
Drivers of sustainable consumption in a developing Sub-Saharan African setting: Nigerian academic staff perspective

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Abstract: Sustainable consumption behaviour is silently becoming a pivotal phenomenon in Nigeria and other Sub-Saharan Africa countries which arguably is affecting purchase patterns. Despite the amazing growing interest in sustainable consumption, minimal research attention has been invested in this domain to deepen and broaden understanding regarding those factors that culture sustainable consumption behaviour. Questionnaire served as data collection instrument from a sample of 3,495 academic staff randomly drawn from nine universities in Southern Nigeria. Data were analysed using structural equation modelling technique regarding hypothesised relations in the model. Convergent and discriminant validity were checked; reliability was assessed to determine the internal consistency of the measurement items. Environmental concern and educational level are primary drivers; health concern, income status, and quality insignificantly influence sustainable consumption. A sustainable consumption model was developed based on the findings. Potential policy and managerial implications were discussed; possible areas for further studies were highlighted.

Keywords: sustainable consumption; drivers; Sub-Saharan Africa; academic staff; Nigeria.

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1 Introduction

The global human family and the world systems are increasingly destroying the earth through their unsustainable consumption patterns. However, the need to build a sustainable global consumer family is increasingly gaining momentum across economies and demographics especially in developing African economies where sustainable consumption behaviour is still evolving and research evidence is relatively scarce. Arguably, the paucity of sustainable consumption research from developing countries may be partially linked to the favourable ecological footprint being enjoyed by most developing nations of the world, particularly African countries (Galli, 2015; Galli et al.,

2017; Global Footprint Network, 2016). For instance, Global Footprint Network in its 2016 Ecological Footprint Annual Report indicates that the ecological remainder in global hectares per person (gha/pers) for Sudan is 0.69 gha/pers, Guinea is 1.18 gha/pers, and Gabon is 27.88 gha/pers. Global Footprint Network argues that with a population of over 180 million people, Nigerian's ecological footprint in global hectares per capital is put at 1.44 gha/per person. However, the bio-capacity in global hectares per person is 1.12 gha/per. Hence the ecological remainder for Nigeria is -0.32 , which makes Nigeria an ecologically debtor nation. At -0.32 , Nigeria's ecological debt status is low when compared to USA whose ecological footprint stands at -8.00 . This somewhat favourable ecological footprint among developing nations seems to be cultivating sustainable consumption complacency, inaction and leapfrogging culminating in unsustainable consumption patterns among its citizens including Nigerians. In contrast, most developed countries are heavy ecology debtor nations with high unfavourable ecological footprint. For instance, United Arab Emirate is -9.83 gha/pers, the USA is -4.13 gha/pers, and Germany is -3.16 gha/pers.

It may be construed that developing nations' contributions towards global ecological threat is minimal compared with that of developed countries of the West and industrialised Asian countries. This observation appears consistent with the remarks of European Commission [as cited in Jones et al., (2014), p.702] regarding European environment. Jones et al. (2014) warned that "Europe's environmental footprint is one of the largest on the planet and argues that if the rest of the world lived like Europeans, it would require the resources of more than two and a half earths to support all of us." This landmark comment reinforces the views of Ukenna and Nkamnebe (2016, p.2) who assert that "52% of nations in the Sub-Saharan Africa (SSA) and indeed Africa are sustainability creditor nations while the few sustainability debtor nations in the SSA have very low ecological debt status compared to highly industrialised Western and Asian nations."

Consequently, there is growing body of knowledge relating to environmental challenges stemming from the consumption lifestyle of the rich especially within developed nations of the world (UNEP, 2010). The import being a somewhat neglect of research that target the consumption patterns of the poor, who dominate the bottom of the pyramid (Bharti et al., 2014). This neglect seems to under-estimate the potential sustainability implications of this group characterised by their high population and consumption to meet their basic needs. Perhaps, global sustainable consumption issues seem to be based on country-development-taxonomy. Most of the world's poor and rapidly emerging middle-income class that often engages in compulsive consumption as means of redefining their status live largely in developing countries; Nigeria's quest for rapid development requires consistent emphasis on responsible consumption (Ukenna and Nkamnebe, 2016).

In attempt to manage the overall global ecological challenge, country-based and context-specific solutions that are informed by research have been advocated (UNEP, 2007). This clarion call applies to both ecological debtor and ecologically creditor nations of the world. Again, literature is replete with conflicting findings and somewhat unresolved debate on drivers of sustainable consumption especially among different countries with favourable ecological status (Bulut et al., 2017). Relatedly, there is dearth of country-specific sustainability research particularly from Nigeria which is perceived as the arrowhead of SSA economy. Arguably, researches conducted on sustainable

consumption in Nigeria can fairly proxy sustainable consumption behaviour in SSA. Importantly, previous research has undermined the survey of university academic staff globally recognised as ‘knowledge creator and innovation-dissemination’ agent. This, therefore, calls for further research using university academic staff to deepen and broaden understanding and probably sieve the inconsistencies that characterise previous studies on sustainable consumption using Nigeria-based data.

Taken together, this paper seeks to:

- 1 unravel those factors that drive sustainable consumption behaviour in a typical developing economy such as Nigeria
- 2 develop a sustainability consumption model to guide policy makers and marketing management.

