ECO-LABEL AND CONSUMER ADOPTION OF SUSTAINABLE PRODUCTS AMONG FEDERAL UNIVERSITES STAFF IN SOUTH EAST NIGERIA

[1]Udodirim Chukwuemeka & [2]Ven. Prof. Anayo Nkamnebe

[1]Department of Marketing, Nnamdi Azikiwe University, Awka

[2]Nnamdi Azikiwe University, Awka

Abstract

The study examined eco-labels and consumer adopting of sustainable products in federal universities in south – east Nigeria. The study adopt cross sectional survey research design in providing answers to the seven (7) research questions, and testing the seven (7) hypotheses at 0.05% level of significance. The population of study is 384 teaching and non – teaching staff of federal universities in south east Nigeria. The data was collected using structured questionnaire instrument (Google form made available online). Face validated at the preliminary stage using exports in marketing and subsequently validated and proved reliable through confirmatory factor analysis. Again cronbach alpha was used to test the reliability of the research instrument. The data was analyzed using structured equation model (SEM) and regression analysis. The findings revealed that consumers awareness, perceived environmental concern and consumer attitude to eco-label have significant relationship with consumer adoption sustainable product, consumer knowledge and social influence have no significant relationship with consumer adoption of sustainable products. Age and marital status have positive relationship in consumer adoption of sustainable products. The moderating variable educational level have significant relationship on consumer awareness, perceived environmental concern, consumer attitude, consumer knowledge and social influence on consumer adoption sustainable products. Thus, it is recommended that adequate marketing communication be put in place to create and deepen the benefit of eco-label and sustainable products. Again, there should be holistic efforts by individuals, manufacturers and government on sustainability policy implementation to achieve environmental sustainability objective.

Keywords: Eco-Label, Consumer knowledge, Perceived Environmental Concern, Social influence, Consumer Awareness

INTRODUCTION

Today, consumers express their feelings of responsibility towards society and their appreciation of socially responsible companies and/or products through ethical consumption behaviour (Pelsmaeker, Janssens, Sterckx & Mielants, 2015).On account of this, is the wave of sustainable development has become an increasingly important issue globally due to the growing concerns over environmental degradation and the depletion of natural resources. The concept of sustainable development encompasses the protection of the environment, social well-being, and economic development.

Sustainable consumption and production are key elements of sustainable development, and the adoption of sustainable products is a critical component of sustainable consumption. Sustainable products are those that are produced and consumed

in a manner that is environmentally, socially, and economically responsible. One way to promote the adoption of sustainable products is through the use of eco-labels. Eco-labels are voluntary environmental certifications given to products that meet certain environmental standards. These labels provide information to consumers about the environmental impact of the products purchased as such enable consumers to make more informed and environmentally conscious purchase decisions.

Sustainability practices are some of the significant environmental initiatives taken by organizations to preserve the environment and improve the quality of human life while performing manufacturing and marketing activities (Salwa, Novita, Raja & Ramagah, 2017). Products produced under this (sustainable) orientation are refered to sustainable products.

Scholars argue that sustainability marketing and manufacturing practices have become major concerns of the global industry in the contemporary times (Gupta, 2017; Okpara & Agu, 2019; Nkamnebe, Obeta & Ayodele, 2019; Gallastegui, 2002). With increasing emphasis on the need to sustain the society, environment and economy, consumers' purchase decisions are now speedily favouring firms and product brands perceived to be sustainable. Although there are diverse range of environmentally friendly products in the market, consumers tend to struggle to identify these products and question their credibility (Pickett-Baker & Ozaki, 2008, Struwig, 2018). Given this certified labels are introduced to aid consumers in isolating and identifying such product brands. Labels on products are powerful marketing tools that act as essential communication conveyers (Treves & Jones, 2010).Hence,   Eco-labels are consideredlabels that identify the environmental friendliness of products

In Nigeria, eco-labelling is not a strange practice. However, when compared with the level of growth, accepance of the practice and awareness as well as purchase decisions made based on eco-labels in Europe, America and Asia, Nigeria still lags behindIn spite of this, the country is faced with numerous environmental challenges such as deforestation, desertification, and pollution. These challenges have led to further increasing interest in sustainable products, and eco-labelling has emerged as a potential solution to facilitate the adoption of these products by Nigerian consumers. However, despite the potential benefits of eco-labelling, there is a lack of empirical research on the effectiveness of eco-labelling in Nigeria. Therefore, there is need for a study that examines the relationship between eco-labelling and consumers' adoption of sustainable products in Nigeria especially universities staff

Statement of the Problem

Many researches (Leire and Thidell, 2009; Carlson, Grove, Roe, & Teisl, 2007; D'Souza, 2004 and Nguyen & Du and Friedrich 2010), have shown that consumers make purchase decisions depending on how they perceive the label information. Again, previous research shows that environmental concern had weak influence on consumer purchase intention and adoption of environmentally friendly products.(Prothero, Shultz and Stanton, 2007) evident reports shows that consumers complain frequently about the ambiguous meaning of eco label and suggests contradicting results regarding the impact of eco label and purchase of environmentally friendly products. Sharma and Kushwaha (2019) shows that eco label influences purchase intention, while Hwang, Park and Kim (2016) did not Taufique, Vocino and Polonsky (2017) state that consumer knowledge ,awareness, social influence and consumer trust influences the adoption of sustainable products.

Again, Daugbjerg, Smed, Anderson and Schvartzman (2014) states that consumer knowledge and understanding are precondition for sustainable consumption. However, There are empirical evidences from developed countries that consumers are demanding more recyclable and sustainable products (Sammer & Wustenhagan, 2006; Albu & Clutu, 2012;and Adendorff, 2018). Whether this assertion is applicable to consumers in the developing countries and South East Nigeria in particular is largely unconfirmed.

.Additionally, there is limited knowledge about the consumers' adoption of sustainable products in Nigeria. This gap in knowledge is a significant challenge for policymakers, marketers, and other stakeholders in the sustainable products industry who seek to promote sustainable consumption in Nigeria, hence the study.

Objectives of the Study

The broad objective of this study is to examine the effects of Eco-labels and consumer adoption of sustainable products in Federal universities in South East Nigeria, the following specific objectives are .

1. To examine the extent of significant relationship between consumer awareness and consumer adoption of sustainable products in Federal universities in South East Nigeria.

2. To examine the extent of significant relationship between perceived environmental concern and consumer adoption of sustainable products in Federal universities in South East Nigeria.

3. To determine the extent of significant relationship between consumer attitude towards eco label products and consumer adoption of sustainable products in Federal universities in South East Nigeria.

4. To examine the extent of significant relationship between consumer knowledge and consumer adoption of sustainable products in Federal universities in South East Nigeria.

5. To examine the extent of significant relationship between social influence and consumer adoption of sustainable products in Federal universities in South East Nigeria.

6. To examine the extent to which educational level moderate consumer adoption of sustainable product in Federal universities in South East Nigeria

REVIEW OF RELATED LITERATURE

Eco-Label and Sustainable Products: An Overview

Eco-Labels are certifications that indicate that a product has met certain environmental standards. These labels provide consumers with information about the environmental impact of a product, including its energy efficiency, water efficiency, and carbon footprint.

