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Extrinsic religiosity and green purchase intention in southeast Nigeria: the role of environmental knowledge

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Abstract

This study investigated the influence of extrinsic religiosity on green purchase intention in Southeast, Nigeria: The role of environmental knowledge. Specifically, the study extended the theory of planned behaviour in examining whether extrinsic religiosity has a significant relationship with consumers' purchase intention; and whether environmental knowledge mediates the relationship. A quantitative research was conducted using a survey research design. An online questionnaire in Google Document was used for data collection. Discriminant and convergent validity tests were conducted, and reliability was tested using composite reliability. Purposive sampling was used in distribution of questionnaire to a sample of 384 respondents. Partial Least Square (SMART 4) Structural Equation Modeling technique was used for inferential statistical analysis. Descriptive statistical analysis was carried out using tables, frequencies, mean, and standard deviation aided by SPSS version 25.0. Data analysis revealed that extrinsic religiosity has no significant relationship with green purchase intention in Southeast, Nigeria; however, environmental knowledge has a significant mediating effect on the relationship between extrinsic religiosity and green purchase intention in Southeast, Nigeria. Hence, it was concluded that there is no significant relationship between extrinsic religiosity and green purchase intention in Southeast Nigeria, while environmental knowledge significantly mediates the relationship. It was recommended among others that green marketing organizations should consider environmental knowledge, when designing promotional strategies for marketing their green products to improve their contribution in the preservation of the environment especially in Southeast Nigeria.

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Introduction

Globally, there has been an increasing emphasis on the adoption of sustainable and environmentally friendly practices, due to incessant environmental degradation and climate change. Hence, sustainable consumption has received more attention from governments and corporate policy makers resulting to strict environmental regulations that will improve conservation of the environment (Joshi & Rahman, 2015). In Nigeria, this trend has been observed with the emergence of green products in the market especially household appliances, with consumers becoming more conscious of their environmental impact. Currently, the concept of green products has gained significant attention due to the pressing need for sustainable and environmentally friendly practices. Previous studies have suggested the need to understand the determinants of consumers purchase intention towards green products, since this will assist in the quest for development of sustainable and environmentally friendly practices (Chen & Tung, 2014).

However, extant literature has shown several studies on the determinants of purchase intention of environmentally sustainable products, but religiousity, and environmental knowledge have been scarcely analysed especially in the emerging economies like Nigeria, despite their significant influence on human consumption behavior (Karimi & Saghaleini, 2021; Chai & Chen, 2021). Most existing studies have focused on demographic and situational factors that affect consumer purchase intention for green products. Hence, the extent to which religiosity, and environmental knowledge play a role in shaping consumers' purchasing intention for green products remains unclear. In Southeast Nigeria, religion plays a significant role in the lives of many individuals, which has led to the incorporation of religious beliefs into various aspects of daily life, including consumer behavior. Religiosity has been recognized as a key predictor of consumer environmental predisposition, (Memon, Azhar, Haque, & Bhutto, 2020). Chai and Chen (2021) aver that religion and its associated practices have long been recognized as important social force that influences human behavior but yet in the secular society its influence on consumer behavior appears to be underestimated.

Religiosity which is seen as belief in the existence of God and the set of divine guidelines for human behavior and worldly actions (McDaniel & Burnett, 2011), is among the most prominent and extensive social institutions involved in the formation of almost any culture and society (Ives & Kidwell, 2019). Following the conceptualization of Worthington, Wade, Hight, Ripley, McCullough, and O'Connor (2003) religiosity is seen as the degree in which individuals adhere to their religious values, beliefs, and practices, and use these in their daily living. Thus, religiosity is conceptualized by using extrinsic religiosity which reflects inter-personal or behavioural aspects of religiosity beliefs and intrinsic religiosity which reflects intra-personal or cognitive aspects of religiosity beliefs as the constructs for assessing religiosity. As noted by Wang et al, (2019) extrinsically motivated individuals use their religion while intrinsically motivated individuals live their religion.

Moreover, environmental knowledge is seen as the series of information about the environment, its issues and the preventive actions necessary to conserve and protect the environment that is collected, organized, and evaluated by the individuals (Mostafa,

2009). It actually means an individual's factual understanding of the environment" (Kaiser et al., 1999). As such, consumers in Southeast Nigeria may consider religiosity, and environmental knowledge in their purchasing decisions for green household products. As noted by Listyorini & Farida, (2022) highly religious consumers are more concerned about the environment and more likely to respond to environmental issues and take actions in environmental protection. Consequently, consumers that are environmentally knowledgeable and have concern for the environment are likely to have interest in purchase of green household products.

Prior research has established a positive relationship between religiosity and consumer behavior (Wang, Wang, Li & Zhou., 2020), with religious individuals being more likely to engage in pro-social behavior, including charitable donations and volunteering, (Wang & Zhang, 2020). However, the relationship between extrinsic religiosity and green product consumption has not been fully explored (Chai & Chen, 2021). Consequently, studies relating to extrinsic religiosity and consumer green purchase intention are limited (Wang, Wang, Li & Zhou., 2020). Furthermore, findings of the existing studies on extant literature show different results among researchers. The results seem confusing, contradictory, and far from conclusive, (Martin & Bateman, 2014). Thus, engendering and informing different growth policy implications. These contradictory findings necessitate an in-depth analysis of the available literature on religiosity and its influence on consumer green purchase intention. Hence, this study fills the gap by exploring the role of extrinsic religiosity and environmental knowledge in shaping green purchase intentions in Southeast Nigeria. Therefore, to solve this problem, this study seeks to answer the following questions: (a) how does extrinsic religiosity relate with green purchase intention in Southeast Nigeria? (b) what is the mediating effect of environmental knowledge on the relationship between extrinsic religiosity and green purchase intention in Southeast Nigeria.

