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Personal Values, Norms and Sustainable Consumption Behaviours of Beverage Consumers in Central Uganda

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ABSTRACT

This study investigated the relationship between personal values, norms, and sustainable consumption behaviours of beverage consumers in central Uganda. The study employed a correlational design where 400 beverage consumers aged 18 and older provided the data in a survey. The data were analysed using structural equation modelling in the SPSS AMOS extension Version 23. The study results show that personal values and norms were critical determinants in beverage consumers' engagement in sustainable behaviours like recycling, reusing, and proper disposal of waste from plastic bottles. Notably, consumers with biospheric values were more predisposed to engaging in such behaviours. Both personal and social norms positively influence sustainable consumption behaviours. The mediation effects of both norms were also confirmed in this research. Therefore, this study offers valuable insights to policy-making bodies and beverage companies in Uganda regarding the factors that drive sustainable consumption behaviours among beverage consumers. These findings can be used to develop effective environmental policies and marketing campaigns.

1. Introduction

Sustainable consumption behaviours benefit the environment by effectively mitigating environmental calamities, including carbon emissions, biodiversity loss, hazardous waste pollution, climatic changes, and global warming (Han, 2021). Since consumers are majorly responsible for environmental degradation, their role as change agents towards sustainable consumption cannot be overlooked. Sustainable consumption behaviours (SCBs) are defined as consumer actions that satisfy their needs without harming the environment through waste and pollution (Kova et al., 2016). These behaviours mainly focus on the environmental effects of consumption and aim to safeguard the planet, which is crucial for achieving sustainable development. Accordingly, governments have undertaken several interventions to encourage sustainable consumption, such as the Agenda 21 document in 1992, the Oslo Conference in 1994, the Ten Year Framework of Programmes in 2002, the Intergovernmental Panel on

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Climate Change in 2013, Sustainable Development Goal 12 in 2015, and the United Nations Environment Programme in 2015 (Kova et al., 2016). Nonetheless, current evidence reveals that human consumption practices are still unsustainable worldwide.

Non-biodegradable plastic consumption has quadrupled in the previous 30 years, generating immense plastic waste (Organization for Economic Co-operation and Development, 2022). Nearly two-thirds of the waste is plastic packaging with less than five years of lifespan. Only 9 per cent of waste is recycled, 19 per cent is incinerated, 50 per cent is disposed of in landfills, and 22 per cent ends up in illegal dumpsites, open pits, or water sources. If this trend continues, plastic garbage will increase by 70 per cent in 2050, which is disastrous for the environment and civilisation. In Africa, mishandled plastic garbage causes many human and environmental issues. Most of the 70 million tonnes of plastic garbage produced annually end up in illicit dumpsites, burnt, or marine ecosystems (Organisation for Economic Cooperation and Development, 2022). The situation is the same in Central Uganda, where an estimated 600 tonnes of plastic packaging is consumed daily, which amounts to 43 kilograms (kgs) of plastic waste per individual yearly (Wandeka et al., 2022).

Poorly disposed of plastic bottle waste resulting from inappropriate consumer behaviour endangers all components of the natural ecosystem; for instance, it clogs drains and sewerage systems, causing floods, leads to respiratory diseases when burned openly, kills animals when consumed, and makes soil unsuitable for agriculture (Kumar et al., 2021). This concern has made scholars ponder the factors that encourage sustainable consumption behaviours among consumers. According to the Value Belief norm (VBN) theory, psychological factors such as personal values and norms can play a pivotal role in motivating sustainable consumption behaviours (Arya & Kumar, 2023; Ghazali et al., 2019).

Prior studies have demonstrated that personal values and norms are critical motivators of SCBs in tourists (Megeirhi et al., 2020), students (Arya & Kumar, 2023) and apparel consumers (Gomes et al., 2022). However, scholars like Robles-Avila (2022) have only explored the mediating role of personal norms between personal values and the SCBs. Although Trautwein et al. (2023) and Ghazali et al. (2019) have investigated social norms as mediators, these studies have been done outside the African context. Nevertheless, most traditional values and norms in Africa align with the critical foundations of sustainability (Ukenna & Nkamnebe, 2017). This is demonstrated by Africa's low ecological footprint of 1.3 hectares per person in 2018, significantly less than the global average of 2.8 hectares per person (Marti & Puertas, 2020). In addition, a paucity of research has been conducted in the context of beverages consumption (Rahies & Khan, 2023). Also, Uganda's current environmental degradation caused by plastic bottle waste is alarming and prompts an inquiry into the prevalent values and norms. Therefore, this study examines the underlying values and norms that motivate Ugandan beverage consumers' engagement in sustainable consumption behaviours.