2 Literature review and hypotheses development

Studies and reports on drivers of sustainable consumption have been country-specific with contradictory results (Bulut et al., 2017; Wang, 2016; Young et al., 2010; Zeegers and Clark, 2014). Therefore, there are no universally acceptable drivers of sustainable consumption. A number of extant studies corroborate this assertion. For instance, a study by Young et al. (2010) in the United Kingdom (UK) explored the micro-purchase process for green consumers in relation to consumer technology products, reported green labels, specialist information, wide availability, and feelings of guilt as the key facilitators of sustainable consumption within the consumer technology product domain.

Bulut et al. (2017) explored the potency of gender as driver of sustainable, indicating that women showed higher level of sustainable consumption behaviour. The study by Wang (2016) revealed that three factors of environmental attitude – environmental concern (EC), environmental efficacy, and perceived environmental effectiveness are common drivers of sustainable consumption behaviour at individual level within the countries examined. Wang further noted variations for countries along income levels for environmental governance being driver of sustainable consumption behaviour. Taken together, both Bulut et al. (2017) and Wang confirmed that there are country-based differences on what motivates sustainable consumption at individual level. In the remaining section of this literature review, we explore the drivers of sustainable consumption and develop conceptual hypotheses.

2.1 Environmental concern/perceived consumer effectiveness

The debate in favour of perceived consumer effectiveness (PCE) as a driver of sustainable consumption began in 1979 when Henion and Wilson (as cited in Ellen et al., 1991) averred that the challenge for sustainability marketers would not be to encourage everyone in the segment to engage in some pro-ecological activity but to identify the specific attitudinal and personality traits associated with a consumer’s willingness to engage in a specific class of action and then link those attitudes and behaviour through targeted messages. They further argued that sustainability marketers must get people who are aware of environmental problems and who place a high priority on solving these

problems on their concerns. The coinage and initial usage of the PCE term is credited to Kinnear et al. (cited in Ellen et al., 1991), which is “conceptualized and measured as the extent to which the consumer believes that the efforts of an individual acting alone can make a difference.” It is basically a measure of an individual belief that he or she can have an effect on environmental issues (Rasool and Ogunbode, 2015; Marquart-Pyatt, 2012) whereas Schwepker and Cornwell (1991) also named it locus of control.

The term ‘environmental concern’ (Rasool and Ogunbode, 2015; Hirsh, 2010) and ‘perceived environmental effectiveness’ (Ellen et al., 1991) are used interchangeably in literature. Consequently, a number of studies have posited EC as key motivator of sustainable consumption. For instance, plethora of studies (Doran, 2009; Ferran and Grunert, 2007) all reported EC as key motivator of sustainable consumption. It is unclear whether academic staff in Southern Nigeria largely beset with efforts to meet basic needs are responsive to PCE/EC. Hence, we formulate the hypothesis:

H₁ EC is a significant driver of sustainability intention/attitude (IA) among university academic staff in Southern Nigeria.

2.2 *Health concern*

Health issues are intensely receiving attention in global sustainable development debate (WHO, 2002). This is, perhaps, due to the health-environment-development nexus at macro levels. Hence it has been advocated that the human family is entitled to a healthy and productive life in harmony with nature (WHO, 2002). Chapter 6, Agenda 21, emphasise the fundamental commitment in sustainable development geared towards ‘protecting and promoting human health’. The worry is: what are individuals doing to respond, embrace, and drive sustainable health concerns? Unfortunately, the pursuit of a healthy life style that is in harmony with nature has been a quagmire (Reisch et al., 2013); almost a mirage at individual and household levels in Southern Nigerian. Recently, sustainable food consumption which mirrors health concern and quest for sustainable lifestyle that is harmonious with nature is being noticed (Boischio et al., 2009). Interestingly, health-poverty-development nexus has taken a different shift in extant debate (Reisch et al., 2013; Ukenna and Nkamnebe, 2016; WHO, 2002). Health is far more central to poverty reduction than previously thought, and that realisation is now beginning to shape governments’ and global policies (WHO, 2002). It has been known for years that people who are poor are more likely to get sick. Indeed, there is a growing body of knowledge about how ill-health creates and perpetuates poverty, triggering a vicious cycle which hampers economic and social development and contributes to unsustainable resource depletion and environmental degradation (Boischio et al., 2009; Mackay and Wolbring, 2013). Evidence suggests that health gains trigger economic growth; if the benefits of that growth are equitably distributed, it can logically lead to poverty reduction (WHO, 2002). Given this line of thought, health concern as a driver of sustainable consumption among academic staff in Southern Nigeria is unclear. Hence, the researchers hypothesise that:

H₂ Health concern (HC) is a significant driver of sustainability IA among university academic staff in Southern Nigeria.

2.3 *Income status*

There is a growing body of empirical evidence corroborating a steady rise of the middle class in Africa, which is a tacit indicator of poverty reduction (AfDB, 2010). Projections suggest that by 2030 much of Africa will have attained lower and middle-class majorities, and that Ethiopia, Nigeria and South Africa are expected to provide the largest number of new middle class (AfDB, 2010).

Taken together, the foregoing evidence of growing middle class in the SSA, though more of ‘floating-middle-class’ typology (AfDB, 2010), forcefully demonstrates a rising IS with a potential implication for sustainable consumption behaviour. Whether the growing purchasing power/income status (IS) of the burgeoning middle class in the SSA will drive the purchase of sustainable products is somewhat still debatable. The potency of the IS construct at predicting sustainable lifestyle is well established in mainstream sustainability debate, because it is a key denominator of the willingness-to-buy (WTB) sustainable products (Morgan and Birthwile, 2009).

