

Promoting Sustainable Consumption Behaviours among Urban Households in South-South Nigeria: Strategies for Enhancing Environmental Sustainability

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Abstract: *The aim of the study is to identify and evaluate the effective strategies for promoting sustainable consumption behaviours among urban households in South-South Nigeria. This study used both qualitative and quantitative research methods. Data were collected from 384 urban consumers in South-South Nigeria, and analyzed through descriptive statistics, multiple regression and thematic analysis. Findings revealed that all three factors considered in this study have significant positive effects on environmental sustainability, with mindful consumption emerging as the strongest predictor. Mindful consumption is driven by self-regulation, ethical values, and awareness of environmental and social issues, though hindered by cultural consumerism and materialism. Responsible consumption requires coordinated policy, industry, and consumer actions, but faces obstacles such as infrastructural gaps and resistance to change. Eco-labeling, while effective in guiding consumer choices, is constrained by issues of trust, understanding, and awareness. The study concludes that promoting sustainable behaviour demands integrated approaches emphasizing mindfulness education, aligned environmental policies, and simplified, credible eco-labeling schemes. Policy recommendations include institutionalizing mindfulness training, incentivizing sustainable design, and standardizing eco-labeling frameworks to enhance environmental outcomes.*

Keywords: Environmental Sustainability, Mindful Consumption, Sustainable Consumption Behaviours

1. Introduction

Sustainable consumption is increasingly recognized as a vital component in addressing environmental degradation and ensuring the responsible use of natural resources. Urban households, particularly in a developing nation like Nigeria, are significant contributors to consumption patterns that impact the environment. With expanding urban populations and evolving lifestyles, there is a pressing need to promote behaviours that balance economic, social, and environmental considerations to achieve sustainability. Nigeria, rich in natural resources and undergoing rapid urbanization, faces unique environmental challenges linked to consumption. Issues such as waste generation, pollution, and resource depletion are exacerbated by unsustainable consumption habits. Urban households, as key consumers, hold the potential to influence environmental outcomes through their purchasing decisions, resource use, and waste management practices. Therefore, understanding how to encourage sustainable consumption behaviours in this context is crucial for regional environmental sustainability.

In recent decades, the anticipated increase in consumption has resulted in the utilisation of natural resources that exceeds their regenerative capacity, leading to their gradual depletion, loss of biodiversity, and environmental deterioration (Bogueva et al., 2017). The gravity of the consequences stemming from consumption patterns influenced by socio-economic aspirations, rather than genuine need, is driving the shift towards sustainable consumption and production models (Goyal et al., 2022; United Nations Environment Programme, 2015). The notion of sustainable consumption was initially discussed at the public policy level in 1992 during the Earth Summit in Rio de Janeiro, where the Global Goals for Sustainable Development were established. In 2012, the United Nations Conference on Sustainable Development, referred to as "Rio +20," culminated in a political outcome document that outlined explicit and pragmatic strategies for the implementation of sustainable development.

In 2015, the 2030 Agenda for Sustainable Development was ratified, establishing a 15-year framework to attain the sustainable development goals (Vergura et al. 2023). Due to the escalating global dedication to sustainability, consumers are becoming more aware of the necessity to alter their purchase and consumption habits (Hopwood et al., 2005; Kostadinova, 2016). This awareness manifests in sustainable consumption patterns and the demand for eco-friendly products (Luzio & Lemke, 2013). Consequently, organisations and consumers are anticipated to adopt more environmentally sustainable practices, specifically focusing on all aspects of sustainability: environmental, economic, and social. In light of these expectations, numerous firms have been prioritising sustainable value production within their business plans, striving to meet performance objectives while honouring both individuals and the environment (Hristov et al., 2022).

The outcome is a transition from traditional marketing, which depends on the availability of enough resources and encourages purchases to satisfy needs and desires (Swim et al., 2011), to sustainable marketing that prioritises the reuse and renewal of resources to mitigate their scarcity (Mont & Heiskanen, 2015). Lee (2014) defines sustainable consumption as a deliberate and individual decision that demonstrates a commitment to environmental protection. Matharu et al. (2020) analysed the factors of sustainable consumption, demonstrating that a health- and sustainability-oriented lifestyle promotes consumer behaviour favouring eco-friendly products. Additionally, some have noted that the desire to acquire eco-sustainable products is contingent upon the product type and is invariably associated with the utilitarian value felt by the consumer (Park & Lin, 2020).

Recent studies examining cognitive variables associated with sustainable behaviours have indicated that, on one hand, social factors and technological knowledge promote sustainable consumption, thereby underpinning a green economy (Dabbous & Tarhini, 2019; Goyal et al., 2022); on the other hand, contingent factors such as social influence and pricing enhance the sustainable performance of consumers and suppliers (Wang et al., 2019). Recent trends have examined the micro foundations of sustainable consumption, particularly the connection between moral conscience and consumption reduction, wherein individual responsibility reflects an innate acknowledgement of contributing to environmental welfare (Culiberg et al., 2022). Consequently, customer attitudes, preferences, and dispositions towards products enable organisations to implement product positioning strategies that align with sustainable consumer behaviour (Makrides et al., 2021).

Concerns regarding climate change, global warming, and, in certain instances, pandemics have intensified the demand for sustainable production and consumption to new heights (Lu & Kwan, 2023). A research by the IBM Institute for Business Value (IBV) (Cheung et al., 2022) revealed that 93% of global respondents reported that COVID-19 impacted their perspectives on the necessity of sustainability. Consumers are offered an expanding array of sustainable items alongside traditional options. In contrast to their competitors, sustainable products are typically produced using biodegradable and non-toxic materials, and are often packaged in recyclable containers (Chirani et al., 2021). Consumers are progressively opting for sustainable products or adopting sustainable lifestyles due to its environmental and health advantages.