Predictive Variables in the Research Conceptual Framework (Research's Proposed Model)
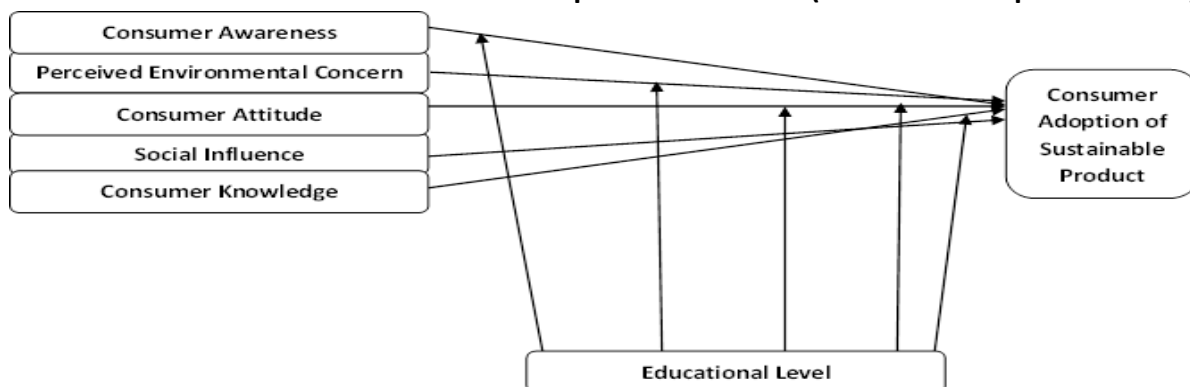
Perceived Environmental Concern

Environmentally concerned consumers are those consumers who can be identified as purchasing environmentally friendly products at any point in time (Adendorff and Miemie, 2018) These consumers purchase products to minimize their impact on the environment (Gleim *et al.,* 2013) even if the quality of the product is inferior and the prices high (D' Souza, Yaghigh, Lamp and Peretiate, 2007)

Consumer Knowledge of Eco-Label

Knowledge plays a very important and significant role in the Eco-labeling. It helps consumers in interpreting the factual purpose of environmentally friendly products. Previous researchers, states that there is lack of transparency in the market as a result of insignificant knowledge among consumers consuming Eco-labeled products. Very few consumers have heard about the term Eco-label. (Van, Amst *et al.,* 2007). Previous research by Thogerson (2000) indicates that consumers often struggle to interpret what the Eco-labels are trying to convey.

Social Influence

Kiahid, Rahbar, Tan (2011) Ayolede, Panama Amu, and Akememu (2017) social influence is seen as a proxy of subjective norm. As cited by Kloba and Clyde (2001) social influence consists of friends, family, education, employer, professional colleagues, expert and the media.

Social influence refers to the way in which individuals are affected by the thoughts, feelings and behavior of others. It is the fundamental concept in social psychology that can have a significant impact on our attitudes, beliefs and action.

Consumer Awareness

Consumer awareness is important in changing consumer behaviour. Consumer awareness refers to the customer's right to be aware of the product they purchase. Consumer awareness is meant to reflect consumer recognition about the existence of eco-labels. Consumer's awareness is one of the vital factors for eco-label product, knowing a product label is a prerequisite for decision making and purchase of ecological products. Winter (2013) Consumer awareness refers to the consumer's right to be aware of the products the consumers purchase.

Consumer Attitude

Consumer attitude is a well-known concept in marketing and has been defined by different marketing scholars. Attitude is a combination of belief, feelings and intention related to a particular object (Kwten & Pank (2017). According to Grimsley (2015) attitude consists of thoughts or belief, feeling and behaviour of intention towards a particular thing like environmentally friendly products attitude.

Consumer attitude plays a vital role in understanding sustainable consumption pattern as cited by Terbau & Hirseh (2017).

Moderating Effect of Education Level

previous study on eco-label and sustainability purchase behaviour has shown a contradicting results whether educational level impact consumer behaviour, while some researchers have shown that education level do not have any impact on consumer behaviour (Johnson, Wesselle, Donath and Asche (2001)., Moon, Florkowcai, Druker, and Schonhof (2002).

Empirical Review

Jana, Mitja and Maja (2019) conducted a study on the transition towards sustainability; adoption of eco-products among consumer in Slovenia. The study used primary data and secondary data from 705 Slovenia consumers. Structural equation modeling was used to test the proposed conceptual modeling. The findings suggest that all the above-mentioned construct mediate the relationship between consumers' environmental concern and their purchase intention in relation to eco products however consumer consciousness of eco products has the greatest effect in channeling environmental concern into purchase intention of eco-product. The finding also indicates that female consumer express greater concern consciousness of eco-products and perceived environmental responsibility than male consumer.

Al Mamum *et al.,* (2018) examine perceived behavioural control in Malaysia. 380 low income house hold respondents who live in coastal areas of peninsula. A Study in eco literacy, self-efficacy attitude towards environmentally friendly products subjective norm Malaysia where examined. The finding reviewed a positive effect of e eco literacy and self-efficacy on attitude towards green products. The findings also show a positive effect of attitude and perceived behavioural control in intention and consumption of green products.

Biswas and Roy (2015) the study examined consumer innovativeness, contextual factor, environmental attitude, and social value. The study examined 42 students in 59 facilities in India. The findings indicate that consumer price and knowledge perceptions are major determinants of behavioural outcome of sustained green consumption and behavioural intention to pay the green price. Premium is outcome of sustained green consumption

Bitta (2018) the study examined environmental consciousness price perception and brand equity. The study examine 255 respondent from United States, the research showed that consumer environmental consciousness does not affect their purchase decision ,demonstrating that consumer decision is based on brand, price. The study concludes that brand equity is an important Factor in leveraging sales and that's consumers environmental consciousness has no impact Io sales.

Miemie and Chris (2018) examine consumer perception of eco-label in South Africa. A quantitative study was employed to empirically investigate a sample of 120 respondent who completed a self-administered structured questionnaire. The result showed that most respondents recognize the European Union energy label. Sufficient evidence shows that consumer are generally aware of the environmental impact of products and consumer often struggle to identify environmentally friendly goods and are unable to verify the environmental claim made by these goods.

Anastasio, Anastasio, Prokopis and Intonios (2023) this study examined the influencing green purchase intention through eco-label and user generated contents. A quantitative research approach with an online survey was applied to collect data from generation Z. The sample size consisted of 393 individuals from Generations Z. Structural equation modelling was applied to test the hypothesized. The study found that environmental concern has a significant positive impact on Generations Z. Users generated contents and eco-label positively affect generation Z users' generated content.

Bipal (2012) examined the purchasing behaviour for environmentally sustainable products using the framework of the theory of planned behaviour. This study investigates

the determinant of the purchase intention for environmentally sustainable product. The study focused on doctorial students in Indian institute of management. Data were collected for the study and analyze using structural equation modeling (SME). The result of the study indicate that environmental knowledge has a significant positive relationship with the attitude towards environmentally sustainable products

Rasid, Jusoff and Kassin (2009) examined eco-label perspective among Malaysian consumer, the study sort to examine the role of trust in eco-label and its influence of choice of products when at time for purchase. 526 respondents from employee of organization where survey, regression analysis were used to test hypothesis. The finding suggests that trust in eco-label is not enough and need to be supplemented with understanding of the label.

Testa *et al.,* (2015) examine why eco-label can be effective marketing tools. Evidence from a Study in Italian consumer. The studies sort to assist weather consumer knowledge and awareness of eco-label environmental impact influence sustainable behaviour. The study used exploratory factor analysis. 2658 respondents from an online questionnaire. The findings suggest that perceived behavioural control is significantly influenced by eco-label. Trust can increase attitude which creates possibilities for retailers to benefit from this.

Dipen, Sushank, Dhnrmesh and Amit (2022) examine the effectiveness of eco-label in the fast-moving consumer goods sector. A sample size of 206 individuals was tested for the various hypothesis, the survey Design was used for the research. The findings suggest that consumer consider the variables and awareness. Trust knowledge of eco-label, availability and motivation to buy eco-label products before marketing purchases.

Negendra and Jyaneshwar (2016) examined eco-label; a tool for green marketing or just a blind mirror for consumer. The study sought to establish a relationship of eco label with consumer knowledge, information communication, trust and its impact on green purchase intention. To test the proposed hypothesis in the research an offline and online, both convenience sampling survey was adopted across the country. 506 respondents were sampled. The study reveals that eco labeling is a significant criterion for consumer trust and green purchase intention via consumer information and knowledge.