Straughan and Roberts (1999) noted that “income is generally thought to be positively related to environmental sensitivity.” Straughan and Roberts posit that most common justification for this belief is that individuals can, at higher income levels, bear the marginal increase in costs associated with supporting green causes and favouring green product offerings. A number of studies (Straughan and Roberst, 1999) have addressed the role of income as a facilitator of sustainable consumption behaviour. Previous studies (Jones et al., 2014; Keleş, 2017; Young et al., 2010) explored developed Western context that is historically characterised by a robust high middle class; they tend to exhibit higher WTP sustainable products regardless of the premium prices for sustainable products. This may be debatable for the developing-country context like Nigeria that is characterised by a daisy and floating growing middle class that are likely to demonstrate weak WTP for sustainable products. Sequel to this line of debate, we formulate the following hypothesis:

H₃ IS is a significant driver of sustainability intention (IA) among university academic staff in Southern Nigeria.

2.4 *Educational level*

Strong nexus seems to exist between knowledge and behavioural change (Zeegers and Clark, 2014). Though a true change should be organic; however, knowledge is the compass for organic behavioural change (Bianchi and Mortimer, 2015; Zeegers and Clark, 2014). There is a common dogma within religious cycles that the greatest enemy of the human family is ignorance (Munroe, 2002). Education, or better still, sustainability education (Ukenna and Nkannebe, 2016) has been described as a potent determiner of future sustainable lifestyle in Nigeria.

Studies (Bashir et al., 2018; Bianchi and Mortimer, 2015) have linked education to sustainable consumption behaviour. The findings regarding education as a predictor of sustainable consumption has been fairly consistent across studies (Roberts, 1995; Straughan and Robert, 1999). On the contrary, Samdahl and Robertson (1989) report a negative connection between education and sustainable consumption behaviour. Theoretically, education is envisioned as an invaluable asset capable of redefining

behaviour including sustainable consumption behaviour (Zeegers and Clark, 2014). This is even more obvious in nation that has huge and rapidly growing youth population desperately hungry for Western education in order to transform the economy and/or behaviour of man. United Nations (2015) reports that in the past two decades Sub-Saharan Africa has achieved a large increase in youth literacy and a burgeoning middle class. The effect of the growing educational level (EL) on sustainable consumption behaviour of university academic staff deserve some empirical investigation. On the basis of this narration, we hypothesise that:

H₄ EL is a significant driver of sustainability IA among university academic staff in Southern Nigeria.

2.5 Quality/trust

A number of studies have found significant relationship between the quality of sustainable product and the intention to purchase. For instance, Hughner et al. (2007) reported perceived high quality as one of the key drivers of the purchase of organic food. The study by Padel and Foster (2005, p.616) found that “visual product quality and presentation” is one of the key motivations for the purchase of organic food. Smith and Paladino (2010) and Mondelaers et al. (2009) reported that product quality significantly influenced consumer green purchase intention and behaviour. Similarly, the study of Aertsens et al. (2011) found support for perceived high quality of green products having positive influence on consumer green purchase intention.

In a more recent study, Joshia and Rahman (2016, p.454) maintained that “functional and sustainable characteristics of products combined with high product quality positively influence consumers’ green purchase behaviour.” They also noted that “poor product attributes and inferior quality may result in a conflict between personal needs of consumers and their sense of environmental and social responsibility, which may further increase the inconsistency between attitude and actual buying actions.” Traditionally, perceived product quality is a magnet that draws consumers closer to the product and facilitates initial trial. In developing economy like Nigeria where sustainable consumption behaviour is in infancy, the ranking and perhaps consumption of sustainable products in relation to ‘environment-hostile products’ [Joshia and Rahman, (2016), p.458] currently dominant in most retail points is somewhat cloudy. It is not clear if the perceived quality of sustainable products and trust for sustainable products can influence sustainable consumption behaviour among academics. Accordingly, the researchers conceptualise the following hypothesis:

H₅ Quality/trust (QT) of sustainable product is a significant facilitator of sustainability IA among university academic staff in Southern Nigeria.

2.6 Intention/attitude and patterns of sustainable consumption

Generally, individual behaviour manifest in different patterns as depicted in the person’s lifestyle or the person’s action. Reviewed literature (Joshia and Rahman, 2016; Young et al., 2010) is somewhat consistent as to what constitutes patterns of sustainable consumption behaviour. There are four ways sustainable consumption behaviour (or

sustainable lifestyle) manifest among individuals: green purchase (Gonçalves et al., 2016; Odiya and Adekunle, 2017; Young et al., 2010), recycle behaviour (RB) (Suki, and Suki, 2015; Vining and Ebreo, 1990), waste management (Jaca et al., 2018) and renewable energy (Seyfang, 2004). The four prisms from which sustainable consumption is viewed is commonly mediated by intention or attitude (Toni et al., 2017) as posited in consumer psychology research (Ajzen and Fishbein, 2002). Accordingly, a number of sustainability marketing studies have empirically proven that sustainability intention is a predictor of sustainability consumption behaviour (Staats, 2003; Egmond and Bruel, 2007). Although intention is a strong predictor of action or behaviour; however, sometimes intention may not translate into behaviour/action. This gap has given rise to what is referred to as intention-behaviour gap (Naidoo, 2010). This study provides further insight into the relationship using data from academic staff. Thus, we hypothesise as follows:

- H₆ Sustainability IA is a significant predictor of green purchase decision (GPD) pattern of sustainability behaviour.
- H₇ Sustainability IA is a significant predictor of RB pattern of sustainability behaviour.
- H₈ Sustainability IA is a significant predictor of renewable energy/transport (RET) pattern of sustainability behaviour.
- H₉ Sustainability IA is a significant predictor of waste management/reduction (WMR) pattern of sustainability behaviour.

