

EXAMINING THE LEVEL OF ECO-LABEL AWARENESS AMONG PRODUCT CONSUMERS IN CITY CENTRE AND SURROUNDING AREAS IN LILONGWE, MALAWI

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ABSTRACT

Background: Globally, increased concern for the environment has made eco-labels an important tool in guiding consumer choices. Incredible and informative eco-labels can greatly influence consumer buying tendencies. Although consumer awareness enhances sustainable consumption, few studies have examined level of eco-label awareness in developing countries such as Malawi.

Study Objective: To examine the level of eco-label awareness among product consumers in Lilongwe's City Centre and surrounding areas.

Methodology: The study utilized descriptive cross-sectional quantitative research design using a structured questionnaire to collect data on sociodemographic characteristics and consumer eco-label awareness. The study used non- random convenience sampling technique. Data were analysed in IBM SPSS statistics with means, modes, frequencies and proportions calculated to describe the sample characteristics. The confidence interval was set at 95% and differences were considered significant at P -value < 0.05 .

Findings: 73 adult participants were enrolled. Out of these 62% were females. Consumers demonstrated moderate eco-label awareness with an awareness mean score of 3.23 (SE = 0.11). Female respondents showed slightly higher eco-label awareness than males, but this difference was not statistically significant ($P=0.13$). The most recognized eco-labels were *Keep Clean* (89.04%), *Energy Efficient* (84.93%), and *Suitable for Recycling* (82.19%), while *Suitable for Re-use* (28.77%), *Forest Stewardship Council®* (30.14%), and *Green Product* (34.25%) were least recognized. There were no significant gender differences in eco-label recognition.

Conclusion: This study suggests that consumers in City Centre and surrounding areas have a moderate level of eco-label awareness. The results call for improved and stronger consumer-related education and enforcement of clear eco-labels information to promote sustainable consumption. Further research should examine eco-label awareness between urban and rural residents with a bigger sample.

KEYWORDS: Eco-label, consumer awareness, City Centre, sustainable consumption, environment, sustainability.

INTRODUCTION

With an increase in global population and manufacturing industry, excessive consumption of products has become inevitable, causing a big concern because of its direct impact on the environment (Carrion-Bosquez et al., 2023). Countries and firms have now turned to exploring the importance of adopting approaches that promote responsible consumption such as use of eco-labelled products. Consumers can significantly contribute towards conservation of nature and the environment by adopting more sustainable consumption habits (Carrion-Bosquez et al., 2023). The increased global concerns about environmental degradation, pollution, climate change, dwindling natural resources and sustainability in recent times have pushed consumers to search for sustainable options when making everyday purchases of commodities (Bhutia & Gupta, 2024; Mahesha & Rekha, 2024). These environmental issues have become a danger to human life (Hussain et al., 2020) consequently leading to emerging debates concerning environmental sustainability compelling countries to start to seriously worry about the environment and how to conserve it (Mahesha & Rekha, 2024). The increasing awareness of environmental issues among global consumers has led to a growing demand for eco-friendly products (Kumar & Basu, 2023). More people now choose sustainable consumption by opting for eco-friendly products over conventional products, adapting to the concept of eco-labelling, also known as green stickers (Mahesha & Rekha, 2024). On the other hand, more manufacturing companies are now producing environmentally friendly products (Hussain et al., 2020).

Developed in 1980s, eco-labels applied to environmentally friendly products as a crucial instrument for influencing consumer behaviour when purchasing items by informing the consumers about the impact of the products on the environment and help them make informed product purchasing behaviour (Li, 2025; Mahesha & Rekha, 2024). It is worth noting that the primary goal of eco-labelling is to promote purchasing of green items and

encouraging green consumption behaviour (Mahesha & Rekha, 2024). Globally, consumer eco-label awareness differs. For example, in India a study found a significant proportion of the interviewed individuals not aware of eco-labels, signaling for more consumer awareness campaigns on eco-labels (Mahesha & Rekha, 2024). In South America, Ecuadorian consumers showed favourable attitudes toward the environment and high degree of environmental awareness and factors that lead to environmental degradation, consequently influencing their product purchasing behaviour (Carrion-Bosquez et al., 2023). Evidence from Malaysia shows a positive correlation between eco-labels, green prices, green advertising, perceived environmental responsibility, and environmental knowledge concerning green purchase intention for eco-friendly products (Sam et al., 2021). In Africa, eco-label awareness varies. In some countries, eco-label awareness is limited to international labels only (Struwig & Adendorff, 2018) despite that eco-label awareness increases trustworthiness and favourable consideration of purchasing a product at a higher price (Chidera & Anyakoha, 2024).