The IBV survey (Cheung et al., 2022) indicated that 64% of customers acknowledged acquiring products marketed as environmentally sustainable or socially responsible. A Deloitte survey (2022) indicated a significant rise in consumers embracing a more sustainable lifestyle in 2022 compared to the prior year. The analysis indicated an 11-point rise in individuals selecting low carbon emission travel choices. Furthermore, the survey indicated that 72% of consumers engage in recycling or composting garbage domestically. B2B purchase decisions, typically complex and encompassing numerous factors, create a distinctive context in which conscientious consumption can significantly influence outcomes. The impact of mindful consumption on intricate decision-making processes may result in more intentional, sustainability-oriented decisions (Gupta & Sheth, 2023), affecting elements from supplier selection to the evaluation of products and services (Sheth & Usley, 2023).

This possible influence possesses complexities. In a marketplace increasingly focused on sustainability, B2B enterprises' alignment with conscientious consumption practices could strengthen their brand reputation. Eco-labels seek to diminish information asymmetry between consumers and producers by offering information regarding environmental features that customers cannot directly witness or evaluate (Grunert, 2011). Research indicates that consumers are inclined to pay a premium for products bearing eco-labels (Asche & Bronnmann, 2017; Xuan, 2021). Significant environmental challenges resulting from extensive human intervention, including pollution, global warming, land degradation, and biodiversity loss, directly affect the sustainability and quality of the environment and ecosystem (Xue et al. 2021).

To comprehend consumer behaviour, it is essential to examine the entire consumption cycle rather than solely initial selections, as post-choice behaviours, including product usage, life extension, and disposal, significantly influences sustainability (Sheoran & Kumar 2020). It is essential to acknowledge that consumer behaviour results from cognitive, emotional, and motivational processes, and is influenced by various circumstantial factors. Notably, changing individual consumption patterns necessitates more sustainable consumer behaviour (Figueroa-García et al. 2018).

Effective strategies to promote sustainable consumption involve a mix of education, policy interventions, and information tools. Mindful consumption encourages individuals to internalize environmental values and make thoughtful choices, while responsible consumption emphasizes the role of systemic support from governments and industries. Additionally, eco-labeling provides consumers with critical information that can guide more sustainable purchasing decisions. Together, these approaches can foster an enabling environment for sustainable behaviours among urban residents. The aim of the study is to identify and evaluate effective strategies for promoting sustainable consumption behaviours among urban households in South-South Nigeria, with a view to enhancing environmental sustainability in the region. The specific objectives of the study are to explore the effect of mindful consumption, responsible consumption and eco-labeling on environmental sustainability in South-South Nigeria. Based on the aim and specific objectives of the study, the following research questions were answered:

- i. What is the effect of mindful consumption on environmental sustainability among urban households in South-South Nigeria?

- ii. How does responsible consumption influence environmental sustainability in South-South Nigeria?
- iii. To what extent does eco-labeling promote environmental sustainability among urban households in South-South Nigeria?

2. Literature Review

Sustainable consumption behaviour

Sustainable consumption entails enhancing the environmental integrity of the entire supply chain, encompassing raw material suppliers, production, distribution, and the ultimate market, while simultaneously informing consumers about sustainability (Tania & Sigrid, 2006). Sustainable consumption encompasses not only purchasing activity but also the perspectives and lifestyles of governments, enterprises, and consumers. It promotes the acquisition of sustainable products and the adoption of an environmentally conscious lifestyle by advocating for reduced consumption and improved purchasing choices over time (Sun et al., 2021).

Wang et al. (2014, p. 154) assert that “sustainable consumption is an umbrella term encompassing several critical issues, including fulfilling needs, enhancing quality of life, improving resource efficiency, augmenting the utilisation of renewable energy sources, minimising waste, adopting a life cycle perspective, and considering the equity dimension.” Sustainable consumption encompasses more than the acquisition and utilisation of eco-friendly products; it entails a lifestyle transformation (e.g., abstaining from excessive consumption), a forward-looking perspective, and a commitment to future generations. Quoquab and Mohammad (2017, p. 120) asserted that “sustainable consumption transcends environmental concerns by ensuring and managing existing resources to meet current demands without compromising the needs of future generations.”

Aibar-Guzmán and Somohano-Rodríguez (2021, p. 1) asserted that “customers are significant stakeholders whose demands and preferences profoundly impact corporate strategies.” Sustainable consumption behaviour encompasses intentional and impactful acts by consumers that enhance their quality of life while safeguarding the environment and resources for future generations (Guzmán Rincón et al. 2021). Sustainable consumption behaviour refers to the conscious and deliberate choices individuals make to minimize negative environmental, social, and economic impacts through their consumption patterns. It involves using goods and services in ways that meet present needs without compromising the ability of future generations to meet theirs. This behaviour emphasizes resource efficiency, waste reduction, ethical purchasing, energy conservation, and support for environmentally friendly products and practices. Ultimately, sustainable consumption behaviour seeks to balance personal well-being with environmental preservation and social responsibility.

Mindful consumption

The notion of mindful consumption was originally prominent in the Business-to-Consumer (B2C) domain (Milne et al. 2020). In the B2C sector, mindful consumption is frequently associated with sustainable and ethical purchasing practices, profoundly influencing consumer experience and brand loyalty (Parvatiyar & Sheth, 2023). This transition towards mindfulness indicates an increasing consumer awareness of the environmental and social consequences of their purchase decisions (Gupta & Sheth, 2023). The necessity to amend consumption patterns in response to significant environmental challenges has led to an increased focus on examining consumers' sensitivity to environmental concerns (De-Boer & Aiking, 2021; Schill et al., 2019). Ecological economists contend that strategies for transitioning to a sustainable society must encompass personal change (O'Brien, 2018), as viewing individuals as active agents of transition may be more effective and enduring in fostering sustainable change than perceiving them as passive recipients of environmental policies (Thiermann & Sheate, 2020).