2. Literature Review

2.1. Brief Background of the Ugandan Beverage Industry

Uganda's food and drinks sector encompasses the beverage industry. This industry has over 100 registered manufacturing companies and many unregistered small businesses which produce a variety of drinks such as water, soda, fruit juice, herbal drinks, milk, alcohol, coffee, tea, and cocoa (Uganda Investment Authority, 2020). As a result, the availability and consumption of beverages in Uganda are rising. For instance, carbonated soft drinks, the largest and fastest-growing category of non-alcoholic beverages, increased sales by 12.4 per cent from 2015 to 2018 (Ahaibwe et al., 2021). Notable beverage brands on the Ugandan market include

Coca-Cola, Rwenzori Water, Pepsi, Riham, Jesa, Uganda breweries, Nile breweries, and Splash beverages. However, most of the beverages in Uganda are consumed from non-biodegradable polyethene terephthalate (PET) bottles, which contribute to plastic waste often disposed of in public places, drainage channels, or water bodies (Omara et al., 2019). This waste can cause environmental issues such as blocking storm drains and sewerage systems, leading to floods that damage property, endanger lives, and creating stagnant water that breeds malaria-causing mosquitoes and waterborne diseases. Therefore, changing consumers' behaviour towards sustainable consumption is essential in tackling the problem of packaging-related plastic waste in Uganda.

Theoretical framework. Among the applicable theoretical frameworks for explaining sustainable consumption behaviours (SCBs), the Theory of Planned behaviour (TPB) and the Value Belief Norm (VBN) theory are the most prominent. The TBP theory asserts that a person's behaviour is driven by cognitive processes: attitudes, subjective norms and perceived behavioural controls. Although values can be incorporated by extending the TPB theory, they are not the conceptual focus of the TPB. In contrast, the VBN theory is based on value frameworks and their causal impacts on beliefs, norms, and behaviours. It recognises personal values and norms as drivers of sustainable consumption behaviours (Stern et al., 1999). Given that our interest is in identifying the underlying value structures and norms that influence behaviour, the VBN theory can be a better choice for this study. Additionally, VBN combines three other theories: the value basis theory, the new environmental paradigm theory, and the norm activation theory. Hence, applying the VBN theory in this study maximises the benefits of using three theories.

Personal Values and sustainable consumption behaviours. Personal values are "*a desirable trans-situational goal varying in importance that serves as a guiding principle in someone's life*." (Schwartz, 1992). When individuals believe a particular value is essential, they behave in ways that lead to its pursuance. Personal values are considered by some scholars as significant determinants of sustainable consumption behaviours (Ghazali et al., 2019). Such values can be triggered when individuals are confronted with environmental problems. Accordingly, many academics found that understanding consumers' values can provide insights into their sustainable consumption behaviours.

Stern et al. (1999) postulated three value orientations: altruistic, biospheric, and egoistic values. However, for this study, only altruistic and biospheric values were considered since individuals with these values are more likely to engage in sustainable consumption behaviours than those with egoistic values (Whitley et al., 2018). Additionally, some scholars have stated that the measurement of egoistic values may not apply to collectivistic societies such as African cultures (Wang et al., 2022).

Altruism means caring for others. Individuals with altruistic values engage in sustainable consumption behaviours based on the positive impacts they will have on others and society (Ghazali et al., 2019). On the other hand, people who have biospheric values think about how what they do affects the environment and other species (Ahn et al., 2020). Generally, prior research has found that consumers with altruistic and biospheric values tend to consume products sustainably. For instance, Gu (2022) found that altruism strongly impacted green purchase behaviours among Chinese customers in the hotel industry.

Additionally, Caniëls et al. (2021) found that biospheric values strongly influenced sustainable consumption patterns among Polish inhabitants. Also, Ahn et al. (2020) found that Koreans with both altruistic and biospheric values bought green clothing. Furthermore, Kumar et al. (2020) also discovered that benevolence drives green brand purchasing intentions. Generally,

most studies agree that having altruistic and biospheric values enables individuals to engage in sustainable consumption behaviours. Accordingly, the following hypotheses are proposed;

H_1 Personal values positively affect sustainable consumption behaviours of beverage consumers in Central Uganda.

H_{1a} Altruistic values positively affect sustainable consumption behaviours of beverage consumers in Central Uganda.

H_{1b} Biospheric values positively affect sustainable consumption behaviours of beverage consumers in Central Uganda.

Personal Values and Norms. Consumers' values can shape norms because norms are activated when individuals believe their valued possessions are imperilled, and a behaviour's performance can mitigate that threat (Rizkalla et al., 2019). Accordingly, many scholars have discovered positive connections between personal values and norms. For example, Arya and Kumar (2023) found positive links between altruistic and biospheric values and personal norms among undergraduate and postgraduate students in Indian private universities. Also, Gkargkavouzi et al. (2019) found that biospheric values significantly affect Greek residents' personal and social standards and their private-sphere environmental behaviours. Some other scholars (Rizkalla et al., 2019) have also found evidence that personal values and norms can be positively related. However, such studies have mainly been done on tourist, teacher, or student consumer groups (Le et al., 2022). Hence, this study hypothesises that:

H_2 Personal values positively influence the norms of beverage consumers in Central Uganda.