In Malawi, eco-friendly concepts have existed for years but have become popular in the recent years. On the other hand, national policies and regulations to protect the environment are in place, for example, Environmental Management Act (1996), the National Ecotourism Strategy (2021), Environmental Management (Waste Management and Sanitation) Regulations (2008), Environmental Management (Plastics) Regulations (2015) (National Ecotourism Strategy, 2021; Griffin & Karasik, 2022). However, there is limited information on the ground regarding their use, implementation and enforcement, levels of awareness and how these factors affect consumers' buying behaviour. Understanding consumer awareness and behaviour helps firms and marketers to better understand how product consumers make a purchase decision out of the many factors that include type of goods, brands, and how these products impact them and their surroundings (Roy & Datta, 2022). Purchasing and consumption of products have grown significantly, raising concerns over the environment (European Commission, 2025). Sustainable consumption and use of eco-friendly products are foundational instruments towards achieving sustainable development. Eco-labels have become an essential tool for green products key for environmental sustainability (Li, 2025).

Despite Malawi government putting in place and promoting sustainable development policies such as the 2017 National Environmental Policy, more needs to be done to further enhance consumption of eco-friendly products to conserve the environment. However, despite global concerns and growing interest in sustainable consumption through use of eco-labelled products to conserve the environment, there is limited literature on eco-label awareness

including how consumers recognize eco-friendly products in Malawi, particularly in Lilongwe urban. The degree of awareness of commonly found eco-labels in Malawi is not well understood. Most of the available data on eco-label awareness is from other countries.

The main objective of this study was to examine eco-label awareness among consumers in City Centre and surrounding areas in Lilongwe, Malawi. With the rapid urbanization of Lilongwe, consumption of products has remarkably gone up. The 2018 Population and Housing Census showed that Lilongwe city constituted 5.6 percent of the total population (National Statistical Office, 2018). With this increased urbanization and increased consumption of products, it was important to understand how consumers in Malawi's Capital perceive eco-labels. The findings of this study have contributed to the literature on eco-label awareness in Malawi and the region. Knowledge on eco-label awareness informs policymakers and marketers on the existing gaps and approaches in the promotion of sustainable consumption through use of eco-friendly products in Malawi. This can lead to environmentally conscious consumer behaviour, consequently helping preserve the environment.

Literature Review

Eco-labels

The increasing awareness of environmental degradation and climate change has led to a paradigm shift in global consumption patterns, with sustainability emerging as a central concern (Panjaitan & Sinaga, 2025). In this era, consumers are more willing to buy eco-friendly products especially when their purchase reasons are based on the conservation of the environment (Panopoulos et al., 2023). As consumers become more environmentally conscious, they are increasingly seeking products that align with environmentally friendly practices, driving the growth of eco-labels that promote sustainable production and consumption patterns and reduce resource depletion, and supporting long-term environmental preservation (Panjaitan & Sinaga, 2025; Nguyen & Le, 2020).

The concept of eco-label consumer awareness implies the ethical conduct of producers, distributors of products alike and is regarded as a prerequisite for consumers to notice a label on a product when buying things (Henaku & Amu, 2023). Eco-friendly labels have become symbols of trust and credibility that reassure buyers that the product was sourced and manufactured with environmental consciousness. This does not only strengthen a brand's reputation but also encourages long-term customer loyalty (Bhutia & Gupta, 2024). Consumers exhibit significant concern for environmental protection and sustainability. This

concern motivates their ongoing pursuit of information regarding the efficient utilization of scarce resources and the recycling of products (Hameed & Waris, 2018).

World Trade Organization (WTO) defines eco-labels as certifications for products that comply with specific environmental standards as established by an authorized body or a government agency (Nguyen & Le, 2020). Cambridge Dictionary defines an eco-label as an official symbol that shows that a product has been designed to do less harm to the environment than similar products (Cambridge University Press and Assesment, 2025). Others have defined eco-labelled products as products “that help bridge the buyer-seller knowledge gap by highlighting their environmental friendliness” (Nguyen & Le, 2020). These eco-labels often appear as logos or certifications on packaging, letting people know if a product is made with sustainable materials, produced with lower energy use, or has less impact on nature (Nguyen & Le, 2020). Eco-labelled products are widely recognized as environmentally friendly options that contribute to the protection of the planet (Nguyen & Le, 2020). These eco-labels serve as trusted indicators for consumers, assuring them that the products meet established standards of sustainability and responsible production (Kumar & Basu, 2023; Henaku & Amu, 2023). By signaling reduced environmental impact, eco-labels not only encourage greener purchasing intentions but also foster consumer confidence in brands that prioritize ecological responsibility (Kumar & Basu, 2023).