Ecological sustainability at the individual consumer level is facilitated by a fundamental shift in awareness (Mishal et al., 2017; Mishra et al., 2023). Mindfulness, defined as the condition of being attentive to and aware of present occurrences (Brown & Ryan, 2003), has been emphasised as a remedy for consumerism (Bharti et al., 2022) and a significant predictor of sustainable attitudes (Gautam & Bhalla, 2023). Mindfulness aligns with a 'other-focus' and pro-environmental behaviours, diverting individuals from fatalistic perspectives (Wamsler & Brink, 2018). Previous studies indicate that mindfulness negatively correlates with conspicuous consumption and impulsive purchasing, with self-worth, self-concept clarity, and susceptibility to normative influence serving as mediators in this connection (Bharti et al., 2022; Dhandra, 2020). Moreover, mindfulness enhances green purchasing intentions by elevating ethical self-identity (Daniel et al., 2023) and promotes pro-environmental behaviour through cognitive reappraisal and climate change awareness (Apaolaza et al., 2022).

Researchers have theoretically suggested that mindfulness could bolster support for sustainable consumption by improving well-being (Fischer et al., 2017; Geiger et al., 2020). Mindfulness practice cultivates self-determination by improving self-control and vigour (Ryan and Deci, 2008). Consequently, mindfulness therapies can be directed towards pro-environmental initiatives that cultivate individual intrinsic incentives for sustainable behaviours (Pelletier et al., 2011). Fischer et al. (2017) established that mindfulness therapies typically enhance sustainable consumption. Although consistent engagement in mindfulness meditation appears to promote sustainable behaviours (Panno et al., 2018), several studies indicate inconclusive results. Participants in a brief mindfulness program exhibited increased beliefs in climate change following the intervention (Wang et al., 2019), while individuals

who attended a virtual one-month mindfulness intervention reported a greater connection to nature and heightened engagement in pro-environmental behaviours post-training (Ray et al., 2020).

A two-month mindfulness training program incorporating sustainability-related elements did not enhance sustainable behaviours (Geiger et al., 2020). Geiger et al. (2020, p.1012) assert that, despite the absence of a direct effect of mindfulness training on sustainable consumption, mindfulness-based interventions modify behavior-distal factors, including material values and well-being, which may subsequently affect consumption behaviour over time. Consumption is associated with deliberate cognition (Arslan & Asıcı, 2021), influenced by the mindset of individuals directing conscious conduct (Gao et al., 2021). Mindfulness encompasses the attitudes, values, and expectations related to consumption behaviour (Peterson & Simkins, 2019). Individuals' concern for themselves, their communities, and the natural environment underpins economic, social, and environmental sustainability (Sheth et al., 2011). Mindful individuals are fully present, attuned to their surroundings, and exhibit compassion and kindness towards themselves and others (Dhandra, 2019). Milne et al. (2020) observed that mindfulness correlates with self-regulation influenced by self-conscious emotions like guilt and pride, which fosters sustainable behaviour and enhances self-esteem.

Mindful consumption involves individuals making deliberate choices that align with their values, particularly in relation to the environment. By being aware of the social and ecological impacts of their purchasing behaviors, consumers are more likely to choose products and services that minimize harm to the planet. This shift in consumption patterns helps reduce resource depletion, supports ethical production practices, and encourages sustainable business models, thereby contributing positively to environmental sustainability.

Responsible consumption

The United Nations Sustainable Development Goals (SDGs) are a worldwide initiative aimed at fostering prosperity while safeguarding the planet (United Nations, 2023a). The objectives underscore a comprehensive and methodical methodology for sustainable development, wherein policies for environmental protection are formulated concurrently with those that promote economic progress and foster a healthy, inclusive community. This poses a specific difficulty in tackling SDG 12 - Sustainable consumption and production. SDG 12 mandates the development of strategies to diminish a nation's material footprint (i.e., the total material resource input throughout all phases from raw extraction to processing and consumption) while ensuring no adverse effects on communities (United Nations, 2023b). This intricate difficulty necessitates the consideration of several aspects that can each contribute to the overarching objective (Mazzucato, 2018).

Human conduct is a crucial element in both the challenges and resolutions associated with sustainable consumption and production. The lifestyles of affluent populations are promoting unsustainable consumption, adversely affecting economic development, global inequality, wellbeing, and planetary health (Raworth, 2017; Wiedmann et al., 2020). Affluent communities must embrace behaviours that promote environmental, economic, and social well-being, thereby altering the character and quality of consumption while preserving and/or enhancing quality of life (Giannetti et al., 2022; Gossen et al., 2019). This poses a considerable challenge, as historically, economic growth has been intricately linked to material intensity (Aslam & Ghouse, 2023; Wiedmann et al., 2020), and the nature of that growth can influence its capacity to promote human flourishing or exacerbate inequality and disadvantage (Denniss, 2017).

The necessity for responsible purchasing behaviour modification transcends mere consumers. Although altering consumer behaviour is arguably the primary objective of responsible consumption, modifications can occur at multiple points within the supply chain (e.g., manufacturers or retailers) or through influential entities (e.g., local or state governments) that facilitate more responsible consumption by end-users (Macklin & Kaufman, 2023; Roberts et al., 2023). Responsible consumption encompasses actions beyond acquisition and utilisation, incorporating upstream activities (such as design and production) (Marchand & Walker, 2008) and downstream activities (such as maintenance, repair, and disposal). Participation in the sharing economy necessitates altering various behaviours among diverse stakeholders, including suppliers and retailers (e.g., in service design and delivery) as well as customers (e.g., to enhance adoption and mitigate misconduct) (Huang et al., 2023). Responsible consumption exemplifies a multifaceted issue involving diverse stakeholders and actions, necessitating a cooperative strategy to discern potential target audiences and behaviours, prioritise them, allocate finite resources, and formulate effective behaviour change interventions (Borg et al., 2024).

