**Argumenta Oeconomica**
Year 2025, Vol. 54, No. 1
ISSN 2720-5088
journals.ue.wroc.pl/aoe

# The role of socio-demographics in the consciousness of sustainable consumption and the behaviour of young consumer

**Agnieszka Szulc-Obłoza**

Faculty of Economic Sciences and Management, Nicolaus Copernicus University in Toruń, Poland

e-mail: aszulc@umk.pl

ORCID: 0000-0002-7281-6813

**Rafał Haffer**

Faculty of Economic Sciences and Management, Nicolaus Copernicus University in Toruń, Poland

e-mail: rafalh@umk.pl

ORCID: 0000-0002-9954-706X

**Michał Bernard Pietrzak**

Faculty of Management and Economics, Gdańsk University of Technology, Poland

e-mail: michal.pietrzak@zie.pg.gda.pl

ORCID: 0000-0002-9263-4478



**Quote as:** Szulc-Obłoza, A., Haffer, R., & Pietrzak, B. M. (2025). The role of socio-demographics in the consciousness of sustainable consumption and the behaviour of young consumers. *Argumenta Oeconomica*, *1*(54), 154-169.

DOI: 10.15611/aoe.2025.1.10

JEL: D12, Q01

## Abstract

**Aim:** This study investigated how the consciousness of sustainable consumption affects each of the consumption phases in terms of the different socio-demographic features of young consumers.

**Methodology:** To achieve the aim of this study, the structural equation modelling (SEM) was applied. The research data were obtained through a computer assisted web interview (CAWI).

**Results:** The results revealed not only that the consciousness of sustainable consumption has a significant effect on all three sustainable consumption phases, but also that socio-economic characteristics influence the strength of these relationships.

**Implications and recommendations:** The conclusions may be helpful to stakeholders involved in sustainable supply chains, and to institutions involved in the education and promotion of sustainable behaviour.

**Originality/value:** This study was the first to explore how the consciousness of sustainable consumption influences all stages of consumption among young consumers.

**Keywords:** consciousness of sustainable consumption, sustainable consumption, sustainable consumer, sustainable behaviour, young consumers

## 1. Introduction

Responsible consumption and production constitute a major challenge in today's world, as society strives for sustainable development. One of the 17 goals of sustainable development is to ensure sustainable consumption and production patterns (United Nations, 2021). Both organizations and individuals are involved in this process, which covers various actors in contemporary supply chains, ranging from focal companies that produce different kinds of goods to their suppliers and customers at various links in the supply chain. A particularly important role is played by individual consumers who make their own decisions about acquiring, using, and disposing of products and services when considering their approach to sustainability.

The sustainability consciousness and behaviour of young consumers may differ according to their socio-demographic characteristics (e.g. Anh et al., 2020). Thus, there is value in studying the effect of the consciousness of sustainable consumption on each of its phases – acquisition, usage, and disposal – among individual, young consumers of different socio-demographics, and investigating whether different approaches should be used to satisfy their requirements. Managers who want to create businesses focused on sustainable production and consumption must concentrate on recognizing the sustainable consumption behaviour of consumers and making their supply chains more sustainable.

Sustainable consumption in this article is understood as the broad concept of individual consumption regarding its influence on the environment and socio-economic conditions, today and for future generations (Geiger et al., 2018; Piligrimiene et al., 2020). Based on the existing definitions, the consciousness of sustainable consumption is understood as a preference for sustainable products and services (Balderjahn et al., 2018; Gericke et al., 2019; Pena-Cerezo et al., 2019; Suarez et al., 2020). The authors are aware of only a few recent articles that discuss and operationalize the construct of sustainable consumption consciousness (Balderjahn et al., 2013a, 2013b, 2018; Gericke et al., 2019; Suarez et al., 2020).

This study aimed to investigate how the consciousness of sustainable consumption affects each of the sustainable consumption phases when different socio-demographic features of young adult consumers were considered in the analysis. Young adult consumers were defined as consumers aged 18–29. The authors aimed to answer the following research questions:

***RQ₁*.** To what extent does the consciousness of sustainable consumption influence the behaviour of less versus more educated young consumers in different consumption phases?
***RQ₂*.** To what extent does the consciousness of sustainable consumption influence the behaviour of young consumers living in one-person versus multi-person households in different consumption phases?
***RQ₃*.** To what extent does the consciousness of sustainable consumption influence the behaviour of less versus more affluent young consumers in different consumption phases?

Based on earlier research and findings, this study designed and validated a research model (Figure 1), where the effect of the awareness of sustainable consumption on each of the sustainable consumption phases was analysed.