Conceptual Review and Hypotheses Development

Extrinsic Religiosity

Religiosity is seen as belief in the existence of God and the set of divine guidelines for human behavior and worldly actions (McDaniel & Burnett, 1990). Also Worthington, Wade, Hight, Ripley, McCullough, and O'Connor (2003), defined religiosity as the degree in which individuals adhere to their religious values, beliefs, and practices, and use these in their daily living. This definition of religiosity by Worthington et al. (2003) is adopted in this study because of its non-restrictive nature towards the scope of those individuals who believe in God (Wang, Wong, & Elangkovan, 2019). Religiosity is conceptualized by using extrinsic religiosity which reflects inter-personal or behavioural aspects of religiosity beliefs and intrinsic religiosity which reflects intra-personal or cognitive aspects of religiosity beliefs as the constructs for assessing religiosity. As noted by Wang et al, (2019) extrinsically motivated individuals use their religion while intrinsically motivated individuals live their religion.

A review of extant literature shows that scholars measured extrinsic religiosity as a single variable which relates to the inter-personal or religious association of an individual (Mokhlis, 2009). According to Borzooei and Asgari (2014), extrinsic religiosity refers to an individual's expression of religious affiliations, devotional

practices, and membership within a religious community. It is determined by executing two forms of behaviour namely frequency of attendance of church meetings and gatherings, as well as the level of monetary donations offered to religious organizations (Mokhlis, 2009a).
Extant literature has evidence of the relationship between extrinsic religiosity and consumer purchasing beliefs, attitudes, intentions, and behaviours. For instance, Hassan (2014) explored the relationship between extrinsic religiosity and consumers' green purchase intention in Malaysia. It was found that extrinsic religiosity has a positive and significant relationship with consumers' green purchase intentions. Hence, this study proposes as follows:

H_1 There is a significant relationship between extrinsic religiosity and consumer purchase intention of green household products in Southeast Nigeria.

Mediation Effect of Environmental Knowledge
Environmental knowledge connotes the series of information about the environment, its issues and the preventive actions necessary to conserve and protect the environment that is collected, organized, and evaluated by the individuals (Mostafa, 2009). It actually means an individual's factual understanding of the environment (Kaiser et al., 1999). As noted by Vicente-Molina et al., (2013) environmental knowledge refers to knowing facts, concepts, and complex relationships that have important impact on nature and the ecosystem. Knowledge of the environment is necessary to enable individuals to understand the environmental issues and the possible solutions to protect the degradation of the environment.

Following the massive damage to the natural environment recently, the consumers are expected to be more knowledgeable, concerned and thereby, more responsive to the green initiatives (Khan & Kirmani, 2018). Consequently, it is expected that consumers with high level of environmental awareness and knowledge will change their consumption patterns in order to protect the environment from harm (Kim and Choi, 2005; Kilbourne and Pickett, 2008; Lee, 2008). Empirical evidence has suggested that the association between knowledge and attitude implies that greater environmental knowledge may likely serve as a vital factor for promoting green consumer behavior. Environmental knowledge is referred to as a vital predictor of green purchase intention because it has a strong influence on all the stages of the green decision-making process (Ukenna et al., 2012). A plethora of studies on extant literature supported this finding and concluded that environmental knowledge significantly influences consumer purchase intention (Diamantopoulos et al., 2003; Laroche et al., 2001).

Maichum et al., (2016) suggested that environmental knowledge is considered as a precursor of consumption of environmentally friendly products. Amanet al. (2012) revealed that environmental knowledge influences green purchase intention. Hence, the study suggests that individuals that are both religious and concerned about the environment and as well are knowledgeable about the issues surrounding environmental degradation may be more likely inclined to purchase green products. In line with this, it is proposed that:

H_2 *There is a significant mediating effect of environmental knowledge on the relationship between religiosity extrinsic religiosity and consumer purchase intention for green household products in Southeast, Nigeria.*

Conceptual Framework

The conceptual framework for this study as shown in the schema below posits that extrinsic religiosity will have a positive influence on green purchase intention in Southeast Nigeria. Moreover, environmental knowledge will mediate the relationship. In line with this, the conceptual framework below shows that extrinsic religiosity was the independent variable; while environmental knowledge was the mediating variable; and consumers' purchase intention for green products the dependent variable. The conceptual framework for the study was depicted as follows:

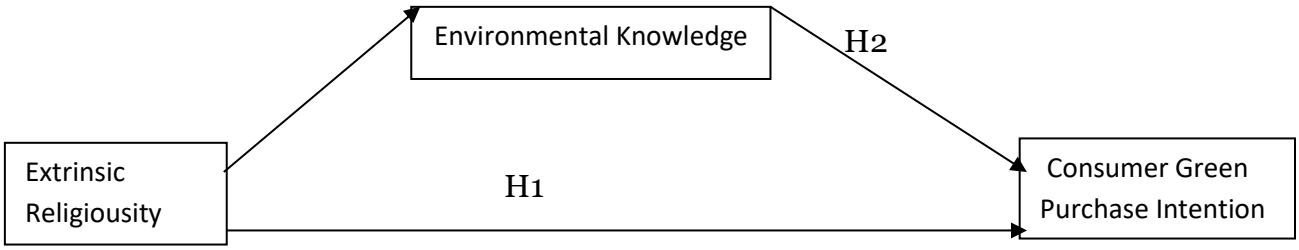

Figure 1: Researchers Conceptual Model of the Study

Specifically, the positive relationship between extrinsic religiosity and purchase intention will be stronger for individuals with higher levels of environmental knowledge. This framework suggests that environmental knowledge plays an important role in shaping the relationship between extrinsic religiosity and consumers' behavior towards green products. It posits that individuals, who are extrinsically religious, have knowledge of the environment. Furthermore, it suggests that religious values and beliefs may interact with environmental knowledge to influence consumers' behavior towards green products.