3 Method

In the absence of database for self-professed sustainable consumers and consistent with the studies of De Pelsmacker et al. (2005a, 2005b) and Keleş (2017), the respondents of this study are university academic staff drawn from nine universities in Southern Nigeria. Three university types (federal, state, and private) were randomly selected from the three geo-political zones of southern Nigeria. In each zone, one federal, state, and private university were selected in order to enhance the representativeness of the respondents. The selection of university type was based on convenience.

Three reasons informed the choice of academic staff as unit of analysis. First, there is no sampling frames, databases or records of sustainable or self-professed green consumers to survey at the moment in Southern Nigeria. A cohort such as university academics becomes a proxy and possible alternative consumer group. Also, previous studies (De Pelsmacker et al., 2005a, 2005b; Keleş, 2017) in sustainable consumption domain have utilised academic staff as respondents; therefore, choice of academic staff in this research fits with evidence in the sustainable consumption literature. Third, there is a presumption that academic staff is agents of behavioural change in the society; this notion places them in the position to diffuse and transmit innovation much rapidly and easily to the larger society. Potentially, insights from academics may be invaluable in policy prescriptions aimed at promoting sustainable consumption behaviour and marketing strategy designs and choices.

The population for the study is 16,365 academics. Sample size of 3,495 was statistically determined. A total of 3,495 copies of questionnaire were administered to academics in the select universities. Number of copies of questionnaire allocated to each university was proportional to the number of academic staff in each university. After

editing, 2,169 copies of the questionnaire, representing 62% valid responses were used for analysis. The high response rate was due to a number of strategies taken. The first strategy was to recruit and train two undergraduate research assistants from each university. In some universities visited, the research assistants were recommended by academic staff in that university whom the investigators had established communication for the purpose of the study. The research assistants were paid wages on daily basis for a minimum of seven working days. The research assistants and the researchers, spent average of seven day in each university in order to distribute and collect questionnaire from respondents using drop-and-pick method. The data for the study was collected from September 2015 to April 2016 (being a period of eight months).

Since the respondents are human participants involving the use of survey to collect data about behaviour, ethical considerations were observed. Firstly, the researchers received approval from their university's Institutional Review Boards after review of the research protocol and instrument for data collection. Secondly, with trained research assistants the legal capacity of respondents was ensured as all are academic staff; the respondents were allowed to choose whether to participate in the survey or not. Thirdly, all necessary disclosure about the survey was made to the respondents to get informed consent.

The dependent variable (i.e., patterns) is measured using 36 items, which are broken down into four dimensions – renewable energy/transportation (six items); sustainability-driven GPD (13 items); RB (seven items); and waste management behaviour (ten items). Most of the 36 pattern items and the intention items were drawn (with minor adjustments to reflect the Nigerian context) from the ecologically conscious consumer behaviour (ECCB) scale developed by Roberts (1995) and the socially responsible consumption behaviour (SRCB) scale developed by Antil (1984). All items were measured on a five-point Likert-scale descriptor ranging from strongly disagree to strongly agree. The instrument was subjected to reliability and validity test based on pilot-study using 92 university staff not included in the sample. This resulted in a Cronbach's alpha value of 0.836, indicating that the set of items shows good internal consistency.

4 Analysis and result

4.1 Demographic profile of the respondents

Table 3 presents an overview of the socio-demographics of the respondents. With respect to Academic Staff status of the respondents, 100%, that is, all the respondents indicated that they are academic staff of surveyed university. The gender distribution of the respondents indicates that 48.7% are male, while 51.3% are female. Although the percentage difference is very small (2.6%), there are more female respondents in this study over male respondents. With respect to marital status of respondents, 31.5% of the respondents are single, 65.5% are married, 1.8% are divorced, and 1.2% are either widow or widower. Evidently, most of the respondents are married. In addition, since most of the respondents are married and are educated; it is somewhat possible that sustainability knowledge sharing may be high between couples as they manage their homes. By this token, the quality of responses is likely to be high and dependable.

Based on the three, (federal, state, and private) typology of universities, statistics regarding Respondent's University of employment shows that for federal universities, 25.0% was drawn from University of Nigeria (UNN); 18.3% was drawn from University of Ibadan (UI); 28.4% was drawn from University of Benin (UNIBEN). When summed, total percentage of respondents drawn from federal universities is 71.4%. For state university typology, 6.4% of the respondents were drawn from Olabisi Onabanjo University (OOU), 8.3% were drawn from Ambrose Ali University (AAU), and 4.7% was drawn from Abia State University (ABSU). Accordingly, the total percentage of respondents drawn from state universities was 19.4%. For private university typology, 2.9% respondents were drawn from Covenant University (CU), 2.4% was drawn from Madonna University (MU), and 3.5% was drawn from Igbenedion University (IU). The total percentage of respondents drawn from private universities was 8.8%.

Taken together, percentages of respondents drawn were thus: federal universities (71.4%), state universities (19.4%), and private universities (8.8%). This result may be explained by the fact that federal universities have higher staff strengths partly due to funding; the sampled federal universities are among the very earliest universities in Nigeria.

