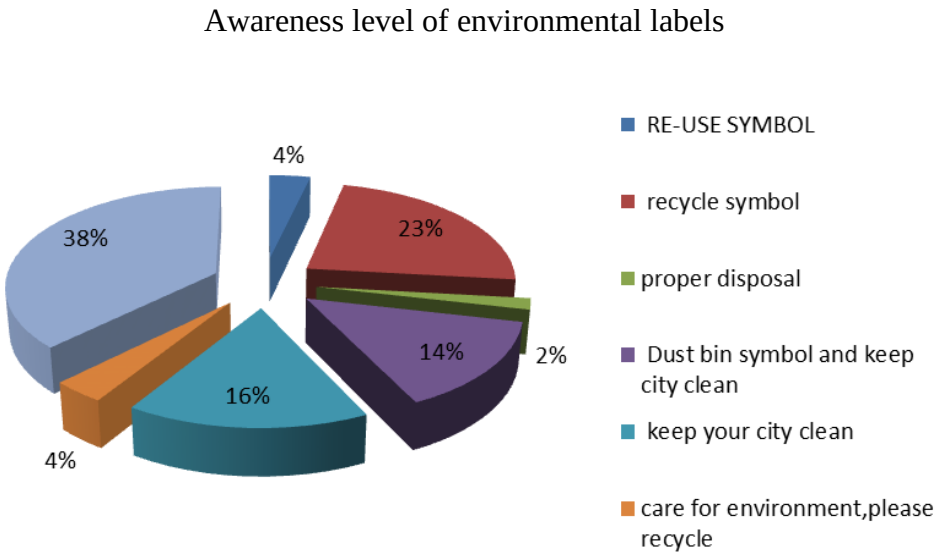


Figure 10: Responses on understanding environmental labels used

4.4 Respondents' Awareness in Relation to Socio-Economic Characteristics

In order to understand peoples' awareness towards environmental information on bottle mineral water, a test was done. The hypothesis concerned was the influence of socio-economic attributes on awareness of environmental information on bottle mineral water. For this hypothesis a binary logistic regression analysis was used;

$$\text{Logit}(Y) = \ln[p/(1-p)] = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 \ldots \quad (2)$$

Let *Y* be a binary response variable (Aware and Unaware of ecolabels)

Where P is the probability of the event of interest, α is the *Y* intercepts, β_n are regression coefficients, and X_n are a set of predictors. α and βs are typically estimated by the maximum likelihood (ML) method, which is preferred over the weighted least squares approach by several authors, such as Peng *et al*. 2002 and Schlesselman (1982). The ML method is designed to maximize the likelihood of reproducing the data given the parameter estimates. Data are entered into the analysis as 0 or 1 coding for the dichotomous outcome, continuous values for continuous predictors, and dummy codings (e.g., 0 or 1) for categorical predictors.

The null hypothesis underlying the overall model states that all βs equal zero. A rejection of this null hypothesis implies that at least one β does not equal zero in the population, which means that the binary logistic regression equation predicts the probability of the outcome better than the mean of the dependent variable *Y*. The interpretation of results is rendered using the odds ratio for both categorical and continuous predictors.

Hypothesis

H_0: $\beta_1 = \beta_2 = \ldots. \beta_p = 0$ (society's socio-economic factors have no effects on awareness)

H_a: At least one of the $\beta_i \neq 0$ (society's socio-economic have effects on awareness)

The model made focus on awareness of environmental information on mineral bottle water and the variables used in the model are presented in Table 8.Where by

Table 8: **Variables used in regression model**

Variable	Description
Y	People's awareness on environmental information (0=aware, 1=unaware)
X_1	Sex of the respondents (0=male, 1=female)
X_2	Age of respondents
X_3	Occupation of the respondents (0=working, 1= business, 2=student)
X_4	Education of the respondents (0=illiterate, 1=primary, 2=secondary, 3=college)

Table 9: **Binary logistic regression analysis for awareness of environmental information on mineral bottled water (n=150)**