Theoretical Review:

Several theoretical perspectives can be used to explain the relationship between religiosity, environmental knowledge, and consumers' purchase intention for green products. However, this study is anchored on the theory of planned behavior. The theory of planned behaviour (TPB) as propounded by Ajzen (1991) extends the Theory of Reasoned Action (TRA) propounded by Fishbien and Ajzen (1975). The theory takes into account conditions where individuals do not have complete control over their behaviour. The TPB postulates that actual usage (AU) is determined by behavioural intention (BI) and perceived behavioural control (PBC). Behavioural intention is determined by three factors: Attitude (A), Subjective Norms (SN) and Perceived Behavioural Control (PBC). Each factor is in turn generated by a number of beliefs and evaluations.

Attitude refers to general consumer feelings of favourableness or unfavourableness towards the use of sustainable product. Subjective norms refer to consumer perceptions regarding the use of sustainable product by the opinions of the referent groups (such as friends and colleagues). Perceived Behavioural Control describes consumer perceptions of the availability of knowledge, resources and opportunities necessary for using sustainable products.

The theory of planned behavior was used by many past researchers in determining the pro-environmental behavior of the consumer (Aslam et al., 2020). This theory suggests that attitudes, subjective norms, and perceived behavioral control can predict individuals' behavioral intentions. To improve the explanatory power of the theory of planned behavior, scholars have also considered extending the theory by adding more constructs. For example, Chen and Tung (2014) added environmental concern, while Wang et al, (2014) added knowledge. Hence, this study extends the theory of planned behavior by adding religiosity, which is presumed an attitude, while subjective norms may be influenced by religiosity and environmental knowledge. The perceived behavioral control may be influenced by the availability and accessibility of green products.

Empirical Review

Aslam, Razzaque, Arif, and Kahshif, (2022) investigated the impact of spirituality, religiosity, knowledge, and attitude on Green Purchase Intention in Pakistan. The study examined the impact of religiosity, spirituality, knowledge, and attitude on green purchase intention in a developing economy i.e. Pakistan. By using purposive sampling, 303 useful responses were gathered between October to January 2021 from the buyers or prospective buyers of green products. The results applied by the partial least square-structural equation modeling technique (PLS-SEM) revealed that intrinsic religiosity, spirituality, objective knowledge, subjective knowledge, and attitude significantly impact green purchase intention. Only, extrinsic religiosity was found insignificant in determining green purchase intention. The study highlights that subjective knowledge is the main contributing variable in determining green purchase intention followed by green attitude, objective knowledge, spirituality, and intrinsic religiosity. The study offers numerous guidelines to marketers and provides an understanding related to consumers' pro-environmental behavior. Chukwu, Eze, Anukwe and Iloka (2022) carried out a study to assess the influence of religiosity on consumers' behaviour and the moderating roles of social and psychological risks on such influence. The study adopted a quantitative approach using structured questionnaire as the instrument for data collection. Probability sampling, based on convenience method was adopted for distributing questionnaire to students of University of Nigeria, Enugu Campus (UNEC) and Enugu State University of Science and Technology (ESUT). The findings, based on a one sample t-Test show that at religiosity has positive significant influence consumers' purchase decisions, recommendation and perception about a product. However, this influence is moderated by perceived social and psychological risks. The implication is that marketers need to pay close attention to the religiosity of their market as such can have direct influence on overall performance of a product in a given market.

Karimi, Liobikien, and Alitavakoli (2022) investigated the effect of Religiosity on Pro-environmental Behavior Based on the Theory of Planned Behavior: A Cross-Sectional Study among Iranian Rural Female Facilitators. Religiosity is one of the most prominent and extensive social factors influencing one's behavior. In this study, the extended Theory of Planned Behavior model was consequently tested by empirical data collected from 110 rural female facilitators in Qom Province in the center of Iran. The results of structural equation modeling indicated that subjective norms and environmental attitude were positively and significantly related to pro-environmental intentions. In addition, pro-environmental intentions and perceived behavioral control were found to be significantly associated with pro-environmental behaviors. The results revealed that there was a direct and indirect relationship between religiosity and pro-environmental behaviors via perceived behavioral control. In addition, there was an indirect relationship between religiosity and pro-environmental intentions via subjective norms and environmental attitudes. Chai and Chen, (2021) carried out a study to examine "Religiosity as an Antecedent of Attitude towards Green Products: An Exploratory Research on Young Malaysian Consumers. Religion has long been acknowledged as an important social force that influences human behavior but yet in the secular society its influence on consumer behavior appears to be underestimated. The research was exploratory in nature and attempted to investigate the influence of religiosity on attitudes towards green products especially among young Malaysian consumers. Religiosity, the independent variable, was measured by the intrinsic/ extrinsic religious orientation scale adopted from Allport and Ross (1967). The dependent variable was derived from a study on attitudes towards green product (Mostafa, 2007). The questionnaires were distributed to students in a large private university located in Klang Valley, Malaysia. Reliability analysis and multiple linear regressions were conducted. The results from the multiple linear regression analysis indicate that intrinsic religiosity has a significant relationship on consumer's attitude towards green product. However, in the case of extrinsic religiosity, there is no significant relationship on consumer's attitude towards green product.