H_{2a} Altruistic values positively influence the norms of beverage consumers in Central Uganda.

H_{2b} Biospheric values positively influence the norms of beverage consumers in Central Uganda.

Norms and sustainable consumption behaviours. Scholars believe that "norms" can have various conceptualisations in academics. However, the most common types in sustainability research are personal and social norms (Niemiec et al., 2020). Personal norms are individuals' feelings of moral obligation to perform a behaviour (Schwartz, 1992), well as social norms refer to society's acceptable codes of conduct (Bai & Bai, 2020). Both personal and social norms have been found to promote consumers' engagement in sustainable consumption behaviours (Esfandiar et al., 2019). Some scholars argue that these norms are the most critical factors in determining how people behave in good ways for the environment. Scholars like Bai and Bai (2020) found that personal norms greatly affected how Chinese city dwellers behaved in good ways for the environment. Likewise, Niemiec et al. (2020) conducted a meta-analysis revealing that personal norms influence consumers' intentions to engage in sustainable consumption. More recently, Carfora et al. (2021) found that personal norms are one of the best ways to predict whether or not an Italian household will buy natural foods.

Social norms have also caught the attention of previous scholars. According to Ahn et al. (2020), people can use social norms to make better decisions, gain social approval or rewards, or avoid social sanctions or punishments. Han et al. (2018) found that social norms were the most important predictors of people's plans to recycle sustainably and reduce waste in China. Ghazali et al. (2019) also pointed out how important social norms are in determining how travellers in Malaysia recycle. This view was supported by Esfandiar et al. (2019) and Khan et al. (2019), who also found significant impacts of social norms on behaviours like recycling, reuse, and proper waste disposal. Only a handful of scholars have found no effects of social norms on sustainable consumption choices (Salmivaara & Lankoski, 2021). Even though personal and social norms are often used in studies to predict sustainable consumption, more

research is needed on whether these norms affect the behaviour of consumers in developing countries, especially in the Sub-Saharan African region. Accordingly, these hypotheses are proposed:

H_3 Norms positively affect sustainable consumption behaviours of beverage consumers in Central Uganda.

H_{3a} Personal norms positively affect sustainable consumption behaviours of beverage consumers in Central Uganda.

H_{3b} Social norms positively affect sustainable consumption behaviours of beverage consumers in Central Uganda.

The mediating role of norms. Several researchers contend that personal and social norms can link sustainable consumption behaviours and their causes. Norms must be activated by aspects like problem awareness, the attribution of responsibility, and individuals' beliefs and personal values before they can affect their respective sustainable behaviours (Salmivaara & Lankoski, 2021). More specifically, Hyun and Seock (2019) found that personal norms intervened in the relationship between altruistic and biospheric values and the purchase of sustainable products among consumers in the United States of America. These findings corroborate with Esfandiar et al. (2019), who revealed that personal norms mediated consumers' attitudes, social norms, awareness, perceived behavioural control, and pro-environmental waste binning behaviour in Australian national parks. Han et al. (2018) also found that personal norms were linked to social norms, willingness to make sacrifices, and college students' plans to reduce waste and recycle while on vacation in South Korea.

Some scholars have also examined the mediation effect of social norms. Robles-Avila (2022) looked at how social norms affect the relationship between altruistic and egoistic values, awareness of consequences, and consumers' intentions to throw away potentially dangerous products in a safe way. Han and Hwang (2017) also revealed that social norms mediated the relationship between problem awareness and pro-environmental behaviours among travellers attending a conference in the United States. Kim et al. (2016) found that social norms link sustainable behaviours and predictors like personal values, beliefs, knowledge of the environment, and consumer attitude. However, Trautwein et al. (2023) found that social norms were not successful mediators in the value-belief-norm theoretical framework. Still, studies that have examined the mediation effect of social norms between personal values and sustainable consumption behaviours are minimal. Thus:

H_4 Norms mediate the relationship between personal values and sustainable consumption behaviours of beverage consumers in Central Uganda.

H_{4a} Personal norms mediate the relationship between personal values and sustainable consumption behaviours of beverage consumers in Central Uganda.

H_{4b} Social norms mediate the relationship between personal values and sustainable consumption behaviours of beverage consumers in Central Uganda.

2.2. Conceptual Framework

This conceptual framework gives a schematic illustration of the hypothetical relationships among variables. In this study, personal values will be considered as independent variables, norms as the mediating variables, and sustainable consumption behaviours will be the criterion variables as presented in Figure 1.