Awareness of environmental information on mineral bottled water								
Predictors	β	SE β	Wald's χ^2	df	P	Exp(β)	95% C.I of Exp (β) lower	Upper
Constant	-3.972	1.362	8.504	1	0.004**	0.019		
X_1	-0.671	0.453	2.194	1	0.139^{NS}	0.511	0.210	1.242
X_2	0.893	0.402	4.928	1	0.026*	2.441	1.110	5.369
X_3	0.474	0.339	1.947	1	0.163^{NS}	1.606	0.826	3.123
X_4	0.318	0.274	1.348	1	0.246^{NS}	1.374	0.802	2.350

Tests	χ^2	df	p
Model evaluation (overall):			
Likelihood ratio test	144.170	4	0.023
Goodness-of-fit test			
H-L statistic	5.579	7	0.590

* Statistically significant at $\alpha = 0.05$
** Statistically significant at $\alpha = 0.01$
^{NS} Not statistically significant

Note: PAC: Null model = model with variable = ; cox & snell R^2: 0.073 Negelkerke R^2; 0.113; sample size used in the analysis (n) = 150

The findings indicate that the model with descriptors (PAC:) performs better than the null model (PAC:). The results further shows that the model performance is statistically significant (χ^2 (4d.f) = 144.17, $p<0.05$). The inferential test for goodness-of-fit, the

Hosmer & Lemeshow (H-L) statistic, indicates that the model fits the data well (χ^2 (7d.f) = 5.579, p>0.05). The descriptive measures of goodness-for-fit also supports that the model fits the data well (Cox & Snell R^2 = 0.073 & Negelkerke R^2 = 0.113). The descriptor which was statistically significant determinants was: *Age (p ~ 0.01)*: whereby people who are young are more awareness of environmental information on mineral bottle water, but as they grow older they start getting unaware.This implies that people who are young are more interested in labels than older persons, as they are more informed about and conscious of labeling. According to Shen (2012) people's age suggesting that younger people in China are willing to pay more for eco-labeled products and the magnitude of this parameter implies that as consumers get one year older, they are less willing to pay 0.1% of the price for those eco-labeled products.

Thus, we can conclude that as consumers' age increases, the stronger the correlation between the label unawareness. Berkowitz and Lutterman (1968, cited in Laroche *et al.*, 2001), as well as Anderson and Cunningham (1972 cited in Laroche *et al.*, 2001), were pioneers in studying the profile of socially responsible consumers. Overall, their combined results represent a highly socially conscious person are female, pre-middle aged, with a high level of education (finished high school) and above average socioeconomic status.

4.5 Challenges to Consumers Understanding Environmental Labels

This study discovered that consumers have challenges when it comes to understanding environmental message on bottled mineral water and beverages and hence fail to take correct actions towards final disposal of the products wastes. If one has low level of education, it is obvious that he/she cannot understand language used on labels. Tanzania

use Swahili as a national language, but all the surveyed product labels are in English (100%). For example, all beverages produced by Azam and Coca cola Company have their labels in English. In the society, people can have secondary and primary level education and cannot understand English unless they have taken an initiative of learning it, thus about 80.7% of respondents combined lied on secondary, primary and illiterate level of education (Table 6) which means the understanding of English eco labels to the society is very minimal.

Misunderstanding the meaning of the certification could severely hinder the consumer's decision to accept and adopt the green product. The confusion related to the eco-label could deter the consumer from liking and later adopting the eco-label (Peattie and Crane, 2005). Klein and Greyser (1989) found out that information in food labels is difficult to understand and that a large proportion of their experimental groups did not perceive the intended information. Also Levy *et al*. (1985) and Burton and Biswas (1993) have pointed out the importance of displaying complete information in simple statements that are easy to read.

Also about 60% of respondents complained about the symbols that are kept without being defined such as Mobius loop which indicates recycle. This means that apart from putting an environmental symbol on the product label there is a need to put a message to define it as it is common for a dust-bin with someone putting waste in a bin which is always elaborated by the words "Keep the country clean".

