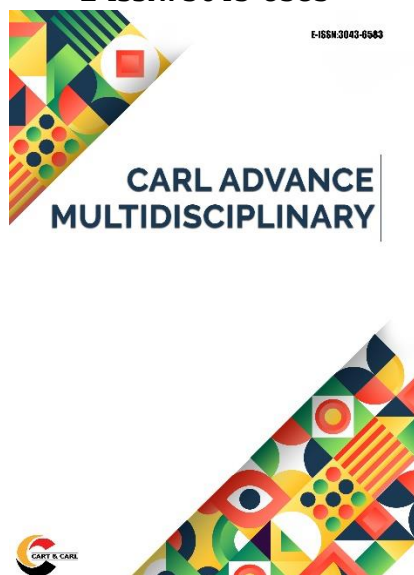




Effect of Circular Economy Values on Consumer Purchasing Decisions in Federal Capital Territory, Nigeria

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Abstract

Transitioning to a circular economic model represents an imperative for sustainable development across industries; which relies on consumer adoption of product-as-a-service systems and responsible purchasing patterns. The study assesses the effect of circular economy values on consumers' purchasing decisions in the Federal Capital Territory (FCT), Nigeria. The respondents (400) of the study entail the respondents randomly selected from eight districts across the AMAC (Phase I and II). The data gathering was done with the aid of a questionnaire while data analysis made use of frequency count, mean value and Spearman rank correlation coefficient. The outcome of the study revealed that respondents disagreed on preferring to buy products made from recycled or sustainable materials (69.8%), considering a brand's environmental commitment before making a purchase (73.2%), choosing products that are designed for durability and long-term use (68.2%), and influenced by product certifications (e.g., eco-labels, sustainability seals) when making a purchase (66.4%). The findings indicated that the respondents agreed to avoid purchasing single-use or non-recyclable products (76.3%), prefer to buy second-hand, refurbished, or upcycled products instead of new ones (55.7%) and support businesses that provide product take-back or repair programs (62.8%). The result showed that circular economy value does not influence consumers' purchasing choices, including preferences for sustainable products ($p > 0.05$, $r \leq 0.5$). The outcome of the study revealed that consumer behavioural patterns and perceptions are influenced by other factors than CE values. Future research should consider establishing the factors that could encourage or hinder consumer participation in CE initiatives.

Keywords : Circular Economy, Sustainability, Consumer Behaviour, Federal Capital Territory (FCT)

Introduction

In Nigeria, annual solid waste generation is estimated at 35 million tons, with less than 30% recycled, and projections suggest it could reach 54.8 million tons by 2030 without intervention (Suleman et al., 2023). Despite past efforts, the circular economy (CE) is adjudged as a promising solution, offering new narratives on resource efficiency through cross-sectoral integration and aligning with sustainable development goals by closing the energy and material loops through the application of cleaner technologies, particularly Goal 12 on responsible consumption and production (Mikulcic et al., 2022; Suleman et al., 2023). Stoiljkovic et al. (2023) argued that a sustainable society and resource effectiveness are two key advantages of transitioning to a circular built environment. Globally, CE has gained prominence in environmental discussions, politics, and academia, evident in resolutions like those from the United Nations Climate Change Convention COP27 could lead to a 35% reduction in greenhouse gas emissions, 50% savings on virgin materials, a 42% cut

in energy consumption, and a 30% decrease in water use (Ezeudu et al., 2021). Additionally, CE adoption could contribute approximately 13% to Nigeria's gross domestic product (Ajayi et al., 2017). Nigeria is the sixth most populous country in the world, with a population of more than 230 million. According to the United Nations Population Fund, this number is expected to reach 400 million by 2050. The demographics of Nigeria's population showed that 63 per cent is currently 24 years or younger (Rezk et al., 2021). Nigeria's performance on the Environmental Performance Index 2022 underscores the country's pressing environmental challenges, including issues related to air and water quality, ecosystem degradation, and the urgent need for enhanced policies and actions to mitigate climate change impacts and improve overall environmental health and ecosystem vitality. It ranked 162nd of 180 countries in terms of waste management performance; Nigeria's Environmental Performance Index 2022 data also indicate challenges in this area (Rezk et al., 2021). The country ranked 152 of 180 (scored 12.7 out of 100) in waste management, specifically under the controlled solid waste category. This score reflects the broader issues related to Nigeria's waste collection, recycling, and disposal practices. Nigeria's poor waste management score emphasises the necessity of a circular economic ecosystem (Rezk et al., 2021).