Eco-Label Schemes and Certification

There are two main schemes of eco-label classification. First eco-label classification considers whether an eco-label is mandatory or voluntary. Second scheme considers whether certification (granting the rights to use the label) is carried out independently or not. Mandatory labelling is generally stipulated by law and is mainly for certain specific performance issues with examples such as that for water or energy consuming devices (Horne, 2009). Voluntary labelling is an International Standards Organization (ISO) concept, and the scheme has three main categories, namely Type I, Type II and Type III (ISO, 1999a, b, 2000) (Horne, 2009; Henaku & Amu, 2023).

ISO 14020:2000 (2022) establishes the core foundational principles for all eco-labels and declarations concerning environmental sustainability (International Organization for Standardization, 2022). ISO Type I labels are environmental product labelling schemes verified by an independent third party, examples include “Blue Angel” (German) and “EU Flower” (European Union). Type II labels consist of environmental declarations made directly by manufacturers, importers, distributors, or retailers on their own initiative, for examples “CFC-free” while Type III labels show quantified life-cycle environmental data in

a detailed report format, for example “Environmental Product Declaration (EPD)” (Henaku & Amu, 2023).

Eco-label Consumer Awareness

Since the 1960s, consumer awareness and concern regarding environmental sustainability have progressively intensified on a global scale (Hameed & Waris, 2018). Public awareness of environmental issues and the impact of personal purchasing behaviour is steadily increasing. In recent times more consumers are intentionally seeking products that reflect their values around sustainability and environmental responsibility (Bhutia & Gupta, 2024). Consumer awareness of eco-labels indicates consumers’ consciousness of the existence of eco-labels. It is a marketing notion which reflects consumers’ right to be informed about the products they purchase (Henaku & Amu, 2023). Consumer awareness of eco-labels positively impacts consumers’ pro-ecological behavior at the same time enhancing the business rationale for delivering products with eco-components for environmental sustainability (Żuchowski et al., 2023)

Theoretical Foundation

Awareness is an important factor that helps influence consumer purchase intentions (Sharma & Kushwaha, 2019). This study utilized Theory of Planned Behaviour (TPB) developed by Ajzen (1991). It suggests that attitudes, subjective norms, and perceived behavioral control influence consumer behavior (Ajzen, 1991). TPB has been one of the most widely applied frameworks over the past two decades for explaining consumer purchasing decisions. It is useful in analyzing consumer perceptions and behaviors toward green packaging (Hamidu & Rahman, 2023).

The framework considers three types of beliefs of behavioral, normative, and control related to the framework’s key constructs, namely attitudes, subjective norms, and perceived behavioral_control (Ajzen, 1991; Hamidu & Rahman, 2023). TPB affirms that attitudes toward the behavior, subjective norms, and perceived behavioral control collectively influence intentions, which subsequently drive consumer behavior, refer to Figure 1 (Sharma & Kushwaha, 2019; Ajzen, 1991). While subjective norms represent social pressure to perform or avoid a behavior, attitudes reflect the consumer’s positive or negative evaluation of the behavior, and perceived behavioral control refers to the perceived ease or difficulty of performing a certain behavior (Sharma & Dave, 2025). This theory was suitable for this study because it helped explain eco-label awareness as an important factor that influences consumer buying behaviour.

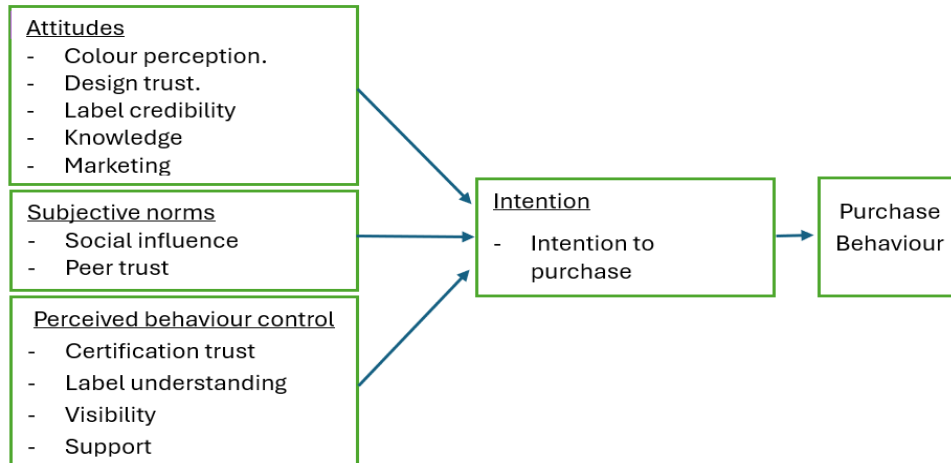


Figure 1. Illustration of Theory of Planned Behaviour adapted from Kovac et al (Kovac et al., 2025).

