AN ASSESSMENT OF CONSUMERS' PERCEPTION OF ECO-LABELS WITHIN NAIROBI

BY:

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DECLARATION

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

Signed…… Date…….

Ogunyo Miriam Adero Awino

Declaration by supervisors

This research has been submitted for examination with our approval as university supervisors

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DEDICATION

This work is dedicated to my parents Mr. and Mrs. Ochieng'; for their faith in me and their belief in the value of a good education**.**

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LIST OF ACRONYMS AND ABBREVIATIONS

CBD Central Business District
CCIC Coalition for Consumer Information on Cosmetics
CFC Chloroflourocarbons
EMCA Environmental Management and Control Act
EPD Environmental Product Declaration
EPD Environmental Product Declarations
FLO CERT Fairtrade Labeling Organizations Certification
FLO Fair-trade Labeling Organizations
FLP Flower Label Program
FSC Forest Stewardship Council
GMO Genetically Modified Organism
ICT Information Communication Technologies
IEC International Electrotechnical Commission
ISO International Standards Organization
KEBS Kenya Bureau of Standards
KNBS Kenya National Bureau of Statistics
LCA Life Cycle Approach
LEAF Linking Environment And Farming
LEED Leadership In Energy And Environmental Design
NEMA National Environment Management Authority
NGO Non-Governmental Organization
TCO Tjänstemännens Centralorganisation

OPERATIONAL DEFINITIONS

Ecolabel- A voluntary trademark that is awarded to products deemed to be less harmful to the environment than other products within the same category.

Environmentally friendly- This term refers to goods and services, laws, guidelines and policies claimed to inflict reduced, minimal, or no harm at all, upon ecosystems or the environment.

Green products – This term refers to products that have less of an impact on the environment or do not affect human health. It may have qualities that will protect the environment or has replaced artificial ingredients with natural ingredients.

ABSTRACT

The present study assesses the decision making process of the consumer amidst efforts by a number of companies to adopt eco friendly value addition in Kenya as part of concerted initiatives towards environmentally sustainable consumption. A growing number of consumers are beginning to bias their demand towards environmentally safe products, and in this respect companies are adopting ecolabels on their products to satisfy this consumer interest. Ecolabel, being a communication tool, is used to inform consumers that a product is more environmentally friendly relative to other products in the same category.

The study aimed at assessing the importance attached to the environment as a criterion in purchasing decisions and assessing consumer recognition of ecolabels. The study also sought to assess the impact of selected consumer characteristics such as age, sex, and education on consumer recognition of eco-labels. In order to achieve these objectives, the study has attempted to determine consumers' response to ecolabels using selected deodorant products as a case study. Deodorants products were chosen as a case study because of the variety of ecolabels found on their packaging. The differentiation in shoppers profiles was based upon differences in house rent prices in the three locations. The study was carried out within Nairobi in three locations in order to make comparisons. Tuskys Eastlands was chosen to represent a profile of shoppers in Eastlands. Nakumatt Westgate was chosen to give a profile of shoppers in Westlands, and Tuskys Imara was chosen to give a cross section of shoppers and to represent centrality.

Extensive literature was reviewed including an overview of the relationship between environmental awareness of ecolabels and sustainable consumption, NEMA directives on promoting a green economy, and typology of ecolabels presently in use in Kenya. Previous literature has examined the impact of consumers demographic characteristics on their decision to purchase environmentally friendly goods. There are no studies examining the influence of these characteristic on ecolabel recognition as in this study. Data gathering techniques involved questionnaire being filled by randomly sampled consumers entering the selected supermarkets. A total of 138 (N=138) respondents were sampled; 60 respondents from Tuskys Imara, 48 from

Tuskys Eastlands, and 30 from Nakumatt Westgate. The key variables that were used for analysis were age, sex, and education of the respondents, and differences based on geographical location of the supermarket. The results revealed that there was a high level of environmental awareness when buying deodorants in all three locations. Environment appeared to be an important criterion in purchasing decisions. Using a chi square test at (alpha=0.05) on age, sex, education and geographical location there was no significant difference in consumer recognition of labels. All consumer characteristics do not distinguish consumer recognition of ecolabels. The Spearman's rank correlation co-efficient test revealed a high positive co-efficient of correlation (rs = .978) between environmental consideration when shopping and recognition of labels. Consumers with a higher level of environmental consideration are likely to recognize ecolabels more often when buying than those with low environmental consideration. It was established that brand and price were often highly prioritized, at 77.2 % and 72.8% respectively as compared to environmental impact of the content and packaging at 53.7% and 52.9% respectively when buying deodorant. 69% of the respondents were influenced by label information in their buying decisions hence this proportion would choose to buy or not depending on the label information. Only 42.7% of the respondents reported to trust environmental label information on deodorants while 88.4% of the respondents reported that it was important that manufacturers are inspected for claims of environmentally responsible production.

The study recommends a comprehensive eco certification scheme in consultation with business industry and relevant Non Governmental Organizations (NGO). This would greatly benefit both corporate and the individual consumer. The study also recommends amplification of environmental friendly aspects of products in advertising and packaging. This study will be of interest to companies hoping to adopt ecolabeling schemes as part of their marketing strategy. It gives an insight to Nairobi consumers' environmental consideration. This research is important for environmental management because it provides a depiction of the importance attached to environment as a criterion in purchasing decisions. This is useful in making policies towards sustainable consumption.

CHAPTER 1 : INTRODUCTION

1.1 BACKGROUND TO THE STUDY PROBLEM

In the last few decades there has been rising concern over the number of environmental problems such as global warming, pollution of resources, ozone depletion, natural resource destruction, and socio-economic inequalities. These problems have to a certain extent been attributed to over consumption of natural resources (Tanner & Kast, 2003). Working on the assumption that a very significant proportion of global environmental degradation is directly attributed to what may be legitimately called overconsumption in Northern countries, (Hannis,1998) it may be necessary to fight environmental degradation from the consumers end. Williams (2004) gives a grim prediction of current consumption patterns;

> "Global economy in its current form, leads to its own detriment. It engages short-term thinking, a rape and pillage tendency, without recognition of the finite limits of the global ecology."

A working solution would require changes in human behaviour and cultural practices to reduce consumption, along with the development of cleaner and more efficient technologies (Tanner & Kast, 2003). Therefore less consumption and less waste generated from the production process would ultimately lead to less environmental degradation; a realisation that led to development of the term sustainable consumption. Sustainable consumption is defined as the use of services and related products which respond to basic needs and bring a better quality of life while minimising the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life-cycle so as not to jeopardise the needs of future generations (Fuchs & Lorek, 2005). The World Business Council for Sustainable Development recognizes the leadership role of businesses in developing sustainable levels of consumption through partnership with consumers, government and other stakeholders. A major element of today's sustainable consumption discourse is to encourage consumers to play their roles as active market actors and to take responsibility to buy green or more sustainable products (Fuchs & Lorek, 2005). These

"friendlier" products are those that are certified by third party organizations as having met specific standards and criteria i.e. those with eco-labels.

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.The Global Ecolabeling network defines eco-labeling as a voluntary approach to environmental performance certification that is practiced around the world. An "eco-label" identifies a product that meets specified performance criteria or standards. It is important for consumers using eco-labels to guide their purchase of a particular good or service to understand the criteria of the label and whether it addresses their specific concerns. Companies have discovered that consumers will buy products, or avoid their purchase, based upon environmental considerations (Lampe & Gazda, 2000)

1.2 STATEMENT OF THE RESEARCH PROBLEM

Kenya is working towards a green economy which is a system of economic activities related to the production, distribution and consumption of goods and services that result in improved human well-being over the long term, while not exposing future generations to significant environmental risks and ecological scarcities (UNEP, 2010). National Environmental Management Authority (NEMA) directives on promoting a green economy call for action from policy makers, industry players and the individual consumer to be mindful of consumption patterns. Businesses are also striving towards environmentally sustainable production and making efforts to be perceived as such. Kenya Bureau of Standards (KEBS) certifies companies to ISO 14000 series of environmental management standards. There is therefore a need to assess the position of the consumer amidst all these efforts.

Economies are driven by laws of demand and supply with the consumer interests driving production quantity, and lately quality. There is much speculation about branding of green products as the end result of a clean production system. Notably, a number of companies have adopted eco friendly value addition in Kenya. These include *Tetra Pak, Dura Coat,* and *Dune Packaging* and use labels to communicate this information. With sustainability becoming a requirement to survive in the Kenyan economy, there is a need to adopt environmentally friendly

technologies in production and a keen; outlook on the bottom line for the company. There is also a need to protect the consumer from 'privatization of the environment' (Sandilands, 1993) by this economy especially in the era of industrialization that the country is geared towards.

This can only be determined by investigating the consumer's perception of the 'environmentally friendly' product. Increased environmental awareness has created need for green products. This research study seeks to investigate the importance of ecolabels as environmental awareness tools in the urban market place. There is a need to establish which ecolabels are presently in use, the consumers' perception of them and their importance to 'green business' and sustainable consumption. This is because consumer environmental awareness ultimately affects business attitudes towards environmental management in the production process.

This research therefore seeks to answer the following questions:

1. What is the importance attached to environment as a criterion in purchasing decisions?
2. What are the differences in consumer recognition of ecolabels within different geographical locations
3. What eco-labels are currently present within the Kenyan market?
4. Do consumers in Kenya recognize the present ecolabels and what is the response to eco-labels by consumers in Kenya?
5. What are the impacts of various consumer characteristics e g age, sex, and education, on the consumers' recognition of ecolabels?
6. What is the relationship between environmental consideration when buying and recognition of ecolabels

1.3 OBJECTIVES

1.3.1 Overall objectives

The overall objectives of this study were:

1. To assess the importance attached to environment as a criterion in purchasing decisions

2. To assess differences in consumer recognition of ecolabels within different geographical locations.

1.3.2 Specific objectives

The specific objectives emanating from these two overall objectives were:

1. To identify the ecolabels currently present in the Kenyan market
2. To determine recognition of and response to the present ecolabels by consumers in Kenya
3. To assess the impact of various consumer characteristics e.g age, sex, and education on consumer recognition of eco-labels.
4. To establish the relationship between environmental consideration when buying and recognition of ecolabels

1.4 HYPOTHESES

H_{01} There is no significant relationship between environmental consideration in buying and consumer recognition of ecolabels.

H_{11} There is a significant relationship between environmental consideration in buying and consumer recognition of ecolabels on deodorants

H_{02} There is no significant difference in consumer recognition of labels within different geographical locations in the city

H_{12} There is a significant difference in consumer recognition of labels within different geographical locations in the city

H_{03}There is no relationship between consumer characteristics; age, sex, education and consumer recognition of ecolabels

H_{13} There is a relationship between consumer characteristics; age, sex, education and consumer response to ecolabels

1.5 JUSTIFICATION

Most ecolabels are predominantly adopted in the developed world. The first meeting of the Marrakech Taskforce on Cooperation with Africa, identified the development of an African Eco-labeling Scheme (Janisch, 2007) as a key opportunity for collaboration. There are presently a substantial number of ecolabels in use in Kenya which are mainly used for export targeting outside markets. The global market share for Environmentally Preferable Products has been consistently growing over the last decade and is expected to grow with an even faster rate. The global market for green marketing is projected to reach US$3.5 trillion by 2017 (GIA, 2011). It would be useful to investigate this global trend in the context of consumers in Kenya.

Environmental awareness is slowly becoming a mainstream concern in the region with government agency NEMA passing policies in support of environmental protection and giving directives towards a 'green economy'. There are presently a number of ecolabels in use thus there is need to investigate their relevance to the consumer. It is therefore important to investigate the ultimate decision maker; the consumer and whether the buying conscience is influenced by environmental awareness.

1.6 SCOPE

The research study was limited to Nairobi City. The study focused on ecolabels found on fast moving consumer goods sold within supermarkets. The ecolabels studied were those focusing on these aspects of environmental protection; ozone layer protection, reduction of greenhouse gases, waste minimization, protection of trees and sustainable trade practices. It did not include ecolabels on aspects of environmental protection such as marine life protection, and wildlife protection. The ecolabels identified were those readily observed on the packaging material of products. It did not focus on ecolabels that were on the product itself which would necessitate purchasing the product and examining it further. The study sought to examine consumers recognition of ecolabels, identify the ecolabels presently used in supermarkets in Nairobi, and the translation of environmental awareness into positive consumption patterns. It did not investigate the validity of the ecolabeling claims. The study investigated consumers recognition of ecolabels on goods found within the supermarkets. It did not investigate recognition of ecolabels on industrial goods not present within a supermarket e.g. construction equipment.

CHAPTER 2 : DESCRIPTION OF STUDY AREA

This chapter gives a description of the study area. It includes information on location, position, climate, physical features, human characteristics and a description of the retail stores.

2.1 LOCATION AND POSITION

Nairobi is located at latitude 1^0 18' South and longitude 36^0 50'East and about 140km south of the equator (UNEP, 2009). Nairobi (see map 1) occupies an area of about 700 km^2 at the south-eastern end of Kenya's agricultural heartland (UNEP, 2009).Nairobi lies at an altitude of 1680m above sea level ranging from 1500 to the east and 2300 to the west.

2.2 CLIMATE

Nairobi experiences a moderate climate. It has a temperate tropical climate. The sunniest and warmest parts of the year are from December to March. At this time temperatures average in the mid-twenties during the day. The mean maximum temperature for Nairobi is 24^0C and the daily temperature ranges from 12-26^0 C (CBS, 2003). It is usually dry and cold between July and August. The mean monthly relative humidity varies between 36 and 55 percent (GOK, 2008).

Nairobi has a mean annual rainfall of 1080mm falling in two seasons. The highest rainfall is received between March and May and the short rains occur from mid October to December. Due to her close proximity to the equator the timing of sunrise and sunset does not vary much all year through. The mean daily sunshine hours though, vary from 3.4 to 9.5 hours.

2.3 PHYSICAL FEATURES

The western part of the city is the highest, with a rugged topography, while the eastern side is lower and generally flat. The Nairobi, Ngong, and Mathare rivers traverse numerous neighborhoods. The indigenous Karura forest spreads over parts of northern Nairobi. Part of Ngong forest and Nairobi Arboretum are also key environmental features in the city. There are also green areas and parks such as Uhuru Park and Jamhuri Park. The Ngong hills are close by in the west, Mount Kenya rises further away in the north, and Mount Kilimanjaro emerges from the plains in Tanzania to the south-east. The Nairobi National Park is a significant feature within the city.

2.4 HUMAN CHARACTERISTICS

Nairobi is the capital and the largest city of Kenya. It is currently home to nearly three million people and represents about a quarter of Kenya's urban population. A growing economy and swelling population numbers from both in-migration and natural growth are continually increasing the city's size. A significant number of commuters from satellite towns such as Thika, Naivasha, Ngong, and Machakos come into Nairobi daily to work or bring goods and supplies. Daily commuters from such satellite towns contribute an estimated additional half-million people to the city's population (UNEP, 2009). In Nairobi, 86.3 per cent of the people aged between 15 and 64, are economically active (Mitullah, 2003)

Most of the up market suburbs are situated to the west and north central of Nairobi where most European settlers resided during colonial times. These include areas such as Karen, Langata, Lavington, Gigiri, Muthaiga while the lower income estates are located in the far Eastern Nairobi including estates such as Umoja, Kariorkor, Dandora among others. By independence, the Africans, who formed a major part of the population, lived in the eastern parts, while the Europeans and Asians lived in the western suburbs with access to better services. Presently, this position is reflected in terms of incomes as well as population densities. Those living in the western suburbs are generally the more affluent while the lower and middle-income elements of society dominate the eastern suburbs (Mitullah, 2003).

2.5 DESCRIPTION OF RETAIL STORES

2.5.1 Nakumatt Westgate

Nakumatt Westgate was opened in 2007. It caters for the neighboring up market residential areas; New Muthaiga, Kitusuru, Lavington, Kilimani, and Westlands (see map 1). Westlands is located 3.1 kilometres by road, northwest of the central business district of Nairobi. It is a high income residential area characterized by low population density (GOK, 2008). Nakumatt Westgate supermarket, was chosen as a study location in order to give a representation of shoppers in Westlands area of Nairobi.

2.5.2 Tuskys Eastlands

Tuskys Eastlands where the study was carried out is located within Buruburu shopping centre (see map 1) alongside other supermarket chains. It caters for the resident population of Buruburu

and other Eastlands estates. Buruburu is a large middle-class residential area in the Eastlands part of Nairobi, Kenya, situated in Makadara Division. The supermarket Tuskys Eastlands where the sample was drawn from was chosen in order to give a representation of shoppers from Eastlands.

2.5.3 Tuskys Imara

Tuskys Imara is located within Central Business District (see map 1). The CBD has a high population density of 32,537 persons per kilometer squared. It has a dynamic population with day time population increasing by more than 500,000 people (GOK, 2008).

The CBD was chosen as a study location due to its centrality within Nairobi city. Nairobi residents frequent the central business district for work, specific services or social reasons. This means that people with different characteristics in terms of age, sex, education, and residing in different locations converge here. Therefore, a sample drawn from the CBD would capture all these characteristics hence making it a good control location.