Ha Thu and Hieu (2020) examine the effect of agricultural products eco-label in green intention in Vietnam. 160 printed questionnaires were distributed but 148 were returned. The study sort to review the relationship between eco knowledge consumer Trust perceived value environmental concern and consumer attitude. The finding shows that there is a significant impact of perceived value and environmental concern on consumer attitude which led to higher green purchase intention.

In the study of Du (2010) examine the effectiveness of eco-label; a study of Swedish University student choice on ecological food. A sample of 242 students was selected and regression analysis was applied to examine the relationship between attention to eco-label and students purchase behaviour as well as the effect of attention eco-label and student purchase behaviour. Four variables consist of eco awareness, environmental motivation and eco availability were used. The finding shows that eco label variables awareness environmental motivation and eco availability significantly influence student purchase behavior**.**

Theoretical Framework

The Theory of Planned Behaviour (TPB), developed by Ajzen (1991) it is a widely used theory to predict (Chang & Watchravesringkan, 2018), behavioural intention in a social psychology theory that explains the relationship between attitudes, subjective norms, perceived behavioural control, and behaviour. According to TPB, individuals' behaviour is determined by their intention to perform the behaviour, which is influenced by their attitude towards the behaviour, subjective norms, and perceived behavioural control. The conceptual framework for this study is based on TPB theories. The framework proposes that the adoption of eco-labels and sustainable products is influenced by consumers' attitudes towards eco-labels and sustainable products, environmental concern, consumer awareness etc., which are explained by TPB. The framework suggests that the adoption of eco-labels and sustainable products is a function of both TPB and constructs, and that the constructs interact with each other in determining consumers' adoption of eco-labels and sustainable products.

METHODOLOGY

This study used a cross-sectional survey design. The population of this study consist of teaching and non-teaching staff of federal universities as consumers of eco-labeled products in South East Nigeria. The consumers would have purchased eco-labeled products in the past six months.

The universities of interest includes Michael Okpara University of Agriculture, Umudike Abia State; Alex Ekwueme Federal University Ndufu-Alike Ikwo, Ebonyi State; Federal University of Technology, Owerri, Imo State; Nnamdi Azikiwe University, Awka, Anambra State; and University of Nigeria, Nsukka, Enugu State. Following the unknown nature of the population, sample size was determined following the recommendation of Onyeizugbe (2013) on determination of a sample size for population that are unknown or infinite, hence top man formula was used .Copies of questionnaire were administered to 384 teaching and non-teaching staff . This was majorly through online means such as through email and the social media such as Whatsapp and Facebook. Modified likert's internal rating scale with options ranging from strongly agree, agree, neutral .disagree, strongly disagree.

Quota sampling and Judgmental sampling method were used to select respondents for this study. Also, content validity was used at the preliminary stage to examine the instrument adequacy on coverage of the scope of the study. Further validity was conducted using confirmatory factor analysis. This involved the use of convergent validity and discriminate validity.

The data generated was analyzed to determine the internal consistency of the instrument using cronbach alph. The major technique that was used in analysing the formulated hypotheses is structural equation model (SEM) through IBM SPSS 23 and AMOS 23.

RESULTS/ANALYSIS

Table 1: Questionnaire Response Rate

Federal Universities Location	No. Shared	No. Validated	% no Validated	No. screened out	% screened out	No. used	% Total
Abia State	88	77	17.23	11	2.46	77	17.23
Anambra State	81	76	17.00	5	1.12	76	17.00
Ebonyi State	90	77	17.23	13	2.91	77	17.23
Enugu State	97	77	17.23	20	4.47	77	17.23
Imo State	91	77	17.23	14	3.13	77	17.23
Total	**447**	**384**	**85.92**	**63**	**14.09**	**384**	**85.92**

Source: Field survey output, (2024)

In Table 1, 447 questionnaires were collected using questionnaires designed on Google form from teaching and non-teaching staff of federal universities in South-East Nigeria. 384 questionnaires were validated which constitutes about 86% response rate. About 14% represents the percentage that was screened out for illegibility and inappropriateness. The 86% validated copies constitute the total number of copies that used in the analysis which also tallied with the sample size needed for the survey and analysis. Significantly, Saunders et al., (2009) justifies a response rate of 50-70% to be adequate in research. Similarly, in structural equation model (SEM) 200 samples are considered to be a baseline for SEM (Wolf et al., 2013).

Table 2: Descriptive Statistics of Data used for Consumer Awareness

Variable	SD	D	N	A	SA	Mean	Decision
I take notice of eco-labels when shopping(CA1)	53 (13.8%)	44 (11.5%)	99 (25.8%)	90 (23.4%)	98 (25.5%)	3.35	Low perception
I read the information on product labels before purchasing(CA2)	29 (7.6%)	12 (3.1%)	67 (17.4%)	119 (31.0%)	157 (40.9%)	3.95	High perception
I attach importance to the trade mark of brands(CA3)	21 (5.7%)	20 (5.2%)	78 (20.3%)	125 (32.6%)	140 (36.5%)	3.89	Low perception
I always take note of the expiry dates when purchasing products(CA4)	20 (5.2%)	0 (0%)	28 (7.3%)	69 (18.0%)	267 (69.5%)	4.47	High perception
I attach importance to the nutritional (CA5)	15 (3.9%)	16 (4.2%)	74 (19.3%)	128 (33.3%)	151 (39.3%)	4.00	High perception

*Source: Field survey output (2024); **Weighted average value** 19.66/5 = 3.93*

The descriptive statistics on table 2 contains the responses of the respondents from the Federal Universities in South East Nigeria on their level of awareness to Eco label. The responses are measured using Likert and analysed using weighted average mean. This permits better justification of the level of perceptions of the respondents to the questionnaire items. The weighted average value for all the items on consumer awareness 3.93 which was derived from the total mean of the five questionnaire items($\frac{19.66}{5}$). With this, the level of perception of the respondents to each of the questionnaire items were displayed and judged with 3.93 as the baseline. The responses to the item one (CA1) and item three (CA3) revealed low perceptions of the respondents to the questionnaire items. However, this is not the same with questionnaire items (CA2), (CA4) and (CA5) as the responses revealed the respondents' high perception to the questionnaire items. Generally, the level of the respondents' perceptions to these questionnaire items merely indicates at a

glance, what the respondents perceive their awareness of eco label to be in different contexts of the questions.

Table 3: Descriptive Statistics of Data used for Perceived Environmental Concern

Variable	SD	D	N	A	SA	Mean	Decision
I consider buying eco- friendly products since they will be less polluting. (PEC1)	31 (8.1%)	45 (11.7%)	79 (20.6%)	138 (35.9%)	91 (23.7%)	3.55	Low perception
I am concerned about waste generation (PEC2)	27 (7.0%)	30 (7.8%)	81 (21.1%)	125 (32.6%)	121 (31.5%)	3.74	High perception
I am concerned about climate (PEC3)	22 (5.7%)	23 (6.0%)	85 (22.1%)	159 (41.4%)	95 (24.7%)	3.73	High perception
It bothers me if someone uses products that are not environmentally friendly (PEC4)	29 (7.6%)	40 (10.4%)	104 (27.1%)	106 (27.6%)	105 (27.3%)	3.57	Low perception
I use garbage bags for litter when in the open or visiting public parks (PEC5)	17 (4.4%)	26 (6.8%)	58 (15.1%)	132 (34.4%)	151 (39.3%)	3.97	High perception

*Source: Field survey output (2024); **Weighted average value 18.56/5 = 3.71***

The table 3 descriptive statistics indicates the respondents' responses on their perception of environmental concern. The questionnaire items are in Likert with the respective mean values. The use of the weighted average value enables better justification of the level of perceptions of the respondents to the questionnaire items. Therefore, weighted average value of 3.71 was derived from the total mean of the four questionnaire items($\frac{18.56}{5}$). The result revealed respondents' low perception to environmental concern on considerations to buying eco-friendly products(PEC1) and concern on someone using products that are not environmentally friendly (PEC4).However, high perceptions of the respondents were recorded from the respondents' responses to questionnaire items (PEC2), (PEC3) and (PEC5). These are justified from the respective mean values of the questionnaire items against the weighted average value.