Conceptual Framework

The conceptual framework proposed in this study considered consumers' environmental concerns and their eco-label awareness to be the independent variables that influence consumer purchasing behaviour, refer to Figure 2. Consumers become more conscious of environmental issues and can recognize and interpret eco-labels. This awareness influences their intentions to buy and in turn, this decision translates to actual buying behaviour. The framework is a pathway from awareness and environmental concern, through the decision process, to eventually purchasing behaviour, closely relating to the intention-to-action logic of the Theory of Planned Behaviour that supports this study. The more aware customers are, and the more they care about the environment, the more likely their awareness influences choices they make when deciding what to buy.

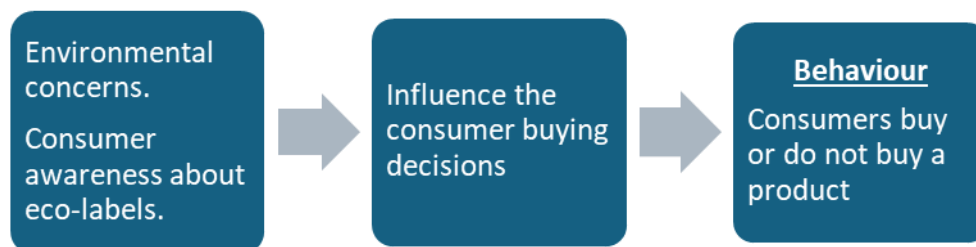


Figure 2. Conceptual Framework for this study.

Empirical Literature Review

Eco-label awareness

Global evidence shows that eco-label awareness of less familiar labels is generally low with many consumers recognizing common eco-labels such as recycling, and biodegradable (Jóźwik-Pruska et al., 2022). Available evidence shows that consumers often confuse eco-label meanings, validating the knowledge gaps that exist regarding certification standards, thereby reducing consumer trust and the ability to make informed choices (Jóźwik-Pruska et al, 2022).

The study by Sharma et al (2025) done in India found that consumers often show moderate awareness but limited comprehension of the information on eco-labels coupled with barriers like product cost, consumer confusion, and mistrust affecting their buying behaviour (Sharma et al., 2025). Zhao et al (2021) in their study found that females, compared to males, usually have stronger green consumption intentions and they buy eco-friendly products more often than their male counterparts. Other authors indicate that, based on factors such as knowledge, attitude and actual buying behaviour, gender patterns in eco-label awareness and green purchasing may differ (Zhao et al., 2021). In a Singaporean study, female consumers demonstrated a higher eco-consciousness than males, consistently showing significant green consumption behaviour among females (Malhotra, 2025).

In African studies, consumers showed a modest to high degree of awareness of eco-labelling for environmental sustainability (Chidera & Anyakoha, 2024; Struwig & Adendorff, 2018; Hamidu & Rahman, 2023). A study done in South Africa found that most consumers showed remarkable awareness of well-known international eco-labels. They recognized the European Union (EU) energy labels and Ozone Friendly eco-labels on deodorants, but to a lesser extent, the ALU aluminum recycling eco-label (Struwig & Adendorff, 2018). Other researchers have suggested that level of consumer awareness on eco-labels and limited enforcement capacity in developing countries, call for the need to have standardized labelling and consumer education initiatives (Yokessa & Marette, 2019).

RESEARCH METHODOLOGY

Research Design

This study used a descriptive cross-sectional quantitative approach to examine the level of eco-label awareness. The method was chosen because its data were quantifiable in nature and it helped establish quantifiable links for statistical testing of relationships between variables, for example sociodemographic and consumer awareness.

Study Setting

The study was conducted in City Centre and its surrounding areas in Lilongwe, the Capital City of Malawi. City Centre blends consumers from a wide range of socioeconomic and educational backgrounds, which made it a perfect place to study eco-label awareness. The study targeted consumers working in City Centre and Capital Hill or those residing in nearby residential locations. The study setting was an ideal preference because it houses numerous government offices, non-governmental organizations, international organizations, local organizations, retail outlets, private companies and residential areas presumably making sustainability campaigns and eco-label activities more prominent. Lilongwe's quick urbanization and expansion of retail infrastructure expose consumers to a greater variety of both locally made and imported products, some of which are eco-labelled. Besides, there are several retail outlets selling various products for office and home use.

Population and sample

The target population for the study was consumers in Lilongwe City Centre and nearby areas aged 18 years and above. The 2018 Malawi Population and Housing Census reported that there were 989,318 people in Lilongwe City (National Statistical Office, 2018). The study population included consumers of both genders, with varying educational backgrounds, income levels, and professions. The focus was on consumers who purchase goods such as food and non-food items including household goods/groceries, cosmetics, gadgets/equipment, etc. The sample size was 73 respondents. The study used non-random convenience sampling technique. This sampling method matched well with the study objective.