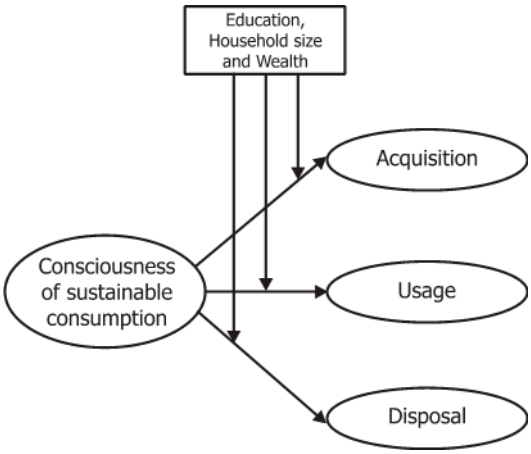


Fig. 1. Research model

Source: own elaboration.

To the best of the authors' knowledge, the influence of sustainable consumption consciousness on all stages of consumption among young consumers has not been investigated previously, and the research most often focused on the acquisition phase (Balderjahn et al., 2018) or the disposal phase (Park, & Lin, 2020). Most researchers also examined only one industry, such as clothing (Hwang et al., 2020) or food (Anh et al., 2020). The measurement scales of individual consumption phases are usually dedicated to the behaviour of consumers towards the products of the analysed sectors (Anh et al., 2020; Hwang et al., 2020), whereas this study proposed its own scales to measure the phases of sustainable consumption.

Although research on consumption behaviour draws attention to the impact of socio-economic characteristics on the consumption process, usually only selected features of its sustainability are considered in this context, e.g. environmental sustainability (Anh et al., 2020). Characteristics such as gender, age, household size, and marital status have been considered (Fischer et al., 2017; Pena-Cerezo et al., 2019; Rizkalla, & Erhan, 2020; Jain and Kaur, 2006; Kala, 2015; Kreuzer et al., 2019). An example of an analysis of sustainable consumption among young consumers was the study by Fischer et al. (2017) which addressed the behaviour of young people in the area of food and clothing. Zalega (2019) identified the sustainable consumption behaviour of young people and indicated age, education, and monthly disposable income as significant determinants of sustainable behaviour. However, the authors are not aware of any studies on the impact of the socio-economic characteristics of young consumers on the relationships between sustainable consumption consciousness and the phases of consumption (Anh et al., 2020).

## 2. Literature review

### 2.1. Sustainable consumption

In sustainable consumption, the consumer searches for a balance between his/her need satisfaction and responsibility for others and for the planet Earth (Piligrimiene et al., 2020). Harmony in different dimensions may be achieved, for example, in the environmental, social, and economic areas (Luchs et al., 2011). An example of the application of sustainability is the cube model of sustainable consumption behaviour (the SCB-Cube model), in which the sustainability areas within three theoretical dimensions are present, the other two being the consumption phases and consumption areas (Geiger et al., 2018).

The environmental dimension in the sustainable consumption context has been extensively analysed, and pro-environmental consumption elements, such as recycling, resource and energy preservation

were examined (Park, & Ha, 2014). The minimization of environmental impact appears crucial in the working definition of sustainable consumption proposed by the Oslo Roundtable on Sustainable Production and Consumption in 1994: "The use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the needs of future generations" (IISD, 2021).

An example of socially conscious consumption is the purchase of fair trade products to ensure fair wages and working conditions, decent standards of living, and reasonable prices (Balderjahn et al., 2013b). The desire to protect workers and employees against poverty and exploitation was also highlighted (Balderjahn et al., 2013b). In addition to social justice, the literature addresses another aspect of minimizing the harmful effects on society: inter-generational justice, i.e. a form and level of consumption that does not impoverish present and future generations. Satisfying only basic needs through voluntary material simplicity may be a strategy for inter-generational justice. Consumers may demonstrate voluntary simplicity by engaging in reduced levels of consumption, such as second-hand purchasing and domestic production. Voluntary simplicity may be driven by awareness of the social, environmental, and economic impact (Shaw, & Newholm, 2002). Hence, motives of particular consumer behaviour commonly belong to more than one area of sustainability.

Voluntary simplicity, as one of three manners of consumption, may be perceived in to-buy-or-not-to-buy decisions, whilst the other two are debt-free consumption and collaborative consumption. Debt-free consumption occurs when a consumer avoids overspending and debt or limits spending to accrue savings, whereas collaborative consumption takes place when consumers substitute ownership-based consumption with sharing, leasing, or renting products (Balderjahn et al., 2013a). These three forms of consumption are included in the economic dimension of sustainable consumption (Balderjahn et al., 2018), which may also be described as diligence for personal well-being (Lim, 2022). Quality of life is highlighted in the United Nations Environment Programme, where sustainable consumption is understood as a holistic approach to minimizing the negative environmental impacts of consumption systems while promoting quality of life for all (UNEP, 2015).

Sustainable consumption in a systematic approach optimizes the environmental, social, and economic consequences of consumption (Luchs et al., 2011). Broadly speaking, sustainable consumption means satisfying basic needs for goods and services with minimal impact on the environment while taking into consideration social fairness and economic viability (Anh et al., 2020; Balderjahn et al., 2018).

## 2.2. Sustainable consumption behaviour in different consumption phases

Consumption is understood as the process of consumer decisions and actions, including the acquisition, usage, and disposal of products and services (Jacoby et al., 1977). The broad definition must address each of the three equally important phases (Hwang et al., 2020).