Responsible consumption emphasizes the ethical, economic, and environmental consequences of consumer decisions. It entails using products more efficiently, avoiding waste, and supporting companies that adopt sustainable practices. When widely practiced, responsible consumption can lead to a reduction in pollution, conservation of biodiversity, and overall improvement in environmental health, as consumers drive demand for environmentally friendly goods and services.

Eco-labeling

Consumer-oriented eco-labels function as informational conduits and instruments for enhancing market awareness. They convey beneficial environmental and social effects while mitigating uncertainties in consumers' eco-friendly purchasing (Donato & Adiguzel, 2022). Lee et al. (2020) emphasised that sustainable labels seek to emphasise environmentally friendly products by categorising their influence into three primary domains: mitigating environmental impact, shaping consumer understanding and attitudes, and altering consumption behaviour. Leach et al. (2016) emphasised the necessity of comprehending customer engagement with environmental effect labels, indicating differing appropriateness across sectors. Potter et al. (2021) endorsed the significance of eco-labels but advocated for further investigation into their characteristics. Riskos et al. (2021) underscored the reliability of eco-labels in shaping environmentally conscious purchasing behaviour. The efficacy of sustainability labels is contingent upon various factors, including individual attributes such as altruism (Iweala et al. 2019), environmental attitudes, and environmental concern (Song et al. 2019), as well as socio-demographic variables (gender, age), label characteristics, and contextual elements such as product type, origin, and price (Majer et al. 2022).

A further individual component is the consumer's comprehension of the information provided (Taufique et al. 2017). While general environmental knowledge has been shown in certain studies to predict green consumer behaviour (Darnall et al. 2012), context-specific knowledge regarding the environmental performance of products and labels appears to be essential for making informed and rational decisions (Testa et al. 2015). Taufique et al. (2027) emphasise the significance of specialised knowledge, revealing that perceived eco-label expertise exerts an indirect positive influence on pro-environmental consumer behaviour. Furthermore, the research conducted by Grunert et al. (2014) indicated that the efficacy of the Fairtrade and Carbon Footprint labels is contingent upon consumers' comprehension.

Eco-labeling serves as a tool to inform and guide consumers toward environmentally preferable products. These labels provide credible, easily recognizable information about a product's environmental attributes, such as low carbon footprint, recyclable packaging, or sustainable sourcing. By making sustainable choices easier and more transparent, eco-labeling empowers consumers to support products that contribute to environmental protection and drives manufacturers to innovate and adopt greener practices, ultimately fostering long-term environmental sustainability.

The Theory of Planned Behaviour

Ajzen (1991) formulated the Theory of Planned Behaviour (TPB) to examine behavioural intention, which is influenced by three determinants of beliefs: subjective norms arising from social pressure, self-perception regarding factors that may facilitate or hinder behaviour performance, and attitude. The Theory of Planned Behaviour (TPB) is a comprehensive behavioural model with extensive applicability, frequently utilised in diverse research across multiple domains, including business, marketing, and public relations. The Theory of Planned Behaviour (TPB) has demonstrated its applicability in addressing various behaviours associated with sustainability, including recycling behaviour (Park & Ha, 2014), intention formation in individual consumption (Geiger et al., 2017), and sustainable consumption behaviour (Uyen et al., 2021).

The Theory of Planned Behaviour (TPB) provides a valuable framework for understanding and promoting sustainable consumption behaviours among urban households in South-South Nigeria. By examining the three core components of TPB attitude, subjective norms, and perceived behavioural control, this study can assess how urban households form intentions to engage in sustainable consumption practices. Positive attitudes toward eco-friendly products, social influence from peers and community norms, and individuals' confidence in their ability to adopt sustainable behaviours (despite potential barriers such as cost or accessibility) all play critical roles in shaping consumption patterns. Applying TPB allows for the identification of targeted strategies that align with these determinants, thereby enhancing the effectiveness of interventions aimed at fostering environmentally responsible consumption within the region.

Table 1.

Review of empirical studies

SN	Author(s)	Methods	Focus Area	Key Findings
1	Maduku (2024)	Quantitative research. 764 South African consumers	Influence of environmental concern and emotions on sustainable buying intentions	Environmental concerns significantly influence both positive and negative emotions, which in turn affect sustainable buying intentions. Regulatory focus moderates this relationship.