Carelessness of reading labels during buying has been a limitation for people to consider environmental information on beverages and mineral water. About 80% said they do not have time to read what has been written on the label, this shows that people ignore the

presence of information on product labels. Table 7 has shown that about 70% of respondents which is majority of people in the sample size were of business class and following the working class 24.7%, these kind of people tend to be very busy and have no time to read during the day and are the majority who buy mineral drinking water and beverages to quench their thirst hence awareness of these ecolabels to these consumer can be highly helpful in order to make sure there will be no time waste in taking much time reading and understanding Eco labels. Being student, one has more time to be organized freely than full-time employed people have. This seems to facilitate the tendency of being attentive towards eco-labelling information. The "student effect" as an effect of more free time seems to be somewhat depressed because students frequently are singles, live in big cities and are of younger age (Papastefanou, 2001).

4.6 Criteria for Consumers Buying Bottled Mineral Water and Beverages

The criteria people use in buying beverages and bottled mineral water were the flavour, taste, price, and popularity as shown in (Fig.11 and 12). In buying bottled mineral water about 42% of respondents said the volume of bottled water is what counts no matter how popular it is. Also about 39% of respondents consider cost of the bottled mineral water like majority do buy Uhai drinking water since it has a low cost compared to Kilimanjaro drinking water. There were few (11%) who considered the quality of water; they had an idea that some companies do produce quality drinking water like Kilimanjaro drinking water. With regard to environmental information only 1.7% responded that they consider the environmental information placed on the bottled such us recycle and keep your country clean since they believe that the company that produced is conscious on environment.

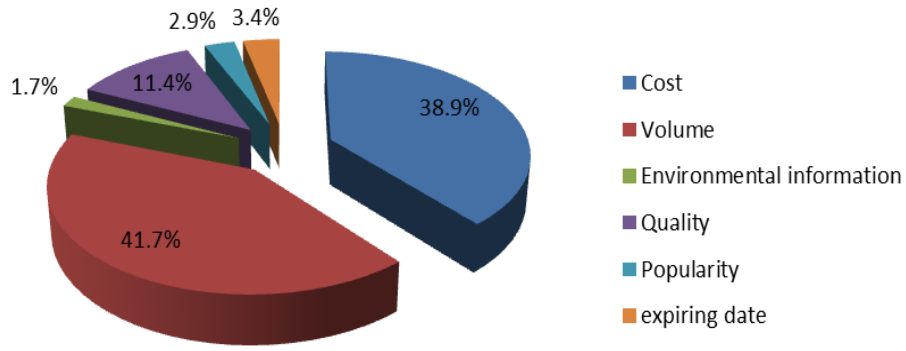


Figure 11: Responses on criteria for buying bottled mineral water

The study also shows that in buying beverages, almost 64% of respondents pointed out that the taste or flavor of beverages is what makes them buy so much (Fig. 12). They do consider how it tastes only since beverages are for refreshment. About 12 % considers the cost of it due to their financial status. These results show that environmental information is not their main concern at all. There has been little education on environment and mostly focus on the improper disposal of wastes while there should be education on the environmental information before proper disposal.

In other developed counties such as Sweden, many people are more conscious about what environmental information is given out on the labels of the products especially when buying the recycled products such as water (Lefebvre and Muñoz, 2011). Many studies have identified segments of consumers that are highly involved in protecting the environment (Dunlap, 2002) or in more specific environmental and/or ethical issues related to consumption (de Ferran and Grunert, 2007; Vining and Ebreo, 1990). Based on this evidence, it is usually assumed that consumers are highly involved in the purchase of Eco labelled products (Zanoli and Naspetti, 2002). This shows that our country still needs

education on environmental awareness and sustainable consumption and this should be more emphasize to business and working class and students who are more in a position of buying beverages and drinking water.

