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Consumer engagement in sustainable consumption: do demographics matter?

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ABSTRACT

This study investigates the relationship between internal and external factors of pro-environmental and pro-social engagement, sustainable consumption behaviour and personal characteristics such as age, gender, financial situation and level of education in the Lithuanian population. A quantitative method was used to collect data from 904 respondents in Lithuania. The study results suggest that women are more concerned about pro-environmental and pro-social issues. In addition, pro-environmental commitment, biospheric values, personal norms and perceived responsibility were important for women. Meanwhile, egoistic values, self-efficacy, social norms, biospheric values, and attachment to place were identified as more important for men. The results reveal that older age increasingly correlates with a stronger expression of place attachment, egoistic values and self-efficacy, pro-environmental and pro-social engagement, and sustainable consumption behaviour. The results of this empirical study allow for identifying the determinants that have the most significant impact on men and women or different age groups. Knowledge of factors that significantly impact pro-environmental and pro-social engagement, which promotes sustainable consumption behaviour as a mediator, can allow policymakers, community representatives or leaders to organise social campaigns and/or provide guidelines for project activities.

KEY WORDS

engagement in sustainable consumption, determinants of engagement in sustainable consumption, sustainable consumption behaviour, demographics

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Introduction

Sustainable consumption that ensures a clean and healthy environment and improves the quality of life for present and future generations is an integral part of the sustainable development agenda (Oslo Roundtable on Sustainable Production and Consumption, 1994). Sustainable consumption could reduce risks related to human health and the environment (Lawrence & Friel, 2019), as consumers play a key role in facilitating social change (Balderjahn et al., 2013). According to the Eurobarometer survey

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(2021), Europeans consider climate change the world's most serious issue. Furthermore, 69 % of consumers indicate that sustainability has become more important to them as they become more aware of climate change issues and their impact on personal well-being and health (Nielsen, 2022). The category of LOHAS consumers that see the link between their health and that of the planet is increasing. In particular, the segment with such values and beliefs consists of about 100 million people worldwide, and approx. 20 % of the population in Europe.

In addition, it is worth mentioning that 28 July 2022 was declared Earth Overshoot Day, meaning that humanity now uses 75 % more resources than the planet's ecosystems can regenerate. Thus, based on European climate law, EU countries must cut greenhouse gas emissions by at least 55 % by 2030 to achieve a climate-neutral EU by 2050 (European Commission, 2023). According to the NielsenIQ 2022 Sustainability report, consumers are one of three of the most important forces, apart from local governments and brands, that are most responsible for making progress in sustainable development. In addition, the consumer role in decreasing climate change and addressing societal challenges is urgent; thus, their high engagement in sustainable consumption remains one of the most important tasks for sustainable businesses and policymakers (United Nations, 2016).

According to Milfont and Schultz (2016), consumer interest in environmental, social and economic issues is growing, and they are increasingly willing to engage and actively participate. Consumers who are more aware of the power of their decisions are likely to choose more responsible consumption (Ciegis & Zeleniute, 2008; Leary et al., 2014). Several studies on engagement in sustainable consumption in Lithuania (Piligrimiene et al., 2019; Capiene et al., 2022) have emphasised that consumers do engage in sustainable consumption, and various factors affect their behaviour toward sustainable consumption. Vivek et al. (2014) found that consumers who are concerned about environmental and social issues are more likely to be engaged in sustainable consumption. Relationships between consumers and companies in deeper forms of engagement and involvement create a sense of community and connected consumption, e.g., through circular products (Otero et al., 2018). Kadic-Maglajlic et al. (2019), who called this phenomenon pro-environmental and pro-social engagement, emphasise that it relates to consumer communities that focus on environmental and social issues. In addition, engagement in sustainable consumption is one of the main factors affecting sustainable consumer behaviour (Kadic-Maglajlic et al., 2019).

Engagement in sustainable consumption can be affected by various external (i.e., promotion, context, and social norms) and internal (i.e., environmental knowledge, self-efficacy, pro-environmental identity and commitment, perceived responsibility, environmental values or attitude, personal norms, place attachment, and satisfaction with life) factors and could mediate the link between them and sustainable consumption behaviour (Kadic-Maglajlic et al., 2019; Piligrimiene et al., 2020; Szpilko et al., 2023). Also, it was found that engagement in sustainable consumption differs according to the socio-demographic characteristics of consumers (Piligrimiene et al., 2020; Sanchez et al., 2016).