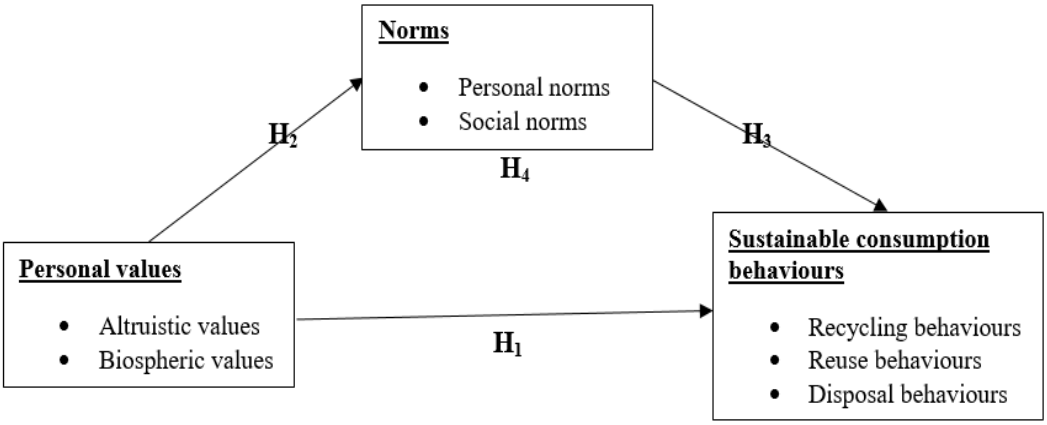

Figure 1. Conceptual framework

3. Materials and Methods

The study adopted a correlational design, enabling the researcher to measure statistical relationships between personal values, norms and sustainable consumption behaviours. The time frame was cross-sectional because it saved the researcher time and resources (Spector, 2019). The study area was the Greater Kampala Metropolitan Area, consisting of four districts: Kampala, Mukono, Wakiso, and Mpigi. Greater Kampala Metropolitan Area (GKMA) is also home to many companies that manufacture plastic-packaged beverages under investigation (Omara, 2019). Additionally, GKMA is Uganda's most susceptible region to plastic bottle waste pollution (Wandeka et al., (2022). The study participants were consumers of plastic-bottled beverages who had resided in the GKMA for at least six months before the study.

For data collection, Yamane's (1967) sampling formula was used to calculate the sample size of 400 respondents from a population of 31,425 households from selected villages in the GKMA. A face-to-face survey was conducted among household heads since they are considered the primary decision-makers in the home who can also influence the behaviours of other members (UNHS, 2020). The study respondents were identified using multistage random sampling. In this case, the clusters included districts, divisions or sub-counties, parishes, villages, and households. At the last stage, probability proportional to size sampling was employed to identify the final respondents (household heads) approached from their residences. Before the central survey, a pilot study was conducted on 100 respondents to check whether the instrument was worthy of the central data collection exercise.

The questionnaire tool consisted of three parts: the first part briefly introduced the researcher and the purpose of the research. The second part comprised background information of the respondents, while the third part contained statements on the study variables to which the household heads responded. A five-point Likert scale ranging from *strongly disagree* to *strongly agree* was used to rate the responses to the study variables. The scale used for personal values ranged from *not at all important* to *very important*.

All measures in the questionnaire tool were adopted from previous scales developed, validated and used by past scholars. The scale to measure recycling and reuse behaviors was adopted from Ghazali (2019), Tuger (2018), and Kalamas et al. (2014), disposal behaviors from Shim (1995) and Jalil (2016); values from De Groot and Steg (2009), Schwartz (1992), Riper and Kyle (2014); personal norms from Abraham and Steg (2009), Fornara (2016) and Gao (2017) and social norms from Han and Hwang (2017), Yadav and Pathak (2016). This instrument was automated using the Kobo Collect software toolkit and administered by the researcher and trained research assistants. The respondents were approached from their residences.

Demographic profile. A total of 400 copies of questionnaires were collected from the respondents. Regarding gender distribution, 33.8 per cent of the respondents were male, and 66.3 per cent were female. Most of the people who answered the survey were married (64%), while others were single (20.8%), divorced (10.8%), or widowed (4.5%). Most people who answered (50.5%) had only finished high school. Only 0.3 per cent of the people who answered had a master's degree. Regarding the level of employment, many respondents were self-employed (61%), with only a few respondents (9.5) doing unpaid family work, while 12.8 per cent were unemployed. Most respondents (61.3%) reported a monthly income of less than 235,000/= compared to those who earn between 235,000/= and 10,000,000/= (38.8%). Many of the people who answered the survey (41.3%) lived in homes with three to four people, most of which were rentals (68.8%).

Data analysis. After data collection, data were sent to the Statistical Package for the Social Sciences (SPSS) and Analysis of Moment Structures (AMOS) version 23 to calculate relevant descriptive statistics and correlations, test for reliability, validity, and multicollinearity, run an exploratory factor analysis (EFA) to estimate dimensionality, and calculate model fit between the collected data and the conceptual model using a confirmatory factor analysis (CFA). Then, structural equation modelling (SEM) was used to test the hypotheses using the path coefficients for each relationship.