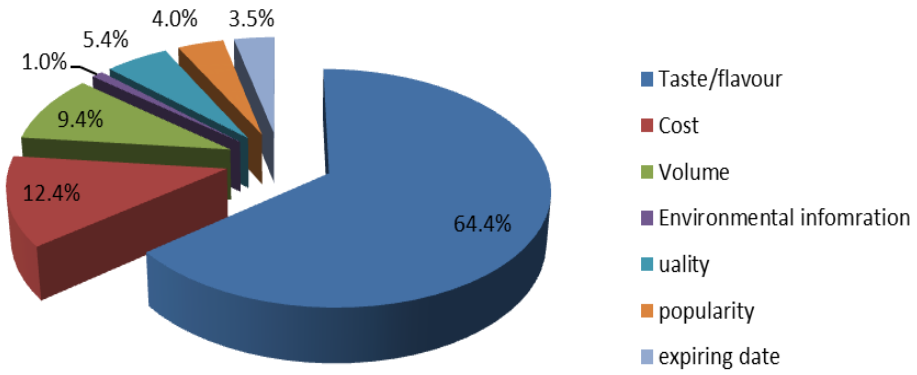


Figure 12: Responses on criteria for buying beverages

4.7 Consideration of Information Provision during Disposal

The study indicates only 12% of the people with knowledge and understanding of environmental information in the bottled water and beverages do consider environmental information when disposing the bottles after use (Table 10). Majority of people (88%) do not make use of that when disposing products. According to Hyandye *et al.,* 2010, concluded that, despite the fact that the environmental messages like “Recycle”, symbol of dust bin appear on many product labels and many respondents know their correct meaning, majority of consumers opt for “Doing Nothing” strategy on the products wastes instead of taking right environmental friendly actions to dispose the wastes as directed by the environmental symbols/messages on the products. This is the mentality of people that needs to be taken into account from children who are growing up to older people.

Moreover, disposal of wastes needs to start at home, thus families (elders) need to start teaching their children. Smallbone (2005) reported that, it can be assumed that consumers with high pro-environmental knowledge and information, indicative of environmental awareness and values, are more likely to show environmental friendliness in their purchase and disposal decisions.

Table 10: Responses on consideration of information during disposal of products

Response	Frequency	Percent
Yes	18	12.0
No	132	88.0
Total	150	100

4.8 Wholesalers and Retailers Awareness to Provision of Information

The study showed that 33 % of the shop keepers in the shops interviewed were aware of the existence of the environmental labels on the bottled minerals water and beverages (Fig. 13). However about 67% were not aware of the presence of environmental messages on the products present in their shops (Fig. 13). This indicated that people do sell products without being conscious with the label that is present on the product.

About 90% of the shop keepers mentioned that, customers only look for the quality and popularity of the beverage and bottled mineral water they want to buy. They do not even look at the expiring dates. This showed that there is little awareness on environmental information. Wholesalers and retailers want to increase their income thus buying products that are more popular to people is their own priority like Uhai drinking water is commonly used since it is cheaper compared to Kilimanjaro drinking water. Thus, when they buy their stock, they will take the most profiting product rather that considering

environmental information placed on the products and that is because they have little knowledge of it.

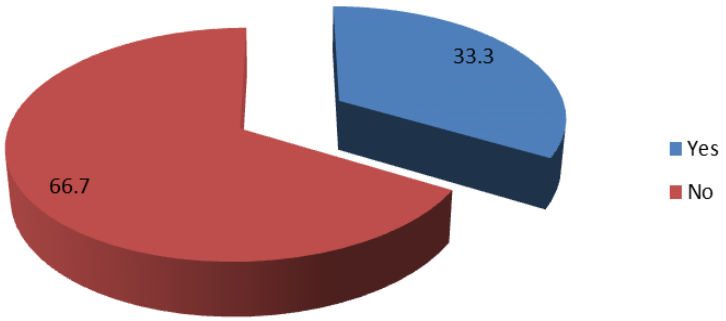


Figure 13: Responses on wholesalers and retailers awareness on environmental information on products (n=20)

4.9 Institution Enforcement on Provision of Information

This study discovered that National Environmental Management Council (NEMC), Tanzania Bureau of Standards (TBS) and Tanzania Food and Drug Authority (TFDA) have been involved in enforcing some of the laws and regulations with regards to production of goods in Tanzania. Thus, production of bottled mineral water and beverages are inspected by these institutions.

In Tanzania, National Environmental Council is the body that is used to enforce and comply with the environmental laws and regulations in Tanzania. There is a department dealing with compliance and enforcement of laws that are stipulated in EMA 2004 and NEP 1997. This guiding law and act have been used in Tanzania so as to comply with environmental management. The use of information provision has been mentioned in these documents but NEMC as an enforcer, has not yet started the enforcement to those companies that need to abide to this type of economic instrument. The environmental

messages that are present on the labels of bottled mineral water and beverages have been placed by the companies just to capture their market share and to comply with international certification bodies such as ISO.