In recent years, there has been a growing interest in gender and age differences among people engaged in sustainable consumption. Sanchez et al. (2016) found that women demonstrate a significantly higher level of engagement in green purchasing behaviour compared to men. Similarly, Piligrimiene et al. (2020) found that women, younger consumers and those with families and kids are also more engaged. In contrast, Wang, Liu and Qi (2014) reported that men demonstrate a slightly stronger intention to act sustainably than women. Janmaimool and Denpaiboon (2016) found that younger consumers living in rural areas reported low engagement in sustainable consumption. A different study by Tabernero et al. (2015) revealed that older people exhibit a higher level of environmental concern than younger people and are more engaged in recycling. Finally, research by Filimonau et al. (2020) showed that older consumers are more likely to implement environmentally responsible consumption practices in their daily routines, while the youth are more likely to promote fair and sustainable practices in restaurants that use food waste management practices. The same study demonstrated that the more educated consumers are, the more they are likely to be engaged in pro-environmental behaviour at home and restaurants. Therefore, results on the relationship between demographic characteristics and pro-environmental and pro-social engagement are not consistent and point to the need for further research. Furthermore, previous studies on pro-environmental and pro-social engagement in sustainable consumption have been limited to one or two single demographic characteristics and did not

explore the links between determinants of engagement and all demographic characteristics.

Given the above, this study aims to investigate the relationship between internal and external factors of pro-environmental and pro-social engagement, sustainable consumption behaviour and personal characteristics, such as age, gender, perceptions about one's financial living situation, and level of education in the Lithuanian population. Thus, the key questions are as follows: Is there a relationship between consumer personal characteristics and internal/external factors of pro-environmental and pro-social engagement, and how does this engagement relate to sustainable consumption behaviour? This paper sheds new light on pro-environmental and pro-social engagement in sustainable consumption in a low SDG index country (Europe Sustainable Development Report, 2021) during the COVID-19 pandemic-caused lockdown. The findings of this study have practical implications for marketers and policymakers, providing information on demographic characteristics that are very important in developing social marketing strategies.

The concept of consumer pro-environmental and pro-social engagement in sustainable consumption is analysed in the literature in the first section of the work. This analysis identifies the external and internal factors that contribute to this engagement as well as the connections between consumer pro-environmental and pro-social engagement in sustainable consumption and sustainable consumption behaviour. After presenting a research methodology in the second section of the work, the relationship between the personal qualities of consumers and the internal and external elements of pro-environmental and pro-social involvement, as well as sustainable consumption behaviour, is examined. Research design and logical progression, the definition of quantitative research, and the tools utilised in the study are all covered. The third part of the paper presents the results of quantitative research. The quantitative research reveals the links between personal consumer characteristics such as age, gender, perceptions about financial and living situations, and level of education and the external and internal factors of pro-environmental and pro-social consumer engagement in sustainable consumption and their impact. The results are interpreted and explained in the fourth section of the findings, which also discusses the limits of the results and suggests potential research possibilities. The results are compared to the literature.

1. Literature review

In recent years, scholars have become increasingly interested in the concept of engagement (Steg & Vleg, 2009; Kadic-Maglajlic et al., 2019; Balan, 2020). Based on the systematic analysis of Balan (2020), engagement could be categorised into several different concepts, i.e., consumer awareness of sustainable products, green consciousness, consumer responsibility, consumer beliefs, consumer attitudes, psychological variables, willingness to buy and willingness to pay for green and organic products, consumer purchase behaviour, etc. Consumer engagement in an environmental and social context can also be seen as a form of behaviour (Steg & Vlek, 2009), as a concern about emerging issues (Hirsh, DeYoung and Peterson, 2009), as an interest of members of a community to support others and to volunteer in common activities (Algesheimer, Dholakia, & Herrmann, 2005). In the context of environmental and social problems, this engagement is called pro-environmental and pro-social and is defined as participation in and connection with environmental and social issues (Vivek et al., 2014; Kadic-Maglajlic et al., 2019). Thus, according to researchers (Vivek et al., 2014; Vivek, Beatty, & Morgan, 2012), pro-environmental and pro-social engagement can combine both psychological and participatory processes. This study focuses on the concept of pro-environmental and pro-social engagement of consumers based on the approach of Kadic-Maglajlic et al. (2019), which describes the phenomenon as a psychological state of willingness to act on environmental and social issues.

Based on the systemic review of sustainable consumption (SC) by Quoquab and Mohammad (2020), pro-environmental and pro-social engagement has been analysed as a mediator between various factors and sustainable consumption behaviour in several studies (Capiene et al., 2022; Kadic-Maglajlic et al., 2019; Piligrimiene et al., 2020). Kollmuss and Agyeman (2002) identified the most important factors influencing consumer engagement in sustainable consumption: motivation, environmental knowledge, understanding, values, attitude, emotions, control, responsibility, and priorities. Kadic-Maglajlic et al. (2019) discussed how self-identity and consumer values affect engagement that shifts to sustainable consumption behaviour. Piligrimiene et al. (2020) found that antecedents of consumer engagement in sustainable consumption are environmental

attitudes, perceived responsibility, perceived behavioural efficiency, conditions for SC, social environment and SC promotion. Wang et al. (2019) investigated felt obligation, altruistic concern, pro-environmental identification and commitment as engagement determinants in pro-environmental behaviour. To summarise, researchers usually tend to focus on one or a couple of external or internal determinants of engagement, rarely categorising them as internal or external factors. Noticing this gap, the authors of this article chose to employ such categorisation in their study. Janmaimool and Denpaiboon (2016) proposed to divide internal factors into three groups: cognitive (environmental knowledge, self-efficacy, pro-environmental identity, pro-environmental commitment, and perceived responsibility), attitudinal (environmental values, personal norms, environmental attitude, and attachment to place) and psychosocial (satisfaction with life). External factors affecting engagement in sustainable consumption are contextual factors, promotion and social norms (Ojala, 2012; Wang, Liu & Qi, 2014; Janmaimool & Denpaiboon, 2016; Piligrimiene et al., 2020).