Research Instruments

Self-administered structured questionnaire was used to collect data from participants on sociodemographic characteristics (age, gender, education level, income level, etc.) and eco-label consumer awareness. The respondent answered questions on all sections such as Sociodemographic, Eco-Label Awareness including Eco-Label Recognition and eco-label product preferences. The questionnaire was based on a carefully worded interview schedule requiring short answers with the respondent mainly ticking off their preferred answers. The questionnaire was made available online on Google Form. Potential participants were provided with a link to access Google Form to answer the questions. Before obtaining the informed consent from the participants to participate, the purpose of the study was explained and confidentiality assured. After going through consenting information, potential participants answered a consenting question whether they agreed to participate in the study or not. Only those that agreed/consented, proceeded to take the survey. The investigator

provided detailed section by section instructions on how to complete the questionnaire. Participants took less than 30 minutes to complete the questionnaire.

Pilot Study

To test the study instrument, to check the understanding of the questions, the investigator first tested the questionnaire on seven random consumers within Lilongwe City Centre in a pilot survey. This represented approximately 10% of the main study sample size. The pilot study helped the investigator correct and modify unclear areas/questions.

Ethical Considerations

The research proposal was approved by the Research Ethics Committee at DMI St John the Baptist University. Informed consent was obtained from participants for their participation in the study. The aim of the study was explained to the participants before the questionnaire was administered. Participants were told that participation was voluntary and that they were free to withdraw at any time if they so wished without any penalty. To protect the interests and welfare of study participants, the investigator ensured respect, privacy and confidentiality. Unique study identification numbers were used to identify study participants to maintain their anonymity. The data were kept confidential and stored in password protected computer and accessible used by the researcher.

Data Analysis and Interpretation

The study employed a quantitative approach to data analysis. The completed online forms were downloaded in Excel worksheet and kept in password protected computer to ensure confidentiality. Data were cleaned in Excel worksheet. Data were analysed using descriptive and inferential statistical procedure. Categorical data such as age categories were analysed using cross tabulations generating frequencies (n), percentages (%), and their confidence intervals. Ordinal data such as the Likert scale data were analysed by means and their standard errors. Pearson Chi Square tests were done to examine statistical differences in proportions while student t-test was used to examine statistical differences in comparisons of groups. Data were analysed in IBM Statistical Package for Social Sciences (SPSS). The confidence interval was set at 95% and differences were considered significant at P -value <0.05 .

The analysis considered eco-label consumer awareness as independent variable. Consumer behaviour was considered the dependent variable, while sociodemographics were the control variables. This analysis model helped identify and describe data in a better way.

RESULTS

The study recruited 73 participants. Out of those 45 were female representing 62%. Most of the respondents were between the ages of 36 and 59 years, representing 63%. All the respondents reported that they were Christians and 53% were married. Regarding education, 96% had tertiary education as the highest level of education. There was a statistically significant difference between male and female participants that preferred not to disclose their monthly estimated income ($P=0.01$). Majority of the participants were working in public sector. Table 1 below describes the study participants' sociodemographic characteristics.

Table 1. Demographic characteristics of respondents by sex category.

Demographics	Sex categories		Total, %(n)	Chi-square (χ^2)	p-value
	Male, %(n)	Female, %(n)			
Age categories					
18-35	39.29(11)	33.33(15)	35.62(26)		
36-59	60.71(17)	64.44(29)	63.01(46)		
>60	0.00(0)	2.22(1)	1.37(1)	0.83	0.66
Marital status					
Divorced/Separated	3.57(1)	8.89(4)	6.85(5)		
Married	67.86(19)	44.44(20)	53.42(39)		
Prefer not to say	3.57(1)	4.44(2)	4.11(3)		
Single	25.00(7)	35.56(16)	31.51(23)		
Widowed	0.00(0)	6.67(3)	4.11(3)	4.99	0.29
Education					
Secondary	3.57(1)	4.44(2)	4.11(3)		
Tertiary	96.43(27)	95.56(43)	95.89(70)	0.03	0.85
Income					
<200,000	3.57(1)	4.44(2)	4.11(3)		
200,000 – 399,999	7.14(2)	4.44(2)	5.48(4)		
400,000 – 599,999	3.57(1)	17.78(8)	12.33(9)		
600,000 – 799,999	10.71(3)	15.56(7)	13.70(10)		
800,000 – 999,999	7.14(2)	13.33(6)	10.96(8)		
>1,000,000	64.29(18)	22.22(10)	38.36(28)		
Prefer not to say	3.57(1)	22.22(10)	15.07(11)	15.93	0.01*
Occupation					
Businessperson	3.57(1)	4.44(2)	4.11(3)		
Employed (Private Sector)	46.43(13)	28.89(13)	35.62(26)		
Employed (Public Sector)	39.29(11)	60.00(27)	52.05(38)		
Self employed	3.57(1)	0.00(0)	1.37(1)		
Student	0.00(0)	4.44(2)	2.74(2)		
Unemployed	7.14(2)	2.22(1)	4.11(3)	6.81	0.23
Location of work					
Capital Hill	21.43(6)	28.89(13)	26.03(19)		
City Centre	60.71(17)	60.00(27)	60.27(44)		