2	Borg et al. (2024)	Mixed-method: collaborative workshops, surveys, and prioritisation summit. Included stakeholders (govt., academics, etc.)	Responsible consumption practices in fashion, electronics, and furniture in Australia	From 84 identified behaviours, 7 were prioritised based on adoption likelihood, timing, impact, and systemic reach. These include both short-term consumer actions and long-term policy interventions.
3	Siagian et al. (2024)	Qualitative survey based on the Theory of Planned Behaviour (TPB). 200 Indonesian consumers from diverse groups	Legal and psychological impacts of eco-label innovation on sustainable business practices in Indonesia	Many respondents are unaware of eco-labels but perceive them as signs of sustainability. Eco-labels influence purchase decisions. Legal support and psychological factors enhance eco-label effectiveness.
4	Carole, et al.(2024)	Comparative cross-sectional study (with and without mindfulness training). 467 French consumers (208 with training; 259 without)	Role of spiritual well-being as a mediator between mindfulness and sustainable consumer behaviour	Mindfulness improves sustainable behaviours via enhanced spiritual well-being. Effects are more significant among consumers with formal mindfulness training.
5	Minh and Quynh (2024)	Mixed-method: quantitative and qualitative based on TPB and Norm Activation Model. 645 Vietnamese consumers across 5 cities	Influence of pandemics and perceived consumer efficacy on sustainable consumption	Pandemic experience increases environmental concern, attitudes, perceived control, and personal norms. Perceived consumer efficacy positively moderates intention-behaviour link. Subjective norms had no significant effect.
6	Saginova et al. (2023)	Online Poll + Lit. Review. 600 young active consumers.	Responsible consumption patterns	Main drivers: resource conservation & cost-saving; resistance to cost-increase; prefer responsible consumption when it saves cost.
7	Kolber and Meixner (2023)	Discrete Choice Experiment. 536 Austrian consumers.	Impact of multi-level eco-labels on meat/alt assessment	Multi-level labels increase WTP; label design matters more than knowledge or concern; "protein source" is key determinant.
8	Paul et al. (2023)	Hypothesis Testing. 206 consumers.	Effectiveness of eco-labels in FMCGs	Awareness boosts purchase intention of eco-labeled products; useful for eco-labeling strategies and emission reduction.
9	Zahid et al. (2023)	Structural Equation Modelling (SEM). 314 Chinese consumers.	Mindful consumerism, ego involvement, social norms	Mindful consumption drives second-hand purchases; ego-involvement is a key mediator; marketing should promote mindful consumption.
10	Proi et al. (2023)	Eye-Tracking + Choice Experiment + Semiotics. 61 Italian consumers	Influence of eco-label design on aquaculture choices	Label size, saliency, symbols, and text influence attention and choices; visual design impacts eco-label effectiveness.
11	Oloveze et al. (2023)	SEM + Regression + Hayes Process. Nigerian students.	Sustainable consumption in food/beverages	Green marketing, education, eco-labeling influence behaviour; transparency in label certification boosts trust.
12	Dimitrova et al. (2022)	Partial Least Squares SEM. 489 Bulgarians	Drivers of sustainable consumer behaviour	EK & materialism impact intentions; SCBI mediates relationship with SCB; age moderates effect.
13	Lima et al. (2022)	Qualitative Field Interviews	Trade-offs in sustainable consumption	Consumers recognize trade-offs; prioritize reuse, often at the cost of broader sustainability goals like resource conservation.
14	Ertmańska (2022)	CAWI Questionnaire Survey. 9 sustainability proponents.	Awareness and practices of sustainable consumption	High involvement in eco-shopping, packaging reuse, buying eco-products; preference for local/domestic goods.

15	Wardhana (2022)	Online Survey + Regression Analysis. 185 Indonesian students.	Impact of environmental knowledge on green behaviour	Environmental knowledge enhances green and sustainable behaviours among university students.
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3. Methodology

The study adopts a mixed-methods approach, integrating both qualitative and quantitative methods involving causal research design. This approach fusion provides a holistic understanding by combining rich qualitative insights gained from literature review and contextual exploration of sustainable consumption within the Nigerian setting with empirical data collected through surveys and statistically analyzed for meaningful patterns. The qualitative phase involved identifying potential drivers and barriers to sustainable consumption, particularly mindful consumption, responsible consumption, and eco-labeling. These themes were refined through expert consultations and a pilot study. The integration of both approaches enhances the depth, validity, and generalizability of the findings.

Questionnaire Development

A structured questionnaire was developed based on extensive literature review and expert input. The questionnaire consisted of closed-ended and Likert-scale questions, allowing respondents to rate their level of agreement or disagreement with various statements related to sustainable consumption, with respondents rating items on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). To ensure clarity and relevance, a pilot study was conducted with selected experts in environmental studies and consumer behaviour. Feedback from the pilot led to improvements in language, structure, and content of the questionnaire, ensuring that it effectively captured the key constructs of the study.

Data Collection

Data were collected from a sample of 384 urban household heads and adult consumers in South-South Nigeria, using a snowball sampling technique. Participants were selected based on their residency in urban areas and their role in household decision-making, particularly regarding consumption habits. The survey targeted a diverse pool to ensure representation across various socio-economic and demographic categories. The aim was to gather insights on the extent to which individuals engage in mindful and responsible consumption, as well as their awareness and perception of eco-labeling. Several strategies were employed to improve response rates and minimize nonresponse bias. The study used multiple channels of distribution (e.g., in-person, online). Reminders and assurances of anonymity were provided to encourage participation. A total of 384 questionnaire were administered and a total of 378 questionnaire retrieved were used for data analysis.

Data Analysis Methods

The collected data were analyzed using descriptive statistics and multiple regression analysis. Descriptive statistics provided summaries of respondents' demographic characteristics and general patterns in consumption behaviour, which was essential for understanding the composition of the sample and identifying basic trends. Multiple regression analysis was employed to determine the strength and direction of the relationships between key variables such as mindful consumption, responsible consumption, eco-labeling, and environmental sustainability. This method was selected for its ability to assess the predictive power of multiple independent variables simultaneously and control for potential confounding factors. Thematic analysis was used to analyze the qualitative data, as it is well-suited for identifying, analyzing, and interpreting patterns of meaning across narrative responses. This approach was chosen to gain deeper insights into consumer attitudes, motivations, and contextual influences that quantitative data alone may not fully capture.

4. Results

Table 2.