Studies on the relationship between demographics (age, gender, education, and income) and engagement in sustainable consumption have been a neglected area in the field. Nevertheless, studies related to engagement in sustainable consumption identify gender, age, and education as control variables. Most studies emphasise that engagement in sustainable consumption is most often found in women (Sanchez et al., 2016; Piligrimiene et al., 2020). Considerations of generational or age factors have provided various findings (Janmaimool & Denpaiboon, 2016; Filimonau et al., 2020; Ajibade & Boateng, 2021). Very little is known about the role of education in engagement in SC. One study has revealed that men with higher education levels show stronger intentions to engage in sustainable consumption (Filimonau et al., 2020). Previous work has failed to address income aspects in pro-environmental and pro-social engagement in the SC context.

Links between sustainable consumption behaviour and demographics have received more attention than engagement in recent years. The study by Bulut, Kökalan and Doğan (2017) revealed that younger consumers (i.e., Gen Z) and women behave more sustainably. Also, the authors emphasised the role of education as the fundamental determinant of sustainable behaviour. In addition, Turkish consumers with higher incomes are more inclined to shop sustainably.

Determinants of engagement in SC and gender have revealed different results that depend on cultural and economic contexts. D'Souza, Taghian, Lamb and Peretiatko (2007) found that attitudes towards green labels are not related to gender. However, most studies show that women tend to express higher pro-environmental attitudes than men (Felonneau & Becker, 2008; Panzone et al., 2016). In addition, women with high self-efficacy and social norms reported higher engagement in sustainable consumption (Janmaimool & Denpaiboon, 2016). Women who identify as environmentally conscious individuals (i.e., having an environmental identity) are more prone to engage in SC (Pirani & Secondi, 2011; Unanue et al., 2016; Sánchez et al., 2016). Similarly, Sánchez et al. (2016) found that women have stronger environmental values that, in turn, lead to higher engagement in SC. In most studies, personal norms were a more important determinant for women than men, as they affect their engagement in environmentally aware purchases and energy saving (Abrahamse & Steg, 2011; Ojala, 2012). In addition, women were shown to be more attached to places and possess higher perceived responsibility (Janmaimool & Denpaiboon, 2016; Piligrimiene et al., 2020). External determinants, such as contextual factors and promotion, also have a greater effect on engaging in SC for women (Liu, Liu, & Jiang, 2019; Piligrimiene et al., 2020). One interesting note is a study by Weber (2012), who demonstrated that optimistic individuals can be more engaged in pro-environmental behaviour; however, the gender effect was not investigated in the study. Even previous research on the links between pro-environmental commitment and engagement received attention in the literature (Wang, Wang, Li, & Yang, 2020), but gender has not been addressed.

Previous research established a relationship between various factors of engagement in SC and age; however, most studies were conducted with younger consumers. In one case, younger respondents were shown to be less critical and less committed to opting for environmentally sound modes of transport, as well as to engage in everyday pro-environmental behaviour less often (Zsóka et al., 2013). Several authors (Lubell et al., 2007; Janmaimool & Denpaiboon, 2016) found that attachment to place, social norms and self-efficacy do not affect consumer engagement in SC. Furthermore, contextual factors and promotion have no significant effect on engagement in SC with young respondents (Wang, Liu,

& Qi, 2014; Piligrimiene et al., 2020). Other research showed older individuals to be more responsible and more likely to implement environmentally benign consumption practices in their day-to-day lives (Filimonaua et al., 2020). Likewise, older people are more self-efficient and recycle the most (Tabernero et al., 2015). Sánchez et al. (2016) also found that older people who have stronger environmental values are more likely to engage in pro-environmental behaviour. Moreover, middle-aged and elderly people with a positive environmental attitude demonstrate a high level of eco-friendly behaviour (Pirani & Secondi, 2011). Abrahamse and Steg (2011) demonstrated that older respondents have weak relationships with personal norms and reported low engagement in pro-environmental behaviour using more energy. However, life satisfaction, pro-environmental identity, personal norms and pro-environmental commitment in the context of engagement in sustainable consumption regarding age have not gained attention in the literature. Likewise, education and income have not received considerable interest as determinants for engagement in SC, as there have been few cases of samples reflective of the population's education and income levels. In our paper, we also focus on age and gender aspects as determinants of engagement in SC, engagement and sustainable consumption behaviour.