Acquisition is related to decisions about what products are purchased to satisfy needs. Sustainable acquiring refers to organic, regional, seasonal, fair trade, and energy-safe items (Kreuzer et al., 2019). However, in some cases, the line between particular phases is difficult to indicate. An example of blurring the lines between phases is collaborative consumption (Geiger et al., 2018). Acquisition may also reflect options without the ownership of tangible products by renting, borrowing, or swapping (Luchs et al., 2011). These examples may be perceived as practices belonging to the sustainable usage phase, and in this article they are applied in such a manner (Geiger et al., 2018).

Responsible usage is directed at consuming less without a reduction in the satisfaction of consumer needs. Consuming less, mainly in the context of basic needs, is seldom easily achieved. Thus, consumers should consider their approach to usage, being thoughtful, selective, creative, and efficient (Luchs et al., 2011). Collaborative consumption creates the possibility of need satisfaction through the use of goods without taking ownership.

Disposal refers to transferring unwanted products to another place or person by throwing them away, passing to others along, or selling them (Hwang et al., 2020). The disposal phase can include repurposing, refurbishing, repairing, storing, segregating, recycling, selling, donating, bartering, or simply throwing away into landfill (Luchs et al., 2011). Jacoby et al. (1977) highlighted the consumer disposal options that involve keeping the product.

## 2.3. Consciousness of sustainable consumption

Examples of analyses of the consciousness of sustainable consumption include studies by Balderjahn et al. (2013a, 2013b, 2018), Gericke et al. (2019), Suarez et al. (2020), and Pena-Cerezo et al. (2019). According to Balderjahn et al. (2013a, 2013b), the consciousness of sustainable consumption is understood as a state of concern or an intention to consume in a way that enhances quality of life. Balderjahn et al. (2018) also referred to consumers' disposition to prefer particular products. In this study, the consciousness of sustainable consumption is understood as the intention and disposition to prefer sustainable products and services.

Balderjahn et al. (2013b) examined the relationships between consciousness for fair consumption and ecological consciousness, and the moral reasoning and consciousness of buying fair-traded products. Balderjahn et al. (2013a) also studied the relationships between the environmental, social, and the economic subdimensions of the sustainable consumption consciousness. Later studies focused on consumer buying decisions and five subdimensions of the consciousness of sustainable consumption: environmental, social, simple, debt-free, and collaborative consumption (Balderjahn et al., 2018).

Gericke et al. (2019) analysed the environmental, social, and economic dimensions of sustainability consciousness, yet expressed in terms of people's knowledge, attitudes, and behaviour. Suarez et al. (2020) analysed the influences of sustainability consciousness, materialism, and the consideration of future consequences on frugal behaviour. Pena-Cerezo et al. (2019) focused specifically on the consciousness of university undergraduates.

## 2.4. Hypotheses development

The hypotheses were based on the theory of planned behaviour proposed by Ajzen (2011), in which attitudes, subjective norms, and perceived behavioural control shape an individual's intentions and awareness. The authors also referred to the studies of Balderjahn et al. (2013a, 2013b) and Geiger et al. (2018) to take into account the potential impact of the consciousness of sustainable consumption on the consumption phases of young consumers. Three main hypotheses were formulated:

H1a: There is a positive and direct relationship between the consciousness of sustainable consumption and product (and service) acquisition behaviour of young consumers.
H2a: There is a positive and direct relationship between the consciousness of sustainable consumption and product (and service) usage behaviour of young consumers.
H3a: There is a positive and direct relationship between the consciousness of sustainable consumption and product (and service) disposal behaviour of young consumers.

The socio-economic characteristics of consumers, such as gender, age, household size, and marital status, were considered in the literature concerning only part of the huge area of sustainable consumption. For instance, Jain and Kaur (2006) used gender, age, education level, type of school attended, income, and occupation as the basis for segmenting green consumers (Jain, & Kaur, 2006). Anh et al. (2020) examined how gender, academic year, relationship (personal) status, residence, and expenditure affected students' sustainable consumption behaviour in the food and beverages sector. Anh et al. analysed only one sector and one group of consumers (students). Similarly, Rizkalla and Erhan (2020) chose to study only Millennials. Other research included only adults aged 18–24 (Kreuzer et al., 2019), representatives of Gen-Y and Gen-Z aged 18–34 (Zalega, 2019), teenagers aged 14–17

(Fischer et al., 2017), or students (Pena-Cerezo et al., 2019). In this study, the authors analysed the influence of heterogeneous young consumers' socio-economic characteristics on the relation between the consciousness of sustainable consumption and the consumption process phases.

Socio-economic characteristics may be analysed as moderators affecting the strength and direction of the relations between the consciousness of sustainable consumption and the consumption phases of young consumers, and this study focused on education, household size, and wealth as moderators.