In a CE, products are designed for durability, reuse, and recyclability. As such, the supply chain is no longer a linear path but a complex, interconnected network of resources flowing in multiple directions. This poses unique challenges and opportunities for supply chain planning and operations (Behnert et al., 2024). Also, consumers play a critical role in driving the transition to a circular economy by making sustainable choices and adopting new consumption patterns. However, little is known about the factors that influence consumers' behaviour in the circular economy context. Existing literature has explored the role of sustainable messaging in shaping consumer perceptions and behaviours related

to environmentally friendly products. For instance, White et al. (2019) conducted a comprehensive review of strategies for shifting consumer behaviours toward sustainability, highlighting the importance of communication framing in nurturing eco-conscious attitudes. Similarly, Stangherlin et al. (2019) investigated how messaging influences consumer responses to suboptimal food products, finding that strategic appeals can encourage waste reduction behaviours. Magnier & Cri  (2015) further substantiated the impact of communicating packaging eco-friendliness on consumer perceptions of eco-designed offerings. In addition, Mehraj et al. (2023) examined demographic differences in green consumer behaviour, underscoring the role of green marketing practices in shaping sustainable consumption patterns. While these studies collectively emphasize sustainable messaging as a vital construct with implications for environmentally responsible outcomes, they do not specifically investigate its influence on consumer purchase intentions. The study assesses the effect of circular economy values on consumers' purchasing decisions in the Federal Capital Territory (FCT), Nigeria.

Methods and Materials

Study Area

Federal Capital Territory (FCT), Abuja is located centrally in Nigeria and is the nation's capital city (Figure 3.1). Kaduna borders Abuja to the north, Niger state to the west, Nasarawa state to the east and southeast, and Kogi state to the southwest. Abuja was officially named the capital of Nigeria on December 12, 1991 (Wambebe & Duan, 2020). Abuja is found on latitude 7° 25" and 9° 20" North of the Equator and longitude 5° 45" and 7° 39" East of the Greenwich. The overall land area is 7315 km². Abuja's population currently surpasses 2.5 million people and the population has grown by over 140%, making it the fastest-growing metropolis in Africa and one of the most rapidly expanding globally (Wambebe & Duan, 2020). The FCT is made up of six (6) area councils which are further sectioned into phases and districts. For

the study, Abuja Municipal Area Council (AMAC) and its phases (5) were selected for the study. The choice of the area council was due to the high level of mixed socio-

economic status among various area councils and districts of AMAC.

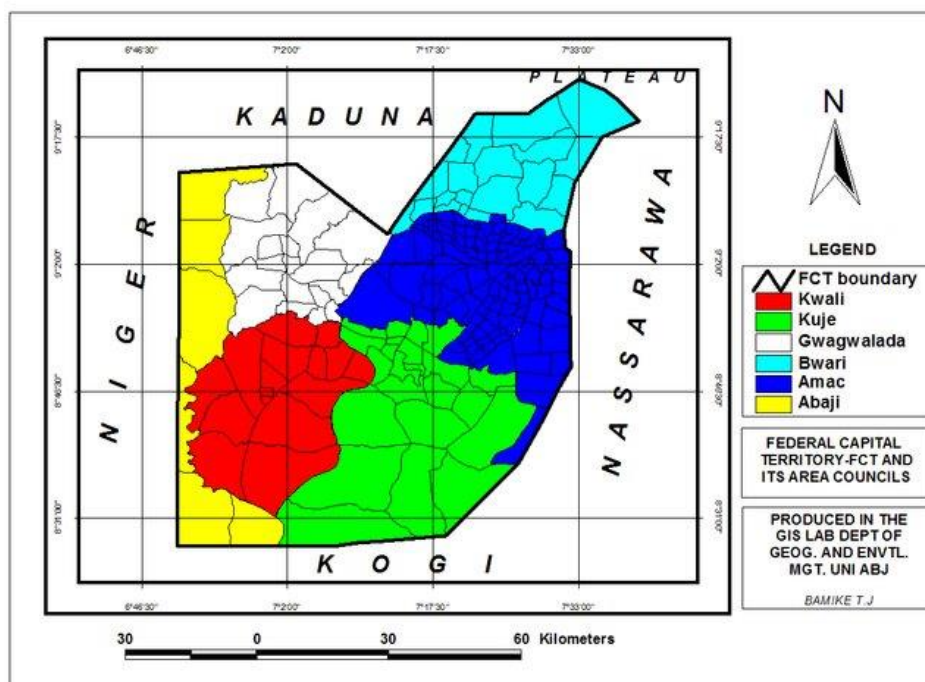


Figure 1: Overview of the Study Area

Research Design and Study Population

The cross-sectional survey research method was adopted in carrying out the study. Cross-sectional survey research is a specific type of field study that involves the collection of data from a sample of elements drawn from a well-defined population through the use of a