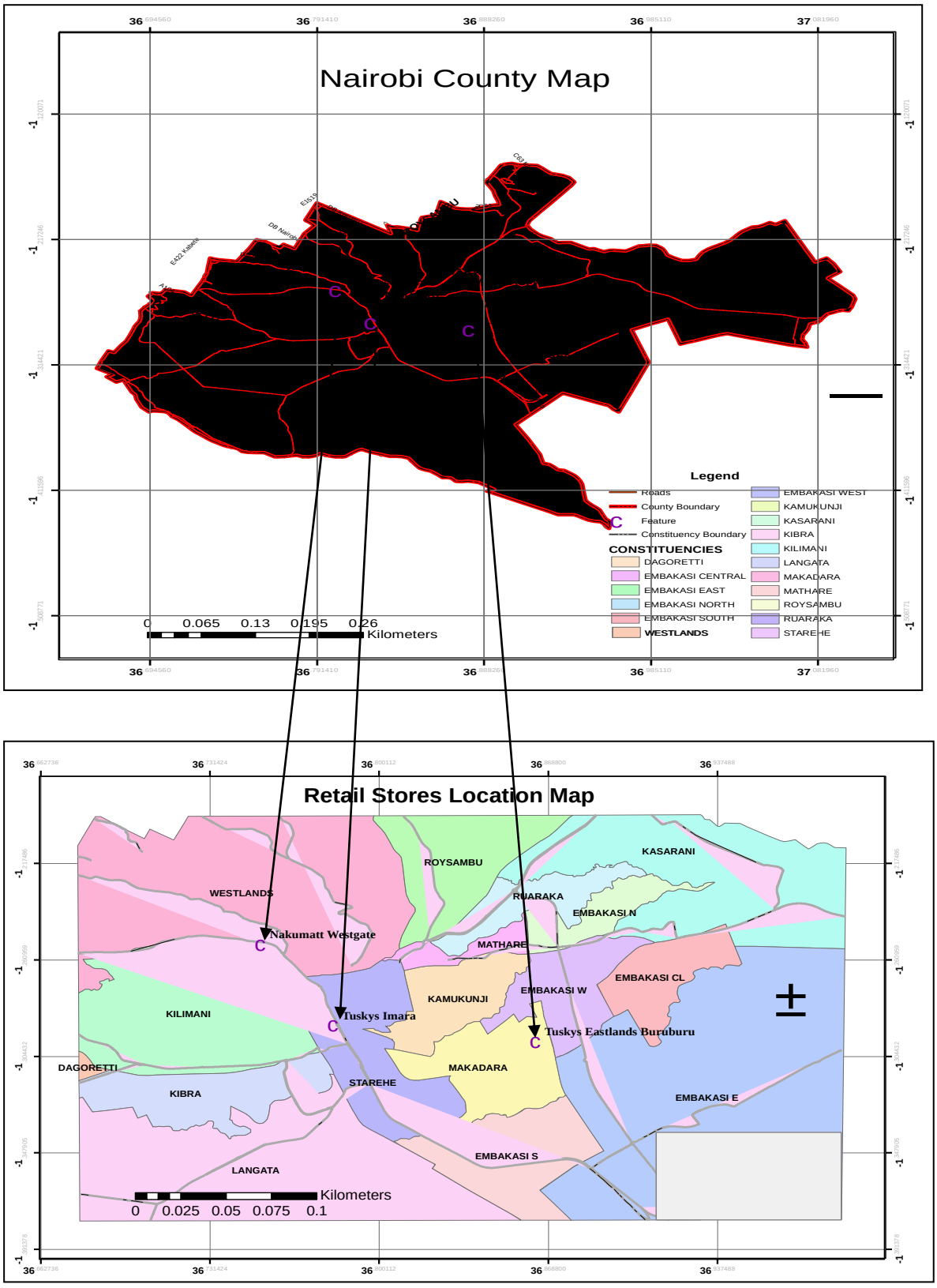
Table 2.1 Difference in shoppers profile between two retail stores: Tuskys Eastlands and Nakumatt Westgate

Retail supermarket	**Residential areas catered for**	**Monthly rent prices in Kshs. thousands**
Tusky's Eastlands	Buruburu, Umoja, Jericho,	Buruburu-25-35 Umoja 10-25 Jericho 4-8
Nakumatt Westgate	Westlands, Lavington. Muthaiga, Kilimani Spring Valley	Westlands mostly owner occupied Lavington.60-300 Muthaiga, generally over 200 Kilimani 90-120 Spring Valley generally over 150 (http://search.knightfrank.co.ke/ ,http://www.buyrentkenya.com/)

Source: Researcher (2013)

The two retail stores were chosen based on the difference in geographical location and the different profiles of shoppers who frequent them. This assumption was made based on the amount of disposable income as inferred from the amount of rent paid in these areas.

Map 1: Map of Nairobi County indicating study locations



Source: Kenya Institute of Surveying and Mapping (2013)

CHAPTER 3 : LITERATURE REVIEW

The literature reviewed includes an overview of the relationship between environmental awareness, ecolabels and sustainable consumption, NEMA directives on promoting a green economy, ecolabels presently in use in Kenya, categories and types of ecolabels, and a few empirical studies on ecolabels, consumer preferences, and reactions to them.

3.1 ENVIRONMENTAL AWARENESS ECOLABELS AND SUSTAINABLE CONSUMPTION

Sustainable consumption is defined as "The use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the needs of future generations."(UNCSD, 1994, p.10). It is widely assumed that sustainable consumption can be promoted by labeling products because a label establishes transparency regarding the social and environmental conditions of production (Gandenberger *et al.*, 2011). Ecolabels promote sustainability without compromising consumer freedom of choice while reducing consumers' information search costs. This makes it more likely that the information provided will actually be used (Thogersen *et al.*, 2010).

There is considerable discrepancy between citizens' environmental attitudes and their actual consumption decisions (Bjorner *et al*., 2004) some consumers exhibit highly positive attitudes that are not translated to their consumption patterns. Analysis of the determinants of sustainable consumption by various scholars (see Noblet, 2005; Alsmadia, 2008) are in agreement that awareness based on information alone is not sufficient to trigger changes in consumption habits. There is need for interaction and cooperation of all actors from production, consumption, and political decision making (Gandenberger *et al*., 2011). This is essential for fundamental change towards sustainable consumption. Consumer willingness often does not translate into sustainable purchasing behavior because of a variety of factors such as availability, affordability, convenience, product performance, conflicting priorities, skepticism and force of habit (WBCSD, 2008). Consumption is heavily influenced by lifestyle, social practices, and routines (Briceno and Stagl 2006), rather than the result of daily decision making based on perfect

information. Consumption therefore, needs to be fully understood because introducing an intervention measure such as environmental labeling may lead to changes in attitudes with no real change in behavior (Throne-Holst *et al.*, 2007). The transfer of responsibility for the social and environmental consequences of consumption to individual consumers ignores the fact that consumption is actually embedded in systems of provision in various forms. Thus, also in social, cultural, and institutional framework conditions, in many cases with global reach.

Non sustainable consumption cannot be transformed into sustainable consumption by consumers on their own, nor by companies alone, and not even by state regulation (Gandenberger *et al*., 2011) but perhaps by a combination of all three. Environmental labeling aims at promoting and supporting sustainable consumption by providing information to the consumer on whether products meet, or fail to meet, certain environmental standards (Koos, 2010). Ecolabeling schemes provide consumers with information about the environmental quality of individual products, at the point of purchase. This enables them to choose products that are acceptable from an environmental point of view (Thogersen *et al.*, 2009). This therefore ensures involvement of all actors in production and consumption cycle. Organizations can use eco-labels to inform purchasing decisions and procure environmentally friendly products. The enforcement of voluntary, participatory, market-based environmental labeling schemes may be potentially efficient economic instruments in order to preserve natural resources (Viscecchia, 2007).

3.2 NEMA DIRECTIVES ON PROMOTING GREEN ECONOMY

A green economy is a system of economic activities related to the production, distribution and consumption of goods and services that result in improved human well-being over the long term, while not exposing future generations to significant environmental risks and ecological scarcities (UNEP, 2010). Green economy encompasses all activities or actions that reduce carbon dioxide emissions to the atmosphere, green initiatives that ensure efficient use of natural resources for sustainable development, and creation of job opportunities to alleviate poverty. The transition to green economy places more emphasis on reducing carbon emissions and depending largely on clean renewable energies (NEMA, 2012). Green initiatives therefore comprise of activities, investments in cleaner production technologies and compliance to environmental regulations (NEMA, 2012). Specific efforts have been directed at forests and biodiversity conservation, the promotion of organic agricultural practices, the minimization and recycling of wastes, the

development of renewable energy and the promotion of sustainable production and consumption via National Cleaner Production Centres in the country (UNEP, 2013). The promotion of the green economy in Kenya has had a three pronged approach with various actors and roles. The actors are NEMA itself, corporate entities and individuals.

The National Environment Management Authority on its part has gazetted various regulations which support promotion of a green economy. These include Environmental (Impact Assessment and Audit) Regulations 2003, Waste Management Regulations, 2006 and The Environmental Management and Co-ordination (Conservation of Regulations, 2006). NEMA has also developed an award mechanism under the NEMA Green List Initiative whereby, the Authority awards the best institutions that work towards efficient use of resources which contributes towards a green economy (NEMA, 2012).

NEMA has developed directives for corporates in order to promote a green economy (NEMA, 2012). They include efforts such as embracing cleaner production technologies, substituting dangerous raw materials such as asbestos and also those contained in ozone depleting substances, and putting fixtures that conserve water and energy. With these measures in place, companies would be using natural resources more efficiently and reducing environmental degradation. NEMA similarly advices individuals to recycle, return e-waste to recycling companies, refuse excess plastic bags for wrapping items, and re-use to save on resources among other measures (NEMA, 2012). These directives are aimed at promoting a green economy through responsible consumption patterns at the individual level.

The underpinning element in the country's 'green economy' policy is to embrace environmental protection and sustainable resource use by all stakeholders. These include the policy makers NEMA, the corporate in production industry and all sectors of the economy, and the individual who is also the final consumer of the products of a green economy

3.3 TYPES OF ECOLABELS

An eco-label is a tag placed on a product or product packaging that certifies that it was produced in a sustainable, environmentally-friendly way. Such tags let consumers make informed choices about what they are buying, so that those who wish to can support responsible production (Viscecchia, 2007), thus creating a market mechanism that promotes sustainable production. The

global ecolabeling network defines an eco-label as a voluntary ‘trademark’ that is awarded to products deemed to be less harmful to the environment than other products within the same category.

This definition implies that a producer makes a voluntary application for an ecolabel. Therefore, a producer only applies for an ecolabel if it is of benefit to his business bottom line. If consumers' reaction to the new information is expected to be small or if the cost of providing that information is large, most producers will keep their competitive advantage without participating in the program and will not have to incur any labeling cost.

The definition also indicates that third party certification is needed to define the levels of environmental harm that will differentiate products within the same category. The third party certification defines the category groups and the relevant degree of environmental harm. Ecolabels can also take the form of advertisements and representations made by sales people to consumers (Bruce & Laroiya, 2007). Ecolabels are not subject to the World Trade Organization regulations that ban trade-restricting practices because they are a voluntary decision on the part of producers.

ISO 14000 classifies ecolabels into three broad categories Type I, Type II, and Type III, whereas other literature (Horne, 2009) include a fourth category “Type I like”. ISO 14000 categorization of ecolabels is as described below:

3.3.1 Type I

These are voluntary, multiple criteria-based third party programs that awards a license authorizing the use of environmental labels on products. (ISO,14024). Type I labels are third-party certified product labels that provide use of a logo (Horne, 2009). They provide qualitative environmental information and provide principles and protocols that third-party labeling, "seal" or "practitioner" programs should follow when developing environmental criteria for a particular product. These programs, based on independent auditing, compare similar products within a category and authorize manufacturers to label the most environmentally preferable in terms of the product's whole life cycle (Lavalle & Plouffe; 2004). Their intent is to standardize the criteria

used by a majority of such programs world-wide to lead to greater agreement among stakeholders. Examples of type I ecolabels include:

- Canada's Environmental Choice Label
- The European Union "Flower"
- The Nordic Swan

3.3.2 Type I-like (not ISO)

Type I-like ecolabels are third party certified but focus on single product groups or criteria (Horne, 2009) unlike the ISO category Type I which focus on multiple criteria. The following are examples of 'type I like' ecolabels:

- Forest Stewardship Council (International)
- Marine Stewardship Council (International)
- Green STAR (Australia)
- Leadership in Energy and Environmental Design (USA and Canada)
- Energy STAR(International)
- Green Globe(International)
- Greenhouse Friendly (Australia)

3.3.3 Type II

Type II ecolabels are self-declared environmental claims made by manufacturers, importers, distributors, retailers, or anyone else likely to benefit from such a claim without independent third-party certification. (Lavalle & Plouffe; 2004). They provide guidance on the terminology, symbols, testing and verification methodologies that an organization should use for self-declaration of the environmental aspects of its products and services.

3.3.4 Type III

Type III ecolabels consist of quantified environmental data for a product with pre-set categories of parameters based on independent verification using preset indices for instance, ecotoxic, or biodegradable. They provide quantitative life cycle environmental data in a more extensive report format (Horne, 2009).Type III ecolabels are environmental product declarations considering the entire life cycle analysis of the product. They may include specific mandatory information about the life cycle. This type of labels may include such information as; By using this product you reduce energy consumption by 4 times, carbon dioxide emissions by 5 times, acid rain gases by 3 times, toxic water pollution by 13 times, and solid waste by 10 times

In terms of categorization, type II ecolabels are quite distinct because they do not require independent third party verification. Type I and Type III ecolabels have a similar requirement for external verification by second or third party organizations. For both types of ecolabels, inclusion of non life cycle information is optional. The similar attributes of the two types of ecolabels may cause some confusion but their differences may be useful in the procedure of categorization. Table 3.1 illustrates the differences between Type I and Type III ecolabels. Type III ecolabels are declarative and all products can be accompanied by an environmental product declaration whereas, type I ecolabels are comparative which means the ecolabel is only assigned to some products in the family. As seen from table 3.1 type I ecolabels are awarded to some products in a given family that meet specific criteria i.e. the best in that family. Type III ecolabels on the other hand, do not need a family of products to serve as a reference for comparison the ecolabel may be awarded to all products.

Table 3.1Differences between Type I and Type III Ecolabels

Feature	Type I	Type III
Reference documents	ISO 14024 European ecolabel declaration dated 2000 July 17th	ISO 14025
Integration of LCA in the EPD	Optional. Life Cycle approach is recommended. LCA has been used in some ecolabel making	LCA is mandatory
Integration of non life cycle information	Optional	Optional. the French EPD includes some specific LCA information in a mandatory manner
Use for communication	Selected products e.g. 25% of a family are awarded with ecolabel	All products can be accompanied by an EPD even if the product is not the best in the class
Comparison of products	This label is comparative all products from a given category are compared to others	The label is declarative. No comparison is needed at first stage.
Nature of products that can be dealt with the ecolabel	The label is adapted for products which are produced in similar ways since the environmental criteria need to be adapted for the whole family	All products can prepare an EPD even if there is no reference for comparison (no family)
Target audience	The ecolabel Type I is adapted for consumers no LCA experience is needed to select a product which cares for the environment	The ecolabel Type III is adapted for business customers. An LCA experience is needed to use the ecolabel in the best way i.e. in a fair manner. Consumers can envision the use of type III EPD as long as the documents listed in the standard are available

Source: Osset *et al.*, 2004

3.4 ECOLABELS IN KENYA

Eco-labeling in Kenya has been practiced by some proactive enterprises with export orientation but all these endeavors have been to a small extent. These include The Kenya Flower council's silver and golden codes of practice and the tourism sector's Eco-Rating Scheme (Scheer *et al.,*2008*).* The Ecotourism Kenya Eco-rating Scheme is a voluntary initiative by the Kenyan tourism industry, designed to further the goals of sustainable tourism in Kenya by recognizing efforts aimed at promoting environmental, economic and social/cultural values (Janisch, 2007). Another export oriented ecolabel is the Utz Certified program. It is based on the Utz Certified Code of Conduct: a set of social and environmental criteria for responsible coffee growing practices and efficient farm management (Janisch, 2007) and is independently certified. The 4C Association is also an international ecolabel focusing on sustainability in the entire coffee growing sector (see table 3.2).

UNEP's project: "Enabling Developing Countries to size Eco-label Opportunities" focused on Kenya's leather industry. The project aimed at promoting European eco-labels in African countries (UNEP, 2009).The Kenya Bureau of Standards (KEBS) product quality standard; the Diamond Mark of Quality touches on environmental issues to a small extent. Kenya as a country does not have a formalized ecolabeling scheme yet but there is a need to expand market access among environmentally aware consumers. There is further need to develop policies that give priority to sustainable consumption and production, (Scheer *et al.,* 2008*).* The barriers to ecolabeling in Kenya include: lack of trust in ecolabels, limited awareness among stakeholders on the benefits of ecolabeling, lack of appropriate pressures promoting ecolabeling and the absence of industrial policies prioritizing ecolabeling (Scheer *et al.,* 2008*).*

The ecolabels discussed in table 3.2, are international and have been adopted by some companies in Kenya. Three of the ecolabels; 4C Association, Flower Label Program, and Leaf Marquee are found within the agricultural sector. The Certified Wildlife friendly ecolabel focuses on conservation of key species whereas the Forest Stewardship Council ecolabel focuses on sustainable management of forest resources. The method of verification is either second party-by the ecolabeling organization itself or third party-by an independent organization

Table 3.2 Ecolabels in Kenya

ECOLABEL		VERIFICATION
	The 4C Association coffee farmers, trade and industry and civil society from around the world work together for sustainability in the entire coffee sector. This global community has joined forces to continuously improve the social, environmental and economic conditions for the people making their living from coffee	Conformity with 4C Association's standard is verified by an independent organization (third party)
	Audubon International's environmental and sustainability education and certification programs require individuals responsible for the membership type to meet specific environmental or sustainability performance requirements. Standards currently exist for communities, neighborhoods, new land developments, land development renovations, schools, businesses, golf courses, and lodging facilities.	Conformity verified by Audubon International organization (second party)
	This certification indicates that the product contributes directly to in situ conservation of key species. Qualified products are fundamentally linked to on-the-ground conservation actions.	Conformity is verified by Certified Wildlife Friendly's organization (second party).
	Flower Label Program (FLP) is an association carried by human rights organisations, trade unions, flower traders and producers. It guarantees socially and environmentally responsible conditions in worldwide flower production by using the instrument of certification.	Conformity with Flower Label Program (FLP)'s standard is verified by an independent organization (third party)
	The Forest Stewardship Council (FSC) promotes environmentally appropriate, socially beneficial, and economically viable management of the world's forests. Kenya has 1.825 nha of forest certified under Forest Stewardship Council	Third-party verification

	The LEAF Marque indicates that food has been produced by farmers who are committed to improving the environment for the benefit of wildlife and the countryside. The goal is to enable prosperous farming that enriches the environment and engages local communities.	LEAF Marque's standard is verified by an independent organization (third party)
	TCO Certified is an international, third party, voluntary certification of information and communication technologies (ICT products) that fulfill strict requirements on the environment and usability.	Conformity with TCO Certified's standard is verified by an independent organization (third party)

Source: Structure and functions of African Eco-labeling Mechanism (UNEP, 2007)

Apart from the ecolabels discussed in table 3.2, there are other ecolabels found predominantly in Kenyan retail stores. These ecolabels were included in the study to test for consumer recognition of ecolabels. They include:

1. Leaping bunny
2. Fairtrade ecolabel
3. The Mobius loop
4. Keep your country clean "pitch in" ecolabel
5. Ozone friendly
6. Green Dot

3.4.1 Leaping Bunny

Established in 1998, the Leaping Bunny Program is managed by the Coalition for Consumer Information on Cosmetics' (CCIC), a non-profit organization (Garza, 2010). The Leaping Bunny (see figure 3.1) label can be seen on packaging, advertising, and point-of-sale purchases for cosmetics and household products. While many ingredients have been tested on animals in the past, the Leaping Bunny program is designed to prevent future animal testing and eventually drive animal testing out of the industry completely. All Leaping Bunny companies are open to independent audits, and commitments are renewed on an annual basis (Garza, 2010).