Table 4: Descriptive Statistics of Data used for Consumer Attitude

Variable	SD	D	N	A	SA	Mean	Decision
I think that purchasing eco-label food is a good idea (ConAtt1)	15 (3.9%)	14 (3.6%)	37 (9.6%)	123 (32.0%)	195 (50.8%)	4.22	High perception
My family considers it a good decision to use eco-labelled food rather than food without eco-label. (ConAtt2)	18 (4.7%)	32 (8.7%)	101 (26.3%)	144 (37.5%)	89 (23.2%)	3.66	Low perception
I agree with the existence of eco-labelled food for a healthy environment. (ConAtt3)	12 (3.1%)	11 (2.9%)	52 (13.5%)	153 (39.8%)	156 (40.6%)	4.12	High perception
I think that purchasing eco-labelled food is beneficial to the environment. (ConAtt4)	12 (3.1%)	10 (2.6%)	49 (12.8%)	134 (34.9%)	179 (46.6%)	4.19	High perception

*Source: Field survey output (2024); **Weighted average value 16.19/4 = 4.05***

The descriptive statistics on table 4 reveals the respondents' responses to the questionnaire items in Likert style and further evaluated with mean. The weighted average value is used. It was derived from the total mean of the four questionnaire items($\frac{16.19}{4}$) =

4.05. The use of the weighted average value to evaluate the questionnaire items revealed low perceptions of the respondents to their attitude on their reaction from what their family considers to be good decision towards eco-labeled food (ConAtt2). Nonetheless, the high perception to questionnaire item (ConAtt1), (ConAtt3) and (ConAtt4) revealed better perception to PAPSS' existence in eco-label products being thought as a good decision. These were justified following the mean values of the respective questionnaire items to the weighted average value.

Table 5: Descriptive Statistics of Data used for Social Influence

Variable	SD	D	N	A	SA	Mean	Decision
My family thinks I should purchase eco-labelled food rather than Food without eco-label. (SI1)	24 (6.3%)	35 (9.1%)	124 (32.3%)	135 (35.2%)	66 (17.2%)	3.48	Low perception
My colleagues are of the opinion that I should purchase eco-labelled food.(SI2)	30 (7.8%)	50 (13.0%)	120 (31.3%)	111 (28.9%)	73 (19.0%)	3.38	Low perception
My friends that their opinion on diet is important to me think that I should purchase eco-labelled food.(SI3)	18 (4.7%)	49 (12.8%)	112 (29.2%)	143 (37.2%)	62 (16.1%)	3.47	Low perception
The people close to me would approve of me purchasing eco-labelled food(SI4)	17 (4.4%)	32 (8.3%)	117 (30.5%)	136 (35.4%)	82 (21.4%)	3.61	High perception

Source: Field survey output (2024); Weighted average value 13.94/4 = 3.49

The table 5 summary statistics indicates the respondents' responses on the respondents' perception on social influence to eco label adoption. The questionnaire items were coded in Likert. The respective mean values and the weighted average value were used in evaluating the responses because it provides a better justification of the level of perceptions of the respondents to the questionnaire items. Therefore, weighted average value of 3.49 was derived from the total mean of the four (4) questionnaire items($\frac{13.94}{4}$). The result revealed low perception on respondents' perception of social influence to eco label adoption especially on (SI1), (SI2) and (SI3) thus revealing that the respondents have low perception on the roles of family, colleagues and friends on eco label adoption. However, there is high perception of the respondents on people close them approving of the purchase of eco label foods (S14).

Table 6: Descriptive Statistics of Data used for Consumer Knowledge

Variable	SD	D	N	A	SA	Mean	Decision
The eco-label food products are informative of its environmental benefits. (CK1)	15 (3.9%)	20 (5.2%)	46 (12.0%)	197 (51.3%)	106 (27.6%)	3.93	High perception
I am convinced that food products with eco-label contributions to the protection of the environment.(CK2)	15 (3.9%)	16 (4.2%)	53 (13.8%)	142 (37.0%)	158 (41.1%)	4.07	High perception
I am knowledgeable about the eco-label.(CK3)	18 (4.7%)	21 (5.5%)	106 (27.6%)	136 (35.4%)	103 (26.8%)	3.74	Low perception
I have sufficient knowledge of the existence of eco-label products(CK4)	29 (7.6%)	47 (12.2%)	81 (21.1%)	140 (36.5%)	87 (22.7%)	3.54	Low perception

Source: Field survey output (2024); Weighted average value 15.28/4 = 3.82

The summary statistics on table 6 reveals the respondents' responses to the questionnaire items in Likert style with the mean and decision on the result. The weighted average value that was derived from the total mean of the four (4) questionnaire items is $(\frac{15.28}{4})$ = 3.82. The respondents have high perception on eco label food products being informative of its environmental benefits (CK1) and contributions to the protection of the environment (CK2). However, following the baseline of the decision making, there is low perception of the respondents on being knowledgeable about eco label (CK3) as well as having sufficient knowledge of the existence of eco label products (CK4).

Table 7: Descriptive Statistics of Data used for Consumer Adoption

Variable	SD	D	N	A	SA	Mean	Decision
I have to save the environment for future generation (ConAdopt1)	14 (3.6%)	3 (0.8%)	44 (11.5%)	119 (31.0%)	204 (53.1%)	4.29	High perception
I want to participate to help the environment (ConAdopt2)	11 (2.9%)	0 (0.0%)	47 (12.2%)	130 (33.9%)	196 (51.0%)	4.30	High perception
I purchase products that have eco-labels. (ConAdopt3)	23 (6.0%)	21 (5.5%)	106 (27.6%)	136 (35.4%)	98 (25.5%)	3.69	Low perception
I prefer eco-labelled products to products that are not eco-labelled (ConAdopt4)	17 (4.4%)	15 (3.9%)	89 (23.2%)	143 (37.2%)	120 (31.3%)	3.87	Low perception

*Source: Field survey output (2024); **Weighted average value** 16.15/4 = 4.04*

The summary statistics on table 7 in Likert style reveals the respondents' responses to the questionnaire items while the weighted average value was used to judge the level of respondents' perception to the questionnaire items. The weighted average value is 4.04 $=(\frac{16.15}{4})$. The result shows respondents' high perceptions to the questionnaire items on eco label. These are particularly from (ConAdopt1) and ConAdopt2. Further, the result also shows respondent's low perception to the questionnaire items on eco label with respect to purchasing products that have eco labels (ConAdopt3) and preference of eco-labeled products to ones that are not eco-baled (ConAdopt4).

DATA ANALYSES

Evaluation of Objective 1, 2, 3, 4 and 5: Examination of the relationship between consumer awareness, perceived environmental concern, consumer attitude, consumer knowledge, social influence and consumer adoption of sustainable products in South East Nigeria.

Decision Rule: Reject H_o if F-cal>F-tab at 5% level of significance with q (df of the numerator) and n-k (df of the denominator) otherwise do not reject H_o.

Table 8: Path Coefficients

Hypotheses	Unstd β	Std β	S.E	C.R.	*P*	Decision
Consumer Awareness→ Consumer Adoption	.206	.200	.068	3.052	.002	Yes
Perceived Environmental Concern→ Consumer Adoption	.156	.194	.066	2.352	.019	Yes
Consumer Attitude→ Consumer Adoption	.585	.616	.090	6.469	.000	Yes
Social Influence→ Consumer Adoption	-.217	-.228	.079	-2.75	.006	Yes
Consumer Knowledge→ Consumer Adoption	-.046	-.055	.062	-.753	.451	No

Source: Field survey output (2024)

The approach adopted involves maximum likelihood method and statistical significance of the paths. The result on table 8 revealed that out of the five (5) variables in the model, only four (4) variables were significant. The variables that significantly influence consumer adoption of sustainable products in the South East Nigeria are consumer awareness, perceived environmental concern, consumer attitude, and social influence.