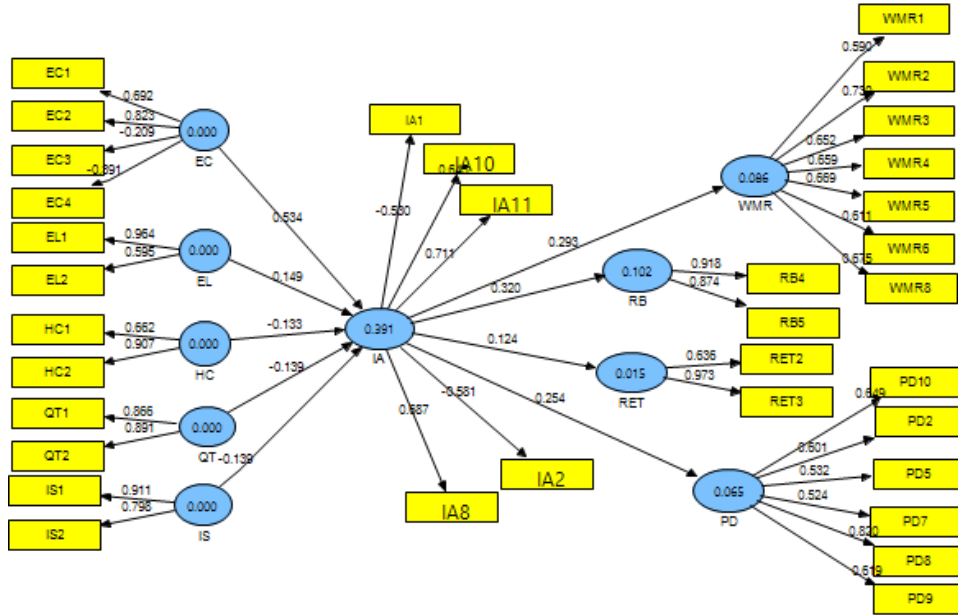
With respect to religion of the respondents, 96.6% of the respondents are of the Christianity religion, 1.6% are of the Islamic religion, 0.6% are of the African Traditional Religion, and 1.2% represent other religion. The reason for the large number of respondents being Christians is because Southern Nigeria is largely dominated by Christians. The distribution of respondents' educational qualifications indicates 15.1% of the respondents hold PhD degree, 37.6% hold Master's degree, 41.4% hold first degree or its equivalent, and 5.9% hold OND or WASC. Given these statistics, all the respondents are sufficiently educated to be included in the study's sample.

With respect to the educational qualification of spouse of the respondent, 7.2% hold PhD, 24.3% hold Master's degree, 57.7% hold first degree or its equivalent; while 10.8% hold OND or WASC or its equivalent. In the light of these statistics, the entire respondents' spouses are fairly educated and, therefore, are likely to possess reasonable knowledge of sustainability issues. Finally, regarding statistics of car ownership status of respondents, 72.2% of the respondents own a car, while 27.8% of the respondents do not own a car.

4.2 The GoF and explanation of target endogenous variable variance

The calculated global goodness of fit (GoF) is 0.47, which exceeds the threshold of $GoF > 0.36$ suggested by Wetzels et al. (2009). Thus, this study concludes that the research model has a good overall fit; thus, providing support that the proposed theory fits reality. This demonstrated by the PLS-SEM path diagram (Figure 1) based on numbers in the circle and numbers on the arrow. The numbers in the circle show how much the variance of the latent variable is being explained by the other latent variables. Numbers on the arrow are the path coefficients. They explain how strong the effect of one variable is on another variable. The weight of different path coefficients enables us to rank their relative statistical importance.

Figure 1 SEM output (see online version for colours)



The coefficient of determination, R^2 , is 0.391 for the IA endogenous latent variable. This means that the five latent variables (EC, EL, HC, QT, and IS) somewhat moderately explain 39% of the variance in IA. Hence, other factors not included in the model explain 61% (i.e., 100% – 39%) of the variance in IA. Further, IA alone explains 9% (0.086), 10% (0.102), 2% (0.015) and 7% (0.065) of the variance in WMR, RB, RET, and GPD, respectively.

4.3 Inner model/structural model path coefficient sizes and significance

The inner model suggests that EC (0.534) has the strongest effect on IA with a path coefficient of 0.534. This is followed by EL (0.148), HC (–0.133), QT (–0.139), and IS (–0.139) respectively. The various effect levels of the independent variables on IA represent the rank order of importance of the drivers using their path coefficients on the arrow. The hypothesised path relationship between EC and IA is statistically significant because its standardised path coefficient (0.534) is greater than the 0.05 significant level. Hence, we accept H_1 that EC is predictor of IA. Similarly, the hypothesised path relationship between EL is statistically significant since the standardised path coefficient (0.148) is greater than the 0.05 significant level. Thus, we accept H_4 that EL is a predictor of IA. However, the hypothesised path relationship between HC, QT, and IS, respectively and IA are not statistically significant due to their low and/or negative standardised path coefficients (–0.133; –0.139; and –0.139, respectively) being below the significant level of 0.05. Hence, we reject the H_2 , H_5 , and H_3 . Thus, we conclude that EC and EL are the primary predictors of IA; however, HC, QT, and IS do not predict IA. This conclusion is temporal pending checking structural path significance in bootstrapping.