Figure 3.1 Leaping Bunny Label

Source: (Garza, 2010)

3.4.2 Fairtrade

Fairtrade is an alternative approach to conventional trade and is based on a partnership between producers and consumers. Fairtrade certification is a product certification system designed to allow people to identify products that meet agreed environmental, labour and developmental standards. Overseen by a standard-setting body, Fairtrade Labelling Organizations (FLO), and a certification body, FLO-CERT, the system involves independent auditing of producers to ensure the agreed standards are met. In Kenya the ecolabel is found in Cadburys chocolate a local chocolate brand.

Figure 3.2 Fairtrade label

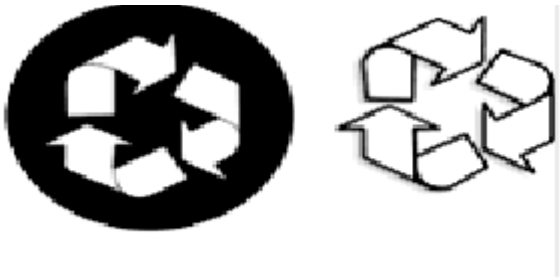
Source: (FLO, 2011)

3.4.3 The Mobius Loop

The recycling symbol is in the public domain, and is not a trademark. The first mobius loop symbol with the circle around (see figure 3.3) means that the container is made up of some recycled materials. When a percentage is indicated within the symbol, it means that, that percentage of the product has been made from recycled materials.

The second mobius loop symbol without a circle round it (see figure 3.3) indicates that the material is recyclable where facilities exist. It does not mean that the product is made from recycled material.

Figure 3.3 Mobius loop symbols



Source: (Ilic *et al*, 2009)

3.4.4 Keep Your Country Clean-"Pitch In"

This label (see figure 3.4) is widely used in the context of public education and outreach for anti-littering efforts. In Kenya it is found in most products within supermarkets and in public dustbins in the city.

Figure 3.4 "Pitch in" Label

Source: (Ilic *et al*, 2009)

3.4.5 Ozone Friendly

"Ozone friendly" labels (figure 3.5) can be found in most cases on deodorants and refrigerators. It means that the product does not contain Chlorofluorocarbons (CFC) gas that contributes to the ozone layer depletion. This label falls under the general statements, which means that there is no legal frame, or standards, that would regulate such type of label. Therefore the manufacturers decide for themselves whether to use this statement or not. Chlorofluorocarbons (CFCs) can damage the ozone layer. CFCs have been banned in all consumer products in Kenya. Thus it is

difficult to determine whether a product with the "ozone friendly" label could actually be better for the atmosphere than other products.

Figure 3.5 Variations of Ozone friendly labels

Source: (Ilic *et al*, 2009)

3.4.6 Green Dot

The green dot (figure 3.6) is a registered symbol that is allocated to a wrapping and not to the product itself. The trade mark of the green dot could be placed on the package only once the product becomes licensed (Ilic *et al*, 2009). Payment is based on a principle 'the producer pays' and it takes into account all expenses of gathering, sorting and recycling of various wrapping materials.

Figure 3.6 Green Dot Label

Source: (Der Grüne Punkt – DSD company website)

3.5 EMPIRICAL STUDIES ON CONSUMER PERCEPTIONS

In recent years, governments of industrialized countries throughout the world have expressed growing interest in voluntary alternatives to environmental regulation. Even in developed

countries with a high adoption level of ecolabels, knowledge of the labels is highly dependent on consumer awareness and attitudes towards nature. In a study of tourism ecolabel awareness in New Zealand-Christchurch (Fairweather *et al.*, 2005), it was found that only 20% of the sample recalled any place with ecolabels, 13% had heard of a tourism ecolabel and, 33% of the sample interviewed had some experience of ecolabels. This results indicate that even with an actively used ecolabel consumer awareness and understanding of the ecolabel are important for adoption.

Ecolabeling alone cannot direct consumer attitudes towards a path of sustainable consumption. In a study of 'consumer assessment of ecolabeled traditional fuel passenger vehicles' (Noblet, 2005) postulates that ecolabeling initiatives accompanied by educational campaigns may meet with greater success than ecolabels alone. The results of Noblet's study indicated that eco-marketing led to only one positive outcome; individuals exposed to the marketing were less likely to think all vehicles polluted the same which was a key misperception. The study also found three negative impacts of the Campaign. Individuals exposed to the marketing viewed vehicle emissions as being a smaller contributor to Maine's air quality problems and had an increased perception that greener vehicles suffered from poor performance and were more expensive. Thus ecolabeling of vehicles in Maine could very well have reduced their market share rather than increasing demand for them.

A study of environmental consciousness of Jordanian consumers found that they were, generally, concerned about the environment, as they demonstrated reasonably high levels of environmental consciousness relating to various environmental issues (Alsmadia, 2008). Unfortunately, this pro-environmental attitude was not sufficient to turn good intentions into actual buying actions, possibly due to several factors, such as loyalty to traditional products, and weak credibility of "green" claims. The study recommends efforts towards linking consumers' good intentions to actual buying behavior through a green marketing strategy, focusing on the unique characteristics of green products and how they impact the environment, within the cultural context of the consumer.

In a study on coffee growing in Mexico (Bray *et al.*, 2002) it was found that consumers are willing to pay higher premiums for these labeling programs than for the organic coffee. Therefore, in a free market, consumers are increasingly willing to pay more for products

perceived as environmentally friendly (Ahlers, 2000). In the case of the Dolphin safe labeling, market share of canned Tuna was found to be increased (Teisl *et al.*, 2002). The Nordic swan programme in Denmark records a price premium for goods and services labeled (Bjorner *et al.*, 2004) This indicates that consumers who choose to buy based on recognition of that ecolabel are willing to pay more for products they consider to be more environmentally friendly.

Green consumers can be classified as light and heavy (Chana, 2000). Heavy green consumers are characterized by a higher education and a higher household income. Heavy green consumers perceive environmentally friendly products as good for their health and help to save resources. They are more likely to report that they perceive influence from other persons, the government and the green groups. They have a strong self-identity and possess a better knowledge about green consumerism and more frequently use the mass media for environmental news. There are statistically significant linkages between the socio-demo-graphic characteristics and different environmental consciousness constructs (Jaina & Kaura, 2006). People materially better off and thus facing less budget restrictions are more likely to buy in an environmentally responsible manner. People with higher education generally tend to be more environmentally friendly than those with lower formal education (Ferrer & Fraile, 2006).

Age is also noted as a determinant in sustainable buying trends. People aged 26 to 55 buy more sustainable products than those at the ends of the age spectrum i.e. very old and very young (Koos, 2010). In an Egyptian study on gender differences in green purchase men showed more environmental concern and more positive outlook towards green purchase compared with women (Mostafa, 2006). Other studies empirical studies suggest that women are more environmentally friendly shoppers than men (Andersen & Tobiasen, 2004). The disparity in findings could be due to cultural factors specific to the context of the study. On the other hand it would be important for green marketing to be able to address women as they are the primary shoppers for the home (Tanner & Kast, 2003).

Other scholars (Koos, 2010; Williams 2004) assert that consumption of environmental-marked products is driven by the normal interplay of supply and demand characteristics in the market place, environmental awareness and a generalized trust of the ecolabel as a brand and not politics Despite ecolabels being a consumer-oriented initiative requiring consumer awareness and

participation, there is little producer participation (Williams, 2004) and policy makers will need to consider products with significant environmental impact (Tanner & Kast, 2003).

3.6 GAPS FROM LITERATURE

The literature reviewed reveals that there is a link between consumers' consideration of environmental issues and their adoption level of ecolabels. Thus it would be interesting to investigate the strength of this association in a Kenyan context as is the objective of this study.

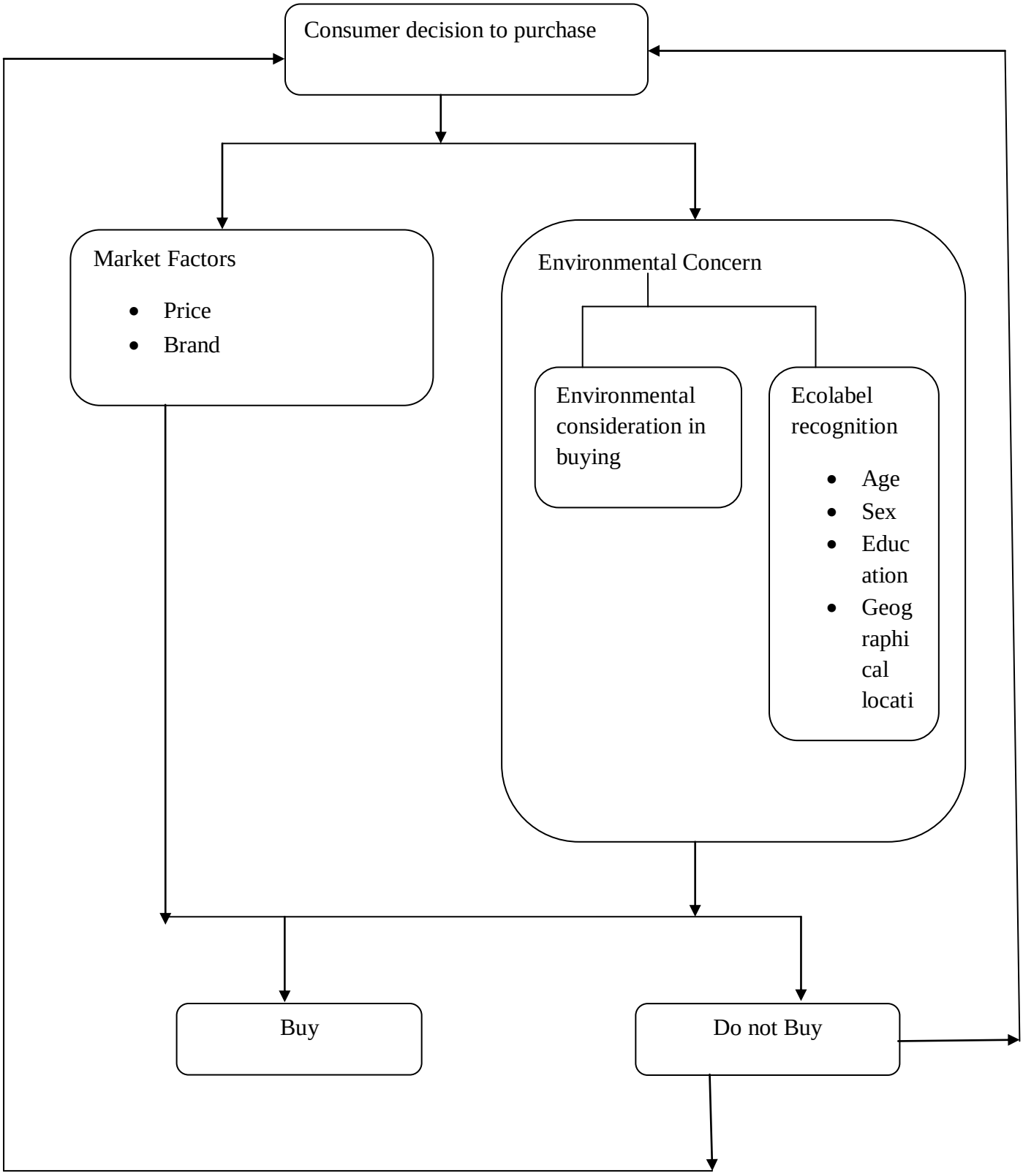
3.7 CONCEPTUAL FRAMEWORK

The overall objective of the present study is to assess the importance consumers attach to environment as a criterion in purchasing decisions and demonstrate the differences in consumer recognition of ecolabels within different geographical locations in Nairobi.

The conceptual framework (see figure 3.7) represents the decision making process when a consumer is selecting and purchasing products. The selection decision is based on normal market factors such as price, brand, and quality of the product. In buying an ecolabeled good, the selection process is taken to include the consumer's environmental concern in addition to normal market factors. A consumer's environmental concern is exhibited through their environmental consideration when buying, and their recognition of ecolabels. It is taken that various consumer characteristics e.g. age, sex, and education shall influence consumer recognition of ecolabels and by extension influence the consumer's decision to purchase.

The conceptual framework helps us to identify the ecolabels currently present in the Kenyan market, determine recognition of and response to the present ecolabels by consumers, by whether to buy or not buy because there is differentiation between normal market factors and environmental concern.

Figure 3.7 Conceptual framework illustrating relationship between Consumer decision to purchase and label recognition



Source: Researcher 2013

CHAPTER 4: RESEARCH METHODOLOGY

This chapter examines the research design, sampling design and the instruments used in the research. It outlines the data collection procedure and methods used in the field. It also outlines the data analysis methods used in the data processing.

This research was carried out primarily using quantitative research methods. Quantitative methods allow for a summary of vast sources of information, and facilitate comparisons across categories and over time. Therefore, with quantitative research method, large amounts of data can be easily collected, analyzed and later compared with similar studies (Kruger, 2003). Quantitative researchers seek explanations and predictions that will generalize to other persons and places. Most research usually does not easily fit into one category and often combine features because some data may be collected that is amenable to statistical analysis while other equally significant information is not (Thomas, 2003). Ultimately both types of data were useful in achieving the objectives of the research. Therefore, both quantitative and qualitative research methods were employed as appropriate in this study.

4.1 TYPES OF DATA

4.11 Primary Data

Primary data was collected from the field by use of questionnaires which were administered to the respondents. Data on the ecolabels present in the Kenyan market was collected in form of photographs by use of a camera, through observation, and note taking.

4.12 Secondary Data

There was extensive review of literature from government agencies and United Nations Environmental Program. A review of literature on previous studies on ecolabeling and consumer preference and attitudes was also carried out.

4.2 RESEARCH DESIGN

The research was carried out in a survey design within two predetermined supermarket chains Tuskys and Nakumatt within Nairobi. The two supermarket chains were chosen due to their

wide distribution within the city. It was carried out in three different locations (see map 1) with one location Tuskys Imara used as control and the other two for comparison of significant differences. In order to determine consumers' response to ecolabels, a single line of products i.e. deodorants was used. A single line of products was chosen in order to narrow down the respondents focus to a single family of goods. Thus a mental comparison could be made between ecolabeled and non ecolabeled goods in the same family. Deodorants products were chosen as a case study because of the variety of ecolabels found on their packaging. The ecolabels on deodorants gave information on ozone protection and reduction of green house gases which have been major environmental concerns in recent years. The study presents the current situation of consumer recognition of ecolabels. It also allows for comparison of recognition in different locations within Nairobi.

The questionnaire which was the primary research instrument was developed to obtain information from consumers. It was constructed based on items used in previous studies, (Thorgesen *et al.*, 2010; Straughan & Roberts, 1999) and with new items on ecolabel recognition developed for this study. The questionnaire consisted of 26 items with four parts. The first part consisted of measures of demographic variables age, sex, and education. The second part tested consumers' 'environmental consideration when buying'. The third part tested label recognition and the fourth part consumers' response to ecolabels on deodorants.

4.3 SAMPLING PROCEDURE

The target population is urban dwelling shoppers in Kenya and the accessible population is urban dwelling shoppers in Nairobi. The sample of consumers was drawn by simple random sampling from the individual retail store branches chosen and questionnaires administered to the sample. Respondents were selected from Central Business District, Eastlands and Westlands. Every fifth respondent exiting the supermarket was approached to take part in the study and if the request was declined, the next was requested until successful. The respondents were interviewed as they exited supermarkets; Town-Tuskys Imara, Buruburu-Tuskys Eastlands and Westlands-Nakumatt Westgate. Special care was taken to ensure they were willing to respond to the questionnaire. Consideration was taken to carry out the interviews at different times of the day; both at weekdays and weekends in order to have a broader representation of different shoppers (see Thorgesen, 2010). The fieldwork took a total of 20 days.