For consumer awareness, it is significant at 1% (β=0.206, p≤0.002) implying that consumer awareness have a significant positive effect on consumer adoption of sustainable products in South East Nigeria. The result revealed that a change in consumer awareness leads to about .206units' positive change in consumer adoption of sustainable products in South East Nigeria holding other variables constant.

The perceived environmental concern is also significant at 1% (β=0.156, p≤0.019). It implies that a unit change perceived environmental concern will lead to 0.156 unit positive change in consumer adoption of sustainable produced in South East Nigeria holding other variables constant.

Further, consumer attitude is significant at 1% (β=0.585, p≤0.000). This implies that a unit change in consumer attitude leads to 0.585 units' positive increase in consumer adoption of sustainable products holding other variables constant. In addition, consumer attitude is revealed as the variable with the strongest effect on consumer adoption of sustainable products in South East Nigeria following the comparable larger effect size of the variable. This presents consumer attitude to be the most important variable in adopting sustainable products.

Social influence is also revealed to have a statistical significant effect on consumer adoption of sustainable products in the South East Nigeria. This is confirmed from the coefficient and p-value of the variable (β= -0.217, p≤0.006) with the result showing a 1% significant result. In this regard, the result confirms that a unit increase in social influence will negatively affect consumer adoption of sustainable products in South East Nigeria.

Lastly, consumer knowledge is revealed to have no significant effect on consumer adoption of sustainable products in South East Nigeria. At (β= -0.046, p≤0.451) the result informs a negative relationship with consumer adoption of sustainable products that is not statistically significant.

Evaluation of Objective 6: Examine the extent to which educational level moderate consumer adoption of sustainable product in South East Nigeria,

Decision Rule: Reject H_o if F-cal>F-tab at 5% level of significance with q (df of the numerator) and n-k (df of the denominator) otherwise do not reject H_o.

The interaction/moderating effect of educational level on the relationship between consumer awareness, perceived environmental concern, consumer attitude, social influence, consumer knowledge and consumer adoption was conducted using Hayes Process macro v2.16. This was approached by mean centering the predictor variables (consumer awareness, perceived environmental consumer, consumer attitude, social influence, and consumer knowledge) and the interaction term (education level). The essence is to reduce the impact of multicollinearity between the predictor variables and the derived interaction variables. Further, the interaction terms were derived by associating each of the predictor variables to the interaction variable.

Table 9: Moderation Result (Consumer Awareness)

Variable	Coeff	SE	T	P	Model Summary
Constant	-2.700	.649	-4.156	.000	
Educational Level	1.348	.166	8.121	.000	
Consumer Awareness	1.648	.159	10.375	.000	
Interaction effect	-.313	.040	-7.718	.000	
Conditional Effect of Consumer Awareness on Consumer Adoption of Sustainable Products at values of Educational Level(Moderator)					
Educational Level	**Effect**	**S.E**	**T**	**P**	
2.941	.729	.053	13.746	.000	
3.924	.421	.041	10.398	.000	
4.908	.114	.060	1.887	.060	
Model Fit Statistics					
R					.589
R^2					.437
ΔR^2					.102**
F-value					67.397**

Source: *Field survey output (2024)*   *(** p < .001, * p < .05)*
Note: *R* *= Multiple correlation; **R² =** R square; **ΔR² =** R square change*

The result on table 9 shows that the educational level is the moderator, consumer awareness is the predictor variable while consumer adoption of sustainable products is the outcome variable. The interaction term is significant (β = -0.313, S.E = 0.040, p≤0.001) confirming that educational level is a significant moderator on the effect of consumer awareness on consumer adoption of sustainable products in South East Nigeria. The interaction term accounted for additional 0.102% (ΔR^2) variation on consumer adoption of sustainable products. This suggests that the significant relationship between consumer awareness and consumer adoption is moderated by educational level.

The conditional effect of consumer awareness on consumer adoption of sustainable products in South East Nigeria at the values of Educational level indicates that at low educational level (β = 2.941) the effect of consumer awareness on consumer adoption of sustainable products in South East Nigeria is positive and significant (β = 0.729, S.E = 0.053, p≤0.001). This implies that as consumer awareness increases, consumer adoption of sustainable products increases for respondents with low educational level by .729 units. For the respondents with average educational level (β = 3.924), the effect of consumer awareness on consumer adoption of sustainable products in South East Nigeria is positive and significant (β = 0.421, S.E = 0.041, p≤0.001). This explains that as consumer awareness increases, consumer adoption of sustainable products increases for individuals with average educational level by 421 units. In the case of the individuals with high educational level (β = 4.908) the effect of consumer awareness on consumer adoption of sustainable products in South East Nigeria is positive and significant (β = 0.114, S.E = 0.060, p≤0.060). This implies that as consumer awareness increases, consumer adoption of sustainable products in South East Nigeria increases for individuals with high educational level by effect size of .114 units. Generally, for individuals with low, average and high educational level, there is significant positive association with consumer adoption of sustainable products but the effect sizes differ. This suggests that the effect of consumer awareness on consumer adoption is stronger among individuals with low educational level in South East Nigeria.

Table 10: Moderation Result (Perceived Environmental Concern)

Variable	Coeff	SE	t	*P*	Model Summary
Constant	-.588	.525	-1.119	.264	
Educational Level	.868	.134	6.422	.000	
Perceived Environmental Concern	1.274	.143	8.926	.000	
Interaction effect	-.219	.036	-6.044	.000	
Conditional Effect of Perceived Environmental Concern on Consumer Adoption of Sustainable Products at values of Educational Level(Moderator)					
Educational Level	Effect	S.E	T	*P*	
2.941	.631	.049	12.803	.000	
3.924	.416	.038	10.830	.000	
4.908	.201	.055	3.642	.000	
Model Fit Statistics					
R					.589
R^2					.323
ΔR^2					.065**
F-value					36.530**

*Source: Field survey output (2024)   (** p < .001, * p < .05)*
Note: R = Multiple correlation; R^2 = R square; ΔR^2 = R square change

Table 10 shows the result of educational level as the moderator, perceived environmental concern as the predictor, and consumer adoption of sustainable products as the dependent variable. The result revealed that the moderating variable is significant (β = -.219, S.E = 0.036, p≤0.001). This confirms that educational level has interaction effect on the relationship between perceived environmental concern and consumer adoption of sustainable products in South East Nigeria. The moderating variable accounted for additional 0.065% (ΔR^2) variation on consumer adoption of sustainable products. The implication is that educational level significantly moderates the effect of perceived environmental concern on consumer adoption.

The conditional effect of perceived environmental concern on consumer adoption of sustainable products in South East Nigeria at the values of Educational level is shown that at low educational level (β = 2.941) the significant effect of perceived environmental concern on consumer adoption of sustainable products in South East Nigeria is positive (β = 0.631, S.E = 0.049, p≤0.001). This confirms that increases in perceived environmental concern significantly and positively increases the consumer adoption of sustainable products particularly for the individuals with low educational level by .631 units. For the individuals with average educational level (β = 3.924), the effect of perceived environmental concern on consumer adoption of sustainable products in South East Nigeria is positive and significant (β = 0.416, S.E = 0.038, p≤0.001). The result reveals that increases in perceived environmental concern increases the consumer adoption of sustainable products increases particularly for the individuals with average educational level by .416 units. The individuals with high educational level (β = 4.908) is revealed from the data to have their consumer adoption of sustainable products in South East Nigeria to be positively and significantly impacted by perceived environmental concern (β = 0.201, S.E = 0.055, p≤0.000). As a result, increases in perceived environmental concern leads to increases in consumer adoption of sustainable products in South East Nigeria for the individuals with high educational level by effect size of .201 units. Generally, positive relationship exists between perceived environmental concerns and consumer adoption of sustainable products although the differences in effect sizes reveals that the effect is more on individuals with low levels of education. In this regard, the stronger effect exists among individuals with low educational level in South East Nigeria.