Previous research showed that the process of acquiring knowledge at school, college, or university is an important driver of sustainable behaviour (Franzen and Vogl, 2013; Park and Lin, 2020; Roberts, 1996; Starr, 2009), therefore the following hypotheses related to education were proposed:

H1b: There is a significant difference between less and more educated young consumers in the relationship between the consciousness of sustainable consumption and product (and service) acquisition behaviour.
H2b: There is a significant difference between less and more educated young consumers when it comes to the relationship between the consciousness of sustainable consumption and product (and service) usage behaviour.
H3b: There is a significant difference between less and more educated young consumers when it comes to the relationship between the consciousness of sustainable consumption and product (and service) disposal behaviour.

Household size is believed to be an important element affecting sustainable consumption behaviour. An example of household size analysis in the context of environmental concerns was the research conducted by Kala (2015), who examined the environmental and non-environmental aspects of solo living. Diamantopoulos et al. (2003) included the number of children as a characteristic of family size in the analysis of the environmental consciousness domain. The authors hypothesised the following:

H1c: There is a significant difference between young consumers living in one-person and multi-person households in the relationship between the consciousness of sustainable consumption and product (and service) acquisition behaviour.
H2c: There is a significant difference between young consumers living in one-person and multi-person households in the relationship between the consciousness of sustainable consumption and product (and service) usage behaviour.
H3c: There is a significant difference between young consumers living in one-person and multi-person households in the relationship between the consciousness of sustainable consumption and product (and service) disposal behaviour.

Income was analysed as a variable in the economic profile of sustainable consumers (Franzen, & Vogl, 2013; Kim, & Wolinsky-Nahmias, 2014; Starr, 2009; Roberts, 1996), however the question of the relationship between the affluence of individual consumers and their sustainable attitudes and behaviour remains open. Therefore, the authors put forward the following hypotheses:

H1d: There is a significant difference between less and more affluent young consumers in the relationship between the consciousness of sustainable consumption and product (and service) acquisition behaviour.
H2d: There is a significant difference between less and more affluent young consumers in the relationship between the consciousness of sustainable consumption and product (and service) usage behaviour.
H3d: There is a significant difference between less and more affluent young consumers in the relationship between the consciousness of sustainable consumption and product (and service) disposal behaviour.

## 3. Methods

The research data were obtained through a questionnaire created using Computer Assisted Web Interview (CAWI) (Appendix A). The questionnaire survey was conducted in Poland in December 2020.

Young consumers were included in the survey, and the sample structure consisted of 800 respondents aged 18–29. The sample was based on three socio-demographic characteristics: gender, education, and place of residence, and the proportions of characteristics were similar to the official statistics provided by the Central Statistical Office in Poland, and out of the respondents, 50.02% were women, and 49.08% were men. Four educational categories were chosen: 21.08% had primary education, 17.20% basic vocational education, 37.90% secondary education, and 23.10% had higher education.

The four constructs shown in Figure 1, namely the consciousness of sustainable consumption, and the three phases of sustainable consumption – acquisition, usage, and disposal – were measured as reflective latent variables. To operationalise the research constructs, DeVellis's (2016) methodology of developing measurement scales was used. For transparent scale construction, the procedure recommended by Geiger et al. (2018) was included. Based on an in-depth study of the literature and the SCB-Cube model, an initial pool of items was generated (Fischer et al., 2017; Geiger et al., 2018; Jacoby et al., 1977; Kreuzer et al., 2019; Loo et al., 2013; Luchs et al., 2011; Muthu et al., 2012; Sun et al., 2021; Zrałek 2018). A group of experts, including seven academic researchers from the economics and management areas, reviewed the initial set of items. A pilot study was launched with a group of 100 students, and feedback was included in the final set of items to capture the essence of the constructs and eliminate any flaws in the questionnaire. All the aspects of the questionnaire related to sustainable consumption were measured on a 5-point Likert scale ranging from "1 = strongly disagree" to "5 = strongly agree" (Appendix A). As an independent variable on the general level, the consciousness of sustainable consumption was described by three measurement items, and as a consequence of the applied definition of sustainable consumption consciousness, measurement items of the intention and disposition to prefer sustainable products and services were included. Sustainable consumption behaviour were divided into three phases: acquisition (5 items), usage (4 items), and disposal (4 items) (Appendix A).

Structural equation modelling (SEM), a second-generation multivariate method (Chin, 1998), was used to examine the research data. The data were analysed using partial least squares (PLS) regression. PLS was chosen for the investigation because it offers more flexibility than the covariance-based (CB) SEM. The limitations of the latter include, for example, sample size, model complexity and level of measurement (Wetzels et al., 2009). For this study, two other limitations of CB-SEM were of particular importance, namely the assumption of a normal distribution of the input data and the greater suitability for confirmation studies. The results of the Shapiro-Wilk test (Shapiro, & Wilk, 1965) and the Kolmogorov-Smirnov test (Marsaglia et al., 2003) demonstrated that the study's assumptions regarding the normality of distributions were not satisfied, indicating that the data were not normal. Given that PLS does not require normally distributed data, this further justified its usage (Fornell, & Bookstein, 1982). Moreover, according to Hair et al. (2011), partial least squares can be useful in both exploratory and confirmatory research, which is often selected as a technique for theory testing in its early phases, when the theory is less established and the research model has not undergone substantial testing (Chin, 1998; Hair et al., 2011), as was the case in this study. The data were analysed using WarpPLS® version 7.0 (Kock, 2021).