A probability sample (N=138) was drawn from different locations within Nairobi. Fieldwork was carried out by the researcher and field assistants who were students from The University of Nairobi. All the field assistants were fully briefed on the objectives and target outcome of the research project. They were also adequately briefed on the sampling selection and interview procedure.

The fieldwork was carried out in three locations for a period of 20 days and a total of 138 respondents were interviewed. As seen from table 4.1, 60 respondents were interviewed from Tuskys Imara, 48 respondents from Tuskys Eastlands and 30 respondents from Nakumatt Westgate

Table 4.1Total respondents interviewed

N VALUE	Tuskys Imara CBD	Tuskys Eastlands-Buruburu	Nakumatt Westgate-Westlands
N	60	48	30

Source: Fieldwork 2012

Table 4.2 Distribution of Socio-Demographic Characteristics of Survey Respondents

Sample n=138	Frequency	Percent
Sex		
Male	74	54
Female	64	46
Age		
Between15-34	99	72
Between 35-54	29	21
Over 55	8	6
Not stated	2	
Education		
Primary	3	2
Secondary	35	25
Post-Secondary	96	70

Not stated	4	

Source: Fieldwork (2012)

With regard to socio-demographic characteristics (see table 4.2), there were slightly more male than female respondents interviewed in the study. Most of the respondents 72% fell within the age bracket 15-34 while 21% were in the age group 35-54. Post-secondary educated respondents formed a larger percentage of the sample than secondary educated respondents.

4.4 STUDY LIMITATIONS

The study was limited to three retail stores within Nairobi City. The study had some probable limitations as a larger sample size would be more representative of the population characteristic responses. The results were based on self reported subjective behavior which entirely depends on the respondents' opinion that may have variation from the truth. The study was limited to interviewing only respondents who were willing to participate in the survey causing the study to take longer than anticipated.

4.5 DATA ANALYSIS

Data analysis is the process of bringing order structure and meaning to the mass of information collected (Mugenda *et al*, 2003). In this study Likert scale analysis, Spearman's rank order correlation, One way ANOVA and Chi-square tests were used to bring order, structure, and meaning to the data collected. The data was presented in graphs with clear descriptions to capture the aspects not easily described quantitatively.

4.5.1 Likert Scale Analysis

Likert scale items are created by calculating a composite score (sum or mean) from four or more type Likert-type items. Therefore, the composite score for Likert scales is analyzed at the interval measurement scale. Descriptive statistics recommended for interval scale items include the mean for central tendency and standard deviations for variability.

The second part of the questionnaire focused on Environmental Consideration In Buying Decisions. The section consisted of six Likert-type items. The entire section was calculated as a Likert scale with a composite score from the six questions. Each respondent's score was determined and graded to determine the level of environmental consideration in buying. For

each of the four choices in the question, a value was given and the total score for each respondent in all the six questions used to assign them to a particular level of environmental consideration when buying namely; very high, high, moderate and low

4.5.2 Spearman's Rank-Order Correlation

The Spearman's rank-order correlation is the non parametric version of the Pearson product-moment correlation. Spearman's correlation coefficient, measures the strength of association between two ranked variables. The Spearmans rank order correlation needs two variables that are ordinal, interval or ratio. It assesses how well the relationship between two variables can be described using a monotonic function. It is based on the assumption that there is a monotonic relationship between the variables which is a relationship that either: as the value of one variable increases so does the value of the other variable, or as the value of one variable increases the other variable value decreases.

Spearman's rank correlation coefficient or Spearman's rho, denoted by the Greek symbol ρ is calculated as shown in equation 1 below. For a sample of size n, the n raw scores X_i, Y_i are converted to ranks x_i, y_i, and ρ is computed from these:

Equation 1:

$$\rho = \frac{\sum_i (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_i (x_i - \bar{x})^2 \sum_i (y_i - \bar{y})^2}}.$$

In this study, the test was used to measure the strength of association between respondents' environmental consideration in buying and their recognition of labels. The environmental consideration of each respondent was calculated as the total score of their responses to a set of questions in a Likert scale whereas the score in recognition was calculated from the total number of ecolabels recognized. These two variables were ranked and the Spearmans correlation co-efficient determined. The value of the correlation co-efficient gave the strength of association.

4.5.3 Analysis Of Variance (ANOVA)

The purpose of analysis of variance is to test differences in means for groups or variables for statistical significance. This is accomplished by analyzing the variance, that is, by partitioning the total variance into the component that is due to true random error and the components that

are due to differences between means. These latter variance components are then tested for statistical significance, and, if significant, the null hypothesis of no differences between means is rejected and the alternative hypothesis that the means in the population are different from each other is accepted.

Equation 2:

F=MST⁄MSE

Where,

F = Anova Co-efficient

MST = Mean sum of squares due to treatment

MSE = Mean sum of squares due to error.

ANOVA was used to test the difference in means of percentage ecolabel recognition within the categories in the three population characteristics; sex, age and education. The percentage recognition for each label in each category was calculated from the total and these percentages used in the ANOVA test.

4.5.2 Chi-Square

A chi-square (X^2) statistic is used to investigate whether distributions of categorical variables differ from one another. Chi-square is a statistical test commonly used to compare observed data with data one expects to obtain according to a specific hypothesis. The chi-square test is a test of independence. In this case the independence the null and alternative hypotheses are:

Ho: The categorical variables are independent.

Ha: The categorical variables are related.

The formula for calculating chi-square (X^2) is:

Equation 3: X^2= (o-e)2/e

That is, chi-square is the sum of the squared difference between observed (o) and the expected (e) data (or the deviation, d), divided by the expected data in all possible categories.

In this study the chi-square was used to test for significant differences in ecolabel recognition. It was used to test for independence in ecolabel recognition within different geographical locations. It was also used to test for independence in ecolabel recognition within different categories of consumer characteristics; sex, age and education.

CHAPTER 5 : RESULTS AND DISCUSSION

This chapter outlines the procedures that were followed in the data processing, analysis and report of the results. Descriptive statistics were used to describe the sample and summarize the data. Results and findings were then presented in tables and graphs to illustrate the observed relationships. The chi square test was used to test the relationship between variables. Spearman's correlation co-efficient was also used to describe the relationship between environmental consideration in buying and recognition of ecolabels.

5.1 IDENTIFICATION OF ECOLABELS FOUND IN THE KENYAN MARKET

Data was collected by observation, photos and note taking from the various supermarkets within the study area. A list of the ecolabels observed was then developed and categorized according to the given ISO categories.

Table 5.1 Categories of ecolabels

TYPE II ECOLABELS	
ECOLABEL	PRODUCTS
We save trees	Tissue
Ozone friendly	Deodorants
Environmentally friendly	Tissue , juice cartons
CFC free	Deodorants, aerosols eg air fresheners
Green dot	Plastic wrapping and deodorant packaging
100% natural no chemicals	Bidco soap flakes
GMO Free	Thai rice
Quality and responsibility label	Henkel detergents
Sustainable cleaning	Vern el fabric softener
European Energy Label	Electronics, Light bulbs
"pitch in" keep your country clean	Public dustbins, plastic wrapping and packaging material

Mobius loop 'Recycle, reduce, reuse'	Public dustbins, plastic wrapping and packaging material

TYPE III ECOLABELS		
ECOLABEL	PRODUCTS	CERTIFYING BODY
Fairtrade	Chocolate	Fair-trade labor Organization
Leaping bunny	Cosmetics	CCIC

Source: Fieldwork (2012)

Table 5.1 represents some of the ecolabels found in the Kenyan market and the products on which they are found. The 'CFC free' and 'ozone friendly' ecolabels were mainly found on deodorants and aerosol sprays and refrigerators due to the chemical composition of their contents. The 'European Energy rating' ecolabel was found on a variety of electronic products observed within the supermarkets. This ecolabel gives an indication of the energy efficiency rating of the product. The 'keep your country clean' and 'Mobius loop' ecolabels were identified on public dustbins, plastic paper bags and various other packaging material. These ecolabels give information regarding disposal of the products. Most of the ecolabels identified in this study were Type II ecolabels which are self-declared environmental claim without independent third-party certification (Lavalle & Plouffe; 2004). This makes them the easiest type of ecolabelling scheme to adopt. Type III ecolabels which have independent verification procedures are less common as they require conformity to a set of standards with the verification bodies. In this study two Type III ecolabels; 'mobius loop' and 'leaping bunny' were identified as seen in table 5.1.

5.3 THE IMPORTANCE ATTACHED TO ENVIRONMENT AS A CRITERION IN PURCHASING DECISIONS

5.3.1 Environmental Consideration In Buying Decisions

This second section of the questionnaire was designed to measure the first objective "The importance attached to environment as a criterion in purchasing decision". The entire second section of the questionnaire was calculated as a Likert scale and scores determined and graded to determine the level of consideration when buying. Each of the five questions was multiple

choice in nature with the options a) Always b) Often c) Sometimes d) Never. Each choice was allocated a value as illustrated in table 5.2, and the total score of the entire section for each respondent calculated from the values assigned to their choices. The total score for each respondent was then ranked according to the four levels of consideration as seen in table 5.2 below.

The table 5.2 illustrates how the likert scale was scored and the overall score ranking and meaning of each score range.

Table 5.2 Score table indicating four levels of consideration

CHOICE	SCORE	OVERALL SCORE RANKING	SCORE MEANING
Always	4	16-20	Very High consideration level
Often	3	11-15	High consideration level
Sometimes	2	6-10	Moderate level of consideration
Never	1	1-5	Low level of consideration

Source: Fieldwork (2012)

Likert Scale Scores

Each respondent was categorized as having a) Very high consideration level b) High consideration level c) Moderate level of consideration d) Low level of consideration. The total number of respondents in each category can be seen in table 5.3. The results indicate that there is a high level of consideration in all three locations as all the means range in the 'high consideration level' score category of 11-15. Westlands location reported the highest level of consideration with a mean of 14.5.The other locations central business district and Buruburu reported means of 13.94 and 14.23 respectively.

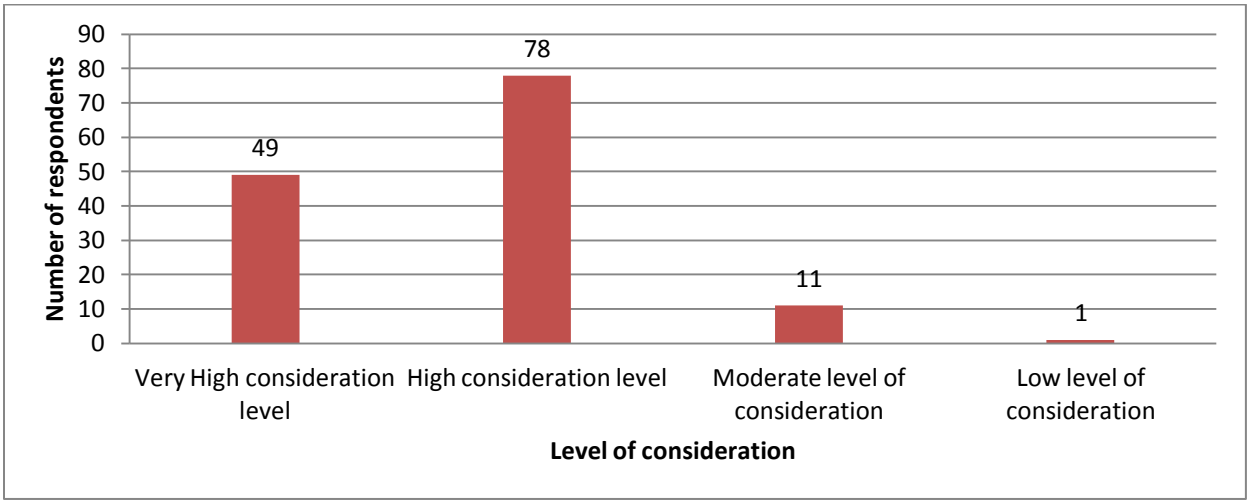
Table 5.3 Frequency of respondents indicating varied levels of consideration

SCORE RANKING	SCORE RANGE MEANING	FREQUENCY			
		CBD	BURU BURU	WEST LANDS	TOTAL
16-20	Very High consideration level	**18**	**18**	**13**	**49**
11-15	High consideration level	**30**	**28**	**19**	**78**
6-10	Moderate level of consideration	**8**	**2**	**0**	**11**
1-5	Low level of consideration	**0**	**1**	**0**	**1**
Mean		**13.94**	**14.23**	**14.5**	**14.12319**

Source: Fieldwork (2012)

78 of the respondents reported a high consideration level, 49 reported very high consideration levels and one reported low levels of consideration (see figure 5.1). Most of the respondents reported high levels of environmental consideration when buying while only one reported low level of consideration.

Figure 5.1 Frequency distribution of consideration levels



Source: Fieldwork (2012)

5.3.2 Environmental Consideration When Buying Deodorant Products

Deodorant products were singled out for this study due to the variety of ecolabels present on their packaging. Consumers were questioned on the importance attached to price, brand environmental impact of content and environmental impact of deodorant packaging as factors when buying deodorant.

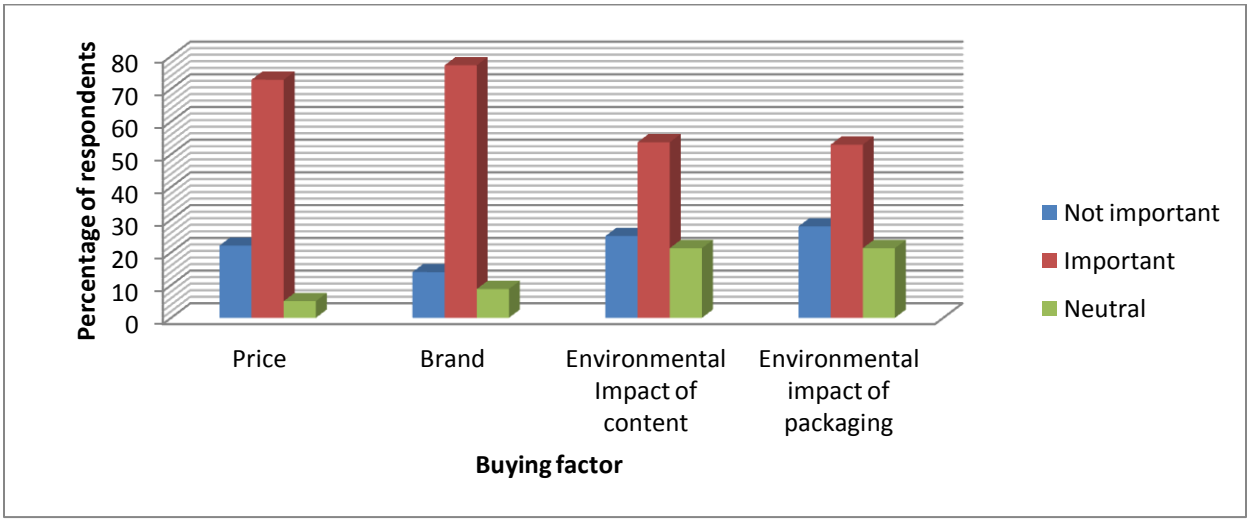
Table 5.4 Comparison Of The Importance Of Four Buying Factors Measured

Factor	Not important	Important	Neutral
Price	22.1	72.8	5.1
Brand	14.0	77.2	8.8
Environmental Impact of content	25.0	53.7	21.3
Environmental impact of packaging	27.9	52.9	21.3

Source: Fieldwork (2012)

As seen from table 5.4 and figure 5.2, brand was the factor considered important by the most number of respondents followed by price. Very low percentages of respondents were neutral to price and brand which indicates that both are important determining factors when buying. Environmental impact of content had a slightly higher percentage of respondents 53.7% considering it important than 'Environmental impact of packaging' which reported 52.9% considering it important. Both had a relatively higher percentage of respondents considering them neutral factors as compared to price and brand. Slightly over 50% of the respondents reported that environmental impact of the deodorant product would be important to them. This is an encouraging indication of the future of environmental consideration when buying.

Figure 5.2 Respondents rating of the four buying factors

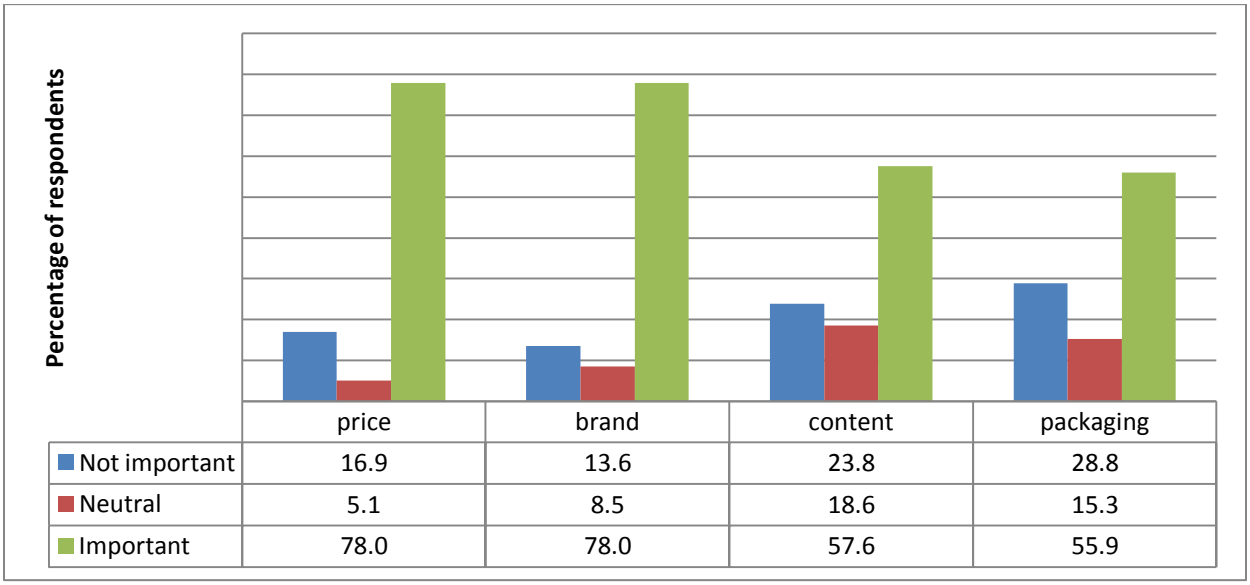


Source: Fieldwork (2012)

The importance of these buying factors was similarly investigated within the three geographical locations (see figures 5.3, 5.4 and 5.5).