Further, using structural path coefficient (SPC), the hypothesised relationship between IA and WMR shows that there is statistically significant relationship since the

linkage's SPC of 0.293 is greater than the significant level of 0.05. Hence H_9 is accepted. Similarly, support is found for hypothesised relationships between IA and RB; IA and RET; and IA and GPD since their SPC of 0.320, 0.124, and 0.254, respectively are all greater than the significant level of 0.05. Hence, we accept H_7 , H_8 , and H_6 . As earlier noted, the decisions to accept or reject the hypothesised relationships above are all tentative since the SPC estimate alone cannot be used to draw conclusion. Accordingly, additional insight was provided using bootstrapping approach in SmartPLS. The two estimates were put side by side to enable the researchers make final conclusion.

4.4 Outer model loadings and indicator reliability

It is essential to establish the reliability and validity of the latent variables to complete the examination of the structural model. Table 1 shows the various reliability and validity of items. The constructs have individual indicator reliability (or factor loadings) values that are much larger than the minimum acceptable level of 0.7 (Pallant, 2007), thus establishing reliability and validity.

Table 1 Accuracy and adequacy analysis

<i>Construct</i>	<i>R² value</i>	<i>Cronbach's alpha</i>	<i>C.R. value</i>	<i>AVE value</i>	<i>AVE square</i>	<i>Factor loading</i>
RET	0.015	0.612	0.800	0.676	0.822	0.973
RB	0.102	0.757	0.891	0.803	0.896	0.918
WMR	0.086	0.783	0.841	0.531	0.728	0.730
PD	0.065	0.727	0.796	0.599	0.773	0.820
IA	0.391	0.653	0.625	0.602	0.775	0.711
HC	0.000	0.644	0.769	0.631	0.794	0.907
QT	0.000	0.706	0.871	0.772	0.878	0.891
IS	0.000	0.646	0.845	0.733	0.856	0.911
EC	0.000	0.746	0.640	0.538	0.733	0.891
EL	0.000	0.528	0.772	0.641	0.800	0.964

Note: CR: composite reliability; AVE: average variance reliability.

4.5 Internal consistency reliability and convergent validity

Traditionally, 'Cronbach's alpha' is used to measure internal consistency reliability in social science research, but it tends to provide a conservative measurement in PLS-SEM (Wong, 2013). Prior literature has suggested the use of 'composite reliability' as a replacement (Bagozzi and Yi, 1988; Hair et al., 2012). From Table 1, such values are shown to be larger than 0.6; reliability of all the ten reflective latent variables is therefore demonstrated. To check convergent validity, each latent variable's average variance extracted (AVE) is evaluated. Again, from Table 1, it is found that all the AVE values are greater than the acceptable threshold of 0.5, so convergent validity is confirmed.

4.6 Discriminant validity

The inter-construct cross-loadings provide insight for the purpose of discriminant validity. Hair et al (2010) argue that the presence of high cross-loadings indicates a

discriminant validity problem and, by extension, the SEM CFA fit would not be good. Using the cross-loading threshold of 0.7 recommended by Hair et al, any cross-loading above 0.7 threshold is considered to be high and there is no distinctiveness between the two constructs. In the present study, the cross-loadings are low, with the highest being 0.567 (i.e., HC/EC cell). Others are 0.503 (i.e., WMR/PD cell) and 0.351 (i.e., QT/IS cell). Some of the cross-loadings of relationship between construct are negative. The negative and low cross-loadings in the inter-construct correlation matrix is a clear indication of distinctiveness of constructs and absence of discriminant validity problem; thereby providing support for potential goodness fit of the model. Hence, each concept is significantly different.

Further, and consistent with SmartPLS, another approach for determining or corroborating the discriminant validity from the inter-construct correlation matrix is the use of the Fornell-Larcker criterion analysis. Fornell and Larcker (1981) (cited in Wong, 2013) suggest that the square root of AVE in each latent variable can be used to establish discriminant validity, if this value is larger than other correlation values among the latent variables. To do this, a table is created in which the square root of AVE is manually calculated and provided in Table 1. For example, the latent variable HC's AVE is found to be 0.631 (Table 1) hence its square root becomes 0.794. This number is larger than the correlation values in the column of HC (0.209, -0.187, 0.068, 0.029, 0.123, 0.076, and 0.162) and also larger than those in the row of HC (0.567 and 0.166). Similar observation is also made for the latent variables EC, EL, IA, IS, PD, QT, RB, RET, and WMR. The result indicates that discriminant validity is well established.

4.7 Checking structural path significance in bootstrapping

After bootstrapping, Table 2 shows the result. We check the numbers in the 'T-statistics' column to see if the path coefficients of the inner model are significant or not. Using a two-tailed *t*-test with a significance level of 5%, the path coefficient will be significant if the *T*-statistics is larger than 1.96. It can be seen that six linkages are not significant, they are: 'EL → IA'; 'HC → IA'; 'IS → IA'; 'QT → IA'; 'IA → RB'; and 'IA → RET'. However, three linkages are significant since their *T*-statistics value each is greater than 1.96 threshold. The linkages are: 'EC → IA'; 'IA → PD' and 'IA → WMR'.