Demographic Profile of Respondents (n = 378)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	198	52.4%
	Female	180	47.6%
Age Group	18–25 years	72	19.0%
	26–35 years	138	36.5%
	36–45 years	90	23.8%
	46–55 years	54	14.3%

	56 years and above	24	6.3%
Marital Status	Single	132	34.9%
	Married	210	55.6%
	Divorced/Widowed	36	9.5%
Educational Level	Secondary Education	36	9.5%
	OND/NCE	60	15.9%
	Bachelor's Degree/HND	186	49.2%
	Postgraduate Degree (MSc/PhD)	96	25.4%
Employment Status	Employed (Public/Private Sector)	180	47.6%
	Self-employed	96	25.4%
	Unemployed	54	14.3%
	Student	48	12.7%
Monthly Income (₦)	Below ₦50,000	84	22.2%
	₦50,000 – ₦99,999	96	25.4%
	₦100,000 – ₦199,999	114	30.2%
	₦200,000 and above	84	22.2%
Location	Akwa Ibom	54	14.3%
	Bayelsa	48	12.7%
	Cross River	60	15.9%
	Delta	90	23.8%
	Edo	66	17.5%
	Rivers	60	15.9%

The demographic profile of the 378 respondents reveals a relatively balanced gender distribution, with 52.4% male and 47.6% female. The majority fall within the 26–35 age range (36.5%), indicating a youthful population likely to be active in consumption decisions. Most respondents are married (55.6%), and a substantial portion holds at least a bachelor’s degree or HND (49.2%), suggesting a well-educated sample. Employment status shows that nearly half (47.6%) are engaged in formal employment, while a combined 38.1% are either self-employed or students. In terms of income, a plurality earns between ₦100,000 and ₦199,999 monthly (30.2%), indicating a modest middle-income group. Geographically, the highest representation comes from Delta State (23.8%), followed by Edo (17.5%), with other South-South states fairly distributed. This demographic spread provides a diverse and representative basis for evaluating sustainable consumption behaviours among urban households in South-South Nigeria.

Table 3

Effective Strategies for Promoting Sustainable Consumption Behaviours

Model	Coefficients ^a						Collinearity Statistics	
	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	Tolerance	VIF	
1 (Constant)	-1.691	.480		-3.523	.000			
Mindful consumption	.473	.046	.420	10.312	.000	.279	3.583	
Responsible consumption	.173	.053	.162	3.243	.001	.184	5.426	
Eco-labeling	.433	.048	.387	9.098	.000	.255	3.925	

a. Dependent Variable: Environmental sustainability

The coefficients in Table 3 showed that all three predictors mindful consumption, responsible consumption, and eco-labeling have a statistically significant positive effect on environmental sustainability. Mindful consumption has the highest standardized beta coefficient ($\beta = .420$), indicating it is the strongest predictor, followed closely by eco-labeling ($\beta = .387$), and then responsible consumption ($\beta = .162$). All predictors have p-values less than 0.05, confirming their significance. The unstandardized coefficients suggest that for every one-unit increase in mindful consumption, environmental sustainability increases by 0.473 units, while eco-labeling and responsible consumption contribute 0.433 and 0.173 units respectively. The tolerance and VIF values indicate acceptable levels of multicollinearity, though responsible consumption shows relatively higher collinearity (VIF = 5.426). The results confirm that these three variables meaningfully and positively contribute to promoting environmental sustainability.

Table 4

Analysis of Variance

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	844.668	3	281.556	596.839	.000 ^b
	Residual	176.433	374	.472		
	Total	1021.101	377			

a. Dependent Variable: Environmental sustainability

b. Predictors: (Constant), Mindful consumption, Responsible consumption, Eco-labeling

The ANOVA results in Table 4 reveal that the overall regression model is statistically significant in explaining the variation in environmental sustainability. The F-value of 596.839, with a significance level (Sig.) of .000, indicates that the model provides a good fit and that the combined influence of mindful consumption, responsible consumption and eco-labeling on environmental sustainability is highly significant. This confirms the effectiveness of the selected predictors in accounting for changes in environmental sustainability.

Table 5
Variation in Environmental Sustainability

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.910 ^a	.827	.826	.687	

a. Predictors: (Constant), Mindful consumption, Responsible consumption, Eco-labeling

The model summary in Table 5 indicates a strong relationship between the independent variables such as mindful consumption, responsible consumption and eco-labeling and the dependent variable. The R Square value of 0.827 implies that approximately 82.7% of the variation in the dependent variable can be explained by the combined effect of mindful consumption, responsible consumption and eco-labeling. The Adjusted R Square of 0.826 confirms that the model remains robust even after adjusting for the number of predictors.

Table 6.
Thematic analysis for Mindful Consumption

Theme	Description	Potential Drivers	Potential Barriers	Authors
Consumer Awareness	A rise in mindfulness reflects growing sensitivity to social and environmental impacts of consumption.	Environmental education; visible sustainability issues	Environmental fatigue; skepticism	De-Boer and Aiking (2021); Schill et al. (2019)
Mindfulness as a Catalyst	Mindfulness promotes sustainability by enhancing present awareness, concern for others, and resistance to consumerism.	Meditation practices; lifestyle alignment; mindfulness education	Cultural consumerism; inconsistency in mindfulness practice	Brown and Ryan (2003); Bharti et al. (2022); Gautam and Bhalla (2023)
Behavioral Transformation	Mindfulness fosters pro-environmental behaviour by reducing impulsive buying and encouraging self-regulation and ethical self-identity.	Self-control; intrinsic motivation; self-determination	Impulse culture; materialistic values	Dhendra (2020); Daniel et al. (2023); Ryan and Deci (2008)
Intervention Outcomes	Mindfulness-based interventions yield mixed results—effective over time via indirect paths (e.g., well-being, values) but not always direct on behavior change.	Long-term training; integration of sustainability in mindfulness programs	Short-term interventions; lack of behavioural follow-up	Geiger et al. (2020); Ray et al. (2020); Wang et al. (2019); Panno et al. (2018)
Internal Cognitive Drivers	Conscious mindset, values, self-worth, and emotional regulation	Guilt and pride; self-concept clarity; climate awareness	External validation-seeking; low self-esteem	Milne et al. (2020); Gao et al. (2021); Peterson

	mediate sustainable consumption decisions.			and Simkins (2019)
Personal and Social Concern	Concern for self, community, and the environment leads to more compassionate and sustainable consumption practices.	Empathy; ethical values; local engagement	Self-centeredness; weak social identity	Sheth et al. (2011); Dhandra (2019)
Long-Term Transformation	Mindfulness enables long-term behavioural change by influencing values and improving psychological well-being.	Habitual mindfulness; sustained self-reflection	Immediate gratification culture; lack of mental health support	Fischer et al. (2017); Pelletier et al. (2011)