questionnaire (Visser et al., 2002). The population of the study comprised all the respondents (households, working class, business outlets) randomly selected from the city phases and districts of FCT as presented in Table 1. The inclusion/exclusion criteria of the study ensure that the study was limited to randomly selected respondents within the selected districts.

Table 1: Population of the Study

FCT Area Councils	Phases and Districts	Selected Districts
Abaji, Abuja Municipal Area, Bwari, Gwagwalada, Kuje, Kwali	Phase I: Asokoro, Central Area, Garki, Guzape, Maitama, Wuse I and Wuse II	Asokoro, Central Area, Garki, Guzape, Maitama, Wuse I, Wuse II, Utako
	Phase II: Apo Dutse, Dakibiyu, Duboyi, Durumi, Gaduwa, Games Village, Kaura, Gudu, Jabi, Jahi, Kado, Katampe, Kukwaba, Mabushi, Utako, Wuye	
	Phase III: Galadimawa, Gwarinpa, Kabusa, Karmo, Life Camp, Lokogoma, Nbora	
	Phase IV: Idu, Karsana	
	Suburbs: Dawaki, Kubwa, Kuje, Lugbe, Mpape	

Sample and Sampling Technique

Based on the inclusion/exclusion criteria, eight (8) districts within the AMAC (AMAC) were selected for the study. To have proper coverage, the National Population Commission data of 2006 of AMAC was used as the base year (778,567) and projected to 2023 using an annual growth rate of 3.2%. To get an optimum sample of the target population (1,339,135) the Taro Yamane (1967) formula for sample size determination will be adopted;

$$n = \frac{N}{1 + N(e^2)}$$

Where: e= Level of precision (0.05), N= Population, n= Sample size, 1= Constant

$$n = \frac{1339135}{1 + 1339135 (0.05^2)}$$

$$n = \frac{1339135}{1 + 1339135 \times 0.0025}$$

$$n = \frac{1339135}{1 + 3347.84}$$

$$n = \frac{1339135}{1 + 3348.84}$$

$$n = 400$$

The sample size was equally distributed among the districts where fifty (50) respondents were randomly selected from each district making a total sample size of 400. A total of 400 copies of the questionnaire were purposively administered using a simple random sampling technique.

Data Collection and Analysis

A questionnaire was used to elicit information from respondents. The questionnaire adopted for the study made use of a closed-ended format. The retrieved questionnaires were coded and subjected to Statistical Package for the Social Sciences (SPSS) for proper analysis. The questionnaire coding was done with MS Excel before being transferred to the Data entry of SPSS. The data were analysed using descriptive statistics such as frequency counts, percentages and mean values. The use of such statistics allows the researcher to present the evidence of the study in a way that can be understandable and make a conclusion concerning the variables of the study. The hypothesis of the study was

tested using the Spearman rank correlation coefficient analysis.

Result

Socio-Demographic Details of the Respondents

The socio-demographic details of the respondents are presented in Table 2. The analysis revealed that 51.1% of the respondents were male while 49.0% were female. Also, the age of the respondents indicated that most respondents are within the age group 36-45 years which represents 38.0% of the respondents while the least of the respondents are within the age range of 56 years and more and represents 2.1% of the respondents. Considering the level of education of the respondents, the outcome revealed that 61.2% have attained higher level education, 21.9% of the respondents have attained secondary level education while 14.8% and 2.1% of the respondents have attained primary level education and no formal education respectively. Regarding the employment status of the respondents, 53.4% of the respondents indicated being employed, 28.6% indicated being self-employed while 17.2% and 0.8% of the respondents are unemployed and students respectively. On the monthly income level, 67.4% of the respondents indicated earning less than N100,000 monthly while 27.9% and 4.7% of the respondents indicated earning between N100,000 – N500,000 and above N500,000 monthly.