Respondents rating of the four buying factors in the three geographical locations

Figure 5.3 Respondents rating of the four buying factors Tuskys Imara-CBD



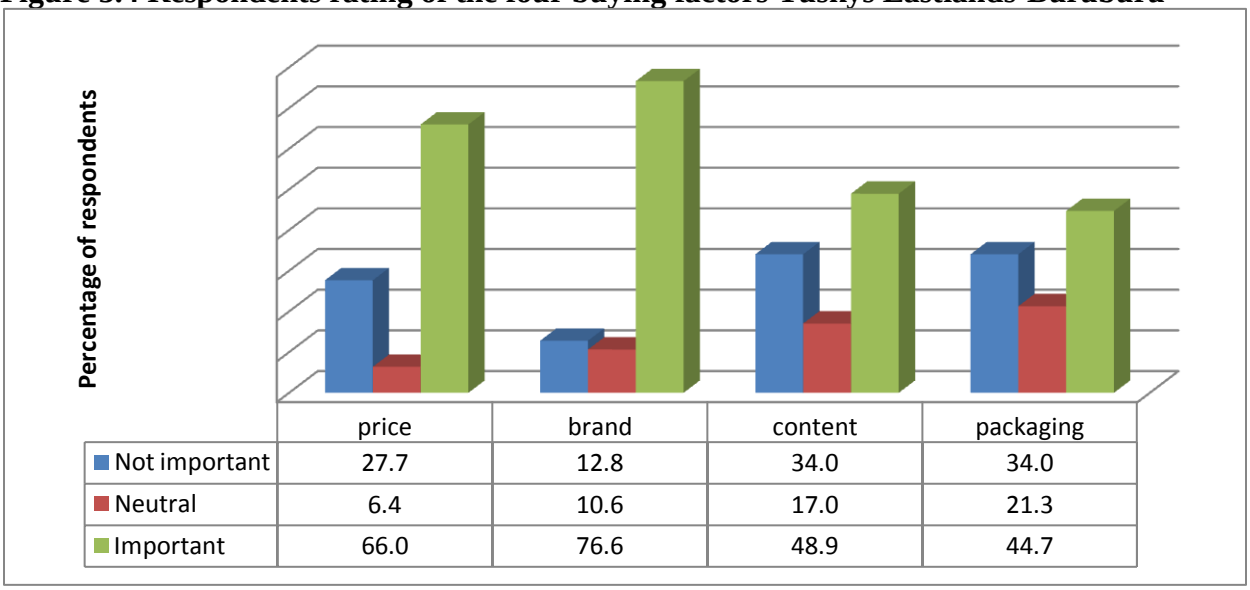
	price	brand	content	packaging
Not important	16.9	13.6	23.8	28.8
Neutral	5.1	8.5	18.6	15.3
Important	78.0	78.0	57.6	55.9

Source: Fieldwork (2012)

From figure 5.3, Tuskys Imara within the CBD had equal percentage of respondents considering price and brand as important when buying deodorant products. The environmental impact of

content scored slightly higher than packaging with 57.6% of the respondents considering it important as compared to 55.9% who considered environmental impact of packaging important.

Figure 5.4 Respondents rating of the four buying factors Tuskys Eastlands-Buruburu

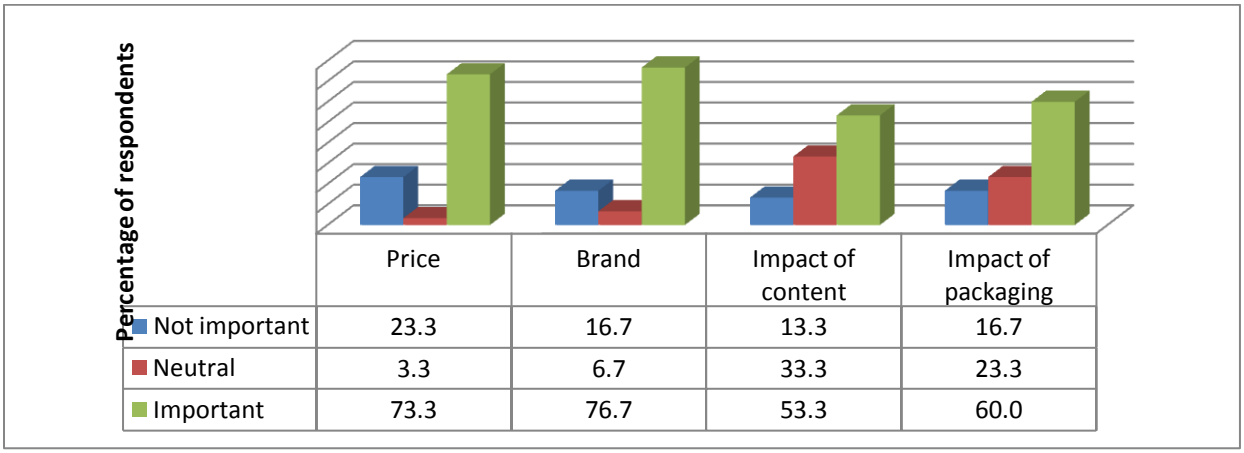


	price	brand	content	packaging
Not important	27.7	12.8	34.0	34.0
Neutral	6.4	10.6	17.0	21.3
Important	66.0	76.6	48.9	44.7

Source: Fieldwork (2012)

From figure 5.4 brand scored higher than price in this location with 76.6% of the respondents considering it an important factor as compared to 66% of the respondents who considered price important. 48.9% of the respondents considered environmental impact of content important slightly higher than the 44.7% who considered environmental impact of packaging important.

Figure 5.5 Respondents rating of the four buying factors: Nakumatt Westgate- Westlands



	Price	Brand	Impact of content	Impact of packaging
Not important	23.3	16.7	13.3	16.7
Neutral	3.3	6.7	33.3	23.3
Important	73.3	76.7	53.3	60.0

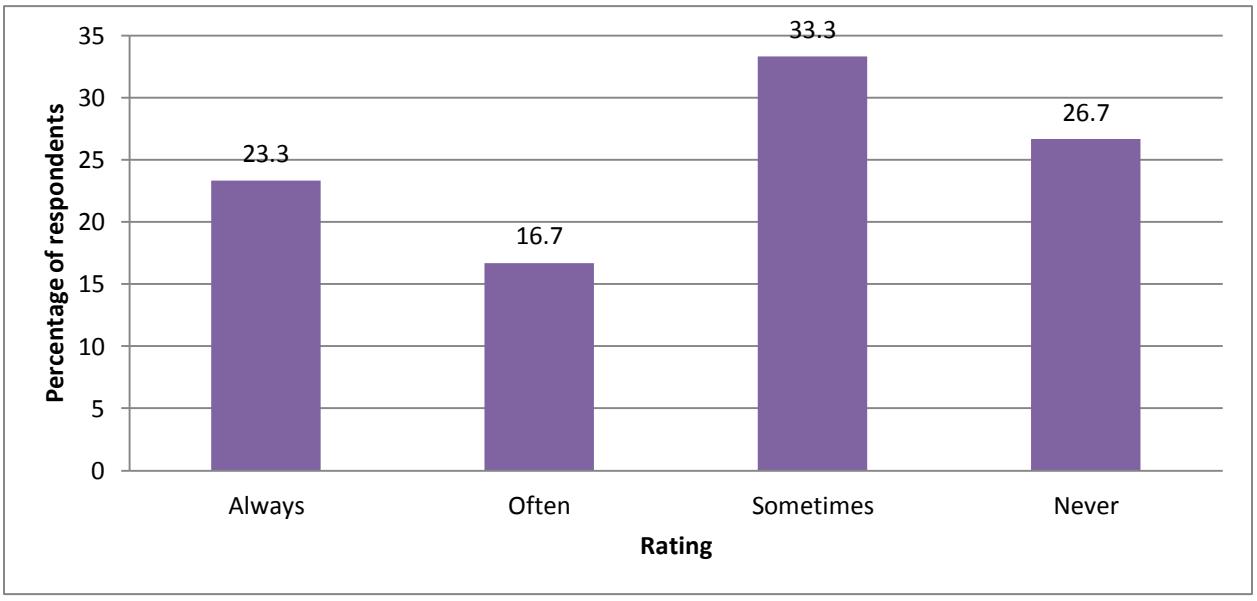
Source: Fieldwork (2012)

Figure 5.5 illustrates that brand was the buying factor highly prioritized by the most respondents in this location at 76.7%. It was followed by price at 73.3%. More respondents 60% considered environmental impact of packaging important as compared to the environmental impact of content which had 53.3%.

Consideration of environmental friendliness of deodorant

Consumers when asked the question "Do you consider the environmental friendliness of deodorant in your purchasing decisions?" responded as shown in Figure 5.6.

Figure 5.6 Consideration of environmental friendliness of deodorant when buying



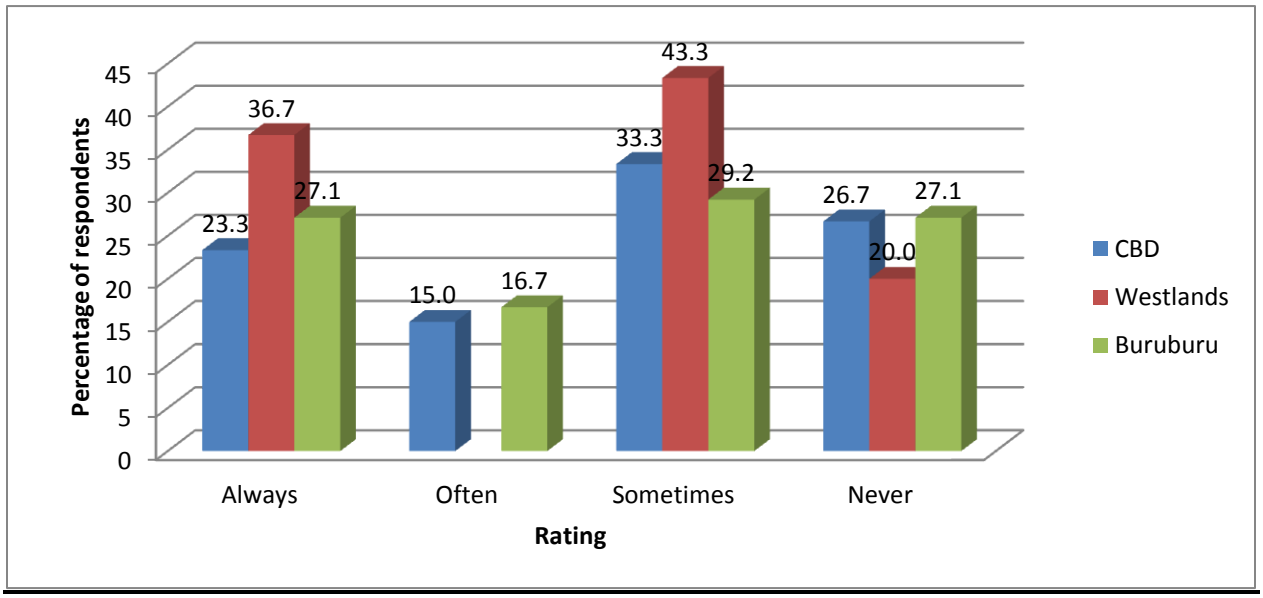
Source: Fieldwork (2012)

As illustrated in figure 5.6; only 23.3% of the respondents reported to always consider, 16.7% reported often consider, 33.3% sometimes considered and 26.7% do not consider environmental friendliness of deodorant in their purchasing decisions. The larger percentage, 60%, reported sometimes or never hence indicating that environmental friendliness is not a priority consideration when buying deodorant. This is in line with the finding that more respondents rate price and brand of deodorant as a more important consideration than environmental impact of content and packaging as seen in (table 5.4). Marketing of deodorant products is based on

promoting brand loyalty by customers therefore the consumer may identify with a familiar brand or buy a product within their budget range.

Respondents' rating of consideration of environmental friendliness of deodorant in purchasing decisions was also tested in the three locations (figure 5.7).

Figure 5.7 Percentage of respondents considering Environmental friendliness of deodorant: Three geographical locations



Source: Fieldwork (2012)

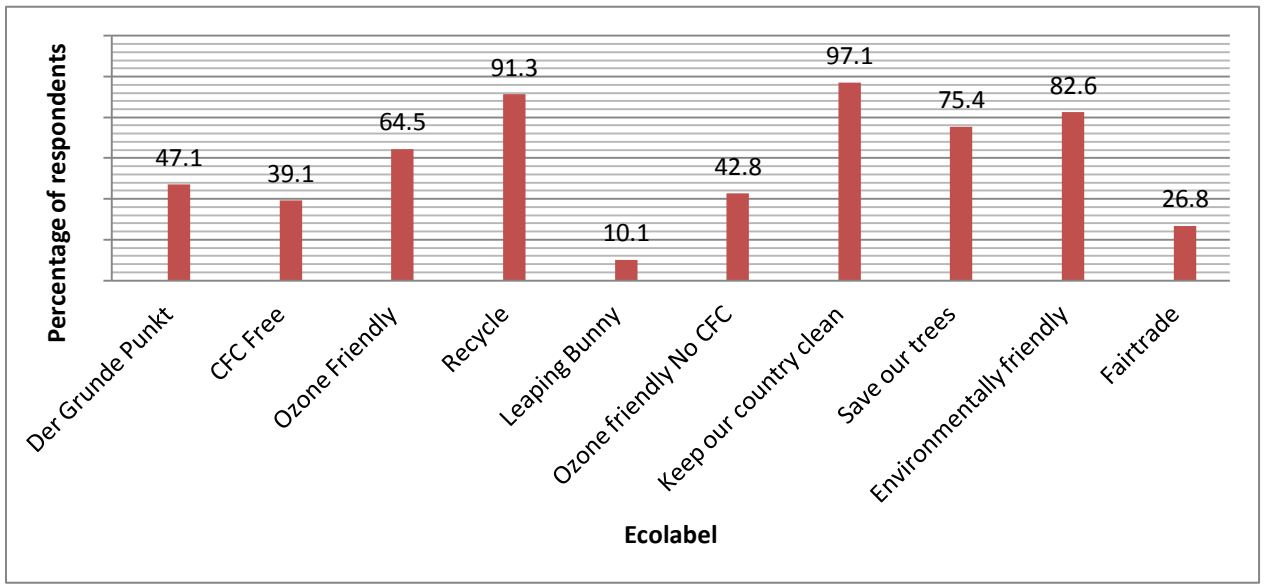
As illustrated in figure 5.7, out of the respondents interviewed at Tuskys Imara in CBD; 38.3% were found to consider environmental friendliness of deodorant in their purchasing decisions with 23.3% always considering and 15% considering it often. The results of data from Nakumatt Westgate at Westlands; 36.7% of the respondents reported to always consider the environmental friendliness of deodorants in their buying decisions. 43.3% reported to consider it only sometimes while the remaining 20% do not consider it at all.

The results in Buruburu showed that 43.8% of the respondents interviewed considered environmental friendliness of deodorant in their purchasing decisions with 27.1% always considering and 16.7% considering it often.

5.4 ECOLABEL RECOGNITION

In the second section of the questionnaire on *Consumer Recognition Of Ecolabels* the respondents were asked to indicate whether or not they recognized the ecolabels and the results were as shown in figure 5.8.

Figure 5.8 Percentage ecolabel recognition



Source: Fieldwork (2012)

The most recognized ecolabels were the 'Keep our country clean' ecolabel which reported 97.1% recognition and the 'recycle' ecolabel which had 91.3% recognition (see figure 5.8). These ecolabels are found on public bins in the central business district and on plastic bags used for packaging in some retail stores. The other two ecolabels 'Save our trees' and 'Environmentally friendly' have a high percentage recognition because they are easily understood. The labeling has accompanying wording explaining the meaning. The environmental claim 'Environmentally friendly' is very general hence likely to be misunderstood (Ravenswaay, 1996) yet in this study was found to be easily recognized as it presented the claim in a simple manner. The least recognized ecolabels were 'leaping bunny' at 10.1% recognition and 'fairtrade' at 26.8% recognition. These two ecolabels do not immediately communicate to the consumer the aspect of environmental protection represented but require further knowledge in order to be useful.

Other ecolabels with less than 50% recognition include, 'Der Grune Punkt' 'CFC free' and 'Ozone friendly no CFC' ecolabels. From figure 5.8, the ecolabel 'green dot' or 'Der Grune Punkt' had 47% recognition. The ecolabel does not immediately provide an informative summary to the consumer and requires additional information to understand. The green dot symbol indicates that the producer pays for all recycling costs associated with the packaging. Recyclable products are not environmentally useful if there is no recycling collection available to a consumer (Ravenswaay, 1996). In essence, such a claim would be deceptive if a recycling collection were not available to the consumer to be able to make good that claim.

A source of confusion is that environmental labels may make less obvious the environmental harms associated with consuming or producing a product (Ravenswaay, 1996). A plastic bag may have the 'Mobius loop' symbol of recyclability making it seem like a better option yet carrying re-usable canvas bag would cost less to the environment. Similarly, a cosmetic product may not be tested on animals but the contents may be over packaged hence become a bigger cost to the environment in terms of disposal.