Data normality and homogeneity of variances. One thing assumed before quantitative data analysis is that the data should be normally distributed. As a result, two prominent tests for data normality: The Kolmogorov-Smirnov and Shapiro-Wilk tests, were run on the sample data to make sure this was true. The results of these tests are shown in Table 1. The normality of the data was confirmed since the test results were not significant at $p > 0.05$ (Hair et al., 2015). Levene's statistic was also used to determine if the sample data came from a population with the same variances. Accordingly, Levene's test results for this study were insignificant at $p > 0.05$, confirming the assumption of equal variances across the population, as highlighted in Table 2.

Table 1.
Kolmogorov Smirnov and Shapiro Wilk test for data normality

	Kolmogorov-Smirnov	**Sig.**	***Shapiro-Wilk***	**Sig.**
Personal Values	.272	.187	.815	.080
Norms	.128	.070	.973	.385
Sustainable Consumption Behaviors	.160	.200	.935	.357

Table 2.
Levene's test for Homogeneity of Variances

	Levene's Statistic	**Sig.**
Personal Values	.879	.481
Norms	2.118	.089
Sustainable Consumption Behaviors	.315	.867

Assessing the measurement model. The reliability and validity of the study results were checked using the measurement model. The reliability of this research was examined using Cronbach's alpha coefficient (α) and composite reliability (CR). In this study, all of Cronbach's alpha and composite reliability values showed that the constructs were reliable (>0.7). The average variances extracted (AVE) were also used to show that the measurement model was valid and convergent (Hair et al., 2015). All of the AVEs in this study were higher than 0.50, showing convergent validity. Next, the variance inflation factor (VIF) values were below 5, confirming no multicollinearity issues.

Furthermore, the discriminant validity was assessed using the heterotrait-monotrait ratio of correlations (HMRT). Hair et al. (2015) suggest that a cut-off value of less than 0.85 shows discriminant validity. The values in Table 4 range from 0.168 to 0.509, much lower than the threshold points, showing that all constructs are separate and that discriminant validity was met. Consequently, the reliability and validity of the measurement model were confirmed since all the relevant thresholds were exceeded, as indicated in Tables 3 and 4 below.

Table 3.
Reliability, Convergent validity, multicollinearity

Personal Values	***Cronbach's Alpha***	***Composite Reliability***	**AVE**	**VIF**
Altruistic Values	.706	.763	.617	1.058
Biospheric Values	.704	.818	.531	1.355
Norms				
Personal Norms	.714	.793	.657	1.110
Social Norms	.744	.767	.623	1.066
Sustainable Consumptions Behaviors				
Disposal Behaviors	.706	.870	.770	1.423
Recycling Behaviors	.746	.750	.601	1.064
Reuse Behaviours_	.817	.868	.526	1.633
CR – Composite Reliability				
AVE- Average Variance Extracted				
VIF- Variance Inflation Factor				

Table 4.
Discriminant validity using the Heterotrait Monotrait Ratio (HMRT)

Personal Values	**AV**	**BV**	
Altruistic Values (AV)			
Biospheric Values (BV)	.278		
Norms	**PN**	**SN**	
Personal Norms (PN)			
Social Norms (SN)	.499		
Sustainable Consumptions Behaviors	**DB**	**RB**	**RE**
Disposal Behaviors (DB)			
Recycling Behaviors (RB)	.307		
Reuse Behaviors (RE)	.168	.509	

Common Methods Bias. Before using SEM, common method bias (CMB) could have changed the strength and direction of the relationships between the variables since all measurements were self-reported, and the dependent and independent variables were collected using the same research tool. "Common methods bias" refers to variance attributed to the measurement procedure rather than the constructs of interest. A full collinearity assessment was done using PLS-SEM to examine the inner Variance Inflation Factor (VIF) values. The threshold is that VIF values should be lower than 3.3 to indicate that the model is free from common method bias (Kock, 2015). For this research, there were no VIF values above 3.3. Hence, no occurrence of common method biases, as indicated in Table 5.

Table 5.
Common Methods Bias

	Norms	***Personal Values***	***Sustainable Consumption Behaviors***
Norms		1.068	1.171
Personal Values	1.098		1.107
Sustainable Consumption Behaviors	1.356	1.246	

4. Study Results

4.1. Exploratory Factor Analysis

Varimax rotation was used to extract a set of underlying factors for each variable to perform exploratory factor analysis (EFA). However, before conducting EFA, the Kaiser Meyer Olkin (KMO) coefficient and Bartlett's test of sphericity were performed on the questionnaire sample data to measure its sampling adequacy and establish its suitability for factor analysis, as displayed in Table 6. Then, exploratory factor analysis was done, and items that loaded less than 0.4 or that loaded on more than one factor were taken out. The results from the EFA can be witnessed in Tables 7, 8 and 9.