Tanzania Bureau of Standards (TBS) has standards that include product standards, test methods, codes of practice and codes of hygiene. The standards cover various sectors of the economy including food and agriculture, chemicals, textiles and leather, engineering, environment and general techniques. Whenever a standard covers a product that can affect health, safety, the environment or with significant impact to the national economy, such a standard is published as a compulsory standard. All other standards are voluntary.

Tanzania Bureau of Standards has been involved in implementing the Environmental labels and declarations as per international standards. These are International Standards Environmental labels and declarations that are used in Tanzania for companies that want to implement information provision to their products-Type I (ISO 14024) in Tanzania is termed as TZS 1525:2012, Type II (ISO 14021) – TZS 1524:2012, Type III (ISO 14025)-TZS 1526:2012 and ISO 14020 – TZS 1523:2012.

It was established that these eco labels have been adopted in Tanzania and any company is entitled to buy these certificates but it is not compulsory. The requirements for these standards have been adopted from International standards and once a company buys these documents, they should follow the requirements so as to use the environmental standards.
Another institute that was consulted was Tanzania Food and Drug Authority (TFDA), which is involved in registering food, drugs and cosmetics that are sold in Tanzania, whether they are manufactured in or outside Tanzania. It was revealed that eco-labelling is not among the registration criteria for the bottled water and beverages produced in

Tanzania. Some of the products registered have the environmental labels and some do not have but that is not their concern as long as the product has reached their requirements.

All these bodies can play a very good role in increasing awareness of the role of eco labelling on products and start enforcing the laws that have been put in place in relation to ecolabeling. The consumers' environmental consciousness only needs positive reinforcement. Such increase in environmental awareness and ecological consciousness can be achieved by governments and nongovernmental organizations (NGOs) outlining environmental topics in educational campaigns. More public education aimed at generating more positive environmental attitudes appears warranted in creating a "greener" mind-set (Pooley and O'Connor, 2000). When governments realize that reaching the minds of today's consumers is as important as setting up rules and regulations for companies, a positive effect on the environment may result.

CHAPTER FIVE

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The general findings showed that in spite of availability of environmental information provision; many people have no sufficient knowledge of these information provided on the bottled mineral water and beverages. Most of the respondents in this study buy plastic bottled mineral water or beverages for their daily use.

Almost all of the plastic bottled mineral water and beverages have environmental information labels. Majority of products have environmental labels in phrases or in a symbol sign. Labels on bottled mineral water and beverages were Mobius loop, tidyman, Symbol with phrase "Please Recycle", Recycle Now symbol and phrases like "Keep your country/city clean" and "Put it in a dust bin". There were few beverages that had no environmental labels that mean producers have no idea of the existence of ecolabels.

Awareness of these environmental information labels was very low about 20%, indicating that only this percentage of people know the importance and they are conscious of environmental information. This leaves majority of people about 80% not aware of environmental information labels which explain the fact that there is too much littering of plastic bottles in the streets of Kinondoni Municipality. Of the small percentage of people with awareness of environmental information in beverages and bottled water, 98.3% do not really consider it during purchasing of these products.

Moreover, Authorities like NEMC, TFDA and TBS currently do not formulate or enforce laws relating to use of environmental information by the manufacturers, wholesalers and final consumers. The information obtained from these bodies showed that the regulations and policy have been formed but there is still poor implementation and enforcement. If there were laws and bylaws specifically on the use of ecolabels to all the products manufactured in Tanzania, the enforcement could have been a bit easier especially since we have TBS and TFDA who are more involved in registration of manufactured goods.

Furthermore, information provided on the labels is in English language which has created problems to majority of people since the national language is Swahili. This challenge has caused consumers to fail to understand what symbols mean and at the end, consumers do not follow the instructions on how to dispose a used product and manage environment.

Lastly, lack of enough consumers' and users' awareness on ecolabels, inadequate enforcement of laws and regulations contribute highly to the current situation of littering of these bottles on the streets without any proper procedure that is, use of dustbins, collection for recycling.