## 4. Results

A reflective latent variable model was employed in this investigation (Jarvis et al., 2003). The standard two-stage modelling approach was used, with the measurement model analysed first, followed by the structural model (Hair et al., 2011; Henseler et al., 2016a; Kock, 2021). The authors began by assessing the measurement model, which determined the constructs' reliability and validity. The structural

model, which explained the link between the tested constructs, was then evaluated. The constructs for the consciousness of sustainable consumption (C_SC) and the stages of acquisition (ACQU), usage (USE), and disposal (DISP) and their indicators were estimated in the first step.

## 4.1. Measurement model – assessment of reflective constructs

Initially, the reflective constructs were examined to see if they were adequate for the measurement model. Internal consistency reliability, convergent validity, and discriminant validity were all evaluated as part of the assessment of the reflective measurement model (Hair et al., 2017). Cronbach's alpha (CA) and composite reliability (CR) coefficients were used to assess internal consistency reliability. An acceptable CR and CA for an exploratory study is $\alpha > 0.60$ (Kock, 2021; Hair et al., 2017). As indicated in Table 1, all the coefficients for both CR and CA were more than 0.60.

Table 1. Internal consistency reliability: Cronbach's alpha (CA), composite reliability (CR) and convergent validity: average variance extracted (AVE) and combined loadings)

| Items | ACQU | USE | DISP | C_SC | p-value |
|---|---|---|---|---|---|
| CR | 0.815 | 0.815 | 0.853 | 0.818 | — |
| CA | 0.696 | 0.696 | 0.769 | 0.666 | — |
| AVE | 0.523 | 0.524 | 0.592 | 0.601 | — |
| ACQU_1 | **0.730** | 0.116 | -0.388 | 0.336 | <0.001 |
| ACQU_2 | **0.737** | -0.128 | 0.196 | -0.152 | <0.001 |
| ACQU_4 | **0.718** | -0.008 | -0.079 | 0.093 | <0.001 |
| ACQU_5 | **0.709** | 0.023 | 0.276 | -0.282 | <0.001 |
| USE_1 | -0.128 | **0.679** | 0.400 | -0.136 | <0.001 |
| USE_2 | 0.054 | **0.749** | -0.072 | 0.074 | <0.001 |
| USE_3 | 0.084 | **0.769** | -0.081 | -0.146 | <0.001 |
| USE_4 | -0.026 | **0.695** | -0.223 | 0.215 | <0.001 |
| DISP_1 | 0.099 | 0.211 | **0.735** | -0.210 | <0.001 |
| DISP_2 | -0.174 | -0.078 | **0.778** | 0.138 | <0.001 |
| DISP_3 | 0.115 | -0.131 | **0.748** | 0.039 | <0.001 |
| DISP_4 | -0.028 | 0.004 | **0.813** | 0.022 | <0.001 |
| C_SC_1 | 0.037 | -0.030 | 0.108 | **0.720** | <0.001 |
| C_SC_2 | -0.008 | 0.117 | -0.148 | **0.822** | <0.001 |
| C_SC_3 | -0.026 | -0.096 | 0.056 | **0.779** | <0.001 |

Source: own calculations.

Factor loadings were used to assess convergent validity. The p-values associated with the loadings should be equal to or lower than 0.05, and the loadings should be equal to or greater than 0.50 (Hair, 2009). The recommended values for outer loadings are between 0.40 and 0.70 (Hair et al., 2017). Researchers must investigate the impact of item removal on the construct's composite reliability and content validity. One indication was eliminated, which resulted in an improvement in composite reliability while having no effect on the average variance extracted (AVE). All the retained items loaded were over the required minimum of 0.50 (Hair, 2009), as indicated in Table 1. An AVE value of 0.50 or greater suggests a suitable degree of convergent validity (Fornell, & Larcker, 1981). This requirement was satisfied by all AVE values, as shown in Table 1.

AVE was used to perform discriminant validity testing, in which the square root of each construct's AVE must be bigger than other construct correlations (Fornell, & Larcker, 1981). The final findings were satisfactory. The square root of the AVE for each variable was larger than that of the off-diagonal elements.

Additionally, the variance inflation factor (VIF) statistic was utilised to assess multicollinearity in the indicators (Fornell & Bookstein, 1982). In general, a VIF of 3.3 or less means that the collinearity problem does not exist in the measurement model (Kock, & Lynn, 2012). The VIF values for the indicators reached satisfactory levels, ranging between 1.22 and 1.65, and full collinearity variance inflation factors (VIFs) were then used for the common method bias test (Kock, 2015). If the full collinearity VIFs calculated for all latent variables are equal to or low smaller than the threshold of 3.3, this can be seen as an indication that the model is free from common method bias. The obtained values of the full collinearity VIFs, ranging from 1.30 to 2.19, confirmed that this was the case in this study.