Table 6.
Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity

	KMO	***Bartlett's Test of Sphericity***		
		Approx. Chi-Square	**df**	***Sig.***
Personal Values	.705	307.583	10.000	.000
Norms	.700	648.688	91.000	.000
sustainable consumption behaviours	.762	1927.388	171.000	.000

Table 7.
Exploratory factor analysis results for personal values

	Altruistic Values	**Biospheric Values**
PVAL3	.708	
PVAL4	.652	
PVAL5	.719	
PVAL6	.588	
PVAL7	.711	
PVBC1		.597
PVBC2		.712
PVBC3		.669
PVBC4		.816
Eigenvalues	5.418	2.864
Variance%	45.154	23.866
Cumulative%	45.154	69.020

Table 8.
Exploratory Factor Analysis Results for Norms

	Social Norms	**Personal Norms**
NMSO1	.737	
NMSO2	.726	
NMSO4	.581	
NMSO5	.579	
NMSO6	.710	
NMSO7	.602	
NMPE1		.730
NMPE2		.597
NMPE3		.499
NMPE6		.648
NMPE7		.496
Eigen Values	6.756	3.596
Variance%	48.258	25.685
Cumulative%	48.258	73.944

Table 9.
Exploratory factor Analysis results for Sustainable Consumptions Behaviors

	Reuse Behaviors	***Recycling Behaviors***	***Disposal Behaviors***
SCRE1	.658		
SCRE2	.808		
SCRE3	.783		
SCRE5	.769		
SCRE6	.677		
SCRC1		.538	
SCRC3		.459	
SCRC4		.510	
SCRC5		.774	
SCRC6		.565	
SCDP1			.722
SCDP2			.770
SCDP3			.647
SCDP5			.798
SCDP7			.471
Eigen Values	6.207	3.468	1.923
Variance%	32.666	18.253	10.120
Cumulative%	32.666	50.919	61.039

4.2. Confirmatory Factor Analysis

After ensuring the measurement model was reliable and valid, the researcher used a confirmatory factor analysis (CFA) to determine whether the proposed measurement model fit the data well enough (Byrne, 2016; Kline, 2018). In the CFA, multiple indices were tested as essential indicators of model fitness. These included the Chi-square values (X^2/DF), root mean square error of approximation (RMSEA), comparative fit index (CFI), normed fit index (NFI), Tucker Lewis index (TLI), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), and incremental fit index. (IFI). Hair *et al.* (2015) recommended that to confirm good model fit, CFI, TLI, IFI, GFI, and AGFI values should be close to 1 (>0.9), RMSEA should be between 0.05 and 0.08, and the chi-square should be below 3. For this study, the goodness of fit statistics indicated that the measurement model showed a satisfactory fit to the observed data, as depicted in Table 10.

Table 10.
Model fit summary for the structural model

Fit Indices	**Personal values**	**Norms**	**Sustainable consumption behaviours**	
Chi-square/Degrees of freedom	2.47	1.35	2.133	
Incremental Fit Index (>.9)	.945	.976	.929	Acceptable
Tucker Lewis Index (>.9)	.909	.963	.903	Acceptable
Comparative Fit Index (>.9)	.943	.975	.928	Acceptable
Goodness of Fit Index (>.9)	.978	.984	.961	Acceptable
Adjusted Goodness of Fit Index (>.9)	.952	.970	.938	Acceptable
Root Mean Square Error of Approximation (<0.08)	.061	.030	.053	Acceptable

4.3. Descriptive Statistics and Correlation Analysis

Table 11 displays the correlation coefficient matrix and four variables' means and standard deviations. The results of the correlation study showed a strong positive link between personal values and norms ($r = 0.38$, $p<0.01$) and personal values and sustainable consumption

behaviours (r = 0.416, p<0.01). Additionally, norms were also strongly connected to sustainable consumption behaviours (r=0.314, p<0.01);

Table 11.
Descriptive Statistics and Correlations

	Mean	**SD**	**1**	**2**	**3**
Personal Values-1	4.071	.497	1.000		
Norms-2	3.675	.379	.385**	1.000	
Sustainable Consumption Behaviors-3	2.709	.476	.416**	.314**	1.000

**. The correlation is significant at the 0.01 level (2-tailed).

4.4. Regression Analysis

The results from the regression analysis reveal that personal values had a greater significant and positive effect on sustainable consumption behaviours (β = .346, p<.01) than the norms (β = .180, p<.01). The adjusted R2 of each equation shows how well each dependent variable can be explained by the predictor variables in the model. For this study, the two predictors, personal values and norms, account for a 19.7 per cent variance (adjusted R square =.197) of the sustainable consumption behaviours. This regression model was statistically significant (p.001), as shown in Table 12.