The thematic analysis in Table 6 highlights how mindful consumption is driven by an increasing consumer awareness of environmental and social issues, supported by mindfulness practices that enhance self-regulation, empathy, and values-based living. Key enablers include education, intrinsic motivation, and long-term mindfulness interventions, which foster behavioral transformation and promote sustainable choices. However, barriers such as consumer skepticism, cultural consumerism, and the dominance of materialistic values can undermine these efforts. Despite mixed outcomes from interventions, mindfulness is shown to play a crucial role in shaping internal cognitive drivers and long-term values that support ethical consumption. Ultimately, sustained mindfulness practices and emotional awareness contribute to a deeper sense of social and environmental responsibility.

Table 7.

Thematic analysis focused on Responsible Consumption Behaviour

Theme	Description	Potential Drivers	Potential Barriers	Authors
Policy Integration	Coordinated development of environmental protection and economic progress policies for sustainable development.	Global frameworks like UN SDGs; governmental commitment; policy coherence	Conflicting economic and environmental priorities; policy enforcement challenges	United Nations (2023a, 2023b); Mazzucato (2018)
Material Footprint	Strategies to reduce the total material resource input across extraction, processing, and consumption phases.	Regulatory measures; technological innovation in resource efficiency	Industrial inertia; consumer demand for material-intensive goods	United Nations (2023b); Wiedmann et al. (2020)
Behavioral Change	Modification of consumer and stakeholder behaviour across the supply chain, including manufacturers and governments.	Multi-stakeholder engagement; education; regulatory incentives	Resistance to change; entrenched consumption habits	Macklin and Kaufman (2023); Roberts et al. (2023)
Upstream Actions	Responsible consumption involving production and design phases to minimize environmental impact.	Sustainable product design; circular economy principles	Higher upfront costs; lack of industry-wide standards	Marchand and Walker (2008); Huang et al. (2023)
Downstream Actions	Responsible consumption covering maintenance, repair, disposal, and participation in the sharing economy.	Consumer awareness; infrastructure for repair and recycling; sharing platforms	Limited access to repair services; consumer convenience preferences	Huang et al. (2023); Borg et al. (2024)
Affluent Lifestyles	Encouraging affluent populations to adopt behaviours that promote environmental, economic, and social well-being.	Awareness campaigns; social norms shifts; corporate responsibility	High material consumption culture; economic growth dependency on material use	Raworth (2017); Giannetti et al. (2022); Gossen et al. (2019)

Complex Stakeholders	Responsible consumption requires cooperation among diverse stakeholders with prioritization of target audiences and behaviours.	Collaborative governance; shared responsibility frameworks	Fragmented stakeholder interests; resource allocation conflicts	Borg et al. (2024); Huang et al. (2023)
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Table 7 presents a thematic analysis of responsible consumption behaviour, emphasizing the need for systemic and multi-level approaches to achieve sustainability. Key themes include the integration of environmental and economic policies, reducing material footprints through technological and regulatory means, and fostering behavioural change across consumers, industries, and governments. Upstream and downstream actions such as sustainable product design and participation in the sharing economy are crucial in reducing environmental impact. Efforts to shift affluent lifestyles towards sustainability and promote stakeholder collaboration are also highlighted. However, challenges such as conflicting priorities, resistance to change, lack of infrastructure, and fragmented stakeholder interests hinder progress. The findings underscore that responsible consumption requires coordinated policy, innovation, and behavioural shifts across all societal levels.

Table 8.

Thematic analysis for Eco-labeling

Theme	Description	Potential Drivers	Potential Barriers	Authors
Information Conduit	Eco-labels serve as tools to provide consumers with reliable information about environmental and social impacts of products.	Clear, credible labeling; consumer demand for transparency	Consumer distrust; label confusion or overload	Donato Adıgüzel (2022); Riskos et al. (2021)
Consumer Awareness	Labels enhance market awareness and shape consumer attitudes toward sustainable products.	Awareness campaigns; media coverage; consumer environmental concern	Lack of consumer interest; low environmental literacy	Lee et al. (2020); Song et al. (2019); Iweala et al. (2019)
Behavioral Influence	Eco-labels aim to change consumption behaviour toward more sustainable choices.	Trust in label credibility; perceived personal benefit; altruistic motives	Habitual buying patterns; price sensitivity	Lee et al. (2020); Riskos et al. (2021)
Label Comprehension	Consumer understanding of eco-labels is critical for effective use and decision-making.	Consumer education; clear and simple label design	Complexity of information; low consumer product knowledge	Taufique et al. (2017, 2027); Grunert et al. (2014); Testa et al. (2015)
Individual Attributes	Factors like altruism, environmental attitudes, age, gender, and environmental concern affect eco-label effectiveness.	Targeted marketing; demographic segmentation	Heterogeneous consumer base; socio-demographic biases	Iweala et al. (2019); Song et al. (2019); Majer et al. (2022)
Contextual Factors	Product type, origin, price, and label characteristics influence the impact of eco-labels.	Product relevance; market context; competitive pricing	Inconsistent label standards; varying market conditions	Majer et al. (2022); Leach et al. (2016); Potter et al. (2021)
Sector-Specific Relevance	Appropriateness and impact of eco-labels vary across different industry sectors and product categories.	Sector-tailored labeling strategies; industry cooperation	One-size-fits-all labels; lack of sector-specific engagement	Leach et al. (2016); Potter et al. (2021)