5.2 Recommendations

From the study of assessing the roles of information provision on bottled mineral water and beverages in environmental management in Kinondoni municipality the following recommendations are laid down;

i. Awareness of ecolabels to companies since some manufacturers of the surveyed products did not place ecolabels on their labels, thus education should start from the manufacturers and there should be laws on the use of ecolabels'. This will be a

win-win strategy since ecolabels to eco-friendly society, increase the market of those products and the environment will be then protected.

ii. Education on awareness of environmental labelling thus companies and government bodies should create programmes on radio and televisions. People should be educated on the environmental labels that are found on the product labels and outlining environmental topics in educational campaigns.

iii. Language of labels should suit the society; All the eco-labels observed during the survey of this research are in English language and not all people in Tanzania understand English. They should be translated to Swahili or be elaborated well through advertisements .As it has been seen in the research results that majority of people have secondary and primary level of education, hence there should be eco labels that suit the society at hand.

iv. Consumers need to understand the labels thus apart from putting an environmental symbol on the product label there is a need to put a message to define it as it is common for a dust-bin with someone putting waste in a bin which is always elaborated by the words “Keep the country clean.

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APPENDICES

Appendix 1: Questionnaire for Consumers

1. Sex (01) male; (02) female.
2. Age- (01) 0-18 (02) 19-35 (03) 36-65 (04) above 65
3. Occupation: 1:working 2:Bussness 3:student 4:none
4. Education level (01) illiterate (02) primary (03) secondary (04) college (05) other specify
5. Do you normally buy bottled mineral water and beverages for you or your family?

   1 YES ……2 NO
6. Do you normally check what is written on the labels of the bottled mineral water and beverages? 1 YES ……2 NO
7. Do you know that plastic bottled mineral water and beverages contains environmental information? 1Yes or 2 No

   If YES:

   Re-use symbol 1 YES ……2 NO

   Recycle symbol 1 YES ……2 NO

   Proper disposal 1 YES ……2 NO

   Dust bin symbol and Keep City clean 1 YES ……2 NO

   Keep Your City Clean 1 YES ……2 NO

   Keep Environment Clean 1 YES ……2 NO

   Care for Your Environment, Please recycle 1 YES ……2 NO

   Dust bin symbol only 1 YES ……2 NO

   No environmental message 1 YES ……2 NO

8. Do you know the meaning of those messages placed on the bottled mineral water and beverages that you normally consume?

   Re-use symbol 1 YES ……2 NO

   Recycle symbol 1 YES ……2 NO

   Proper disposal 1 YES ……2 NO

   Dust bin symbol and Keep City clean 1 YES ……2 NO

   Keep Your City Clean 1 YES ……2 NO

   Keep Environment Clean 1 YES ……2 NO

   Care for Your Environment, Please recycle 1 YES ……2 NO

   Dust bin symbol only 1 YES ……2 NO

9. In purchasing bottled mineral water and beverages, do you consider the environmental messages placed on the bottle? Yes or no

   i. If yes, why do you consider that?

   ii. If no, why don't you consider?

10. What is your criterion in buying bottled mineral water and beverages that you consume?

    Cost 1 YES ……2 NO

    Volume 1 YES ……2 NO

    Environmental information 1 YES ……2 NO

    Quality 1 YES ……2 NO

    Popularity 1 YES ……2 NO

    Expiring date 1 YES ……2 NO

11. In disposing of the empty bottles, do you give consideration on the information given on the label? 1 YES ……2 NO

12. What criteria do you use when purchasing those beverages?

    Taste/Flavour 1 YES ……2 NO

Cost 1 YES ……2 NO

Volume 1 YES ……2 NO

Environmental information 1 YES ……2 NO

Quality 1 YES ……2 NO

Populatity 1 YES ……2 NO

Expiring dates 1 YES ……2 NO

Appendix 2: Questionnaire for Wholesalers and retailers

1. Sex (01) male; (02) female.
2. Age- (01) 0-18 (02) 19-35 (03) 36-65 (04) above 65
3. Education level (01) illiterate (02) primary (03) secondary (04) collage (05) other specify
4. Type of Business…….
5. Business tenure……
6. Types of plastic bottled beverages and bottled mineral water sold in the shop

   JUICE 1

   SODA 2

   KILIMANJARO DRINKING WATER 3

   UHAI DRINKING WATER 4

   MAISHA DRINKING WATER 5

   JUICE, SODA, KILIMANJARO, UHAI, MAISHA 6
7. Do you there are environmental information provided on the bottles of beverages and drinking water?