Bougherara & Grolleau (2004) describe a successful ecolabel as one that captures the attention of the consumer and provides a useful information summary so that the consumer does not have to search in order to understand. From the study, the highly recognized ecolabels were those frequently seen and those with text explaining the meaning of the ecolabels.

5.5 CONSUMER RECOGNITION OF ECOLABELS WITHIN DIFFERENT GEOGRAPHICAL LOCATIONS

The following table 5.5 shows the values calculated from the tally of respondents as a percentage of the total number of respondents interviewed in each area i.e. CBD, Westlands, and Buruburu. The values in the table represent the percentage of respondents who reported to recognize the ecolabels presented to them.

Table 5.5 Percentage recognition of various ecolabels

ECOLABEL	CBD	WESTLANDS	BURUBURU
	PERCENTAGE OF RESPONDENTS		
Der Grune Punkt	33.9	56.7	58.3
CFC Free	32.1	50	41.7

ECOLABEL	CBD	WESTLANDS	BURUBURU
Ozone Friendly	64.3	63.3	64.6
Recycle	91.1	100	85.4
Leaping Bunny	14.3	3.3	10.4
Ozone friendly Ozone	48.2	46.7	35.4
Keep our country clean	98.2	93.3	100
Save our trees	82.1	66.7	72.9
Environmentally friendly	85.7	80	79.1
Fair trade	23.2	30	29.1

Source: Fieldwork (2012)

From table 5.5 both the "keep our county clean" and "recycle" ecolabels had a high percentage recognition in all three locations. Buruburu reported 100% recognition of the "Keep our country" clean ecolabel whereas "recycle" ecolabel was recognized by 100% of the respondents in Westlands. There are slight variations in ecolabel recognition in the three locations but with similar trends among the highly recognized ecolabels and those with low recognition.

Table 5.6 Chi-square test on significance of geographical locations

Chi square Value		Degrees of freedom	P value
Calculated	Critical		
9.58	26.29	16	0.888

Source: Fieldwork (2012)

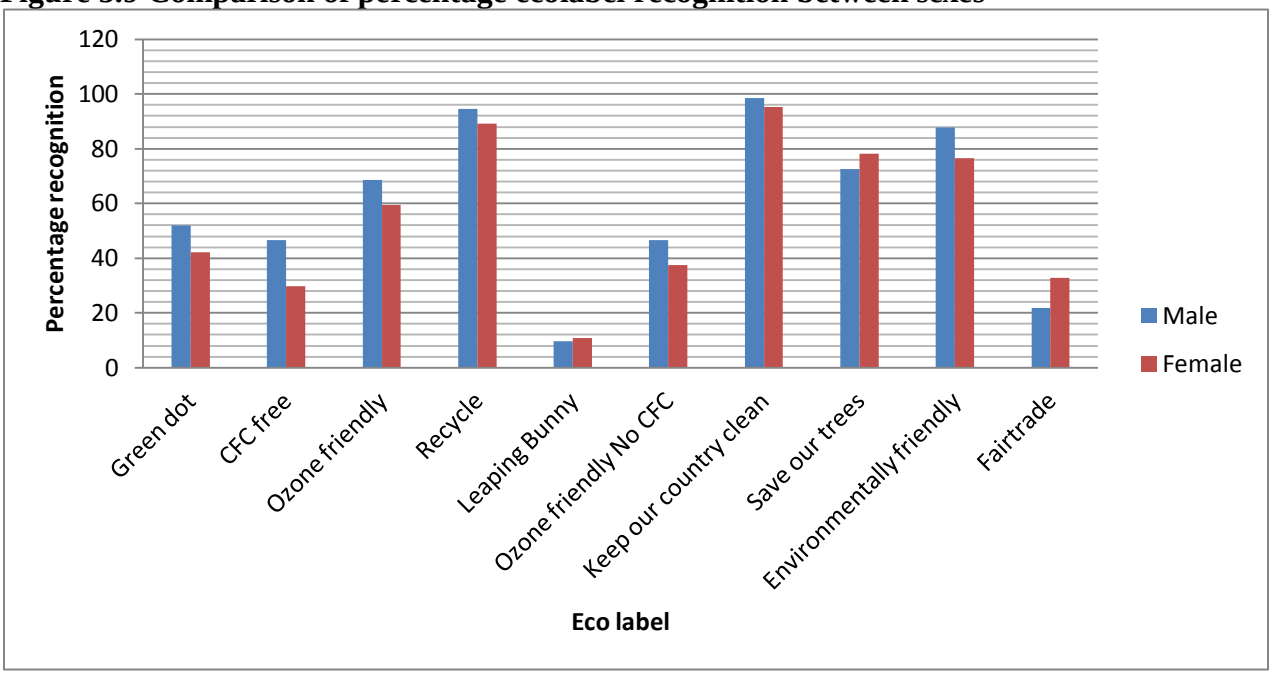
The null hypothesis "There is no significant difference in consumer recognition of labels within different geographical locations in the city" was tested using chi square statistical test at alpha =0.05.The chi test (see table 5.6) yielded a p value (0.888) greater than alpha therefore we fail to reject the null hypothesis at an alpha level of 0.05. There is an 88.8% probability that the difference in ecolabel recognition in the three locations is by chance and not determined by the location. This could be attributed to the fact that the products available in the three supermarkets

are similar and there is no significant difference in the prices of deodorants in the three study locations.

5.6 IMPACT OF CONSUMER CHARACTERISTICS; SEX, AGE, AND EDUCATION ON CONSUMER RECOGNITION OF LABELS

5.6.1 Sex

Figure 5.9 Comparison of percentage ecolabel recognition between sexes



Source: Fieldwork (2012)

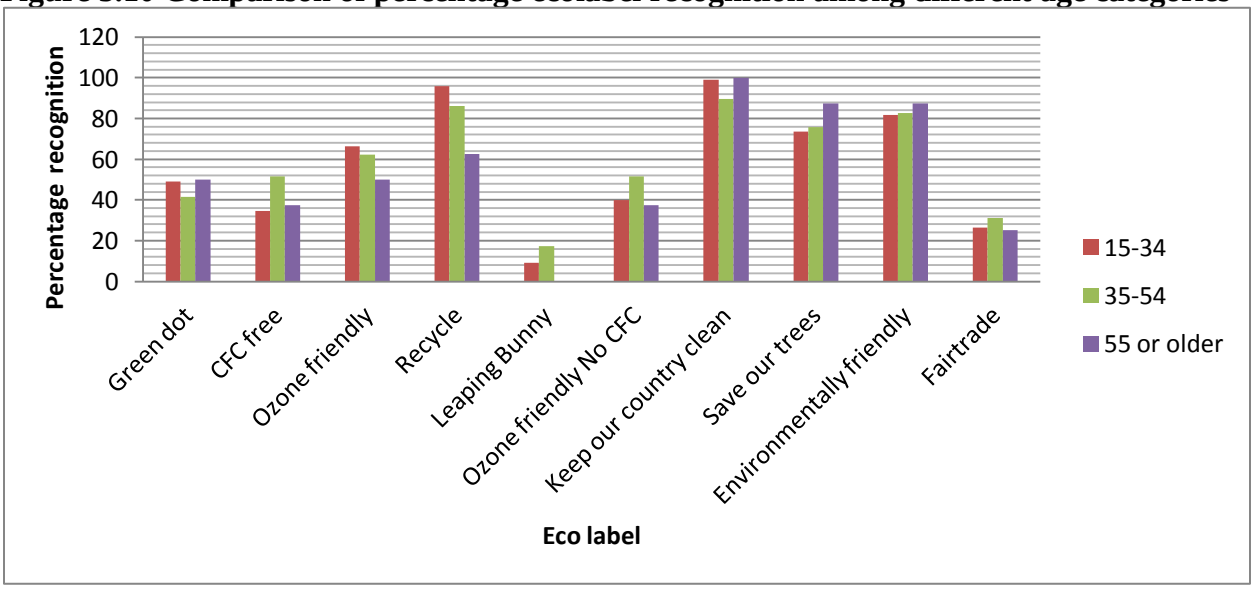
From figure 5.9, there is slightly higher percentage recognition of ecolabels among the male respondents than among the female respondents. There are exceptions in the leaping bunny ecolabel which reports a low recognition with female respondents reporting 10.9% and the male respondents 9.6%. The fair-trade ecolabel is also an exception reporting a low recognition percentage but with females having a higher recognition percentage of 32.8 % as compared to 21.8% of the males.

There is some evidence that males tend to have higher and better knowledge about green issues than females (see Hartono, 2008 and Mostafa, 2006). There is also evidence that women are more environmentally friendly shoppers than men (Anderson *et al*, 2004). A third scenario has also been found for instance; in a Canadian study, by Eagles and Muffitt (as cited by Mostafa,

2006) found no environmental attitude differences between the genders. In this study there was found to be no significant difference in ecolabels' recognition between the males and females using a chi-square statistical test at alpha = (0.05). The ecolabels tested were found on products whose consumption cut across the sexes hence their recognition may have been determined by frequency of use of the product.

5.6.2 Age

Figure 5.10 Comparison of percentage ecolabel recognition among different age categories



Source: Fieldwork (2012)

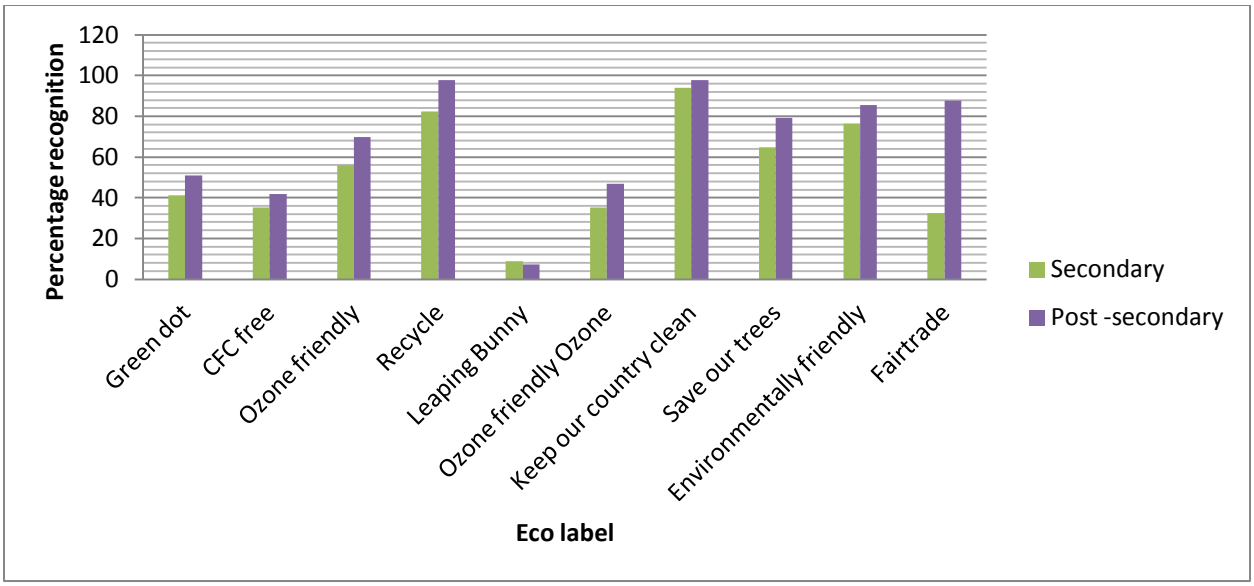
According to figure 5.10, "CFC free" and "Ozone friendly no CFC" ecolabels reported a high percentage recognition among the age category 35-54 as compared to the other two categories. This could be due to the increased environmental awareness about Chloroflourocarbons (CFC) within their buying life and increased concern over ozone depleting substances and preference for CFC free products. Previous studies indicate that there is a reverse relationship between the age and environmental knowledge, attitudes, and behaviors (Hartono, 2008). There is a general belief that younger consumers are more environmentally friendly (Straughan & Roberts,1999) with the argument that individuals who have grown up in an period where environmental concern is given prominence are likely to be more sensitive to environmental issues.

In this study there was found to be no significant difference among the three age categories in ecolabel recognition using chi-square statistical test at alpha= (0.05). In a study investigating

consumer purchase preference in Canada and Hong Kong, Chan (1996) found the influence of age on environmental behavior to be country specific and thus one context cannot be mapped onto another. Therefore the results of this study represent a Kenyan context.

5.6.3 Education

Figure 5.11 Comparison of ecolabel recognition between two educational categories



Source: Fieldwork (2012)

The results indicate a greater recognition of ecolabels among respondents with post secondary education. Figure 5.11 illustrates a marked difference in percentage recognition of all the ecolabels with all the ecolabels reporting higher percentage recognition among post secondary educated respondents. The Leaping bunny ecolabel was the only exception. This ecolabel reported the lowest percentage recognition among all educational categories with secondary educated respondents reporting 8.8% recognition and post secondary educated respondents reporting 7.3% recognition. The Fair trade ecolabel had the greatest disparity in recognition among the two categories with post secondary educated respondents reporting 87.7% recognition and secondary educated respondents reporting only 32.4% recognition.

Previous studies have indicated that education is expected to be positively correlated with environmental concerns and behavior (Straughan &Roberts, 1999). Thus consumers who have a higher level of education score higher on all attributes of environmental consciousness (Hartono,

2008). This is attributed to the complex nature of the subject of ecology with its complex interactions between organisms and environment that make its subject matter difficult to understand and assimilate (Hartono, 2008).

Statistical Tests

Table 5.7 Chi- square values on the three population characteristics

CHI SQUARE TEST				
Population characteristic	Chi square Value		Degrees of freedom	P value
	Calculated	Critical		
SEX	5.404	16.918	9	0.79776522
AGE	6.797	28.869	18	0.99172941
EDUCATION	24.89	28.869	18	0.1279763

Source: Fieldwork (2012)

The null hypothesis "There is no relationship between consumer characteristics; age, sex, education and consumer recognition of ecolabels" was tested using chi square statistical test at alpha =0.05 (see table 5.7). For all three cases it was found that p>alpha therefore we fail to reject the null hypothesis at this alpha level. The characteristic gender had a p value of 0.79 and age 0.99 indicating a very high probability that the variation in categories was only by chance. Education on the other hand had a p value of 0.12 indicating only a 12% probability that the variation was by chance. This is an interesting variation and implies that with a larger sample and other statistical tests education could be a determining variable in consumer recognition of ecolabels.

Table 5.8 ANOVA on the three population characteristics

ANOVA TEST						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
SEX						
Between Groups	110.9205	1	110.9205	0.129264	0.72338	4.413873
Within Groups	15445.65	18	858.0914			
AGE						
Between Groups	145.6827	2	72.84133	0.087148	0.916798	3.354131
Between Groups	145.6827	2	72.84133	0.087148	0.916798	3.354131
EDUCATION						
Between Groups	2713.213	2	1356.606	1.585921	0.223247	3.354131
Within Groups	23095.96	27	855.406			

Source: Fieldwork (2012)

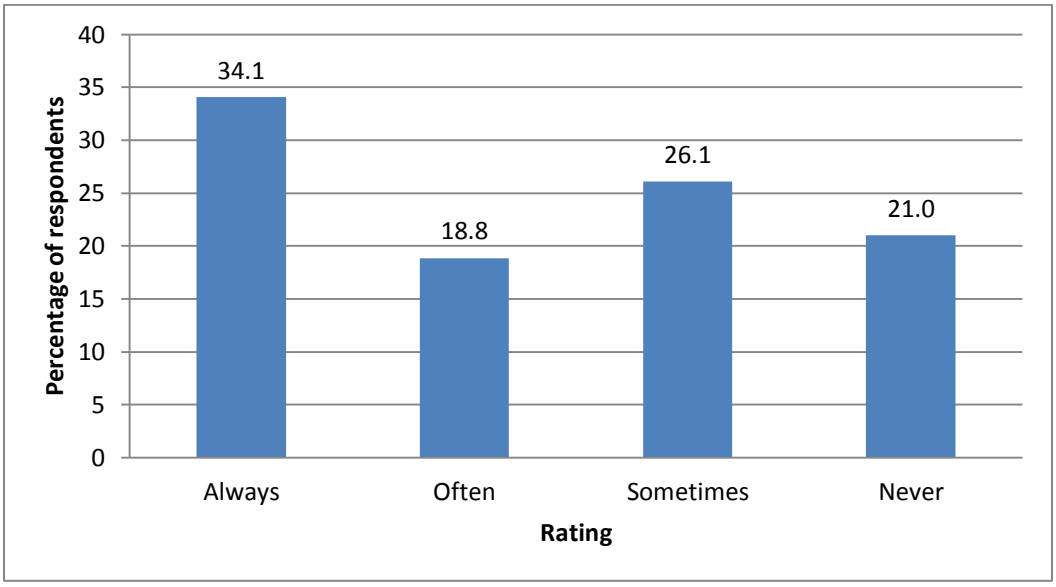
For all three population characteristics it was found that the calculated F value was less than the critical F value at the respective degrees of freedom (see table 5.8). Therefore, we fail to reject the null hypothesis "There is no relationship between consumer characteristics; age, sex, education and consumer recognition of ecolabels".

5.7 CONSUMER RESPONSE TO ECOLABELS

5.7.2 Reading Label Information

When asked the question "How often do you read the consumer packaging information on deodorants?" consumers responded as shown in figure 5.12. 34.1% reported to always read consumer packaging information on deodorants, 18.8% reported to read it often, 26.1% sometimes and 21% do not read the information at all. The larger percentage reported to read consumer packaging information hence indicating that consumers take time to read label information.