Memon, Azhar, Haque, and Bhutto, (2020), carried out a study to examine "Religiosity as a moderator between theory of planned behavior and halal purchase intention in Pakistan. The purpose of the study is to investigate the relationship between subjective norms, attitude, and perceived behavioral control in predicting intention to choose halal-labeled products. Additionally, this research was an attempt to address the moderating influence of religiosity on relationship between theory of planned behavior constructs and halal purchase intention. The data for the study were collected through a survey. To find the factors that affect purchase intentions of Pakistani consumers regarding halal purchase intention partial least squares (PLS) path modeling has been used in the study. The results indicate that Theory planned behaviour constructs i.e. Attitude and perceived behavioral control have significant and positive influence over halal purchase intentions. However, subjective norm did not have positive and significant influence over halal purchase intention. Furthermore, no moderation effect of religiosity could be found in this study. Findings suggest that religiosity has not moderated the relationship between Theory of planned Behaviour constructs and halal purchase intention. This study has incorporated three antecedents of TPB.

Gap in the Literature

Despite the growing interest in green products and sustainable consumption, there is a dearth of research on the relationship between extrinsic religiosity and consumers' purchase intention for green household products in Southeast Nigeria. Therefore, this study seeks to fill this gap by exploring the role of extrinsic religiosity, and environmental knowledge in shaping consumers' behavior towards green household products in Southeast Nigeria. The findings of this study will contribute to the literature on the relationship between religiosity, environmental knowledge and sustainable consumption in developing countries, particularly in the context of green products.

Methodology

The study used a quantitative research design in which data were collected through a structured survey questionnaire in a Google Document administered to a sample of consumers belonging to any of the religious groups in Southeast Nigeria. The study covered Southeast, Nigeria as the area of study. The population of the study included consumers among different religious groups in Southeast Nigeria. This kind of population is infinite because the researcher could not obtain a sampling frame for such group of consumers in Southeast, Nigeria. The Cochran's formular for determination of sample size for an unknown population was employed to determine the sample of 384 consumers who were selected from various religious groups in Southeast Nigeria using purposive sampling method. This method was used because there was the need for the researcher to use his personal judgement to select respondents from various religious groups in Southeast Nigeria and purposive sampling supports the criteria.

A twenty-seven (27) item survey questionnaire in a Google Document was designed and properly categorized into two sections. The first section focused on the demographic characteristics of the respondents while the second section directly addressed the research variables. Each of the variables has five items that were adopted from previous studies that have passed instrument validation and reliability test. The items for religiosity were extracted from Wang et al, (2020); the items for environmental knowledge were extracted from Listyorini & Farida (2022) and Karimi & Khan, (2016); while the items for Green Purchase Intention were extracted from Wang, Wong, and Elangkovan (2019). The five-point Likert scale with responses ranging from 5 indicating strongly agree; 4 indicating agree; 3 indicating Neutral, 2 indicating disagree; and 1 indicating strongly disagree was utilized. In line with the requirements of partial least square structural equation modeling, convergent validity and discriminant validity were conducted to test the validity of the measurement instrument. Also, the reliability of measurement models was measured using four reliability indices, namely; Cronbach's Alpha (α or alpha), composite reliability (pc or rhoC), Average Variance Extracted (AVE) and Rho_A (rhoA). As recommended by Hair et al (2019) and McMillan (2010) an acceptance level of 0.70 of Cronbach's alpha tested for internal consistency for each of the constructs was maintained. Data analysis was carried out using descriptive and inferential statistics. Descriptive statistics was used for analyzing demographic data. Partial least square Structural Equation Modeling (SEM) test was used to test the hypotheses

Results

This section presents the administration of the research instrument, and responses to each question item as contained in the questionnaire. The aim was to categorize the response part of each question item as it addresses the research questions earlier stated in this study. In order to achieve this, frequency and simple percentage were employed to identify the response distribution.

Out of 384 copies of the questionnaire distributed, 277 copies (72%) were returned as duly filled, usable, and valid questionnaire while 107 copies (28%) were not valid due to various missing data; thus, sample size of 277 was used in the analysis.

Demographic Characteristics of Respondents

The respondents of the questionnaire comprise of people of different backgrounds and areas of life endeavor. The choice of using people of diverse endeavor was influenced by the fact that different opinions will give a clearer view and understanding of the subject at hand. The table below contains the number of questionnaires distributed and the percentage response gotten from each category.

Table 4.1: Demographic Characteristics of Respondents

Factor	Status	Frequency	Percent
Gender	Male	142	48.7
	Female	135	51.3
Marital Status	Single	121	44
	Married	104	37
	Divorced/Separated	52	19
Age	< 25yrs	54	19.5
	25 – 34yrs	86	31.1
	35 – 44yrs	63	22.7
	45 – 54yrs	38	13.7
	≥ 55yrs	36	13.0
Education	No Formal Education	54	20
	Primary Education	62	22
	Secondary Education	67	24
	Tertiary Education	94	34
Occupation	Public Servant	56	84
	Business Person	54	64
	Religious Leader	46	79
	Environmental Activist	26	81
	Educator	31	69
	Students	64	65
Religious Affiliation	Islam	51	18
	Christianity	137	50
	Traditionalist	64	23
	Atheist	16	6
	Others	9	3
Total		277	100