## 4.2. Structural model assessment

The structural model path coefficient (β) and significance were investigated to determine the links between the constructs. Table 2 shows the hypothesis testing outcomes, as well as the effect sizes (f2). Large, medium, and minor effects are indicated by values of 0.35, 0.15, and 0.02, respectively (Cohen, 1988).

Table 2. Hypothesis testing – all young consumers

| Hypothesis | Path | Path coefficient (β) | p-value | Effect size (f2) | Result |
|---|---|---|---|---|---|
| H1a | C_SC → ACQU | 0.669 | <0.01 | 0.448 | **Supported** |
| H2a | C_SC → USE | 0.428 | <0.01 | 0.183 | **Supported** |
| H3a | C_SC → DISP | 0.529 | <0.01 | 0.280 | **Supported** |

Source: own calculations.

The following conclusions may be drawn based on Table 2:

- With a p-value < 0.01 and β = 0.669, C_SC had a significant influence on ACQU. Hypothesis H1a was supported.
- With a p-value < 0.01 and β = 0.428, C_SC had a significant influence on USE. Hypothesis H2a was supported.
- With a p-value < 0.01 and β = 0.529, C_SC had a significant influence on DISP. Hypothesis H3a was supported.

For the entire model, the following global model fit and quality indices (Hair et al., 2011) were calculated: average path coefficient (APC), average R-squared (ARS), average adjusted R-squared (AARS), average full collinearity VIF (AFVIF), Tenenhaus GoF (GoF), Sympson's paradox ratio (SPR), R-squared contribution ratio (RSCR), statistical suppression ratio (SSR), nonlinear bivariate causality direction ratio (NLBCDR), standardised root mean square residual (SRMR), standardised mean absolute residual (SMAR), standardised chi-squared (SChS), standardised threshold difference count ratio (STDCR) and standardised threshold difference sum ratio (STDSR). The indices matched the following criteria: APC = 0.542, ARS = 0.304, AARS = 0.303, AFVIF = 1.756, GoF = 0.412, SPR = 1, RSCR = 1, SSR = 1, NLBCDR = 1, SRMR = 0.093, SMAR = 0.075, SChS = 3.197, STDCR = 0.990, STDSR = 0.967. These fit and quality indices point to a satisfactory model–data fit. The coefficient of determination (R2) values for ACQU, USE, and DISP in this study were 0.448, 0.183, and 0.280, respectively. The Stone-Geisser (Q2) values in this study were 0.448 for ACQU, 0.183 for USE, and 0.280 for DISP, all of which were acceptable (greater than 0).

## 4.3. Multigroup analysis

Multigroup analysis (MGA) is a method for determining whether group-specific parameter estimates (primarily path coefficients) change significantly across two groups in a PLS path modelling framework (Hair et al., 2017; Henseler, & Chin, 2010). There were three grouping variables: education, household

size, and wealth, and in this case only the group of young consumers was included (N = 800). Measurement invariance was established to continue the MGA and maintain the validity of the findings and conclusions of the multigroup comparisons (Chin et al., 2016; Henseler et al., 2016b). The Satterthwaite method (Kock, 2014) was used to assess MGAs and measurement invariance. All variables had high invariance (p-values > 0.05) according to the provided data.

Tables 3 to5 show the outcomes of the MGAs. The beta parameters and p-values were calculated in groups after the model was run twice for each grouping variable, and once for each database. The MGA compares path coefficients. To conclude that there are significant differences, p-values must be less than 0.10 (Kock, 2014).

Table 3. Hypothesis testing – multigroup analysis results for education

| Hypothesis | Path | Group 1 less educated respondents (N=299) | | Group 2 more educated respondents (N=501) | | Group 1 vs. Group 2 | | Result |
|---|---|---|---|---|---|---|---|---|
| | | Path coefficient (β) | p-value | Path coefficient (β) | p-value | Absolute path coefficient differences | p-value (one--tailed) | |
| H1b | C_SC → ACQU | 0.651 | <0.01 | 0.697 | <0.01 | 0.046 | 0.245 | Not supported |
| H2b | C_SC → USE | 0.507 | <0.01 | 0.387 | <0.01 | 0.119 | 0.040 | **Supported** |
| H3b | C_SC → DISP | 0.559 | <0.01 | 0.516 | <0.01 | 0.044 | 0.259 | Not supported |

Source: own calculations.

On the C_SC→USE path, the MGA tests revealed significant differences between the two groups of less educated (N = 299) and more educated (N = 501) respondents, as shown in Table 4. The authors reached the following conclusions from Table 3:

- With path coefficients of β = 0.651 and β = 0.697, both less and more educated respondents' C_SC had a significant influence on ACQU, with a p-value of < 0.01. Therefore, hypothesis H1b was not supported.
- With path coefficients of β = 0.507 and β = 0.387, the C_SC of both less and more educated respondents had a significant impact on USE, with a p-value of < 0.01. Group-specific path coefficients differed considerably between the two groups in this scenario, indicating that the influence of C_SC on USE was significantly larger for less educated respondents than for more educated respondents. Therefore, hypothesis H2b was supported.
- With path coefficients of β = 0.559 and β = 0.516, the C_SC of both less and more educated respondents had a significant influence on DISP, with a p-value of < 0.01. Therefore, hypothesis H3b was unsupported.