Table 11: Moderation Result (Consumer Attitude)

Variable	Coeff	SE	T	P	Model Summary
Constant	-1.138	.547	-2.083	.038	
Educational Level	.825	.142	5.794	.000	
Consumer Attitude	1.326	.135	9.788	.000	
Interaction effect	-.202	.035	-5.834	.000	
Conditional Effect of Consumer Attitude on Consumer Adoption of Sustainable Products at values of Educational Level(Moderator)					
Educational Level	**Effect**	**S.E**	**T**	**P**	
2.941	.733	.049	15.090	.000	
3.924	.534	.040	13.247	.000	
4.908	.335	.057	5.921	.060	
Model Fit Statistics					
R					.631
R^2					.398
ΔR^2					.054**
F-value					83.580**

Source: *Field survey output (2024)*　　　*(** p < .001, * p < .05)*
Note: R = *Multiple correlation; **R² = R square; **ΔR² =** R square change*

Table 11 shows the inclusion of the variables in the moderation model: consumer attitude and consumer adoption as the independent and dependent variable while educational level is the moderator or interaction term. The interaction term is significant (β = -0.202, S.E = 0.035, p≤0.001) confirming that educational level is a significant moderator on the effect of consumer attitude on consumer adoption of sustainable products in South East Nigeria. However, the interaction term accounted for additional 0.054% (ΔR^2) variation on consumer adoption of sustainable products. This suggests that the significant relationship between consumer attitude and consumer adoption is moderated by educational level.

The conditional effect of consumer attitude on consumer adoption of sustainable products in South East Nigeria at the values of Educational level indicates that at low educational level (β = 2.941) the effect of consumer attitude on consumer adoption of sustainable products in South East Nigeria is positive and significant (β = 0.733, S.E = 0.049, p≤0.001). The implication is that increases in consumer attitude tend to increase consumer adoption of sustainable products increases for the individuals with low educational level by .733 units. For the individuals with average educational level (β = 3.924), the result revealed that the effect of consumer attitude on consumer adoption of sustainable products in South East Nigeria is positive and significant (β = 0.534, S.E = 0.040, p≤0.001). This explains that as consumer attitude increases, consumer adoption of sustainable products increases for individuals with average educational level by .534 units. In the case of the individuals with high educational level (β = 4.908) the effect of consumer attitude on consumer adoption of sustainable products in South East Nigeria is positive and significant (β = 0.335, S.E = 0.057, p≤0.000). The implication is that increases in consumer attitude tend to positively impact consumer adoption of sustainable products in South East Nigeria for individuals with high educational level by effect size of .335 units. With respect to consumer attitude, the general implication of the finding is that for individuals with low, average and high educational level, consumer attitude has significant positive association with consumer adoption of sustainable products but with different effect sizes. This suggests that the effect of consumer attitude on consumer adoption is stronger among individuals with low educational level in South East Nigeria.

Table 12: Moderation Result (Social Influence)

Variable	Coeff	SE	T	P	Model Summary
Constant	-.080	.657	-.122	.903	
Educational Level	.809	.167	4.834	.000	
Social Influence	1.127	.186	6.073	.000	
Interaction effect	-.200	.048	-4.198	.000	
Conditional Effect of Social Influence on Consumer Adoption of Sustainable Products at values of Educational Level(Moderator)					
Educational Level	Effect	S.E	T	P	
2.941	.540	.059	9.082	.000	
3.924	.344	.044	7.824	.000	
4.908	.147	.069	2.146	.033	
Model Fit Statistics					
R					.454
R^2					.206
ΔR^2					.037**
F-value					32.867**

Source: *Field survey output (2024)*   **(** p < .001, * p < .05)**
**Note: R = *Multiple correlation; R^2 = R square; ΔR^2 = R square change*

Table 12 shows the inclusion of social influence (Independent variable), consumer adoption (Dependent variable) and educational level as interaction term (moderating variable) in the moderation model. The interaction term is significant (β = -0.200, S.E = 0.048, p≤0.000). This confirms educational level as a significant moderator on the relationship between social influence and consumer adoption of sustainable products in South East Nigeria. The moderating variable accounted for additional 0.037% (ΔR^2) variation on consumer adoption of sustainable products. This implication is that there is a significant relationship between social influence and consumer adoption that is moderated by educational level.

The conditional effect of social influence on consumer adoption of sustainable products in South East Nigeria at the values of educational level indicates that at low educational level (β = 2.941) social influence have a significant positive effect on consumer adoption of sustainable products in South East Nigeria (β = 0.540, S.E = 0.059, p≤0.000). The result shows that for increases in social influence there is also an increase in consumer adoption of sustainable products particularly for the individuals with low educational level by .540 units. The result for the individuals with average educational level (β = 3.924), reveals that the effect of social influence on consumer adoption of sustainable products in South East Nigeria is positive and significant (β = 0.344, S.E = 0.044, p≤0.000). This implication is that for individuals with average educational level the increase in social influence positively and significantly increases consumer adoption of sustainable products by .344 units. With respect to the individuals with high educational level (β = 4.908) the effect of social influence on consumer adoption of sustainable products in South East Nigeria is positive and significant (β = 0.147, S.E = 0.069, p≤0.033). By implication, increases in social influence for individuals with high educational level tend to positively and significantly impact consumer adoption of sustainable products in South East Nigeria by .147 units. The general implication of the finding is that for individuals with low, average and high educational level, social influence has significant positive association with consumer adoption of sustainable products but with different effect sizes. Further, it confirms that the effect of social influence on consumer adoption is stronger among individuals with low educational level in South East Nigeria that the individuals with other levels of education.

Table 13: Moderation Result (Consumer Knowledge)

Variable	Coeff	SE	t	P	Model Summary
Constant	-.257	.588	-.437	.663	
Educational Level	.907	.146	6.229	.000	
Consumer Knowledge	1.134	.158	7.158	.000	
Interaction effect	-.220	.039	-5.577	.000	
Conditional Effect of Consumer Knowledge on Consumer Adoption of Sustainable Products at values of Educational Level(Moderator)					
Educational Level	Effect	S.E	T	P	
2.941	.488	.054	9.031	.000	
3.924	.272	.039	7.037	.000	
4.908	.055	.055	1.002	.317	
Model Fit Statistics					
R					.440
R^2					.193
ΔR^2					.066**
F-value					30.383**

Source: *Field survey output (2024)* *(** p < .001, * p < .05)*
Note: R = *Multiple correlation;* **R^2 =** *R square;* **ΔR^2 =** *R square change*

Table 13 shows the result of educational level as the moderator, consumer knowledge as the predictor, and consumer adoption of sustainable products as the dependent variable. The result revealed that the moderating variable is significant (β = -.220, S.E = 0.039, p≤0.000). This confirms that educational level has interaction effect on the relationship between consumer knowledge and consumer adoption of sustainable products in South East Nigeria. The moderating variable accounted for additional 0.066% (ΔR^2) variation on consumer adoption of sustainable products. This shows that educational level significantly moderates the effect of consumer knowledge on consumer adoption of sustainable products in South East, Nigeria.

The conditional effect of consumer knowledge on consumer adoption of sustainable products in South East Nigeria at the values of Educational level is shown that at low educational level (β = 2.941) the significant effect of consumer knowledge on consumer adoption of sustainable products in South East Nigeria is significant and positive (β = 0.488, S.E = 0.054, p≤0.000). This confirms that for individuals with low educational level the increases in consumer knowledge significantly and positively influence the consumer adoption of sustainable products by .488 units. In the case of the individuals with average educational level (β = 3.924), the effect of consumer knowledge on consumer adoption of sustainable products in South East Nigeria is positive and significant (β = 0.272, S.E = 0.055, p≤0.000). The result further reveals that a positive change in consumer knowledge for the individuals with average educational level positively influences the consumer adoption of sustainable products by .272 units. The individuals with high educational level (β = 4.908) is revealed from the data not to be significant although it revealed a positive impact of consumer knowledge on consumer adoption of sustainable products in South East Nigeria (β = 0.055, S.E = 0.055, p≤0.317). Generally, positive relationship exists between consumer knowledge and consumer adoption of sustainable products specifically for the individuals with low and average levels of education although the effect is more on the individuals with low level of education.