Outside City Centre/Capital Hill	17.86(5)	11.11(5)	13.70(10)	0.94	0.62
Proportion with electricity	100.00(28)	97.78(44)	98.63(72)	0.63	0.43
Proportion owning a refrigerator	100.00(28)	93.33(42)	95.89(70)	1.95	0.16

Results from the analysis of eco-label awareness showed that eco-label awareness among consumers in City Centre and surrounding areas was moderate with an awareness mean score of 3.23 (SE = 0.11); demonstrating a stronger recognition of eco-labels and belief-related awareness. More participants reported that they believe eco-labels indicate that a product is environmentally friendly, mean score of 3.63 (SE = 0.13), and that they have ever heard about eco-labels before, mean score of 3.61 (SE = 0.13) and that they can identify at least one eco-label when buying products, mean score of 3.58 (SE = 0.13). On the other hand, fewer participants indicated that they check product labels for environmental information, mean score of 2.79 (SE = 0.14). It was also shown that fewer consumers have ever purchased products because they had eco-labels, mean score of 2.84 (SE = 0.15). The study further found that fewer consumers differentiate between eco-labelled and non-eco-labelled products. The findings demonstrate that consumers were moderately aware of eco-labels and that they were able to link these eco-labels to environmental protection. Table 2 is an illustration of the participants' level of eco-label awareness.

Table 2. Level of eco-label awareness.

Awareness index	Sex categories		Total means(se)	t-test	p-value
	Male means(se)	Female means(se)			
Ever heard about eco-labels before	3.35(0.26)	3.77(0.14)	3.61(0.13)	1.51	0.13
Understand what eco-labels mean on product packages	3.17(0.25)	3.68(0.13)	3.49(0.13)	1.90	0.06
Can identify at least one eco-label when buying products	3.28(0.25)	3.77(0.14)	3.58(0.13)	1.82	0.07
Check product labels for environmental information	2.64(0.23)	2.88(0.17)	2.79(0.14)	0.84	0.39
Differentiate between eco-labelled and non-eco-label products	2.92(0.22)	3.08(0.18)	3.02(0.14)	0.54	0.58
Trust information provided on eco-labels	2.85(0.24)	3.33(0.15)	3.15(0.13)	1.70	0.09
Believe eco-labels indicate that a product is environmentally friendly	3.35(0.26)	3.8(0.14)	3.63 (0.13)	1.58	0.11
Ever purchased products because	2.67(0.26)	2.95(0.18)	2.84(0.15)	0.87	0.38

they had eco-labels					
Think eco-labels are easy to understand.	2.96(0.24)	2.970 (.17)	2.97(0.14)	0.04	0.96
Aggregate awareness index	3.02 (0.21)	3.36 (0.11)	3.23 (0.11)	1.50	0.13

Respondents were also asked to recognize common eco-labels which included *Suitable for recycling*, *Organic certification*, *Keep clean*, *Energy efficient*, *Green product*, *Eco-friendly*, *Suitable for re-use* and *The Forest Stewardship Council®*). Out of these eight eco-labels, majority of respondents were able to identify at least four eco-labels, namely; *Keep Clean*, *Energy efficient*, *Suitable for recycling*, and *Organic certification* logos. On the other hand, *Green product*, *Eco-friendly*, *Suitable for re-use* and *The Forest Stewardship Council®*) were the least recognized, please refer to Figure 3 and Table 3.