Source: Field Survey, 2024

In terms of the age distribution of the respondents as shown in table 4.1 above, out of the 277 of the respondents, 142(48.7%) of them said they were males while 135(51.3%) others were females. The implication of this is that the survey was not gender biased.
Considering the marital status of the respondents as indicated in table 4.1 above, out of 277 of the respondents, 121(44%) said they were still single while 104(37%) others were married and 52(19) were divorced or separated. The implication of this demographic data is to reflect that the survey was not on the excess on one part than the other.
In terms of the ages of the respondents as shown in table 4.1 above, 54(19.5%) of them indicated that they were < 25years old, 86(31.1%) said they were 25 – 34years old, 63(22.7%) said they were 35 – 44years old, 38(13.7%) said they were 45 – 54years while 36(13.0%) others said they were ≥ 55years old. From this analysis, it would be noted that majority of the respondents were 25 – 44years old followed by those with the age bracket of 45 – 54years. Table 4.1 above on demographic characteristics shows that out of the 277 respondents, 56(84%) were public servants, 54(64%) of them were businesspersons, 46(79%) were religious leaders, 26(21%) of them were environmental activists, 31(69%) were educators while 64(65%) were students. The implication of this demographic data is that majority of the people that participated in this survey were students followed by public servants.

Based on the survey as shown on table 4.1 above, 54(20%) of the respondents indicated that they had no formal education, 62(22%) of them indicated that they had primary education, 67(24%) of them indicated that they had secondary education, while 94(34%) of them has tertiary education certificates. Considering religious affiliation as indicated on table 4.1 above, out of the 277 respondents, 51(18%) were affiliated to Islam, 137(50%) of them were Christians, 64(23%) were affiliated to traditional religion, 16(6%) of them said they are atheists, while 9(3%) are affiliated to other religions not indicated on the questionnaire. The implication of this demographic data is that majority of the people that participated in this survey were affiliated to Christianity and traditional religion.

Descriptive Statistics
This section discusses the descriptive statistics showing the mean, median and standard deviation values of the data and the excess kurtosis and skewness.

Table 4.6: Descriptive Statistics of the Responses

ITEMS	NO	Mean	Median	MIN	MAX	Std. dev.	Kurtosis	Stewness
ER1	8	3.512	4	1	5	1.105	-0.517	-0.375
ER2	9	3.69	4	1	5	1.199	-0.656	-0.526
ER3	10	3.874	4	1	5	1.058	-0.594	-0.108
ER4	11	3.816	3	1	5	1.119	-0.246	-0.583
ER5	12	3.909	4	1	5	0.994	-0.709	-0.118
EK1	23	3.502	3	1	5	1.064	-0.521	-0.226
EK2	24	3.169	3	1	5	1.153	-0.165	-0.674
EK3	25	3.711	4	1	5	1.193	-0.677	-0.472
EK4	26	3.838	4	1	5	1.052	-0.597	-0.069
EK5	27	3.971	3	1	5	1.084	-0.395	-0.370
GPI1	28	3.986	4	1	5	1.157	-1.058	0.292

GP2	29	3.610	4	1	5	1.077	-0.513	-0.270
GP3	30	3.314	3	1	5	1.073	-0.245	-0.399
GP4	31	3.725	4	1	5	1.166	-0.683	-0.412
GP5	32	3.501	4	1	5	1.048	-0.623	-0.003

Table 4.6 above shows the information requested for each of the items used in measuring the variables of the study. The next two columns show the minimum and maximum and the highest under maximum is 5 while the least under minimum is 1. This confirms that the variables were measured with five-point scale coded five for strongly agree to one for strongly disagree. Also, the table indicated that all the items have median ranging between 3 and 4 and mean up to 4.0 while most of the standard deviation values are above one. Standard deviations measure variability hence with standard deviations above 1, it is an indication that the respondents are not in agreement as their opinions are diverse.

The above descriptive table also provides information concerning the distribution of the scores on continuous variables (skewness and kurtosis). This information is necessary if the variables are to be used in parametric statistical techniques (e.g., Pearson correlation, t-tests, among others) which is the situation in this study. The skewness value provides an indication of the symmetry of the distribution. Kurtosis on the other hand provides information about the "peakedness" of the distribution. Positive skewness values indicate positive skew (scores clustered to the left at the low values). Negative skewness indicates a clustering of scores at the high end (right-hand side of a graph).

Positive kurtosis values indicate that the distribution is rather peaked; that is clustered in the centre with long thin tails. Kurtosis values below 0 indicate a distribution that is relatively flat (too many cases in the extremes). With reasonably large samples, skewness will make a substantive difference in the analysis (Pallant, 2013). The skewness of the items is mixed with very high values and very low values while the kurtosis shows very high and very low or values below zero. The implication is that there is a mix of 'peakedness' and flattened values in the items. This problem of distribution was overcome by the fact that the analysis involved the use of partial least squares structural equations modeling) PLS-SEM). One of the advantages of PLS-SEM over other tools of multivariate statistical analysis is that it does not require a normally distributed data, (Urbach & Ahlemann, 2010). Also, Tabachinick and Fidell (2013) maintain that with reasonably large samples for example data of 200 and above; skewness will not make substantive difference in the analyses

Assessment of Measurement Model

The first stage in partial least square structural equation modelling evaluation is the examination of the measurement model to ensure that the manifest (indicator) variables are measuring the underlying constructs they are meant to measure. To achieve this, the evaluation should ensure that the models are reliable and have the required validity. Lowry & Gaskin, (2014) opine that reliability is the degree to which a scale yields consistent and stable measures over time. It refers to the reflective items in the measurement model. On the other hand, validity evaluates the extent to which an

instrument perfectly measures an exact concept it is designed to measure (Hair et al., 2010).