Table 8 offers a thematic analysis of eco-labeling, illustrating its role as a vital communication tool that informs consumers about the environmental and social impacts of products. Eco-labels can enhance consumer awareness, shape sustainable attitudes, and influence purchasing behaviour, especially when labels are credible, clear, and supported by education and targeted marketing. However, effectiveness is often hindered by consumer distrust, information overload, price sensitivity, and limited comprehension due to complex or inconsistent labeling. The impact of eco-labels also depends on individual attributes such as environmental concern, and contextual factors like product type and market conditions. Moreover, the success of eco-labeling varies across industry sectors, necessitating tailored strategies and sector-specific engagement. Overall, while eco-labels have the potential to drive responsible consumption, their influence is contingent on trust, clarity, consumer understanding, and contextual relevance.

Results and Discussion

Findings revealed that mindful consumption has the highest significant positive effect on environmental sustainability, indicating that it is the strongest predictor. The findings show that mindful consumption is encouraged by growing awareness of environmental and social issues, supported by mindfulness practices that foster self-regulation, empathy, and ethical values. Key drivers include education, intrinsic motivation, and sustained interventions, while barriers such as skepticism, materialism, and cultural consumerism can hinder progress. Despite mixed outcomes from interventions, mindfulness remains vital in shaping lasting values and responsible consumption behaviours. Carole et al. (2024) indicate that mindfulness improves sustainable behaviours through enhanced spiritual well-being, with more significant effects observed among consumers who have undergone formal mindfulness training. Zahid et al. (2023) found that mindful consumption drives second-hand purchases, with ego-involvement serving as a key mediator; they recommend that marketing strategies promote mindful consumption.

Responsible consumption also has a significant positive effect on environmental sustainability. The findings highlight that responsible consumption requires coordinated efforts across policies, industries, and consumer behaviour. Key strategies include integrating sustainability into economic policies, reducing material use, promoting sustainable design, and encouraging participation in the sharing economy. Shifting affluent lifestyles and fostering stakeholder collaboration are also essential. However, progress is challenged by conflicting priorities, resistance to change, and inadequate infrastructure. Lima et al. (2022) found that while consumers recognize trade-offs, they often prioritize reuse at the expense of broader sustainability goals like resource conservation. Ertmańska (2022) reported high customer involvement in eco-shopping, packaging reuse, and the purchase of eco-products, with a preference for local or domestic goods. Wardhana (2022) found that environmental knowledge enhances green and sustainable behaviours among consumers.

Eco-labeling also shows a significant positive effect on environmental sustainability. The findings indicate that eco-labels are essential tools for promoting sustainability by providing clear information on the environmental and social impacts of products. Their success depends on credibility, simplicity, education, and alignment with consumer values and market conditions. However, their effectiveness can be limited by consumer distrust, information overload, price sensitivity, and varying levels of comprehension. Tailored, sector-specific strategies are necessary to maximize their impact across different industries. Siagian et al. (2024) found that many customers are unaware of eco-labels but perceive them as indicators of sustainability. Eco-labels influence purchase decisions, and their effectiveness is enhanced by legal support and psychological factors. Paul et al. (2023) found that awareness significantly boosts the purchase intention of eco-labeled products, suggesting that eco-labeling strategies are useful for increasing sales and reducing emissions.

5. Conclusion and Policy Recommendations

The study concludes that mindful consumption, responsible consumption, and eco-labeling each have a significant and positive impact on environmental sustainability, with mindful consumption emerging as the strongest predictor. This highlights the importance of internal values, emotional intelligence, and intentional decision-making in fostering environmentally responsible behaviour. Responsible consumption reinforces the need for systemic collaboration among consumers, businesses, and policymakers, while eco-labeling acts as a vital informational tool that empowers consumers to make sustainable choices. These findings align with the Theory of Planned Behaviour (TPB), as they reflect how attitudes (mindful consumption), subjective norms (responsible consumption), and perceived behavioural control (eco-labeling) jointly shape behavioural intentions toward sustainable consumption.

While the causal research design used in this study helps establish directional relationships among the variables, a key limitation lies in the reliance on self-reported data, which may be subject to bias or may not accurately reflect actual consumption patterns. Future studies could strengthen these findings by incorporating behavioural tracking or observational methods to validate self-reported data. Additionally, research could explore the long-term impact of sustainability interventions using longitudinal designs, assess the role of digital platforms in influencing sustainable choices, and conduct comparative studies between urban and rural households. Examining moderating factors such as income level, education, and cultural background would also provide more nuanced insights into effective strategies for promoting sustainable consumption behaviours across diverse populations. The policy recommendations are:

- i. Policymakers and institutions should integrate mindfulness-based education into sustainability programs to cultivate self-awareness, empathy, and values-based decision-making. Formal mindfulness training can significantly enhance individuals' commitment to sustainable behaviours.
- ii. Governments should align environmental and economic policies to promote sustainable production and consumption. This includes enforcing regulations that reduce material footprints, incentivizing circular economy practices, and encouraging sustainable product design and innovation.
- iii. Regulatory bodies should standardize and simplify eco-labeling schemes to improve credibility and consumer trust. Labels must be easy to understand, sector-specific where necessary, and supported by legal frameworks and public awareness campaigns.

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