Table 4. Hypothesis testing – multigroup analysis results for household size

| Hypothesis | Path | Group 1 respondents living in one-person household (N=179) | | Group 2 respondents living in multi-person household (N=621) | | Group 1 vs. Group 2 | | Result |
|---|---|---|---|---|---|---|---|---|
| | | Path coefficient (β) | p-value | Path coefficient (β) | p-value | Absolute path coefficient differences | p-value (one-tailed) | |
| H1c | C_SC → ACQU | 0.797 | <0.01 | 0.634 | <0.01 | 0.163 | 0.014 | **Supported** |
| H2c | C_SC → USE | 0.632 | <0.01 | 0.386 | <0.01 | 0.246 | <0.001 | **Supported** |
| H3c | C_SC → DISP | 0.708 | <0.01 | 0.491 | <0.01 | 0.217 | 0.002 | **Supported** |

Source: own calculations.

As indicated in Table 4, the MGA tests showed significant differences between the respondents living in one-person households (n = 179) and those living in multi-person households (n = 621) for the three paths, C_SC→ACQU, C_SC→USE, C_SC→DISP. From Table 4, it was concluded that the C_SC of the respondents living in both types of household had a significant effect on all three phases of sustainable consumption at a p-value of < 0.01, with path coefficients of β = 0.797 and β = 0.634 for ACQU, β = 0.632 and β = 0.386 for USE, and β = 0.708 and β = 0.491 for DISP. However, the group-specific path coefficients differed significantly between the two groups, meaning that the effects of C_SC on ACQU, USE, and DISP were significantly stronger for respondents living in one-person households than for those in multi-person households. Therefore, hypotheses H1c, H2c, and H3c were supported.

Table 5. Hypothesis testing – multigroup analysis results for wealth

| Hypothesis | Path | Group 1 less affluent (n=575) | | Group 2 more affluent (n=175) | | Group 1 vs. Group 2 | | Result |
|---|---|---|---|---|---|---|---|---|
| | | Path coefficient (β) | p-value | Path coefficient (β) | p-value | Absolute path coefficient differences | p-value (one-tailed) | |
| H1d | C_SC → ACQU | 0.632 | <0.01 | 0.776 | <0.01 | 0.144 | 0.028 | **Supported** |
| H2d | C_SC → USE | 0.393 | <0.01 | 0.526 | <0.01 | 0.133 | 0.046 | **Supported** |
| H3d | C_SC → DISP | 0.504 | <0.01 | 0.636 | <0.01 | 0.132 | 0.044 | **Supported** |

Source: own calculations.

As indicated in Table 5, the MGA tests showed significant differences between the two groups of less (n = 575) and more affluent (n = 175) respondents on the three paths, C_SC→ACQU, C_SC→USE, and C_SC→DISP. From Table 5, it can be concluded that the C_SC of both groups of the respondents had a significant effect on all the three phases of sustainable consumption (ACQU, USE, DISP) at a p-value of less than 0.01, with path coefficients of β = 0.632 and β = 0.776 for ACQU, β = 0.393 and β = 0.526 for USE, and β = 0.504 and β = 0.636 for DISP. In all the cases, group-specific path coefficients differed significantly between the two groups, and the effects of C_SC on ACQU, USE, and DISP were significantly stronger for more affluent respondents than for less affluent ones. Therefore, hypotheses H1d, H2d, H3d were supported.

The MGA's results under the PLS path modelling framework revealed substantial differences regarding the relationships between sustainable consumption awareness and the purchase, use, and disposal of products (and services) between the following groups:

- Less and more educated respondents differed on one path between consciousness of sustainable consumption and usage behaviour. Thus, hypothesis H2b was confirmed, whereas hypotheses H1b and H3b, which predicted that there would be no significant difference between less and more educated respondents in the relation between consciousness of sustainable consumption and acquisition and disposal behaviour, respectively, were not supported. These findings suggest that the effect of consciousness of sustainable consumption on usage behaviour was significantly stronger for less educated respondents, and that education moderates the relationship between the consciousness of sustainable consumption and usage behaviour.
- The respondents living in one-person households and those in multi-person households differed on the three paths between the consciousness of sustainable consumption and the acquisition, usage, and disposal behaviour. Thus, hypotheses H1c, H2c, and H3c were accepted. All these relationships were significantly stronger for the respondents living in one-person households, and household size moderated the relationship between the consciousness of sustainable consumption and all the three stages of consumption.