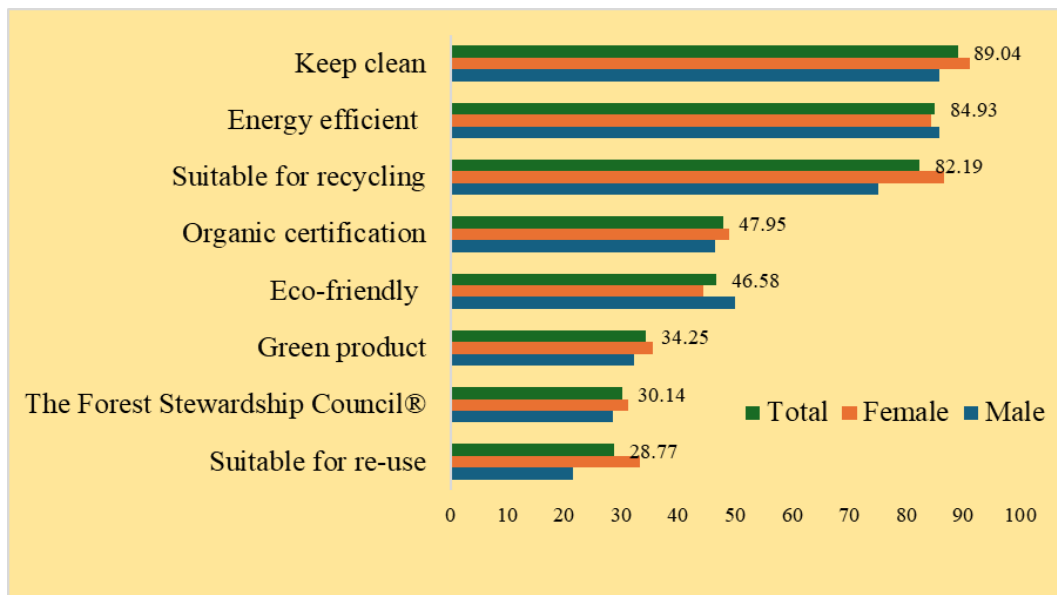


Figure 3. Proportions of the ability of respondents to recognize common eco-labels.

Table 3. Eco- Label Recognition.

Demographics	Sex categories		Total, % (n)	Chi-square (χ^2)	p-value
	Male, % (n)	Female, % (n)			
Suitable for recycling	75.00(21)	86.67(39)	82.19(60)	1.60	0.20
Organic certification	46.43(13)	48.89(22)	47.95(35)	0.04	0.83
Keep clean	85.71(24)	91.11(41)	89.04(65)	0.51	0.47
Energy efficient	85.71(24)	84.44(38)	84.93(62)	0.02	0.88
Green product	32.14(9)	35.56(16)	34.25(25)	0.08	0.76
Eco-friendly	50.00(14)	44.44(20)	46.58(34)	0.21	0.64
Suitable for re-use	21.43(6)	33.33(15)	28.77(21)	1.19	0.27
The Forest Stewardship Council®	28.57(8)	31.11(14)	30.14(22)	0.05	0.81

The *Keep Clean* logo was the most well recognized eco-label, representing 89% of the respondents. On the other hand, the label representing *Suitable for Reuse* was the least recognized eco-label with 28% of the 73 respondents reporting they recognized the label. There were more females than males who recognized *Keep Clean*, *Suitable for Recycling*, *Organic Certification*, *Green Product*, *The Forest Stewardship Council®* and *Suitable for Reuse*. There were more male respondents than female counterparts who recognized *Energy Efficient* and *Eco-Friendly* eco-labels but these differences were not statistically different.

Respondents were also asked to show their preferences of categories of eco-labelled products that they buy. Proportions revealed that both food items and electrical appliances (67%) were the most reported categories of eco-labelled products that respondents usually buy while clothing/textiles category (17%) was the least reported eco-labelled product category, followed by cosmetics and personal care (38%), and household cleaning products (48%). Table 3 illustrates consumer preferences of eco-labelled products by proportions. The findings that consumers in Lilongwe City Centre and surrounding areas had moderate eco-label awareness appeared to have limited influence and could not fully translate this awareness into consumer behaviour of eco-labelled product preferences.

Table 3. Consumer eco-label product preference.

Demographics	Sex categories		Total, % (n)	Chi-square (χ^2)	p-value
	Male, % (n)	Female, % (n)			
Food items	75.00(21)	62.22(28)	67.12(49)	1.27	0.25
Electrical appliances	60.71(17)	71.11(32)	67.12(49)	0.84	0.35
Cosmetics and personal care	25.00(7)	46.67(21)	38.36(28)	3.42	0.06
Household cleaning products	39.29(11)	53.33(24)	47.95(35)	1.36	0.24
Clothing/textiles	20.00(9)	14.29(4)	17.81(13)	0.38	0.53

DISCUSSION

Results from this study suggest that level of eco-label awareness among consumers in Lilongwe's City Centre and surrounding areas was moderate. This demonstrates that consumers were moderately aware of common eco-labels and that they were able to link these eco-labels to environmental protection. Similar findings were reported in a study by Sharma et al (2025) who found that consumers had moderate awareness of eco-labels, although they had limited understanding of technical claims alongside a trust gap driven by confusion (Sharma et al., 2025). In contrast, other studies showed a modest to high degree of

awareness of eco-labelling for environmental sustainability (Chidera & Anyakoha, 2024; Hamidu & Rahman, 2023). A study done in South Africa showed that most consumers reported remarkable awareness of well-known international eco-labels, for example, European Union (EU) energy labels and Ozone Friendly eco-labels on deodorants (Struwig & Adendorff, 2018).