2. Research methods

Sample and data collection. For the purposes of this study, a survey questionnaire was developed, pretested, and distributed digitally among individuals over 18 years of age living in Lithuania. The authors aimed to explore consumer engagement in sustainable consumption and the differences between their gender and age depending on the level of engagement and sustainable consumption behaviour. The authors used quota sampling to target women and men and ensure the representation of consumers from all age groups. Data was collected during the pandemic period, from October to November 2020. A total of 1165 questionnaires were collected. Excluding incomplete questionnaires, a total of 904 samples were used in the further analysis. The study sample maintained the same gender ratio as the general population, but in the case of age, more answers were collected from the younger generation. The educational background of the respondents was divided into six groups from primary to tertiary. The largest share of respondents had received tertiary education (466 respondents; 51.5 %). Respondents were also asked to indicate their perceptions about their financial and living situations. More than half of the respondents, 58.6 %, stated living like most people in Lithuania, while 30.8 % indicated living slightly better than most people in Lithuania. The demographic profile of the sample broadly reflects the demographic composition of Lithuanian residents in terms of age and gender. The sample structure (within age and gender) is presented in Table 1.

Measures. Previously established and validated scales were used to measure constructs. The questionnaire assessed engagement in sustainable consumption on a 7-point Likert scale, which was developed by Kadic-Maglajlic et al. (2019). Sustainable consumption behaviour was measured using 23 items proposed by Quoquab, Mohammad, and Sukari (2019), environmental attitudes — 15 items proposed by Dunlap et al. (2000), personal norms — Vining and Ebreo (1992) 5-item list, perceived responsibility

Tab. 1. Structure of the sample

	Population	Population distribution	Distribution in the study	Number of fully completed questionnaires
Males	868288	47%	47.7%	431
Females	903729	53%	52.3%	473
16–29	389843	18.6%	25.3%	229
30–39	372123	15.9%	22.6%	204
40–49	354406	15.6%	20%	181
50–59	301242	17.6%	13.1%	118
60 and more	354403	32.4%	19%	172
In total: 904				

— seven items proposed by Paço and Rodrigues (2016), self-efficacy — four items proposed by Abraham, Pane and Chairiyani (2015), pro-environmental self-identity — four items developed by Whitmarsh and O'Neil (2010), and pro-environmental commitment — four items proposed by Su et al. (2019). Place attachment was measured with the help of eight items (Song & Soopramanien, 2019), life satisfaction — 5-item measurement scale by Clench-Aas et al. (2011), external factors, such as contextual factors, — the 7-item scale by Wang, Liu and Qi (2014), social norms — five items by Kim and Seock (2019), and promotion — three items (Zhu, Li, Geng & Qi, 2013). To measure all mentioned scales, the 7-point Likert-type scale was used (1 being "strongly disagree" and 7 — "strongly agree"). Environmental values were measured using 13 items adopted from Howell (2013) and Van Riper and Kylie (2014), as based on Schwartz (1994). From these, four items reflect biospheric values, four — altruistic values, and 5 — egoistic values. Respondents were asked to rate the importance of each value on a 7-point scale from 1 (not important at all) to 7 (very important). Finally, for environmental knowledge, eight items were used as proposed by Polonsky, Garma and Grau (2011). Responses were evaluated by selecting "True" or "False" for a given statement.

Also, questions were inserted regarding the respondents' age, gender, education and perceptions about their financial living situation in the research instrument.

3. Research results

Validity and reliability. The reliability of the variables used in this research was evaluated within exploratory factor analysis, using the principal components method of extraction (varimax rotation). This analysis removes statements with low factor loadings, multiple factor loadings, or factors explaining a small proportion of the variance. This analysis assesses the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy. A scale is suitable for factor analysis if KMO ≥ 0.6 and Bartlett's sphericity criterion has a significance level of $p < 0.05$ (Pallant, 2013). The results of EFA are presented in Table 2.

Tab. 2. Exploratory analysis

Factor	No of items	Cronbach Alpha	KMO	Range of Factor Loading	Variance Explained by Each Factor, %
Environmental knowledge	8	0.719	0.597	-0.646-0.598	2.693
Self-efficacy	4	0.812	0.707	0.677-0.913	21.01
Pro-environmental self-identity	4	0.693	0.5	0.827-0.876	4.022
Pro-environmental commitment	4	0.873	0.737	0.809-0.886	14.920
Perceived responsibility	5	0.842	0.829	0.721–0.854	26.33
Biospheric values	4	0.890	0.823	0.676–0.864	12.01
Altruistic values	3	0.821	0.793	0.651–0.839	6.79
Egoistic values	5	0.794	0.693	0.671–0.827	24.91
Personal norms	5	0.809	0.817	0.600–0.851	25.71
Environmental attitude	11	0.730	0.819	0.852–0.737	19.21
Place attachment	8	0,840	0.851	0.596-0.839	38.806
Life satisfaction	5	0.826	0.817	0.689-0.858	26.300
Contextual factors	7	0.633	0.658	0.604-0.804	4.758
Promotion	3	0.897	0,519	0.938-0.938	4.854
Social norms	5	0.884	0.772	0.758-0.872	23.741
Pro-environmental and pro-social engagement	8	0.893	0.866	0.600–0.856	63.63
Sustainable consumption behaviour	23	0.863	0.813	0.608–0.747	27.93

The analysis indicated that constructs of pro-environmental and pro-social engagement and sustainable consumption behaviour were modified and became single factors; therefore, in the following analysis, both are analysed as one dimension-based constructs. All Cronbach alpha values of the above-mentioned factors are over the recommended 0.7 value (Pallant, 2013), except for the pro-environmental self-identity and contextual factors. The scales of each construct were scored, and means, standard deviations, and minimum and maximum values were determined (Table 3).