Factor Loadings

For the researcher to establish the reliability of an indicator, a Confirmatory Factor Analysis (CFA) was used to confirm the factor loadings of the four constructs involved in this study, namely extrinsic religiosity, environmental knowledge, and consumer green purchase intention. Hair et al. (2006) suggested a rule of the thumb which provide guideline to interpret the factor loading, whereby factor loadings with value of ± .50 or greater are considered very significant; a loading of ± .40 is considered most important; a loading of ±.30 is considered significant (Osman & Muhammad, 2017). In this study, from Table 4.6 below presents the factor loadings of different latent variables and their observed indicators (questions enumerated for each variable).

It can be observed that the factor loadings below reveal that a positive weak relationship exists between extrinsic religiosity and the indicators. Other latent variables namely, environmental knowledge, and intention to purchase **variables** indicated figures above .50 (Hair et al., 2006). This suggests that the items correlated significantly to the factor itself and show evidence of indicator reliability.

Reliability of Measurement Models

As noted by Lowry and Gaskin, (2014) reliability refers to the extent to which a scale yields consistent and stable measures over time. Also, Pallant (2011) sees reliability as the measure of how the scale is free from random error. It assesses the degree to which a measurement scale response is consistent across constructs (Creswell, 2014). Although, Cronbach's alpha is the most commonly used method of measuring reliability, composite reliability is recommended as preferable when dealing with PLS-SEM (Hair et al., 2011; Memon & Rahman, 2013). It was argued that Cronbach's alpha is subtle and sensitive to the number of items in the scale, and that it is also found to cause serious underestimation when applied to PLS path models; hence it is not much suitable for PLS-SEM (Wong, 2016). Hair et al. (2011) also leaned towards the preference of composite reliability to Cronbach's alpha in PLS-SEM. The scholars argued that Cronbach's alpha is restricted by the assumption that all indicators are equally reliable based on tau-equivalence principle which could compromise reliability the moment efforts are made to maximize it. Nevertheless, composite reliability does not assume tau-equivalence, making it more suitable for PLS-SEM, which prioritizes indicators according to their individual reliability.

Table 4.8: Factor Loadings for Constructs

Construct	Code	items	Factor loadings
Extrinsic Religiosity	ER1	I make financial contributions to my religious organization.	0.504
	ER2	I enjoy spending time with others of my religious affiliation.	0.327
	ER3	I enjoy working in the activities of my religious organization.	0.243
	ER4	I keep well informed about my local religious group	0.291
	ER5	I have some influence in the decisions of my local religious group	0.464
Environmental Knowledge	EK1	I have knowledge about the advantages of green products.	0.874
	EK2	I am knowledgeable that purchasing green products is a good initiative toward the environment.	0.721
	EK3	I am knowledgeable that purchasing green products is a responsible step toward the environment.	0.654
	EK4	I am knowledgeable about the negative impact of non-green products on the environment.	0.752
	EK5	My knowledge about green products influences my purchase intention.	0.698
Green Purchase Intention	GPI1	I am willing to purchase a green product when buying	0.780
	GPI2	I will make an effort to purchase a green product when buying	0.875
	GPI3	I am likely to choose a brand implementing environmental strategies	0.782
	GPI4	I am more likely to patronize a green firm over a non-green firm	0.665
	GPI5	I am always desirous to purchase a green product	0.785

This research strikes a balance and employed all the methods to fully explore the reliability of measurement models. Thus, this research used both the Cronbach's alpha and composite reliability measuring the reliability of the instruments. The reliability assessment of the measurement models was based on the recommended thresholds. Various scholars recommended that the threshold for Cronbach's alpha is to be at least a value of 0.7. The composite reliability is similarly recommended by various authors as the rule of thumb to have a threshold value similar to the Cronbach's alpha (Hair, Sarstedt, et al., 2014; Hair et al., 2011; Lowry & Gaskin, 2014; Wong, 2016). However, Hair et al., (2014) noted that a composite reliability of 0.6 is considered acceptable especially for newly developed scale. In this study, the reliability of measurement models was measured using four reliability indices, namely, Cronbach's Alpha (α or

alpha), composite reliability (pc or rhoC), Average Variance Extracted (AVE) and Rho_A (rhoA) as presented in table 4.9 below:

Table 4.9: Measurement Model's Reliability

Latent Variable	**Cronbach Alpha**	**rhoC**	**AVE**	**rhoA**
Extrinsic Religiosity	0.868	0.901	0.605	0.871
Environmental Knowledge	0.818	0.867	0.523	0.834
Green Purchase intention	0.808	0.785	0.684	0.65

As shown in Table 4.9 above, the reliability of the measurement models measured by Cronbach's Alpha (α or alpha), composite reliability (pc or rhoC), Average Variance Extracted (AVE) and Rho_A (rhoA) shows that all the measurement models are reliable.

Convergent Validity

As noted by Hair et al., (2014) convergent validity is the measure of how the indicator (manifest) variables explained the variance of the underlying measurement model. It is assessed by evaluating the factor loadings, the significance of the factor loadings and the Average Variance Extracted (AVE). Factor loading refers to the variance an indicator item shares with the measurement model.

The factor loading is required to be high, preferably above 0.7. Items with factor loadings less than 0.4 are required to be removed from the measurement model. The factor loadings of the indicator items are required to be significant. This is achieved when their t-statistic and p-value are greater than or equal to 1.96 and less than 0.05 respectively (Wong, 2013). After evaluation of the factor loading, the next stage is the evaluation of the Average Variance Extracted. The Average Variance Extracted (AVE) refers to the average value of the squared loadings of the items associated with the construct (Hair *et al.*, 2014). The average variance extracted is the average of all the squared loadings of the indicator variable. For measurement model to have convergent validity, its average variance extracted has to be 0.5 and above (Wong, 2016). Similarly, the model is required to converge before reaching the maximum 300 iteration (Wong, 2013).