The current study also found that consumers are more likely to recognize the common eco-labels, for example, they were able to recognize *Keep Clean*, *Energy efficient*, *Suitable for recycling*, and *Organic certification* logos out of the eight eco-labels that were presented. Few consumers were able to recognize less common eco-labels. Jóźwik-Pruska et al (2022), in their study found that eco-label consumer awareness level of less familiar labels is generally low with many consumers recognizing common eco-labels such as recycling, biodegradable (Jóźwik-Pruska et al., 2022). Struwig and Adendorf found that consumers were only able to recognize well-known international eco-labels (Struwig & Adendorff, 2018). While this study has demonstrated that awareness exists, this may not be strongly supported because the findings demonstrate that fewer consumers check product labels for environmental information and fewer consumers buy products because they have eco-labels and fewer consumers did not think eco-labels are easy to understand. Further, fewer consumers indicated that they could differentiate between eco-labelled products and non-eco-labelled products. The low numbers of consumers that check labels and purchasing products based on eco-labels may be attributed to limited understanding, low trust, price concerns, or the perception that eco-labels are not easy to understand. The study by Sharma et al (2025) found consistent findings that consumers often show moderate awareness but limited comprehension of the information on eco-label coupled with barriers like product cost, consumer confusion, and mistrust (Sharma et al., 2025). Contrasting this view, other researchers reported that consumers are more willing to buy eco-friendly products especially when their purchase reasons are based on the conservation of the environment (Panopoulos et al., 2023).

The current study also found that female consumers showed higher level of eco-label awareness on several indicators compared to their male counterparts, but this gender difference was not statistically significant. While this was not statistically significant, the findings may imply that female consumers probably pay more attention to product information or they have a stronger exposure and ability in decision making concerning purchasing of household products. A study by Zhao et al (2021) found similar results regarding gender differences and eco-label awareness. In their review they concluded that

females, compared to males, usually have stronger green consumption intentions and they buy eco-friendly products more often than male. Based on factors including knowledge, attitude and actual buying behaviour, gender patterns in eco-label awareness and green purchasing may differ (Zhao et al., 2021). Concerning differences between females and males, a previous study by Malhotra (2025) reported similar findings that there was no statistically significant difference between females and males eco and ethical labels awareness, despite females showing a higher eco-consciousness. However, they found that there was a statistically significant difference in eco-consciousness, with females reporting higher eco-consciousness than males, consistently showing remarkable green consumption behaviour among females (Malhotra, 2025). Veer et al (2025), on the other hand, contrary to the findings of the current study found that there was a significant difference among the consumers towards the awareness and understanding of eco-labels (Veer et al., 2025). The current study suggests that there is not enough evidence to conclude that gender has a significant influence on eco-label awareness among consumers in Lilongwe's City Centre and surrounding areas.

This study has also demonstrated that more consumers in Lilongwe City Centre and surrounding areas prefer purchasing eco-labelled food items and electrical appliances (67%) as opposed to clothing/textiles (17%), cosmetics and personal care (38%), and household cleaning products (48%) indicating awareness-behaviour inconsistency. Similar findings were reported in a study by Malhotra (2025) who concluded that there is an attitude-behavior gap in clothing consumption despite awareness. Contrary to the findings of this study, evidence from another study shows that environmental understanding and consumer perception, both had a significant influence on consumer purchase intention enabling them to purchase a variety of eco-labeled products (Kim & Lee , 2023).

CONCLUSION

This study suggests that consumers in City Centre and surrounding areas have a moderate level of eco-label awareness. Consumers demonstrated that they are more likely to recognize the common eco-labels, for example, the keep clean, energy efficient, suitable for recycling, and organic certification. More consumers prefer to buy eco-labelled food items and electrical appliances. The study also suggests that female consumers have a slightly higher level of awareness of eco-labelled products as opposed to their males. This difference was not statistically significant. Therefore, gender may not have a strong influence over eco-label awareness and consumer choices. These findings imply that consumers in City Centre and

surrounding areas in Lilongwe are moderately aware of eco-labels and that they can recognize and understand that eco-labelled products promote sustainable consumption that helps protect the environment. One of the limitations of this study is that it focused exclusively on consumers in an urban setting (City Centre and surrounding areas) making it difficult to generalize the findings to rural settings and other places. Use of a relatively small sample size ($n = 73$), though scientifically modelled, may have reduced the statistical power to detect the differences and relationships. These results call for improved and stronger consumer related education and enforcement of clear information about eco-labels and how they benefit the environment to help promote awareness among consumers that would motivate them and have informed buying behaviours. Product campaigns and sensitization by businesses should not only focus on introducing or promoting eco-labelled products to consumers. The awareness should also clarify the information on the products, what the labels mean and why they matter to help consumers make better buying decisions for environmental sustainability. Likewise, businesses, government institutions and environmental conservation organizations and civil society should put in place policies, standardized labeling frameworks and interventions that can help increase consumer education.

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