Influence of Circular Economy Values on Purchasing Decisions

The influence of circular economy values on the purchasing decisions of the respondents was examined and presented in Table 3. Among the respondents, 69.8% disagreed about preferring to buy products made from recycled or sustainable materials while 20.8% and 9.4% agreed and were undecided respectively. 73.2% of the respondents disagreed that they consider a brand's environmental commitment before making a purchase while 15.9% and 10.9% of the respondents undecided and agreed respectively. 68.2% of the respondents disagreed that they choose products that are designed for

durability and long-term use while 25.0% and 6.8% of the respondents were undecided and agreed respectively. 59.6% of the respondents disagreed about actively seeking out brands that use eco-friendly packaging while 21.4% and 19.0% of the respondents agreed and undecided respectively. 60.1% of the respondents disagreed about them being likely to buy from a company that promotes recycling and reuse initiatives while 20.6% and 19.3% of the respondents agreed and undecided respectively. 76.3% of the respondents agreed to avoid purchasing single-use or non-recyclable products while 4.7% and 19.0% of the respondents disagreed and were undecided respectively. 55.7% of the respondents prefer to buy second-hand, refurbished, or upcycled products instead of new ones

while 34.2% and 10.2% of the respondents disagreed and undecided respectively. 55.0% of the respondents were undecided about their belief that products made with circular economy principles offer better long-term value while 6.0% and 39.1% of the respondents agreed and disagreed respectively. Among the respondents, 62.8% agreed to support businesses that provide product take-back or repair programs while 46.7% and 7.8% disagreed and were undecided respectively. Also, 66.4% of the respondents disagree that they are influenced by product certifications (e.g., eco-labels, sustainability seals) when making a purchase while 12.0% and 21.6% of the respondents agreed and undecided respectively.

Table 2: Socio-Demographic Details of the Respondents

Variable	Frequency (n=384)	Percentage (%)
Sex of Respondents		
Male	196	51.0
Female	188	49.0
Age (years)		
18- 25years	91	23.7
26 – 35 years	113	29.4
36 – 45 years	146	38.0
46 – 55 years	26	6.8
56years and Above	8	2.1
Level of Educational		
No Formal Education	8	2.1
Primary Education	57	14.8
Secondary Education	84	21.9
Higher Education	235	61.2
Employment Status		
Student	3	0.8
Employed	205	53.4
Self-Employed	110	28.6
Unemployed	66	17.2
Monthly Income Level		
Low (< N100,000)	259	67.4
Medium (N100,000 – N500,000)	107	27.9
High (Above N500,000)	18	4.7

Research Hypothesis I

From Table 4, the study's hypothesis was tested using the Spearman rank correlation coefficient analysis. The hypothesis was tested based on the following statement:

- H₀: The circular economy value does not influence consumers' purchasing choices, including preferences for sustainable products.
- H₁: The circular economy value does influence consumers' purchasing choices, including preferences for sustainable products.

Table 3: Influence of Circular Economy Values on Purchasing Decisions

SN	Influence of Circular Economy Values on Purchasing Decisions	U	D	A	Total	Mean
1	I prefer to buy products made from recycled or sustainable materials.	36 (9.4)	268 (69.8)	80 (20.8)	384 (100)	2.36
2	I consider a brand's environmental commitment before making a purchase.	61 (15.9)	281 (73.2)	42 (10.9)	384 (100)	2.64
3	I choose products that are designed for durability and long-term use.	96 (25.0)	262 (68.2)	26 (6.8)	384 (100)	2.61
4	I actively seek out brands that use eco-friendly packaging.	73 (19.0)	229 (59.6)	82 (21.4)	384 (100)	2.49
5	I am more likely to buy from a company that promotes recycling and reuse initiatives.	74 (19.3)	231 (60.1)	79 (20.6)	384 (100)	2.45
6	I avoid purchasing single-use or non-recyclable products.	73 (19.0)	18 (4.7)	293 (76.3)	384 (100)	3.57
7	I prefer to buy second-hand, refurbished, or upcycled products instead of new ones.	39 (10.2)	131 (34.2)	214 (55.7)	384 (100)	3.18
8	I believe that products made with circular economy principles offer better long-term value.	211 (55.0)	150 (39.1)	23 (6.0)	384 (100)	1.79
9	I support businesses that provide product take-back or repair programs.	30 (7.8)	113 (46.7)	241 (62.8)	384 (100)	3.36
10	I am influenced by product certifications (e.g., eco-labels, and sustainability seals) when making a purchase.	83 (21.6)	255 (66.4)	46 (12.0)	384 (100)	2.28