The cluster comparison test and correlation analysis were used to analyse the relationship of these variables with the constructs. A comparison analysis of the expression of the constructs was carried out using the Kruskal–Wallis test (which is designed to compare more than two independent samples) and the Mann–Whitney test (which is designed to compare two independent samples in a non-parametric way). According to these tests, the results are statistically significant at $p < 0.05$ (Table 4).

Correlation analysis revealed that the older the age group, the better their environmental knowledge, the stronger their pro-environmental identity, place attachment, pro-environmental and pro-social engagement, and the more sustainable their consumption behaviour. However, older age also correlated with weaker altruistic values, a poorer attitude and lower appreciation of the environment, as well as lower incentive (Spearman's rank correlation coefficient $p < 0.05$). The age group variable does not correlate with self-efficacy, pro-environmental commitment, perceived responsibility, biospheric values, egoistic values, personal norms, life satisfaction and social norms. However, according to the p-values of the Kruskal–Wallis test of the latter scales, only the means (sum of ranks) of the life satisfaction and social norms scales do not differ between age groups.

The gender (women) variable is statistically significantly associated with all scales (Spearman's correlation coefficient and Mann–Whitney U test $p < 0.05$), with the exception of place attachment and contextual factors. Similarly, in the case of the education variable, only some factors (environmental attitude and social norms) are not statistically significantly ($\alpha = 0.05$) correlated or do not differ between education groups (Table 4).

The financial situation variable is unrelated to slightly more than half of the factors: pro-environmental identity, biospheric values, altruistic values,

Tab. 3. Numerical characteristics of the scales (N-904)

Factor	Mean	SD	Asymmetric coefficient	Excess coefficient
Environmental knowledge	4.708	1.212	-0.346	-0.334
Self-efficacy	4.526	1.146	-0.397	0.313
Pro-environmental self-identity	5.,231	1.003	-0.818	1.122
Pro-environmental commitment	5.690	0.965	-0.954	1.496
Perceived responsibility	5.159	1.027	-0.606	0.657
Biospheric values	6.075	0.868	-1.417	3.011
Altruistic values	6.235	0.868	-1.789	4.792
Egoistic values	4.893	0.996	-0.607	0.879
Personal norms	5.661	1.015	-0.824	0.651
Environmental attitude	5.181	0.728	-1.055	1.174
Place attachment	5.129	1.037	-0.712	0.853
Life satisfaction	4.971	1.022	-0.804	1.033
Contextual factors	4.945	1.092	-0.494	0.391
Promotion	5.449	0.977	-0.55	0.219
Social norms	5.631	1.101	-1.09	1.898
Pro-environmental and pro-social engagement	4.926	0.998	-0.453	0.329
Sustainable consumption behaviour	5.351	0.79	-0.712	0.847

Tab. 4. Non-parametric p-values and Spearman's rank correlation coefficients for non-parametric tests of control variables and factors

Control variables	Age		Gender (women)		Education		Financial living situation	
Factor	Kruskal–Wallis test p-value	Spearman coef.	Mann–Whitney U test p-value	Spearman coef.	Kruskal–Wallis test p-value	Spearman coef.	Kruskal–Wallis test p-value	Spearman coef.
Environmental knowledge	0.000	0.132*	0.015	-0.081*	0.221	0.087*	0.174	0.080*
Self-efficacy	0.055	0.005	0.007	0.090*	0.009	0.114*	0.000	0.119*
Pro-environmental self-identity	0.000	0.212*	0.005	0.092*	0.002	0.099*	0.037	-0.016
Pro-environmental commitment	0.017	-0.051	0.000	0.263*	0.001	0.141*	0.087	0.068*
Perceived responsibility	0.010	-0.032	0.000	0.210*	0.033	0.100*	0.002	0.072*
Biospheric values	0.001	0.002	0.000	0.196*	0.084	0.093*	0.591	0.015
Altruistic values	0.027	-0.088*	0.000	0.195*	0.068	0.081*	0.783	0.014
Egoistic values	0.025	0.061	0.004	-0.095*	0.001	-0.110*	0.476	0.007
Personal norms	0.002	-0.051	0.000	0.310*	0.000	0.173*	0.006	0.048
Environmental attitude	0.000	-0.194*	0.000	0.161*	0.669	-0.043	0.376	-0.006
Place attachment	0.000	0.197*	0.273	0.036	0.175	0.067*	0.248	0.018
Life satisfaction	0.394	0.063	0.017	0.080*	0.002	0.119*	0.000	0.225*
Contextual factors	0.002	-0.096*	0.316	0.033	0.000	-0.154*	0.001	-0.131*
Social norms	0.163	-0.057	0.001	0.111*	0.672	0.047	0.015	0.111*
Promotion	0.000	-0.149*	0.000	0.146*	0.330	0.059*	0.194	0.064*
Pro-environmental and pro-social engagement	0.001	0.125*	0.000	0.188*	0.066	0.082*	0.006	0.043
Sustainable consumption behaviour	0.000	0.190*	0.000	0.188*	0.007	0.054*	0.002	-0.001