Table 4.10: AVE values for test of convergent validity

Latent Variable	**ER**	**EK**	**GPI**
Extrinsic Religiosity	0.890		
Environmental Knowledge	0.895	0.645	
Green Purchase intention	0.692	0.522	0.875

Table 4.10 above indicates that all the latent variables have a shared variance above 50%, thus it can be said that the latent variables is well represented by its indicators.

Discriminant Validity

As noted by Memon and Rahman (2014) discriminant validity is the assessment of how the measurement model is different, unique, and distinct from other models in the structural models. It examines how unique a particular model is from the other models

of the research. Traditionally, discriminant validity is determined using two approaches namely the cross-loadings approach and the Fornell and Larcker approach (Memon & Rahman, 2013). Recently, studies are questioning the adequacy of the traditional methods in establishing discriminant validity and advanced arguments for the use of Hetero-trait-Mono-trait ratio (HTMT). In the study Hetero-trait-Mono-trait ratio was utilized for establishing the discriminant validity of the models.

Table 4.11: Discriminant Validity Using HTMT Ratio Criterion

Latent Variable	**ER**	**EK**	**GPI**
Extrinsic Religiosity			
Environmental Knowledge	0.652		
Green Purchase intention	0.845	0.629	

Hetero-trait-Mono-trait ratio (HTMT) is the ratio of the hetero-trait-hetero-method correlations to the mono-trait-hetero-method correlations. HTMT values close to or below 1 suggest good discriminate validity, indicating that the latent variables are more related to their own indicators than to other constructs.

Test of Hypotheses

In this study, there are two hypotheses formulated to guide this study. The hypotheses formulated for this study were tested using the partial least square structural equations modeling.

The first hypothesis sought to ascertain if a direct relationship exists between the independent variable (Extrinsic Religiosity) and the dependent variable (Consumer purchase intention). Then second hypothesis sought to understand whether a mediator variable (Environmental Knowledge) exerts an indirect influence on the relationship between the independent variable and the dependent variable. The results of these tests of hypotheses are presented in two phases as indicated below.

Hypothesis One

Ho_1: There is no significant relationship between extrinsic religiosity and consumers' purchase intention for green products in Southeast Nigeria.

H_1: There is a significant relationship between extrinsic religiosity and consumers' purchase intention for green products in Southeast Nigeria.

Table 4.12: Table of Path Coefficients for Direct Effects

Relationship	***B***	**Std.Error**	**z-value**	**P(>|z|)**	**Hypothesis**
Extrinsic Religiosity → Consumer Green Purchase	-0.457	0.123	3.714	0.203	1-Not Supported

As contained in table 4.12 above, the first hypothesis was tested using the p-value of the path coefficients: The decision rule was to reject the null hypothesis if the p-value is

greater than 0.05 (chosen alpha level). As indicated in table 4.12 above, the values are: ***β*** = -0.4567, Standard error = 0.123, Z statistics = 3.714 and p-value = 0.203 >0.05.
Decision: Since the p-value (0.203) is greater than the chosen level of significance (0.05), there is not enough statistical evidence to reject the null hypothesis, hence, the null hypothesis was accepted. Therefore, with (β =.46 and P=.20) there is no significant relationship between extrinsic religiosity and consumers' purchase intention for green household products in Southeast Nigeria.

Mediating Effects

Ho_2: There is no significant mediating effect of environmental knowledge on the relationship between extrinsic religiosity and consumers' purchase intention for green products in Southeast Nigeria.

H_2: There is a significant mediating effect of environmental knowledge on the relationship between extrinsic religiosity and consumers' purchase intention for green products in Southeast Nigeria.

Table 4.13: Table of Path Coefficients for Indirect Effects

Relationship	***B***	**Bootsrap Mean**	**T Stat.**	**Lower CI**	**Upper CI**	**H**
Extrinsic Religiosity → Environmental Knowledge → Green Purchase Intention	0.040	0.042	2.813	-0.0043	0.1076	Supported

As contained in table 4.13 above, hypotheses two was tested using the lower and upper confidence interval of the path coefficients. The decision rule was to reject the null hypothesis if the confidence interval includes zero, otherwise the null hypothesis is accepted. Decision: Since the confidence interval contains zero (from negative number to positive number), there is a statistical evidence to reject the null hypothesis. Therefore, with (β =.040 and P=.20) it was concluded that there is a significant mediating effect of environmental knowledge on the relationship between extrinsic religiosity and consumers' purchase intention for green products in Southeast Nigeria.

Discussion

The study aimed at investigating the relationship between extrinsic religiosity and green purchase intention in Southeast, Nigeria: the role of environmental knowledge. Discussion of the findings from the data analysis is presented below.

Extrinsic religiosity and green purchase intention

Extrinsic religiosity also known as 'inter-personal religiosity' refers to religious affiliation, devotional practices, or membership within a religious community (Borzooei & Asgari, 2014), and it reflects the behavioral aspect of religiosity of individual participation in the organized religious activities (Mukhtar & Butt, 2012). On the basis of this, hypothesis one was formulated to test whether there is a significant relationship between extrinsic religiosity and green purchase intention in Southeast Nigeria. From

the path coefficient table 4.10 above indicates the following values: $\boldsymbol{\beta}$ = 0.4567, Standard error = 0.123, Z statistics = 3.714 and p-value = 0.203 >0.05. Since the p-value (0.203) is greater than the level of significance (0.05), there is no adequate statistical evidence to reject the null hypothesis; so the null hypothesis is accepted and the alternate accepted. Therefore, it is concluded that there is no significant relationship between extrinsic religiosity and consumers' purchase intention for green products in Southeast Nigeria.