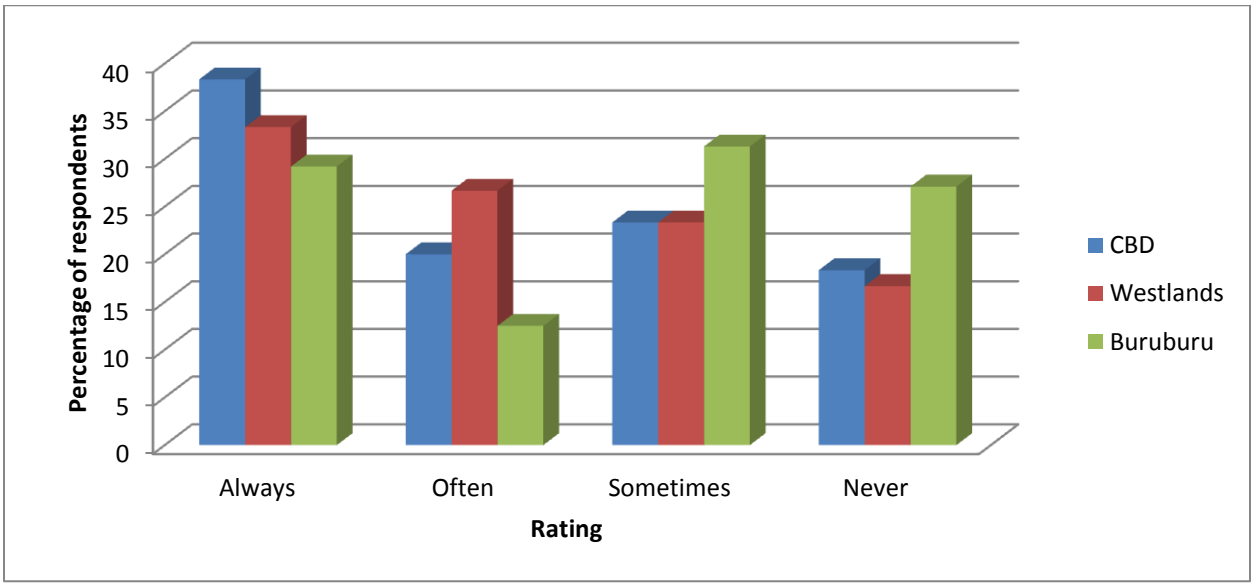
Figure 5.12 Reading label information



Source: Fieldwork (2012)

Consumers' reading of label information was similarly tested in the three geographical locations with similar trends reported (figure 5.13).

Figure 5.13 Percentage of respondents reading label information in three geographical locations



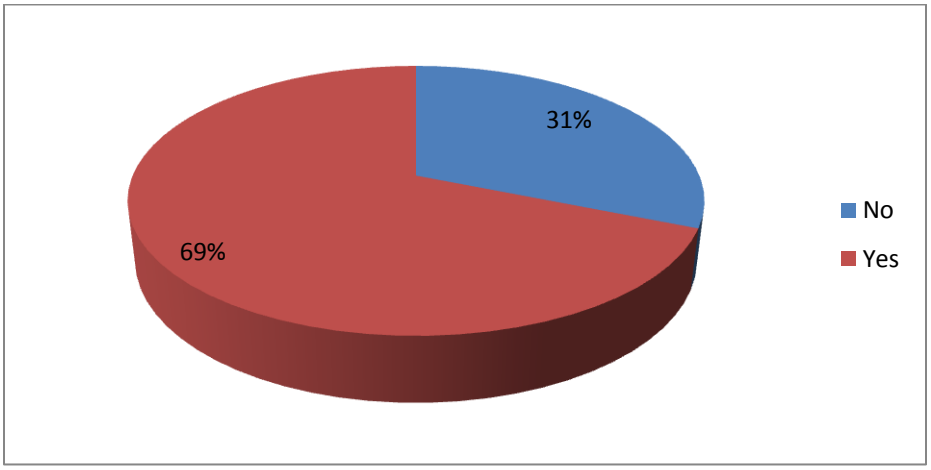
Source: Fieldwork (2012)

From figure 5.13, Tuskys Imara within the CBD reported 58% of the respondents reading the consumer packaging information on deodorants while 23% only read the label sometimes and 18% did not read the label information at all. In Nakumatt Westgate at Westlands, 33% of the respondents reported to always read the consumer packaging information on deodorants, 27% read it often 23% sometimes, and the remaining 17% did not read it at all. Of the respondents interviewed at Tuskys Eastlands in Buruburu, 41.7 % were found to read the consumer packaging information on products with 29.2 % always reading and 12.5% reading often.

5.7.3 Influence Of Label Information

When asked the question "Does label information influence your buying decisions?" the consumers responded as shown in figure 5.14. 69 % of the respondents reported to be influenced by label information in their buying decisions while 31% were not influenced. This indicates that the information on a product is useful to the consumer when making the choice on whether to purchase the product or not. On the other hand, consumers are only likely to make decisions using label information on issues that are important to them.

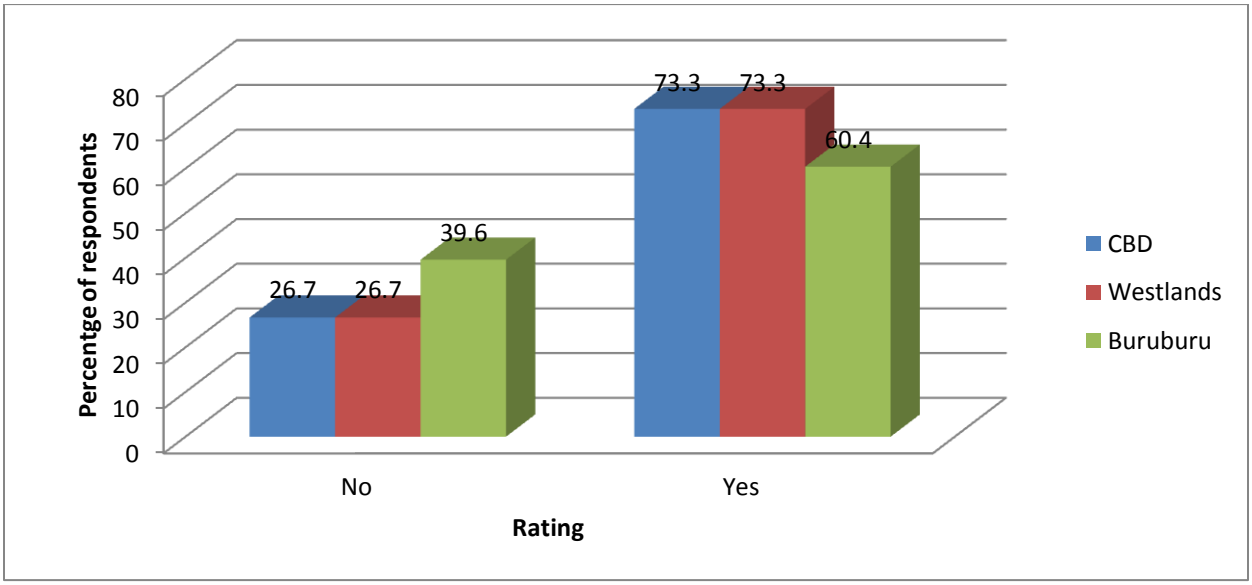
Figure 5.14 Influence of label information when buying



Source: Fieldwork (2012)

The influence of label information when buying was tested in the three locations (see figure 5.15) and similar results were obtained with majority of the respondents in all locations reporting to be influenced.

Figure 5.15 Influence of label information when buying: Three geographical locations



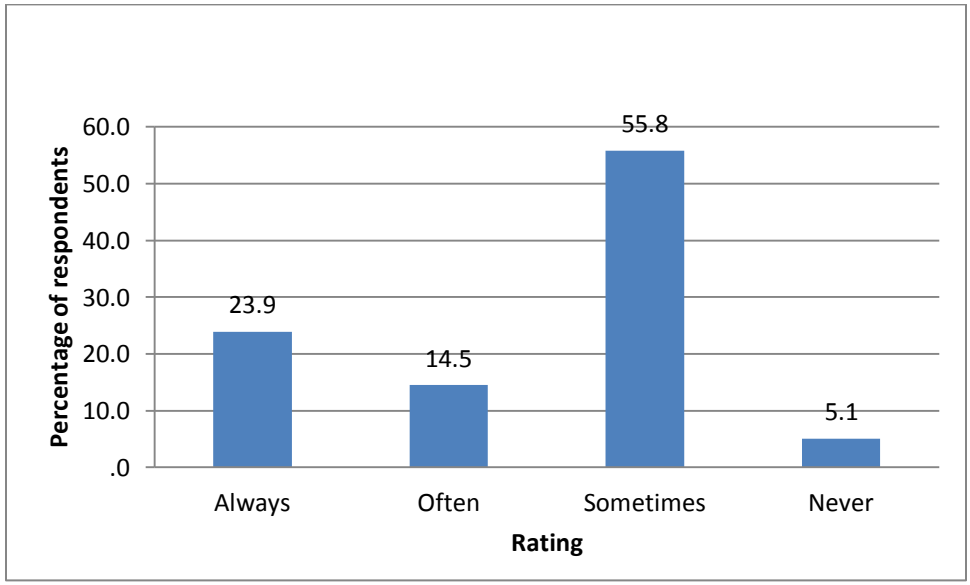
Source: Fieldwork (2012)

As illustrated in figure 5.15, in all three locations the larger percentage of respondents reported to be influenced by label information in their purchasing decisions. At Tuskys Imara within the CBD 73.3% of the respondents admitted to being influenced by label information while 26.7% reported that it did not influence their buying decisions. Similar results were recorded in Nakumatt Westgate in Westlands with 73.3 % of the respondents reported to be influenced by label information when buying deodorants while 26.7% were not influenced at all. The data from Tuskys Eastlands in Buruburu showed that, 60.4% of the respondents agreed that label information influenced their buying decisions while 39.6% declined that it did not.

5.7.4 Trust Of Environmental Labeling On Products

When asked the question "If you look at environmental labeling on products, how often do you trust it?" consumers responded as shown in figure 5.16

Figure 5.16 Trust of environmental label information



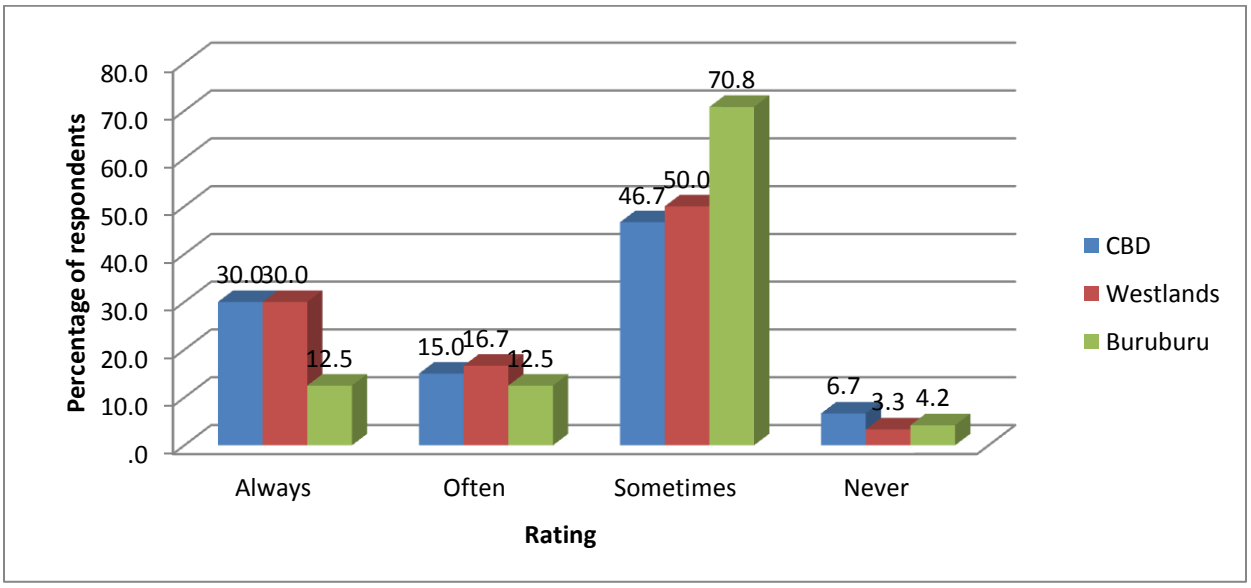
Source: Researcher (2013)

As seen in figure 5.16, 23.9% of the respondents reported to always trust environmental label information on deodorants, 14.5% reported to trust it often, 55.8% trust it sometimes and 5.1% do not trust environmental label information at all. Majority of the respondents only trust environmental labels sometimes.

As noted previously a consumer may be confused and therefore not fully trust a label if it is very general, is not easily verified, represents claims that are not useful in the context of the consumer or overemphasizes a single attribute while others less obvious (Ravenswaay, 1996). Further research is necessary to determine the cause of the current level of trust in environmental labels.

This question was put to respondents in all three locations (figure 5.17) and similar trends were observed.

Figure 5.17 Percentage of respondents' trust of environmental label information: three geographical locations

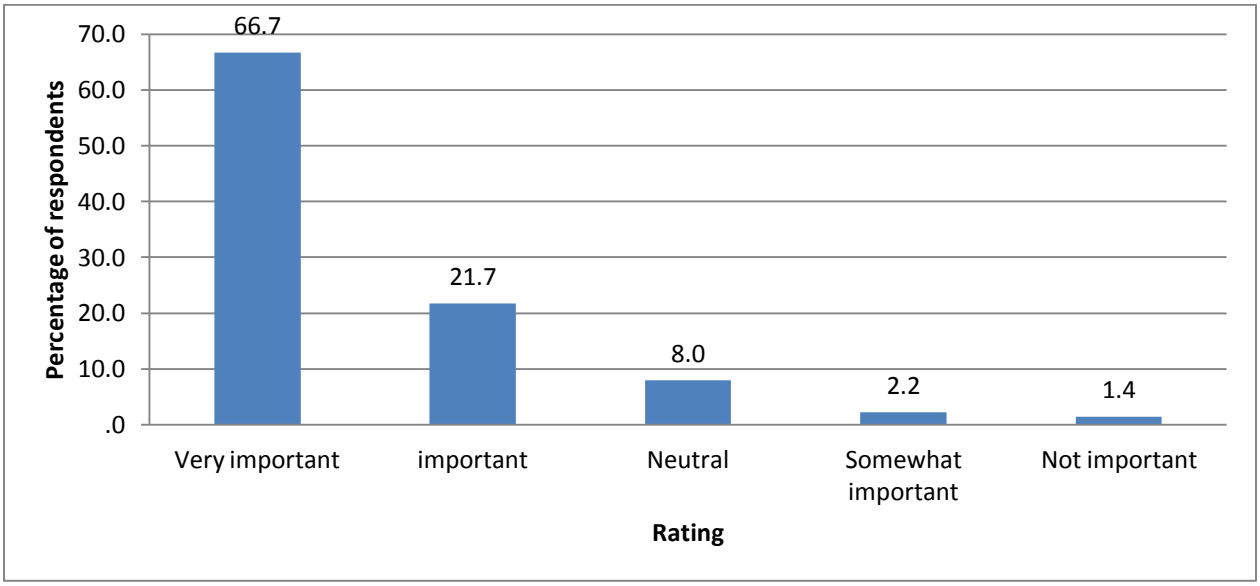


Source: Fieldwork (2012)

In all three locations the higher response percentage is clustered around trust of environmental labels sometimes as seen from figure 5.17. At Tuskys Imara within the CBD, majority of the respondents, 46.7% only trust environmental labeling sometimes 30% trust it always, and 15% trust it often. The data collected at Nakumatt Westgate in Westlands showed that 30% of the respondents interviewed always trusted the environmental labeling on products, 16.7% trusted it often while 50% only trusted it sometimes. The remaining 3% never trust labeling on products. At Tuskys Eastlands In Buruburu, 25% of the respondents interviewed conceded to trusting environmental labeling on products with 12.5% trusting always and 12.5% trusting often. The majority 70.8 % only trusted the labeling sometimes and 4.2% did not trust the labeling at all.

5.7.5 Importance Of Certification

Figure 5.18 Total respondents rating on importance of certification



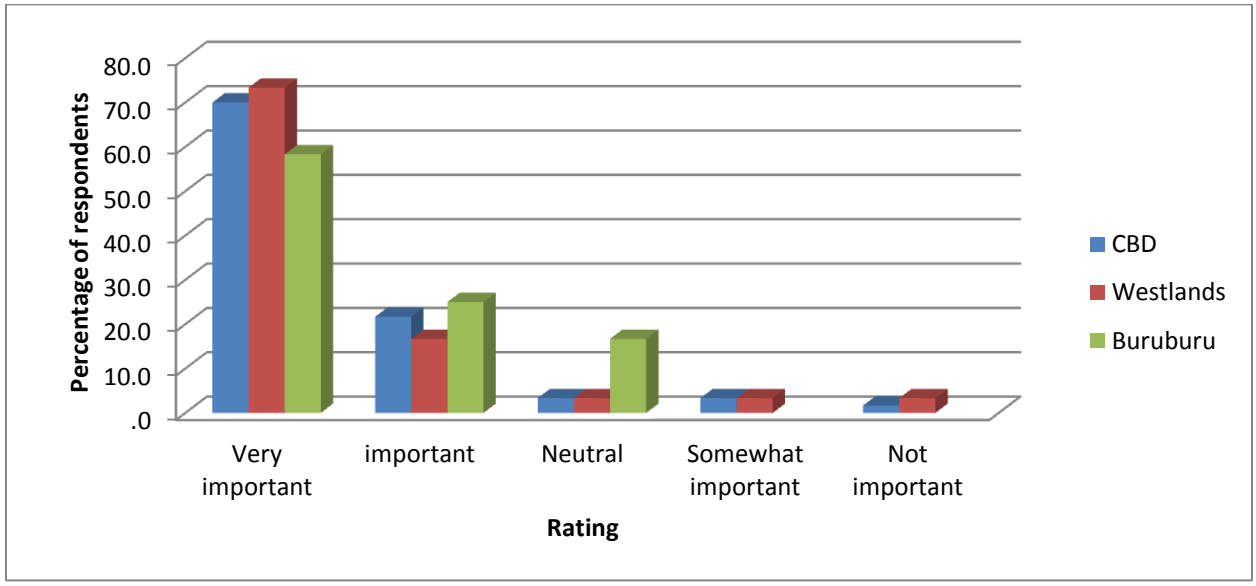
Source: Fieldwork (2012)

Figure 5.18, illustrates respondents rating of the importance of certification. 88.4% of the respondents reported that it was important that manufacturers are inspected for claims of environmental responsible production, with 66.7% considering very important and 21.7% considering it important. 8% were neutral and 2.2% considered it somewhat important while only 1.4% considered certification unimportant.