** p < 0.05; no correlation; average correlation; strong correlation*

egoistic values, personal norms, environmental attitude, place attachment, pro-environmental and pro-social engagement and sustainable consumption behaviour.

To understand how men and women tend to engage in sustainable consumption and actual sustainable behaviour and how different factors are distributed according to gender, the authors compared the dichotomised median scales and their values. The scales were dichotomised according to the median value (above the median is a high score, and below or equal to the median is a low score). Fig. 1 shows the percentage distribution of high scores for men and women across all constructs. The results revealed that the proportion of women scoring above the median for the constructs is significantly higher than for men. Only in cases of environmental knowledge and egoistic values, men exceed women by almost three per cent. The factors with the highest scores among women are pro-environmental commitment (31.19 %), biospheric values (29.87 %), personal norms (29.76 %), sustainable consumption behaviour (29.31 %), and pro-environmental and pro-social engagement (29.3 %). The lowest scores were given to environmental knowledge (12.5 %) and promotion (15.3 %). Incentives also received the lowest number of high scores in the men's group (9.4 %). However, the men's group had the highest number of high scores

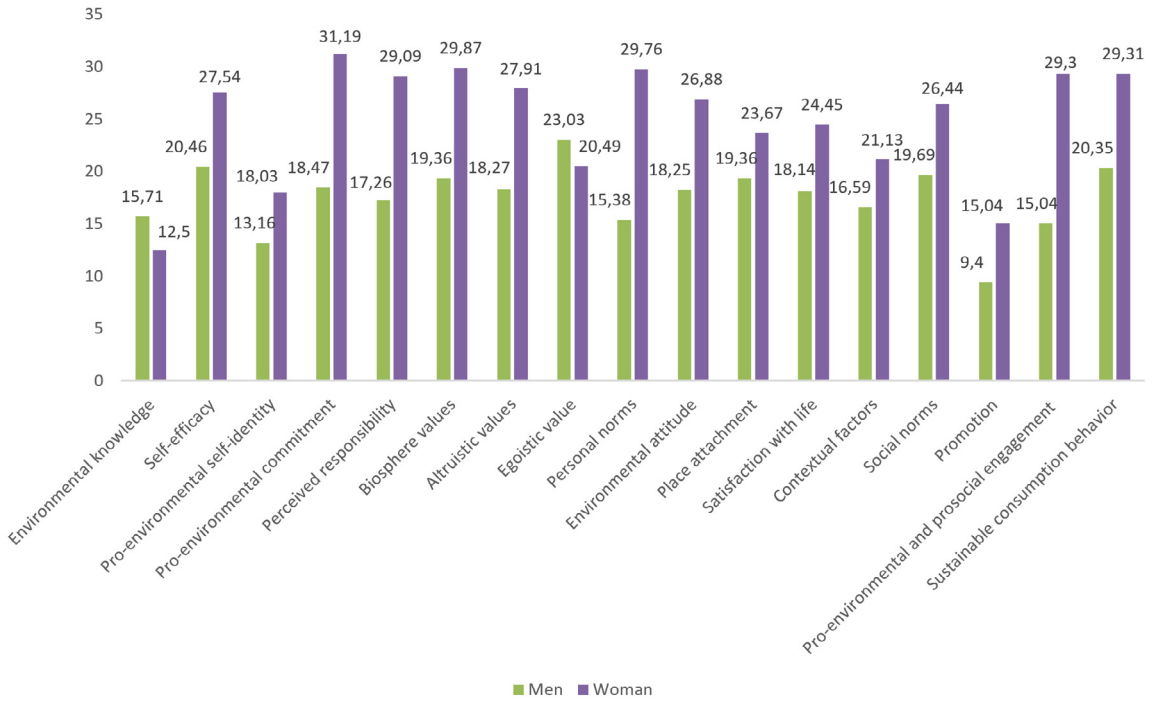

Fig. 1. High score results for women and men on the dichotomised median scales (%)