DISCUSSION OF FINDINGS

Firstly, the effect of consumer awareness on consumer adoption of sustainable products in South East Nigeria is statistically significant at 1%. The result is consistent with

the suggestion of Md Sidin et al (2008) and Ishak and Zabil (2012) on consumer adoption. The result confirms that a unit increase in consumer awareness will positively influence consumer adoption of sustainable products. The finding corroborates the result of related studies (Katarzyna & Maciej, 2023). The implication of the result further suggests that consumer awareness is a pre-requisite to impacting consumers positively to adopt products. Essentially, awareness is proven to be a vital factor. According to Wewege and Thomsett (2020) consumers' state of awareness or lack of awareness often serve as a primary barrier to consumers' adoption of products. In other instances, Gholami and Clegg (2009) revealed that when the awareness is low it has the potential to cause customers not to adopt a product. Invariably, the chance of consumers adopting or not adopting a product depends on their awareness of the products. Consumers are indicated to respond positively when they are aware of a product. In other words, without awareness of the products, the chance of adoption of sustainable products is slim or not existent. In this case, the findings of the study support this viewpoint given the statistical significance of the result and the effect size 0.206 units. The implication is that increases by 0.206 units in consumer adoption can be predicted from consumer awareness. In this regard, awareness is a fundamental variable to positively impact consumers' adoption of sustainable products in the South East Nigeria.

The role of perceived environmental concern is also a significant predictor of consumer adoption of sustainable products in South East Nigeria. The finding suggests that a unit increase in perceived environmental concern leads to a significant positive increase on consumer adoption of sustainable products. This corroborates the results of extant literature on similar studies conducted in foreign countries (Kilbourne & Pickett, 2008; Joshi & Rahman, 2017; Lee, 2014; Nanggong & Rahmatia, 2019). According to Dunlap et al., (2021), environmental concern is often associated with individual's consciousness of the ecology and ecosystem which arises due to problems associated with values and beliefs of people as well as their attitude. In related studies such as Nanggong and Rahmatia (2019) it is seen as values and beliefs of people that impacts sustainable behaviour through the lens of consciousness and concern about the environment. How consumers perceive adoption of sustainable products is further buttressed from their ability to believe that their actions can produce significant impact around them. The concern for the environment is shown from concern for wastes, climate, and use of products that are not environmentally friendly such that they consider buying ecofriendly products given that they are less polluting.

The result of the effect of consumer attitude on consumer adoption of sustainable products in South East Nigeria is statistically significant. The positive sign implies that a positive change in consumer adoption can be predicted from consumer attitude by 0.585 units. The result is fundamental because of the possibility of the implications of attitude on actual behaviour as posited by Ajzen (1991) and Ajzen and Fishbein (1977) in that the consumer attitude can directly predict actual behaviour. Thus, the finding of the research reveals that where consumers perceive a better benefit and reward from using an improved product over an existing product, the chances of consumer adoption increases. The finding corroborates results from extant literature on the role of consumer attitude on consumer behaviour (Bothma & Mostert, 2023; Peluso et al., 2021; Akinwale & Kyari, 2020). The major thing inferred from the finding is that there is need to be an established benefit from what the existing option offers. This is because of the thought process of the consumers on sustainable products being a good idea, believing the existence of eco-labeled products leading to healthy environment, and the purchase of eco-labeled products being beneficial to the environment. Thus, the results from the analysis revealed a pattern that is consistent

with the effect of attitude on consumer behaviour. Further, the importance of attitude is easily seen from attribute of having a favourable or not favourable disposition to things. This quality of being favourble or not favourable depends on the likes and dislikes to something. This is pronounced when the object is new and has the ability of satisfying a gaping need. The effect of consumer attitude on consumer adoption implies that the chance of successful adoption is high going by the high effect size. The variable has the highest effect on consumer adoption.

The objective four in the research was to ascertain the relationship between consumer knowledge and consumer adoption of sustainable products in South East Nigeria. The result is revealed to have no significant contribution to consumer adoption given the high level of the p-value. Further, it is the variable with the least effect on the consumer adoption despite not having any significant effect on consumer adoption of sustainable products in South East.

The objective five (5) was also evaluated using SEM and statistical significance. The objective is to evaluate the relationship between social influence and consumers' adoption of sustainable products in South East Nigeria. The result revealed a negative relationship between social influence and consumers' adoption of sustainable products in South East Nigeria. The implication is that a unit increase in social influence negatively and significantly predicts consumer adoption. In other words, as social influence increases, consumer adoption reduces. The result is not consistent with literature on social influence and consumer behaviour given that extant literature suggests others' opinions tends to positively impact consumer behaviour (Ramos de Luna et al., 2019; Liebana-Cabanillas et al., 2017). However, individual influence depends on the knowledge, predisposition, attitude and belief of others in a person's relationship circle. In this case, their opinions, views and suggestions can impact either way leading to positive or negative reaction. As a result, the result confirms from the data collected that the influence of family members, opinions of colleagues and friends, and the suggestions and views of the people close to the individual negatively impacts consumer adoption of sustainable products. This can emanate from insufficient knowledge on sustainable products, attitude towards the sustainable products such as in cost elements, availability and reach, and other economic factors such as demand and supply. Further, this result places emphasis on marketing communication to create and deepen the benefits of sustainable products given that social influence is not having a positive effect rather it is negatively impacting on consumers of sustainable products in South East Nigeria.

The objective six (6) is on examining the extent to which educational level moderate consumer adoption of sustainable product in South East Nigeria. The result reveals that educational level have significant interaction impact on the effect of consumer awareness, perceived environmental concern, consumer attitude, consumer knowledge, social influence on consumer adoption of sustainable products in South East Nigeria. The role of educational level is proven in literature. At different levels of weak, average and strong educational level, the interaction effect was positive for all the relationships and significantly led to increased influence on consumer adoption of sustainable products in South East Nigeria. In other words, the conditional effect of educational level on consumer adoption of sustainable products in South East Nigeria reveals that with low, average or high educational level of individuals there is significant positive relationship between the consumer awareness, perceived environmental concern, consumer attitude, social influence, consumer knowledge and consumer adoption of sustainable products in South

East Nigeria but the effect sizes differ between each of the variables. In other words, for individuals with low educational level, the effect of consumer awareness, perceived environmental concern, consumer attitude, social influence and consumer knowledge is stronger on consumer adoption of sustainable products in South East Nigeria. This suggests that low education of individuals tend to move them towards knowing more about sustainable products and adopting them. This is a consequence of insufficient knowledge and education which is indicated to impact the propensity of the individuals to adopt sustainable products. In other words, individuals with low education display higher adoption of sustainable products following their awareness and knowledge of the benefits of sustainable products. This is indicated in their awareness and positive attitude as well as their perception of environmental concern. Further, the individuals with average educational level generally show a moderate adoption level. This is consistent across all the variables (consumer awareness, perceived environmental concern, consumer attitude, social influence, and consumer knowledge) and consumer adoption of sustainable products in South East Nigeria. Similarly, the effect size for all the variables on consumer adoption suggests were average except consumer knowledge where the effect size on consumer adoption was low. The implication is that on the average, consumers adopt sustainable products in South East Nigeria but it depends on their level of awareness, perception of environment, attitude, social influence and knowledge level. With respect to the individuals with high educational level, consumer awareness, perception of environmental concern, consumer attitude, and social influence have low effect on consumer adoption of sustainable products in South East Nigeria. This is often a consequence of being knowledgeable about the benefits of sustainable products. In other words, the individuals with high education tend to be aware of the benefits and impact and as such are least motivated or influenced given that they are already informed, aware and educated on the benefits of adopting sustainable products. Consumer knowledge of the does not really produce any level of effect on adoption of sustainable products in the South East Nigeria. Generally, the result of the research confirms that at different levels of educational level there is still positive increase on consumer adoption of sustainable products in South East Nigeria. In other words, when the educational level is low, consumer adoption increases but it is not the same with the other levels of education as they tend to increase but lesser levels of impact on consumer adoption. The lower the educational level, the more the consumers adopt sustainable products but the higher the educational level, the lesser the consumers adopt sustainable products. Thus, focus on education is on the consumers with low educational level given the higher levels of the effect on consumer adoption of sustainable products in South East Nigeria.