Within the three geographical locations certification was reported to be very important to respondents (figure 5.19).

Comparison of the importance of certification in three geographical locations

Figure 5.19 Comparison of respondents rating of the importance of certification in three locations



Source: Fieldwork (2012)

As represented by figure 5.19, a large percentage of the respondents felt that certification of ecolabels was important, in all three locations. Of the consumers interviewed from Tuskys Imara within the CBD, 92% reported that it was important that manufacturers are inspected for claims of environmentally responsible production, with 70% considering very important and 22% considering it important.

At Nakumatt Westgate in Westlands, 73% of the respondents considered it very important that manufacturers are inspected for claims made about goods produced in an environmentally responsible manner. 17% of the respondents considered it important. The remaining 10% were either neutral or did not consider certification of ecolabel claims important.

From the data collected at Tuskys Eastlands in Buruburu; this question had no negative response. 58 % of the respondents felt that it was very important for manufacturers to be inspected 25% felt that it was important while 17% were neutral. Therefore none of the respondents considered certification of environmental claims an unimportant procedure.

5.8 THE RELATIONSHIP BETWEEN ENVIRONMENTAL CONSIDERATION WHEN BUYING AND RECOGNITION OF ECOLABELS

Table 5.9 Correlation between environmental consideration when buying and recognition of ecolabels

Correlation between environmental consideration when buying and recognition of ecolabels **. Correlation is significant at the 0.01 level (1-tailed).				
Spearman's rho	Consideration	Correlation Coefficient	1.000	.978
		Sig. (1-tailed)		.000
		N	138	138
	Recognition	Correlation Coefficient	.978	1.000
		Sig. (1-tailed)	.000	
		N	138	138

Source: Fieldwork (2012)

A Spearman's Rank Order correlation test was run to measure the strength of the relationship between respondents' environmental consideration in buying and their recognition of ecolabels. There was found to be a strong, positive correlation between the two variables (see table 5.9) which was statistically significant (r_s= 0.978). There is a significant association between environmental consideration in buying and consumer recognition of ecolabels. Consumers who practice high levels of environmental consideration when buying are likely to recognize ecolabels often. Therefore the null hypothesis; 'there is no significant relationship between environmental consideration in buying and consumer recognition of ecolabels' is rejected.

CHAPTER 6 : SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter highlights the summary of the results. It makes conclusions and recommendations to policy makers and other stakeholders. It also points out areas for further research

6.1 SUMMARY OF FINDINGS

There was found to be a high level of environmental consideration when buying. Brand was the buying factor considered important by the most number of respondents followed by price. Slightly over 50% of the respondents reported that environmental impact of the deodorant product would be important to them. 40% of the respondents interviewed considered the environmental friendliness of deodorant in their purchasing decisions either always or often

The ecolabels identified in the supermarket were mainly Type II ecolabels which are self-declared environmental claims without independent third-party verification. The most recognized ecolabels were the 'Keep our country clean' ecolabel and the 'recycle' ecolabel. The least recognized ecolabels were 'leaping bunny' at 10.1% recognition and 'fairtrade' at 26.8% recognition. There was found to be no significant difference in ecolabel recognition among the three geographical locations in the study.

There was found to be no significant difference in ecolabel recognition among factors in all population characteristics categories; age, sex, and education. There is no relationship between consumer characteristics; age, sex, education and consumer recognition of ecolabels

There is a high correlation coefficient (r_s=0.978) between the two factors environmental consideration in buying and recognition of environmental labels.

42.7% of the respondents reported to trust environmental label information on deodorants and 55.8% only trust them sometimes. 52.9% of the respondents read the label information and 69% of the respondents are influenced by label information in their buying decisions. 88.4% of the respondents reported that it was important that manufacturers are inspected for claims of environmental responsibility, and only 1.4% felt that certification was not important.

6.2 CONCLUSIONS

The high environmental consideration when buying is a hopeful indication of the future of both verbal environmental product declarations and the use of ecolabels in advertising. Brand was the buying factor considered important by the most number of respondents followed by price. Very low percentages of respondents were neutral to price and brand which indicates that both are important determining factors when buying. On the other hand slightly over 50% of the respondents reported to consider environmental impact of deodorant when buying which is indicative of the percentage of respondents who could benefit from advertising based on positive environmental aspects. Ecolabels on deodorants could be marketed as a brand on their own because there is already positive response towards brand as a buying factor

The ecolabels identified in the supermarket were mainly Type II ecolabels which are self-declared environmental claims without independent third-party certification. This makes them the easiest type of ecolabelling scheme to adopt hence the most common. Type III ecolabels which have independent verification procedures were found to be less common. They require conformity to a set of standards that is checked by the verification bodies hence more effort is required for adoption.

The ecolabels on the packaging were very small hence could not be identified easily. Most respondents did not recognize common labels such as 'Green Dot' despite its presence on common products such as bread wrapping. The most recognized ecolabels were the 'Keep our country clean' ecolabel and the 'recycle' ecolabel. These were the ecolabels most familiar to consumers as they are common in public dustbins within the city centre. Familiarity is a major factor in recognition and is particularly enhanced when the ecolabel size is magnified as is the case with these two ecolabels. It is important that an ecolabel is understood by the consumer even as visibility is improved. The ecolabels "we save trees" and 'environmentally friendly' also had a high recognition as the meaning is immediately communicated as one reads. The least recognized ecolabels were 'fair-trade' and 'leaping bunny' whose symbols did not have an accompanying explanation.

There was found to be no significant difference in ecolabel recognition among the three geographical locations. This could be attributed to the fact that the products available in the three

supermarkets were similar and there was no price differentiation of products in the three study locations.

There was found to be no significant difference in ecolabel recognition among respondents of different age categories tested. The males recorded slightly higher percentage recognition than the females but there was no significant difference when subjected to statistical testsAge does not have a significant impact on respondents recognition of ecolabels. This could be attributed to the fact the ecolabels tested were found on products that cut across sexes. Education was an exception among the three cases, as it yielded a significantly lower p value than the other two indicating a lower probability that the difference was by chance. Previous research has indicated that people with a high education tend to be more environmentally friendly than those without. Therefore respondents with a higher education would be expected to have a higher recognition of ecolabels. This would explain the lower probability that the difference was by chance in this case.

There is a high correlation coefficient between the two factors environmental consideration in buying and recognition of environmental labels. Therefore a strong association exists between one's consideration for the environment and their recognition of ecolabels. This means that consumers who place a high importance on environment when buying are likely to read and recognize ecolabels more often.

42.7% of the respondents reported to trust environmental label information on deodorants and 55.8% only trust them sometimes. This indicates that there is a future in influencing consumer choice in buying by the type of environmental labels placed on goods. Therefore there is need to narrow the gap between believers and non believers by removing the trust barriers. 52.9% of the respondents read the label information and 69% of the respondents are influenced by label information in their buying decisions. Therefore this proportion would choose to buy or not depending on the label information.

Majority of the respondents indicated that they would like certification for ecolabeling claims. This is an indication of the need for an eco-certification scheme with set standards and audit procedures before acquisition of a particular ecolabel. This would help not only in protecting the

consumer from unscrupulous claims by manufacturers but also in providing visibility for goods produced through sustainable processes.

Lack of trust of the ecolabel itself may limit the consumers' consideration as it is difficult to put as a priority what one cannot tell whether to be true or untrue. Certification would be a useful step forward in improving the trust level of the environmental labels in the market. Currently there isn't a local eco-certification standard. Therefore the consumer is left entirely at the mercy of manufacturers using Type II ecolabels, verbal mention of 'green' products and other ecolabels in the product advertising.

6.3 RECOMMENDATIONS

6.3.1 Recommendations For Further Research

There is need for further research on this topic on areas such as.

- The type of environmental declarations most effective to consumers whether verbal in advertising or as ecolabel symbols.
- Environmental protection attributes that are of importance to the local consumer and how these attributes may be used in ecolabeling.
- This study focused on consumer recognition of selected ecolabels. It would be useful to study what factors influence recognition of a particular ecolabel.

6.3.2 Recommendations To Policy Makers

Brand and price are highly prioritized by the consumer when choosing deodorant products and there is encouraging evidence of some importance attached to its environmental impact by some consumers. Current advertising does not emphasize on the environmental attributes of the deodorant product even if they do exist. The ecolabels on the packaging are not designed or positioned to capture the attention of the consumer. Advertising focusing on positive environmental attributes of the product would be important in building up the beliefs of the consumer in the benefits of a greener product. This is especially useful as the consumer already exhibits high environmental consideration when buying. The positive correlation between environmental consideration when buying and recognition of ecolabels also presents an opportunity to amplify the use of ecolabels as a marketing tool targeting green consumers.

The government through NEMA directives is already working towards a green economy. This policy embraces cleaner production technologies and involves corporate and individuals in promoting this goal. Ecolabels could be a tool to communicate the prevailing changes in industry. It would be a useful step forward to have a comprehensive eco certification scheme in consultation with business industry and relevant NGO'S. This would greatly benefit both corporate and the individual consumer. Corporates would get validation for their efforts towards a cleaner production process and ultimately a green economy through an ecolabel that is recognized. The individual consumer would be protected from unverified claims about goods produced in an environmentally sustainable manner. From this study there is a high level of consideration for the environment when buying therefore the presence of a trusted ecolabel would make it easier for the consumer to practice this consideration. Ecolabeling is a life cycle approach to environmental management therefore all stakeholders in the production process from raw material producers to industry and finally the consumer would benefit from a correctly working eco-certification scheme. Along with these efforts sensitization should be carried out to overcome the barrier of limited awareness among stakeholders concerning economic and environmental benefits of ecolabelling.

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8.0 APPENDICES

8.1 QUESTIONNAIRE

Thank you for taking time to answer this short questionnaire regarding *Consumer perception of Ecolabels.* My name is Miriam Ogunyo and I am a student of The University of Nairobi-Department of Geography and Environmental Planning. This research is in partial fulfillment of the degree of Master of Arts in Environmental Planning and Management.

Your participation in this study is completely voluntary and there are no foreseeable risks associated with it. However, if you feel uncomfortable answering any questions, you can withdraw from the survey at any point.
Your questionnaire responses will be strictly confidential and data from this research will be reported in the dissertation anonymously.

Your co-operation is much appreciated.

Questionnaire No.

Date of interview:

Location :

A. PERSONAL HISTORY

1. Sex: Male ☐ Female ☐
2. Age: Between 15- 34 ☐ Between 35 – 54 ☐ Over 55 ☐
3. Level of education:
   Primary ☐ secondary ☐ post secondary ☐

B. ENVIRONMENTAL AWARENESS AND ENVIRONMENTAL PRODUCT DECLARATIONS/ ECOLABELS

1. How often do you shop at this particular branch of this retail chain (Tuskys)

   a) I do all my shopping here
   b) I do some of my shopping here and some in another branch of Tuskys* Kindly mention which branch_____
   c) Other

2. I try to buy energy efficient household appliances

   a) Always b) Often c) Sometimes d) Never

3. I have replaced light bulbs in my house with those of smaller wattage so that I will conserve on electricity use

   a) Always b) Often c) Sometimes d) Never

4. If I understand the potential danger to the environment that some products can cause I do not purchase these products

a) Always b) Often c) Sometimes d) Never

5. I will buy products which have less packaging

a) Always b) Often c) Sometimes d) Never

6. I buy toilet paper made from recycled paper.

a) Always b) Often c) Sometimes d) Never

C. CONSUMER RECOGNITION OF LABELS

Please tick the boxes to indicate if you recognize the labels or not.

Yes ☐ No ☐

Yes ☐ No ☐

Yes ☐ No ☐

Yes ☐ No ☐

Yes ☐ No ☐

Yes ☐ No ☐

Yes ☐ No ☐

Yes ☐ No ☐

Yes ☐ **No** ☐

Yes ☐ **No** ☐

D. CONSUMER RESPONSE TO ECOLABELS ON DEODORANTS

1. How often do you buy deodorant at Tuskys?

a) Always b) Often c) Sometimes c) Never

2. Do you consider the environmental friendliness of deodorant in your purchasing decisions?

a) Always b) Often c) Sometimes d) Never

3. How often do you read the consumer packaging information on deodorants?

a) Always b) Often c) Sometimes d) Never

4. Does label information influence your buying decisions?

a)Yes b) No

5. If you look at environmental labeling on products, how often do you trust it?

a) Always b) Often c) Sometimes d) Never

6. What is the greatest influence in buying deodorant products?

	1 Not important	**2 Somewhat important**	**3 Neutral**	**4.Important**	**5 Very Important**
Price of the product					
Brand					
Environmental impact of content					
Environmental impact of packaging					

7. How important is it to you that manufacturers are inspected for claims about goods produced in an environmentally responsible manner?

a) Very important b) Important c) Neutral d) Unimportant e) Very unimportant

8.2 FIELD DATA

Table 8.21 Comparison Of The Importance Of Four Buying Factors In the three geographical locations

	LOCATION		
	Not important	**Important**	**Neutral**
FACTOR	**PERCENTAGE**		

Price	CBD	5.1	**78**	16.9
	BURUBURU	27.7	**66.0**	6.4
	WESTLANDS	23.3	**73.3**	3.3
Brand	CBD	13.6	**78**	8.5
	BURUBURU	12.8	**76.6**	10.6
	WESTLANDS	16.7	**76.7**	6.7
Environmental Impact of content	CBD	23.8	**57.6**	18.6
	BURUBURU	34	**48.9**	17
	WESTLANDS	13.3	**53.3**	33.3
Environmental impact of packaging	CBD	29	**56**	15
	BURUBURU	34	**44.7**	21.3
	WESTLANDS	16.7	**60**	23.3

Table 8.22 Summary of three locations' results on; 'Consumers Environmental Consideration When Buying'

			Always	**Often**	**Sometimes**	**Never**
				PERCENT		
Question 2	I try to buy energy efficient household appliances	CBD	30	13.3	50	6.7
		Buruburu	8.3	37.5	31.3	22.9
		Westlands	10	36.7	26.7	26.7
Question 3	I have replaced light bulbs in my house with those of smaller wattage so that I will conserve on electricity use	CBD	40	23.3	26.7	8.3
		Buruburu	2.1	14.6	35.4	47.9
		Westlands	6.7	23.3	60	10
Question 4	If I understand the	CBD	38.3	20	25	16.7

	potential danger to the environment that some products can cause I do not purchase these products	Buruburu	8.3	29.2	31.3	31.3
		Westlands	26.7	16.7	20	36.7
Question 5	I will buy products which have less packaging	CBD	20	28.3	41.7	10
		Buruburu	8.5	55.3	19.1	17.0
		Westlands	13.3	30	20	36.7
Question 6	I buy toilet paper made from recycled paper	CBD	43.3	13.3	30	13.3
		Buruburu	6.3	31.3	16.7	45.8
		Westlands	13.3	16.7	16.7	53.3

Table 8.23 Number of respondents reporting recognition of selected ecolabels

Location	Sample size	Der Grunde Punkt	CFC Free	Ozone Friendly	Recycle	Leaping Bunny	Ozone friendly No CFC	Keep our country clean	Save our trees	Environmentally friendly	Fairtrade
Tuskys Imara CBD	60	19	18	36	51	8	27	55	46	48	13
Nakumatt westgate-Westlands	30	17	15	19	30	1	14	28	20	24	9
Tuskys Eastlands-Buruburu	48	28	20	31	41	5	17	48	35	38	14
TOTAL	138	64	53	86	122	14	58	131	101	110	36

8.3 IMAGES OF ECOLABELS

Plate 1:Leaping Bunny, Keep your country clean, green dot ecolabels

Plate 2: Green Dot and Mobius loop Ecolabels

Plate 3: Energy rating Ecolabel

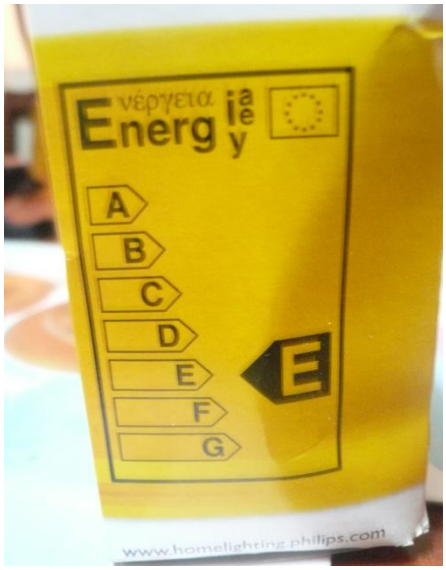

Plate 4: Henkel Quality &Responsibility Ecolabel

Plate 5: Keep your country clean and Green Dot ecolabels


KEBS
KEEP THE ENVIRONMENT CLEAN