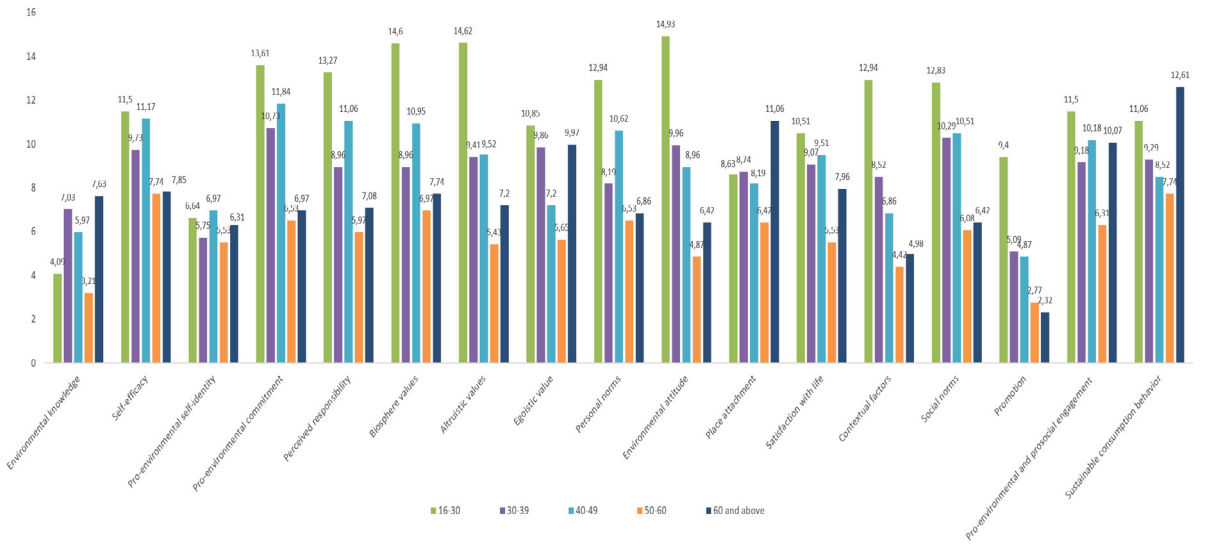

Fig. 2. Dichotomised median scale high score results based on age group (%)

for the factors compared to the women's group. The factors with the highest scores were egoistic values (23.03 %), self-efficacy (20.46 %), sustainable consumption behaviour (20.35 %), social norms (19.69 %), and place attachment and biospheric values, both scoring 19.36 %.

The study also focused on specificities of different age groups for the investigated factors. The data analysis obtained from the comparison of the five age groups focuses on the percentage of estimates above the median (Fig. 2).

In the first age group (16–29 years), the factors with the highest scores were environmental attitude (14.93 %), biospheric and altruistic values and reversal of environmental attitudes (14.6 %), pro-environmental commitment (13.61 %), engagement in sustainable consumption (11.5 %) and sustainable consumption behaviour (11.06 %). The lowest scores were for environmental knowledge (4.09 %) and pro-environmental identity (6.64 %).

In the second age group (30–39), pro-environmental commitment (10.73 %), social norms (10.29 %), environmental attitude (9.96 %), egoistic values (9.86 %) and self-efficacy (9.73 %) were the highest rated factors. Pro-environmental and pro-social engagement in sustainable consumption (9.18 %) and sustainable consumption behaviour (9.29 %) were very close to the top five highest-scoring factors. The lowest scoring factors were incentive (5.09 %) and pro-environmental identity (5.75 %).

In the third age group, the following factors received the highest scores: pro-environmental commitment (11.84 %), self-efficacy (11.17 %), perceived responsibility (11.06 %), biospheric values (10.95 %), and personal norms (10.62 %). Pro-environmental and pro-social engagement in sustainable consumption (10.18 %) were close to the top five factors, but sustainable consumption behaviour (8.52 %) had a slightly lower percentage of scores above the median. The lowest scores were promotion (4.87 %) and environmental knowledge (5.97 %).

In the fourth age group (50–59), the factors with the highest scores were self-efficacy and sustainable consumption behaviour (7.74 %), perceived responsibility (6.97 %), personal norms and pro-environmental commitment (6.53 %), and pro-environmental and pro-social engagement in sustainable consumption (6.31 %). The lowest scores were for promotion (2.77 %) and environmental knowledge (3.21 %), the same as in the third age group.

In the fifth age group (60+), the highest scoring factors were sustainable consumption behaviour (12.61 %), place attachment (11.06 %), involvement in sustainable consumption (10.07 %), egoistic values (9.97 %) and life satisfaction (7.96 %), whereas the lowest scoring ones were promotion (2.32 %), and contextual factors (4.98 %).

4. Discussion and conclusions

Most research on pro-environmental and pro-social engagement has been carried out on young people (Kadic-Maglajlic et al., 2019; Ojala, 2012). The present study explored significant differences in pro-environmental and pro-social engagement stimuli and results (i.e., sustainable consumption behaviour) for people of different age groups, gender, education and financial and living situations in Lithuania. The results revealed that as the age of the test group increases, the stronger the demonstrated place attachment, egoistic values, and self-efficacy become, and the more pro-environmental and pro-social engagement, and sustainable consumption behaviour are likely to be exhibited. This could be because older respondents are more attached to their place of residence and may even identify with it, perceiving themselves as environmentally friendly individuals and possessing environmental knowledge.