   1 YES 2 NO
8. Do you understand anything concerning environmental information which are provided on the bottled mineral water and beverages that you are selling in the shop?

   1 YES ……2 NO
9. Do you know the importance of environmental messages that are placed on plastic bottled mineral water and beverages labels that you are selling in the shop?

   1 YES ……2 NO

10. When you purchase bottled mineral water and beverages from the manufacturers, do you consider the presence of environmental information on them?

    1 YES…….. 2 NO

    If YES, Which environmental information do you consider? If NO, What do you normally consider?

11. Do you inform your customers the presence and meaning of environmental information before they buy bottled mineral water and beverages?

    1 YES……..2 NO

    If YES, what means are you using to inform them? …….

12. Do the information provided on the products enough for consumers to be aware and be conscious with environmental issues with regard to bottled mineral water and beverages?

    1 YES ….. 2 NO

    If NO, What additional information do you think manufactures need to put on labels for customers to be more conscious with environmental management of bottled mineral water and beverages? ……

13. Have you ever received any customers who are buying bottled mineral water and beverages by considering the environmental messages provided on the bottles?

    1 YES …..2 No

    i. If YES, Approximately how many?

    ii. If No, what do you think could be the reasons?

14. Have you received questions from customers on environmental information provided on the products? Yes or No

15. Have you received questions from customers as to why environmental information is not provided on the products? Yes or No

Appendix 3: Checklist for National Environmental Management Council (NEMC)

1. What is the responsibility of your organization with regard to information provision for environmental management?
2. How do you implement those roles?
   a) What are the specific laws that guide you in the implementations?
   b) How do you assess the effectiveness of the use of information provision on products with regards to environmental management?
3. What problems /obstacles do you face in enforcing the use of information provision in environmental management?
4. What benefits do you think the community will get with regard to the use of information provision for environmental management?
5. The problem of plastic bottles littering, what role is your organization playing on reduction of the problem?
6. Better options for the community awareness on the use of information provision for environmental management.
7. For those products registered to be sold in Tanzania, is information provision one of the requirements for registration?
8. What type of information provision does the council make manufacturers give on the products they produce?
9. What is your opinion on enforcement of information provision when it comes to the littering of plastic bottles on the streets?
10. What environmental messages would you wish to be made aware to consumers in order to provide information which will help in environmental management?

Appendix 4: Checklist for Tanzania Food and Drug Authority

1. Product specifications are compulsory when registering water and beverages, is environmental information part of the requirement?
2. Opinions on administration of information provision on the products manufactured in Tanzania.
3. Opinions/Challenges on enforcement and compliance of information provision.
4. What type of information provision does your organization make manufacturers give on the products they produce?
5. Do you think, it is necessary for such information to be known to the public? YES or NO

   If yes, Why?
6. What environmental messages would you wish to be made aware to consumers in order to provide information which will help in environmental management?
7. Better options for the community awareness on the use of information provision for environmental management.
8. For those products registered to be sold in Tanzania, is information provision one of the requirements for registration?
9. What type of information provision does the council make manufacturers give on the products they produce?

Appendix 5: Checklist for Tanzania Bureau of Standards (TBS)

1. In Compulsory Tanzania standards as of 2009 in water and beverages, is information provision included?
2. Is Environmental certification included in registration of products?
3. Opinions on administration of information provision on the products manufactured in Tanzania.
4. Opinions/Challenges on enforcement and compliance of information provision.
5. In your own views, do you think information provided on the bottled mineral water is sufficient for community awareness on environmental conservation? Yes or No
   If No, why do you think so?
6. What should be done to improve the awareness of environmental information provision to consumers in order to be more conscious with non-environmental goods?
7. What environmental messages would you wish to be made aware to consumers in order to provide information which will help in environmental management?