Table 2 Results of structural equation model analysis

<i>Relationships</i>	<i>Hypothesis</i>	<i>Path coefficient</i>	<i>T-statistics</i>	<i>Rejected/supported</i>
EC → IA	H ₁	0.787	2.805	Supported
EL → A	H ₄	0.222	0.985	Not supported
HC → IA	H ₂	-0.254	1.153	Not supported
IS → IA	H ₃	-0.233	0.786	Not supported
QT → IA	H ₅	0.256	0.889	Not supported
IA → PD	H ₆	0.064	2.522	Supported
IA → RB	H ₇	0.176	1.489	Not supported
IA → RET	H ₈	0.076	1.126	Not supported
IA → WMR	H ₉	0.055	2.905	Supported

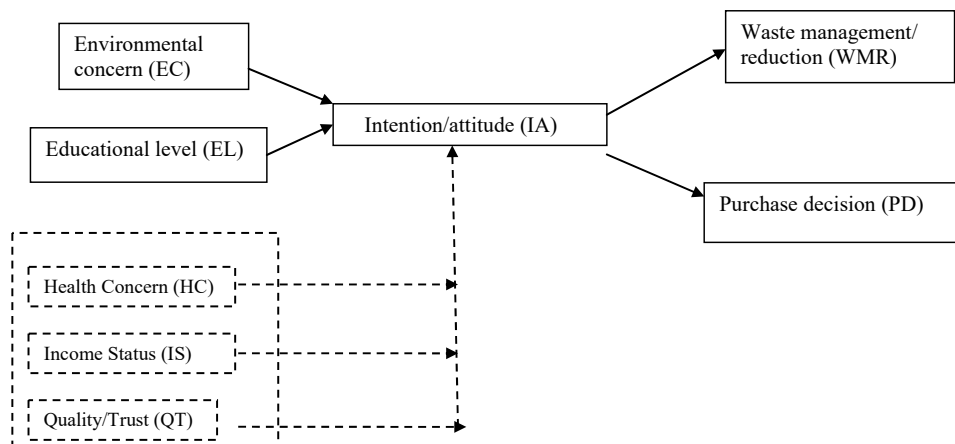
Table 3 Demographic profile of the respondents

<i>Demographic profile</i>	<i>Frequency</i>	<i>Percentage</i>
Academic staff status		
Yes	2,169	100%
No	0	0%
Gender		
Male	1,056	48.7%
Female	1,113	51.3%
Marital status		
Single	684	31.5%
Married	1,420	65.5%
Divorce	34	1.8%
Widow	26	1.2%
Respondents university of employment		
UNN	543	25.0%
UI	398	18.3%
UNIBEN	617	28.4%
OOU	139	6.4%
AAU	180	8.3%
ABSU	101	4.7%
CU	63	2.9%
MU	52	2.4%
IU	76	3.5%
Religion		
Christianity	2,095	96.6%
Islam	34	1.6%
African traditional religion	13	0.6%
Others	27	1.2%
Educational qualification		
PhD	327	15.1%
Master's degree	815	37.6%
PGD/first degree/HND	899	41.4%
OND/WASC	128	5.9%
Educational qualification of spouse		
PhD	156	7.2%
Master's degree	257	24.3%
PGD/first degree/HND	1,251	57.7%
OND/WASC	235	10.8%
Car ownership status		
Yes	1,567	72.2%
No	602	27.8%

Accordingly, we accept the hypothesis (H_1) that environmental concern (EC) is a key predictor of sustainability IA. Using the bootstrapping method, we do not find significant relationship between EL and IA; however, using the path coefficient approach, the relationship between EL and IA is statistically significant. Hence, we accept H_4 . Also, the hypothesis (H_6) that sustainability driven IA is a predictor of green purchase decision (PD). Finally, the hypothesis (H_9) that sustainability IA is a predictor of WMR also found statistical support and was accepted. Other hypothesised relationships did not find statistical support.

On the strength of the foregoing accepted hypotheses, the researchers posit the sustainable consumption model shown in Figure 2.

Figure 2 The sustainable consumption model



Source: Authors' conceptualisation

The posited sustainable consumption model depicted in Figure 2 argues that the key predictors of sustainability IA in Nigeria, and perhaps similar developing SSA context are EC and EL and that sustainability IA is a critical mediator between the drivers of sustainable consumption and the patterns of sustainable consumption. Further there are two ways sustainability behaviour manifest, which are: WMR and green purchased decision (PD). Figure 2 further argues that HC, IS, and quality trust (QT) may predict sustainability IA, but their predictive powers are weak and somewhat insignificant at the moment. The weakness in their predictive potency and the insignificance of their relationship with sustainability IA is depicted by the dotted upward arrows pointed towards IA.

5 Discussion

Juxtaposed with trajectory of debate in extant mainstream literature, the finding that intention is a mediator of sustainable consumption behaviour is consistent with Ajzen and Fishbein (2002) in their theory of planned behaviour (widely validated by many scholars in different context) which maintain that behaviour predictors can be mediated by intention. This, perhaps, informed the conceptualisation of the

knowledge-attitude-practice (KAP) gap by Westoff (1988) in social marketing that awareness relating to a subject, with a supportive attitude may not translate into actual behaviour. Guided by KAP, a number of studies (Devinney et al., 2009; McCarty and Shrum, 2001; Peattie, 2001) that included intention as mediating variable had shown that sustainability intention had not led to sustainability behaviour; hence, the KAP gap or attitude-behaviour gap in sustainability. Although their finding is a departure from the present study in that no support is found for the predictive power of attitude towards behaviour. In other words, in their study, sustainability attitude is a weak predictor of sustainability behaviour. This, perhaps, explains why some studies (Vermeir and Verbeke, 2006) outrightly did not include IA in their investigation.