Table 12.
Regression Model Estimates

	Unstandardised Coefficients **B**	**Std. Error**	***Standardised Coefficients*** **Beta**	**t**	**Sig.**
(Constant)	1.261	.210		6.005	.000
Personal Values	.376	.053	.346	7.123	.000
Norms	.136	.037	.180	3.711	.000
a. Dependent Variable: Sustainable Consumption Behaviors					
R	.448				
R Square	.201				
Adjusted R Square	.197				
Std. Error	.484				
F Statistic	49.798				
Sig.	.000				

5. Results from Hypothesis Testing

Regression analysis from AMOS software version 23 was used in the study to look at how beverage consumers' personal values, norms, and sustainable drinking habits are linked. Table 13 displays the findings from the study's primary hypothesis analysis.

5.1. Direct Effect Analysis

H_1 was supported because personal values and sustainable consumption behaviours are positively related (β= 0.803, p <0.01). However, only biospheric values significantly affected sustainable consumption behaviours (β= 0.602 p < 0.01), supporting $H_{1b.}$ There was no effect between altruistic values and sustainable consumption behaviours; H_{1a} was not supported (β= 0.129, p>0.05).

Regarding $H_{2,}$ the relationship between personal values and norms was also statistically significant (β= 0.611, p <0.01). The effects from the sub-hypotheses (altruistic values and

norms and biospheric values and norms) were also supported by the study findings, i.e., H_{2a} (β= 0.208, p < 0.05) and H_{2b} (β= 0.656 p < 0.01) respectively.

The path coefficient between norms and sustainable consumption behaviours was also positive and significant (β=0.322, p<0.05), thus supporting hypothesis 3. Consequently, both H_{3a} (β=0.278, p<0.05) and H_{3b} (β= 0.444, p <0.05) were supported by the study results.

5.2. The Mediating Effect Analysis

H_4, which tested the mediating role of norms on the relationship between personal values and sustainable consumption behaviours, was also positive and statistically significant (β= 0.197, p <0.05). Also, at the sub-hypothesis level, mediation results for both personal norms (β= 0.151, p <0.05) and social norms (β= 0.268, p =0.001) were positive and statistically significant. Therefore, the study findings supported H4, H4a, and H4b.

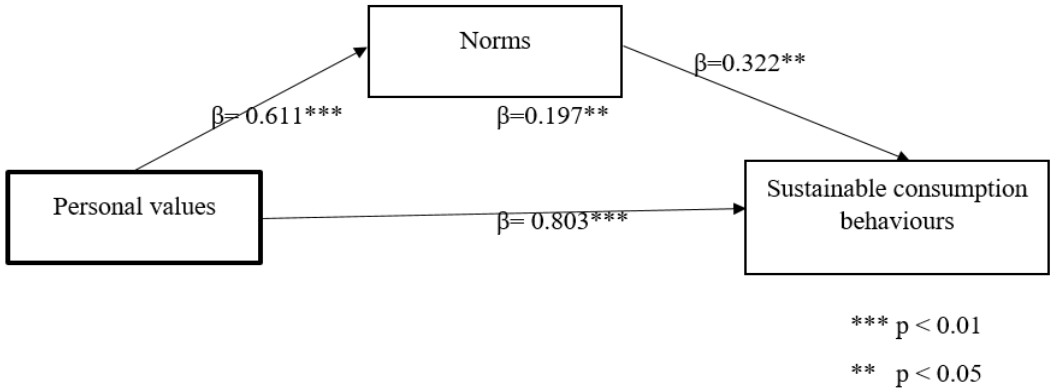

Figure 2. Indirect effect of personal values on sustainable consumption behaviours

Table 13.
Standardised Indirect Effect Estimates, Mediator: Norms

	Personal Values
Sustainable Consumption Behaviour	[β = .197, p=.030]

Table 14.
Summary of study results

Hypothesis	**Results**	**Status**
H_1	(β= 0.803, p <0.01)	Supported
H_{1a}	(β= 0.129, p>0.05)	Not supported
H_{1b}	(β= 0.602 p < 0.01)	Supported
H_2	(β= 0.611, p <0.01)	Supported
H_{2a}	(β= 0.208, p < 0.01)	Supported
H_{2b}	(β= 0.656 p < 0.01)	Supported
H_3	(β= 0.322, p <0.05)	Supported
H_{3a}	(β=0.278, p<0.05)	Supported
H_{3b}	(β= 0.444, p <0.05)	Supported
H_4	(β= 0.197, p <0.05)	Supported
H_{4a}	(β=0.151, p<0.05)	Supported
H_{4b}	(β= 0.268, p= 0.001)	Supported

5.3. Discussion of Findings

According to the first hypothesis, the results show that personal values positively affect sustainable consumption habits. This implies that consumers tend to behave in ways that lead

to the protection of aspects they deem valuable. Several other studies, such as Kumar et al. (2020) and Rizkalla et al. (2019), corroborated these results. However, sub-hypothesis 1a showed that altruistic values did not affect the behaviours in a significant way. This negative connotation has been confirmed by earlier scholars (Caniëls et al., 2021). On the other hand, several studies (Gomes et al., 2022; Hyun & Seock, 2019) have found that biospheric values positively affect sustainable consumption behaviours.