However, it should be noted that the older the age group, the weaker the relationship with altruistic values, the poorer the environmental attitude, the lower the appreciation of the contextual conditions, and the weaker the link with promotion. These results suggest that older respondents may show lower levels of self-sacrifice and reliance on incentives or conditions. Surprisingly, however, environmental attitudes, which reveal a certain perception of the world and a certain level of knowledge, correlate more weakly than environmental knowledge. For this reason, the authors suggest further developing research on pro-environmental and pro-social engagement in sustainable consumption to clarify the differences between knowledge and attitude.

This research shows that different determinants of engagement to sustainable consumption, the engagement itself and actual behaviour are expressed differently across age groups. However, one dimension of environmental values factor — biospheric values — dominated across the different respondents, scoring high in four of the five age groups. Thus, to encourage consumers from 16 to 49 years of age to engage in SC, the positioning of biospheric values

would be the right choice. It should be noted that egoistic values, which reflect the focus on personal gain, were dominant among respondents from 30–39 and 60+ age groups. Egoistic values could lead to pro-environmental and pro-social engagement in sustainable consumption by promoting a personal perception of the need to strive for what is good for oneself or one's children. The pro-environmental commitment, reflecting the individual's relationship with the environment and their perceived sense of duty towards it, emerged among respondents aged 16 to 49. Thus, it would be appropriate to include measures to promote pro-environmental commitment in designing social marketing strategies for this group. In addition, self-efficacy is revealed in these groups and that reflects the consumer's belief that their individual contribution can help solve global problems. Therein lies the nudging strategy of promoting individual people's success stories and the power for change that each person has.

Among the respondents, the older consumers were found to be more attached to the place. It could be argued that when attachment and identification with the living environment and the people and community within it are established, place attachment becomes an important factor that can change consumer behaviour. These results are in line with the study by Janmaimool and Denpaiboon (2016), in which younger individuals expressed low attachment to place and reported low engagement in sustainable consumption.

Meanwhile, the perceived responsibility, which is associated with life changes, a certain maturity of personality and perhaps the importance of family and children, is more linked to consumers from 40 to 60 years of age. These consumers realise the consequences of their actions and take responsibility for themselves personally. These results are in line with the study by Filimonaua et al. (2020), in which older individuals were more responsible and would be more likely to implement environmentally benign consumption practices in their day-to-day lives. Therefore, to focus on encouraging this group of consumers to engage in sustainable consumption, it would be appropriate to use measures that remind them of the responsibility for the actions they have taken.

As predicted, the youngest segment of respondents (i.e.,16–29) are more affected by social norms. Therefore, these consumers more often follow the behaviour of others in social groups and networks. Meanwhile, personal norms, those that determine the individual's personal perception of correct behaviour in a certain social environment, are more relevant among 40–60 years-old-Lithuanian consumers.

The study aspects related to gender are in line with study results by Banyte et al. (2020), which revealed a statistically significant relationship in a sample of women when examining engagement in sustainable consumption both at home and at work. In the research described by this article, the gender (women) variable is statistically significantly related to all factors except place attachment and contextual factors. It could be argued that women are more concerned with pro-environmental and pro-social issues in Lithuania. These results are in line with research by Janmaimool and Denpaiboon (2016), Wang, Liu and Qi (2014), Ojala (2012) and Piligrimiene et al. (2020).

In addition, the research described in this article revealed that the pro-environmental commitment, which reveals an individual's perceived sense of duty to the environment (even though such behaviour is not favourable to them personally), was dominant among the women respondents. Thus, the promotion of pro-environmental commitment, biospheric and altruistic values, personal norms and perceived responsibility among women could foster their engagement as well as actual sustainable behaviour. Meanwhile, social marketing strategies related to egoistic and biospheric values, self-efficacy, social norms and place attachment could be emphasised when targeting men. In conclusion, measures to encourage sustainable consumption should be adapted specifically to men and women.

Demographic variable education correlates statistically significantly with all scales except social norms, i.e., the external environment, regardless of the acquired education, affects consumers and shapes their behaviour. The links between education and other factors could be explained by the fact that most respondents who participated in the study had higher education, and if more people with lower levels of education had been part of the group of respondents, the results might have been different.

The current findings reveal the links between the consumers' financial and living situation and environmental knowledge, self-efficacy, pro-environmental commitment, perceived responsibility, life satisfaction, social norms and promotion, such that the better the subjective financial situation, the stronger the correlation. Economic factors are very important for those willing to pay a higher price for green or circularity-based products (Wei, Ang,

& Jancenelle, 2012; Pretner et al., 2021). However, the subjective financial situation reflects how the consumer evaluates their financial situation, but not price-related decisions. For this reason, it would be appropriate to develop research on pro-environmental and pro-social engagement in sustainable consumption to clarify the influence of economic factors.

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