The moderate predictive power of sustainability attitude on sustainability behaviour as unravelled by the present study sheds light on a number of sustainability-policy and strategy direction. For instance, since it is found that sustainability attitude moderately connects with sustainability behaviour, policy initiatives and strategies towards increasing sustainability attitude should dwell on developing messages around the key drivers, which in turn will, to an extent, foster sustainability behaviour. The question that readily follows is: which facilitator should be manipulated or reinforced to foster sustainability attitude? Symmetry was found for two key drivers – EC and EL along the three stage analyses.

As indicated in the literature section, a plethora of scholarly works have explored EC as a correlate of sustainability behaviour. Although the finding of Straughan and Roberts (1999) is a departure from the finding of the present study; however, the present finding is consistent with studies of Roberts (1995); Roberts and Bacon, (1997) which all found a positive correlation between the two. Variety in the context within which studies were executed has been approximately responsible for the equivocal divergence in findings (Straughan and Roberts, 1999). This divergence seems to lend credence to this present study since findings in those contexts may not be true for the present context.

The connection between EL and sustainability attitude is well established in mainstream sustainable consumption literature. For example, this linkage has been explored by Roberts and Bacon (1997); Straughan and Roberts (1999); Zimmer et al. (1994). Similar to the views of Straughan and Roberts (1999), the hypothesised relationship has been fairly consistent across these studies and, expectedly, many have reported positive correlation between education level and environmental attitude. Contrary to the present finding, Samdahl and Robertson (1989) found the opposite, that education was negatively correlated with environmental attitudes, and Kinnear et al. (1974) found no significant relationship.

It is important at this juncture to distinguish between EL facilitator and eco-literacy or eco-knowledge. A form of similarity abounds between sustainability knowledge (or eco-knowledge) and EL as somewhat established in the present study. EL and sustainability knowledge are different sides of the same coin, in that they are both predictors of sustainability attitude (Amyx et al., 1994; Chan, 1999; Vining and Ebreo, 1990). This perspective has to be considered with caution since the study did not primarily explore sustainability knowledge with sustainability intention.

EL narrowly relates to an individual's academic qualification; however, eco-knowledge refers to an individual's level of sustainability awareness. It is logical to recognise EL as a precursor to eco-knowledge; hence, an individual primarily have to be educated before the propensity to understand sustainability related issues. Therefore,

being educated is the starting point and a pathway towards fostering the appropriate sustainability attitude in the developing country context where the EL is still embryonic.

6 Conclusions

In broad terms, this study has demonstrated efforts towards bridging the sustainability attitude-behaviour gap within the sustainability domain by providing deeper insight. Specifically, this study has shown on the one hand that companies can engage the consumer and use facilitators to influence sustainable consumption and create business value. On the other hand, the study has demonstrated that government can foster sustainable consumption behaviour by deepening key sustainability facilitators. In the main, this study concludes that the drivers of sustainable consumption can significantly influence the promotion of sustainability attitude, which, in turn, can trigger and sustain increased manifestation of sustainable consumption behaviour in Nigeria and, perhaps, other developing country within the SSA.

7 Implications and recommendations

We reported in this study that EC is a key facilitator of sustainability intention. This seems to suggest that an individual must be convinced that his or her pro-environmental actions will be effective at fighting environmental issues (such as environmental degradation or wastes management challenge). This has implications for a variety of marketing activities. It suggests that environment-based marketing efforts should be explicitly linked with beneficial outcomes. Simply claiming to be 'green' is no longer enough. Instead, marketers must show how consumers choosing green products are helping in the struggle to preserve the environment.

Since a nexus is found between EL and sustainability intention, governments within the developing countries in the SSA, through policy initiatives, can consider greening university curriculum by introducing compulsory sustainability marketing courses at tertiary ELs. This way, sustainability-responsible and sustainability-driven future corporate chieftains and households are built.

Importantly, this study underscores the need for speedy sustainability awareness and rapid sustainability information dissemination in Nigeria and indeed, the Sub-Saharan African countries. This calls for active government involvement in this regard. Policy directive by relevant government agencies (such as ministry of environment and related parastatals) to increase sustainability educational programmes needs to be crafted and enforced urgently.

A national sustainability day (NSD) in most developing countries in Africa should be encourage and given necessary legislative backing. This is in addition to World's Earth day marked on every 22nd of April each year. Instituting the NSD will further foster and deepen sustainability awareness in the SSA given its nascent status.

Government at different levels in SSA region should raise prices of less sustainable products by raising their taxes and charges, while minimising taxes for sustainable products. This can be effective at influencing a shift in consumer behaviour towards sustainability through changing purchasing patterns. It could be assumed that taxes are

more efficient than regulations from an economic point of view and it gives more flexibility to households and firms to adapt. The implication is that government can use tax instrument to shift consumer product patronage and purchase decision.

8 Limitations and areas for further studies

A number of limitations in this study offer opportunities for further research. The use of academics may not be the best unit of analysis, but the absence of database and the nascent nature of sustainable consumption research in the region informed their usage. Future research could use other consumer class such as married women that determine largely what is consumed or used in homes in a typical African setting. The study was not tied to a sustainable product type due to awareness level of sustainable consumption within the region. Thus, this somewhat creates the need for exploring sustainable consumption research within a sustainable product class as sustainable consumption consciousness evolves within the region.

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