Table 4: Tests of Significance for Circular Economy value influence on consumers' purchasing choices

SN	Influence of Circular Economy Values on Purchasing Decisions	Correlation Coefficient	Sig. (2-tailed)	N	Remark
1	I prefer to buy products made from recycled or sustainable materials.	0.024	0.078	384	H ₀ Accepted
2	I consider a brand's environmental commitment before making a purchase.	0.245	0.068	384	H ₀ Accepted
3	I choose products that are designed for durability and long-term use.	0.687	0.016	384	H ₁ Accepted
4	I actively seek out brands that use eco-friendly packaging.	0.273	0.069	384	H ₀ Accepted
5	I am more likely to buy from a company that promotes recycling and reuse initiatives.	-0.341	0.076	384	H ₀ Accepted
6	I avoid purchasing single-use or non-recyclable products.	0.471	0.079	384	H ₀ Accepted
7	I prefer to buy second-hand, refurbished, or upcycled products instead of new ones.	0.612	0.047	384	H ₁ Accepted
8	I believe that products made with circular economy principles offer better long-term value.	0.314	0.061	384	H ₀ Accepted
9	I support businesses that provide product take-back or repair programs.	0.714	0.020	384	H ₁ Accepted
10	I am influenced by product certifications (e.g., eco-labels, and sustainability seals) when making a purchase.	0.247	0.071	384	H ₀ Accepted

In explaining the outcome from the multivariate tests of significance, the Spearman correlation (rho) was used in ascertaining the strength of the relationship between the variables identified as economic effects of artisanal

refining activities and the corresponding variables used to measure property development while the p-value was adopted for the level of significant in the relationship (where $p \leq 0.05$, the null hypothesis was rejected). The

results of the analysis show that circular economy value does not influence consumers' purchasing choices, including preferences for sustainable products ($p > 0.05$, $r \leq 0.5$). Therefore, H_0 was accepted for all the variables except variables 3, 7 and 9 which indicated that circular economy value does influence consumers' purchasing choices, including preferences for sustainable products ($p \leq 0.05$, $r \geq 0.5$).

Discussion

The outcome of the study revealed that respondents disagreed on preferring to buy products made from recycled or sustainable materials, considering a brand's environmental commitment before making a purchase, choosing products that are designed for durability and long-term use, actively seeking out brands that use eco-friendly packaging, likely to buy from a company that promotes recycling and reuse initiatives and influenced by product certifications (e.g., eco-labels, sustainability seals) when making a purchase. The findings share similarities with Bawa et al. (2024) which indicated consumer behaviour can be improved upon by attributes such as behaviour such as product quality, product package and price; and influence consumer purchasing decisions. Also, the findings indicated that the respondents agreed to avoid purchasing. Single-use or non-recyclable products, prefer to buy second-hand, refurbished, or upcycled products instead of new ones and to support businesses that provide product take-back or repair programs; however, the respondents are undecided about their belief that products made with circular economy principles offer better long-term value. According to Wang and Hazen (2016), the perceived value is directly influenced by product knowledge, which is created by knowledge about quality, cost and sustainability. Therefore, the more knowledge consumers have about green products, the more positive the effect on their purchasing decision (Hazen et al., 2017; Wang and Hazen, 2016). The finding shares similarities with Katigbak and Villaruel (2023) which suggested that quality knowledge strives to have the

strongest effect on perceived value and is therefore also one of the most important predictors of consumer purchasing decisions.

Conclusion

Transitioning to a circular economic model represents an imperative for sustainable development across industries; however, achieving circularity relies on consumer adoption of product-as-a-service systems and responsible purchasing patterns that fundamentally determine material demand. The outcome of the study revealed that consumer behavioural patterns and perceptions are influenced by other factors than circular economy values. Future research should consider establishing the factors that could encourage or hinder consumer participation in CE initiatives. The study recommends that manufacturers should engage more in continuous development programmes on CE that will enhance collaboration and engagement with consumers. Also, public-private partnerships should be encouraged in the development of case projects and the acquisition of technical CE skills.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Credit Authorship Contribution Statement

Aimiuwu, D.O.: Conceptualization, Methodology, Formal analysis, Investigation, Resources, Data curation, Visualization, Project administration, Writing - original draft. **Adesope, O.M. and Ifeanyi-Obi, C.C.:** Supervision, Methodology, Validation, Formal analysis, Data curation, Visualization, Review & Editing.

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