This result is consistent with similar studies on extant literature. For instance, Aslam, Razzaque, Arif, and Kahshif, (2022) investigated the impact of spirituality, religiosity, knowledge, and attitude on Green Purchase Intention in Pakistan. The study revealed that extrinsic religiosity was insignificant in determining green purchase intention. The result is also consistent with the study by Chai and Chen, (2021) that examined "Religiosity as an Antecedent of Attitude towards Green Products: An Exploratory Research on Young Malaysian Consumers. The result of the study indicated that extrinsic religiosity has no significant influence on consumer's attitude towards green product. This is unlike the study of Wang and Zhang (2020) which examined the Role of Extrinsic Religiosity on Consumer Green Hotel Selection in China. The study that extrinsic religiosity has a significantly positive influence on attitude and intention respectively.

Mediating effect of environmental knowledge on the relationship between extrinsic religiosity and green purchase intention

Environmental knowledge refers to the series of information about the environment, its issues and the preventive actions necessary to conserve and protect the environment that is collected, organized, and evaluated by the individuals (Mostafa, 2009). It actually means an individual's factual understanding of the environment" (Kaiser et al., 1999). Sustainable marketing literature has suggested that the incessant increase in global environmental issues has increased the desire among consumers to know about the environment and become more sensitive to the environmental challenges. Due to consumers' sensitivity to the environment, a slight alteration in the natural state of the environment can inspire them to actively participate in programmes designed for environmental conservation (Dunlap & Jones, 2002; Kim & Choi, 2005; Hassan, 2014). On the basis of this, hypothesis two was formulated to test whether there is a significant mediating effect of environmental knowledge on the relationship between extrinsic religiosity and green purchase intention in Southeast Nigeria.

The path coefficient table 4.11 above indicates the following values: $\boldsymbol{\beta}$ = 0.0399, Bootstrap Mean= 0.00434, T stat =2.813, lower confidence interval = -0.00434 and upper confidence interval = 0.1076. Since the confidence interval contains zero (from negative number to positive number), there is enough statistical evidence to reject the null hypothesis. Therefore, it was concluded that there is a significant mediating effect of environmental knowledge on the relationship between extrinsic religiosity and consumers' purchase intention for green products in Southeast Nigeria.

This result is consistent with similar studies on extant literature. For instance, Rahman, Akter, Uddin, and Biswas, (2023) examined the Role of Environmental Responsibility and Environmental Knowledge on Green Purchase Intention of Household Appliances in Bangladesh: Mediating Role of Environmental Concern. The results show that knowledge is directly related to ecological responsibilities and influences the intention to make green purchases. Additionally, it was found that knowing the environment positively affects individuals' level of concern for it.

Conclusions

The study sought to investigate the relationship between extrinsic religiosity and green purchase intention in Southeast Nigeria: The mediating role of environmental knowledge. Based on the results from data analysis, the study has proved that extrinsic religiosity has no significant effect on green purchase intention in Southeast Nigeria. It has been statistically confirmed that environmental knowledge has a significant mediating effect on the relationship between extrinsic religiousity and green purchase intention in Southeast Nigeria.

Hence, this study concludes that extrinsic religiosity has no significant relationship with green purchase intention in Southeast Nigeria. In addition, the study concludes that environmental knowledge mediates the relationship between extrinsic religiosity and green purchase intention in Southeast Nigeria.

Recommendations

Since it was statistically established that environmental knowledge mediates the relationship between extrinsic religiosity and consumers purchase intention of green products, managers of green marketing organizations should not only focus on the firm's profit-related objectives but must also look at the environmental impacts of their business operations. They should inculcate as part of their objectives policies and strategies that are geared towards improving awareness and concern for the preservation of the environment through adoption of environmentally friendly consumption behaviour.

Theoretical Contribution

The study has successfully advanced the knowledge of green purchase intention by considering variables that are not normally discussed especially in the context of a developing economy like Nigeria. Past studies have established that most of the previous studies anchoring on religiosity and consumers' green purchase intention were conducted in western countries like the United States of America (Wang et al., 2018). Hence, this study has added to the body of knowledge in the field of sustainability marketing and environmentally friendly consumption behaviour by deepening the concept of consumer purchase intention for green household products.

Theoretically, this study has extended and deepened the application of the theory of planned behavior in the field of consumer behavior. The study extended the traditional theory of planned behaviour by introducing religiosity as part of the dimensions of the theory of planned behaviour. Another theoretical contribution of this study is the introduction of environmental knowledge as a mediator in the relationship between religiosity and consumer purchase intention for green products.

Limitations of the study and Future Area of Research

In this study there are some limitations that need to be addressed by future researchers. First, the study considered a specific region in Nigeria i.e., southeast as the area of the study, so its findings cannot be generalized for the entire population in the Country. Hence, it is recommended that this study should be replicated by considering other regions as part of the study area. Second, this study did not compare or dwell on the religiosity factors of different religions whereas previous studies such as (Minton et al., 2015) have indicated that different religions groups express different attitudes concerning consumer buying behavior Hence, it is suggested that future studies should compare and contrast different religious consumers as they might have different attitudes towards green purchase intention. Third, the study didn't consider the influence of consumer demographic characteristics in predicting green purchase intention. Future studies can consider the role of demographic variables either as moderating or mediating factors in consumer green purchase intention.

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