CONCLUSION

The main objective of the study is to examine eco-label and consumers adoption of sustainable products in of federal universities in south east Nigeria. From the finding after analysis, it can be concluded that consumer's state of awareness or lack of awareness often serve as a primary barrier to consumer adoption of environmental sustainability in south East federal universities. Again, the concern for the environment is shown from concern for waste, climate and use of products that they consider buying sustainable products given that they are less polluting.

The results confirms that the influence of family members, opinion of colleagues and friends, their suggestions and views of the people close to the individual negatively impacts consumer adoption of sustainable products.

RECOMMENDATION

Based on the finding of the study, the following recommendations are made:

1. As seen, a major militating factor against consumer's adoption of sustainable products, lack awareness. Hence adequate marketing communication should be in place to create and deepen the benefit of eco –label and sustainable product.

2. As seen by the study, consumer knowledge had poor and no significant contribution to consumer adoption of sustainable products. To address the situation, a joint and holistic effort is needed by individual concerned, manufacturers, government and university community in sustainability policy implementation to achieve environmental sustainability objectives.

3. Government through its environmental regulating bodies should enact laws and guideline that educate and promote public awareness and need to act in an environmentally friendly manner.

References

Abdullah, AI, M., Mohd, R.M., Mohd R.B. and Muhammad, M. (2018). Intention and Behaviour towards green consumption among low income households. *Journal of Environmental Management*. 227, 73 – 84.

D'Souza, C (2004). Eco label Programmes; A stakeholders perspectives: Corporate communication. *An International Journal* 9(3), 2004.179.188*.

Adendooff, C. and Miemie. S. (2018). Consumer perception of eco-labels in South Africa. *A Journal of business and economics*. Vol. 4, issue 2 pages 165-178.

Porta, M., Maondino, O., & Supino, S (2007).Eco-Label of Sustainability Performance in benchmarking? Management of environmental quality; *An international journal* 18(6)669-683

Sharma, N.K & Kushwaha, G.S (2019) Eco -labels; A tools for Green Marketing or Just a Blind Mirror for Consumer, *Journal of green electronic*, Vol. 1, No 42, https://escholarship

Leire, C & Thidell, A. (2009)"Product related environmental information to guide consumer Purchases: A review and analysis of research on perceptions. Understanding and use among Nordic Consumers .*Journal of cleaner production*, Vol, 13, No10, pp61-70

Taufique, K.R.,Vocino,A and Poloniky M.S(2017) The Influence of Eco label Knowledge and Trust on Pro Environmental Consumer Behaviour in an Emerging Market ,*Journal of Strategic Marketing* ,Vl 25,no 7pp511-529

Ayodele, A. A.; Pamima, A. E. and Akemu C. (2017) Green Awareness and Consumer Purchase intention of Environmentally friendly Electrically Products in Anambra, Nigeria; *Journal of Economics and Sustainability Development* ISSN 2222, VL8, No. 22

Carlson, L., Grove S.; Roe and Tessl (2007) A Content analysis of Environmental Advertising Claims; A Matrix Method, *Approach Journal of Advertising*, Vl(3) 8-38

Grimsley, S. (20015) Consume Attitudes Intention and Change. Lesson Transcript: Study: Academic/lesson/Consumer Attitude definition – Change.

Kasten, E. & Pank, E. (2017). Consumer Attitudes, Warc.www.Warc.Com/Consumer Attitude

Terlau, W. & Hirsch, D. (2015) Sustainability Consumption and the attitude behavior Gap Phenomenon: Causes and measurement towards a sustainable Development. International Centre for sustainable.-IZNE, BOON, Rhein – Sieg. University of Applied Science, Germany

Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behaviour and Human*

Albu, R.G., &Clutu, I.B. (2012). The European ecolabel advantage and perspectives for development in Romania: Bulletin of the Transilvania University of Brasov, *Economic Sciences Series*, 5(2), 9-14.

Anastasio, P., Athanasios, P., Prokopis, T and Antonion, K. (2023). Influencing green purchase intention through eco-label and user generated contents. *Journal of Sustainability*. Vol. 15(1): 764

Biltar, D.V. (2018). Examine consumer environmental consciousness, price perception and brand equity. ? *Journal clean production*. 181, 527 – 534.

Bipal, K. (2012): Purchasing behaviour for environmentally sustainable products using the framework of the theory of planned behaviour. *Journal of Sustainability Management*. Vol. 61, Pg. 72 – 90.

D'Souza, C., Taghian, M. Lamb, P. and Peretiako, R. (2007): Green Decision Demographic and consumer understanding of Environmental labels. *International Journal of consumer studies*. Vol. 31, no. 4, pp. 371-376.

Daugberg, C., Smed, D.S., Anderson, L.M. and Schectman (2014): improving eco-labelling in an environmental policy instruction knowledge, trust, and organic consumption. *A Journal of environmental policy and planning*

Dippen, P. Sushant M., Dharmesh, K. and Amit, T. (2022). A study in effectiveness of Eco-label in the fast-moving Consumer Goods Sector 10p Conference Series, *Earth and Environmental Science* 1161(1).

DU. Q and Quynh N. (2010). Effectiveness of Eco-label? A student of Swedish University students' choice on Ecological Food. *Int'l Journal of Sustainability*.

Gallastegui, I.G. (2002). The use of eco-labels: a review of the literature. *European Environment*, 12(6), 316-331.

Hawang-Ah, H. and Park Y. (2016) "Why do Consumers respond to eco-label? *Singer Plus* 5, 1 -13

Miemie and Chris (2018). Consumer Perception of eco-label in South Africa: *Athen Journal of Business & Economics*, *Atten Institute for Education and Research*, VL, 42, Pages 163-178 DDI 1030958

Nkamnebe, A.D, Obeta, C., & Ayodele, A. A. (2019).Ethical consumption and consumer social responsibility. In Nkamnebe, A.D. & Anyanwu, A.V eds. Marketing ethics and corporate social responsibility. Awka: SCOA Heritage.

Okpara, G.S., &Agu, G.A. (2019).Ethics and consumer behaviour. In Nkamnebe, A.D &Anyanwu, A.V eds. *Marketing ethics and corporate social responsibility. Awka:* SCOA Heritage.

Picket-Baker, J. & Ozaki, R. (2008). Pro-environmental products: marketing influence on consumer purchase decision. *Journal of Consumer Marketing, 2*5(5), 281-293.

Sharma, N.K. and Kushwaha G.S. (2019). Eco-labels: A tool for green market by just a blind micro for consumer. 42, Electronic Green Journal (e-Journal) Vol. 1, no. 42, Available online.

Sharma, S. (1996). *Applied Multivariate Techniques.* New Jersey: John Wiley & Sons Limited

Struwig, F.W., & Stead, G.B. (2013). *Research: Planning, Designing and Reporting*. 2nd edition. Johannesburg: Pearson.

Treves, A., & Jones, S.M. (2010). Strategic tradeoffs for wildlife-friendly eco-labels: European *Journal of Marketing*, 44(12), 1787-1810.