Regarding hypothesis 2, which says that personal values and norms are related positively, the results agree with Whitley et al. (2018), who also found that college students' values affected their norms toward sustainable actions. Also, the study results from sub-hypotheses 2a and 2b have been confirmed in the past (Francis & Sarangi, 2022).

The results of the study also show that norms are related to sustainable consumption behaviours in a positive way, which supports Hypothesis 3. This is consistent with previous studies (Bai & Bai, 2020; Le & Nguyen, 2022). Several studies also agree that personal norms can directly lead to several sustainable consumption behaviours, such as visitors' sustainable waste binning behaviours (Esfandiar et al., 2019), curtailment behaviours (Rizkalla et al., 2019), and agro-tourism (Le et al., 2021). Hassan et al. (2022) and Le and Nguyen (2022) concur that personal norms are the most critical factor in determining sustainable consumption behaviours in different situations.

In this study, however, it was found that social norms have a more significant effect on how Ugandan beverage consumers act in ways that are good for the environment. Ahn et al. (2020) found that descriptive and injunctive social norms were essential predictors of eco-friendly behaviour when buying clothing. Slocum et al. (2022), in support of H3b, found more proof when examining how people act at Renaissance fairs.

The results of our study also show that norms provide a positive link between personal values and sustainable drinking behaviours among beverage consumers, which fits with what other studies (Ghazali et al., 2019; Megeirhi et al., 2020; Whitley et al., 2018) have shown to be true.

Many scholars have found evidence that when people have personal values, they feel a moral obligation to act in ways that keep the things they care about from getting destroyed, in line with hypothesis 4. Studies have shown that personal norms bridge personal values and sustainable consumption behaviours (Gomes et al., 2022). As suggested by sub-hypothesis 4b, social norms also played a significant mediating role. Prior studies have demonstrated this significance (Ahn et al., 2020; Gkargkavouzi et al., 2019).

6. Conclusion

This study investigated the relationship between personal values, norms and sustainable consumption behaviours of beverage consumers in Central Uganda. The data were collected in a survey using a questionnaire instrument. Beverage consumers residing in Central Uganda were the study participants. The study findings revealed that consumers with biospheric values and social norms were more inclined to engage in sustainable consumption. Accordingly, managers of beverage manufacturing companies are advised to adjust their sustainability campaigns to target these consumers' predispositions. The Ugandan government should also amend its environmental policies so consumers can quickly adopt them.

6.1. Theoretical Implications

This research added to existing research in these ways: first, it highlighted that biospheric values, personal norms, and social norms influence sustainable consumption behaviours of

beverage consumers in Central Uganda. Prior research was mainly done on tourist, student, apparel, and farming consumer groups from developed countries. The study also extended the value belief norm (VBN) theory by including social norms. The findings revealed that social norms had a more significant impact than personal norms as mediators in the VBN theoretical framework. This confirms the successful integration of social norms into the VBN theory and the applicability of the extended VBN theory to the Ugandan context.

6.2. Practical Implications

First, the study revealed that biospheric values positively influenced beverage consumers' sustainable consumption behaviours. To preserve the environment, beverage manufacturing companies should run advertisements on various media platforms instructing consumers on how to consume plastic-packaged beverages sustainably. In addition, media advertisements should be created to elicit social norms among consumers, as these were found to have a more significant effect on SCBs. Messages such as "the majority of consumers recycle their waste" or "the majority of people in society support proper waste disposal" should be conveyed to beverage consumers. Beverage companies should also implement incentives for plastic bottle recovery, such as rewarding consumers who dispose of plastic bottles properly or return them in bulk for recycling.

Government institutions should also conduct extensive community-based awareness campaigns to educate the populace about the dangers of plastic pollution to the environment. These campaigns should emphasise the importance of adequately recycling, reusing and disposing waste as socially acceptable norms within the community. Moreover, these institutions should impose strict penalties on individuals who continue to dispose of plastic bottles improperly. Ultimately, government institutions must adapt their environmental policies to align with consumers' values and societal norms surrounding sustainable consumption behaviours.

6.3. Limitations and Areas for Further Studies

This study had the following limitations. It was focused on the Central region of Uganda, which is predominantly urban and only referred to plastic-bottled beverages. The study findings were not generalisable to the rural areas of this country, yet the beverage consumers there may behave differently, given their location. There are also other products in Uganda whose consumption effects can be detrimental to the environment, yet they can be consumed sustainably (i.e., metal and clothes). Second, the study followed a cross-sectional time frame in conducting the research; hence, a longitudinal approach could also be appreciated. Also, personal values and norms only predicted 19.7 per cent (adj R^2) of the variance in sustainable consumption behaviours. The other percentage can be attributed to other antecedents of the behaviours. Therefore, future researchers should consider these areas in their subsequent research on sustainable consumption behaviours among Ugandan consumers.

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