- Less and more affluent respondents differed on all the three paths between the consciousness of sustainable consumption and the acquisition, usage, and disposal behaviour. Thus, hypotheses H1d, H2d, and H3d were supported. These relationships were significantly stronger for more affluent respondents, and the wealth of the respondents moderated the relationship between the consciousness of the sustainable consumption and all the three stages of consumption behaviour (acquisition, usage, and disposal).

## 5. Discussion

This study's results are in line with those of Ajzen (2011), in which the relationship between attitudes and behaviour was confirmed. Similarly, this study confirmed positive and direct relationships between the consciousness of sustainable consumption and its three phases: acquisition, usage, and disposal. To the best of the authors' knowledge, the analysed dependencies have not yet been investigated in terms of individual consumers' socio-demographic information, such as education, household size, and wealth. Hence, this study demonstrated that when the socio-demographics of consumers are taken into account, the outcomes vary.

Analyses of household size in the context of sustainable behaviour are not common compared to age and education. In this study, household size moderated the relationship between the consciousness of sustainable consumption and all the three phases of consumption. The effects of consciousness were significantly stronger for the respondents living in one-person households than for those in multi-person households. These results correspond with those of Kala (2015), whose analysis showed that aspects of single households, such as high workload, living in the city centre, and the absence of cars, corresponded to pro-environmental behaviour.

According to the authors' findings, the education of the respondents moderated the relationship between the consciousness of sustainable consumption and usage behaviour, in line with the findings of numerous studies concerning the role of education in various dimensions of sustainable behaviour. For example, Franzen and Vogl (2013) found that educational attainment had the strongest effect on environmental concerns. Research has highlighted that well-educated consumers tend to improve their knowledge and understanding of consumption outcomes and are more concerned about these issues (Diamantopoulos et al., 2003; Franzen, & Vogl, 2013, Park, & Lin, 2020; Robert, 1996). A higher level of sustainable behaviour was shown among young, wealthy, and well- educated consumers (Barr, 2003), whose study indicated the stronger effect of the consciousness of sustainable consumption on product (and service) usage behaviour for less educated respondents than for more educated ones. Hence, there is a need for in-depth research on the role of education and its implications for consciousness and behaviour in sustainable consumption.

The results of this study indicate the moderating role of wealth in the relationship between the consciousness of sustainable consumption and acquisition, usage, and disposal, which is consistent with previous research. The latter, however, concerned only selected phases of sustainable consumption (Franzen, &Vogl, 2013; Kim, &olinsky-Nahmias, 2014; Roberts, 1996). The results demonstrated that the analysed relationships were significantly stronger for more affluent respondents, which is compatible with those obtained by Park and Lin (2020), Franzen and Vogl (2013), and Starr (2009), where it was highlighted that higher-income people are more open to global concerns.

## 6. Conclusion

Given the scarcity of research on the consciousness of sustainable consumption and the three phases in relation to young consumers, this study fills a research gap. It shows that there are positive and significant relationships between the consciousness of sustainable consumption and product (and service) acquisition, usage, and disposal among young consumers. It also indicates that socio-demo-

graphic factors, including age, education, household size, and wealth, have moderating effects on these relationships.

Based on the analysis, the role of sustainability consciousness in sustainable behaviour was highlighted, and the potential to enhance sustainable consumption consciousness through dedicated education and promotion was indicated. This, in turn, influences the sustainable behaviour of consumers. Moreover, the role of cooperation between individuals and companies in the supply chain was pointed out. Consumer heterogeneity (the different effects of the consciousness of sustainable consumption on acquisition, usage, and disposal), should be included by all companies throughout their supply chains until the delivery of the product (or service) to end-consumers.

In future research, this survey could be replicated in multiple geographic locations, spanning different countries and perhaps continents, to acquire more generalised conclusions. Due to the observed differences in the results of this and other researchers' studies, the authors suggest conducting in-depth research on the role of education and its consequences for consciousness and behaviour related to sustainable consumption. In addition, future research should take into account consumer characteristics other than those tested here. During the retesting of the studied relations, contextual variables such as profession, position, religion, or worldview could be also considered.

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*Received: November 2023, revised: June 2024*

# Appendix A

### The consciousness of sustainable consumption

I prefer to buy less but focus on quality.

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |

I prefer to spend more money in return for sustainable products and services.

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |

I think that it is worth to spend more money on sustainable products and services.

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |

### Acquisition

I buy regional, bio, organic and certified products and services.

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |

I buy energy-saving equipment.

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |

I study the list of product components.

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |

I save utilities (water, electricity, gas…).

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |

I buy products using a compiled shopping list.

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |

**Usage**

I buy used (second-hand) products.

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |

I share products with others by lending, bartering, chargeable providing.

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |

I borrow products instead of buying new ones.

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |

I use shared products and services, like an urban bike, electric scooter, shared cars and books.

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |

**Disposal**

I fix broken products.

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |

I carry reusable shopping bags.

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |

I recycle trash.

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |

I avoid dumping and wasting of products.

| | | | | |
|---|---|---|---|---|
| ❑ 1 (strongly disagree) | ❑ 2 | ❑ 3 | ❑ 4 | ❑ 5 (strongly agree) |