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## ENVIRONMENTAL CONCERNS VS. SUSTAINABLE CLOTHES PURCHASES AMONG VARIOUS GENERATIONS OF FEMALES IN CEE COUNTRIES

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**ABSTRACT.** Modern society is facing a multitude of challenges and environmental problems related to excessive consumption and extensive utilization, or even depletion, of natural resources caused by various industries. These issues are compounded by the fashion businesses selling attractive, trendy, mass-produced cheap clothes, while exploiting labour force with unsatisfactory working conditions. The objective of this study was to examine generational differences in environmental concerns of females related to sustainable clothing and differences in their actual purchases. A questionnaire survey was conducted for a sample of 1796 female respondents from 4 countries: Slovakia (428), Czechia (423), Slovenia (518), and Lithuania (427). Kruskal-Wallis tests were used for data processing. The findings reveal significant differences in concern for the well-being of clothing factory workers, animal species, future generations, and for the environment across the generational cohorts. Overall, younger generations, especially Gen Z and Gen Y, exhibit higher levels of concern for the well-being of clothing factory workers, animal species, and for the environment compared to Baby Boomers. Gen X demonstrates higher levels of concern for the well-being of future generations and environmental issues. Notably, Gen Z shows the lowest levels of engagement across all categories, suggesting a gap between attitudes and actual behaviour. Limitations of the study are discussed, and future research directions are noted.

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## Introduction

The fashion industry is a significant contributor to the global economy, with an estimated value of over 2.5 trillion USD and millions of individuals employed worldwide. The industry demonstrated a significant annual growth rate of 10.7% between 2018 and 2022 (Statista, 2022). However, it also has a significant negative impact on the environment. The industry is a major contributor to carbon emissions, accounting for 10% of global emissions. It is also a significant source of industrial wastewater pollution, with 20% of such contamination globally originating from the fashion industry, surpassing the combined impact of international flights and shipping (Geneva Environment Network, 2021). Castro-López et al. (2021) conducted a study which found that citizens of European countries purchase an average of over 12 kg of clothing per year. This high level of consumption can be translated to a significant impact on the environment, including the consumption of more than 46 million m<sup>3</sup> of water and the generation of 195 million tons of CO<sub>2</sub> emissions. Furthermore, a study by the United Nations Economic Commission for Europe (UNECE, 2018) revealed that 85% of all textiles produced annually are discarded and either sent to landfills or burned as unused or unsold clothing. Rapid growth has been observed for the so-called fast-fashion companies that sell affordable, ever-changing, trendy, mass-produced clothes. Clothing purchases increased by 60% between 2000 and 2014, but consumers wore their clothes for twice as short a period (McKinsey & Company, 2022).

On the other hand, people become increasingly aware of the importance of sustainable growth (Ertekin & Atik, 2015). As a result, the popularity of eco-friendly, sustainable clothing is increasing although the knowledge is not frequently enough transformed into a sustainable purchase. Customers' shopping habits are not always congruent with their values (Crommentuijn-Marsh et al. 2010). Nevertheless, the key towards increasing sustainable customer behaviour is to encourage more transparency and promote more ethical and environmentally friendly clothing practices, such as slow fashion. For the conscious customer, "quality over quantity" has been becoming the standard of decision-making. Organizations need to respond to shifting societal expectations in response to social and environmental concerns. Global issues like sustainability, linked to climate change, demand a thoughtful and everyday more urgent response from everyone; at the organizational and individual level (Sedej, 2021). Busalim et al. (2022) conducted a systematic literature review of relevant journal articles published from 2009 to 2019 and found that existing literature on sustainable fashion is focused on understanding trends within sustainable fashion research, sustainable fashion supply chain, or sustainable business models, rather than on consumer behaviour. This suggests that there is still a gap in the literature when it comes to understanding consumer attitudes and behaviour towards sustainable fashion.

The subsequent sections include examination of relevant literature on sustainable fashion, sustainable consumer behaviour and influencing factors in Section 1, followed by the presentation of the applied methodology in Section 2, involving description of the research design, sample size, data collection, and analytical methods. Section 3 contains the presentation and discussion of the research findings, and the final section outlines our conclusions, including potential directions for future research.

## 1. Literature review

Sustainable clothing has been frequently equated with ethical clothing. An agreed upon definition of sustainable clothing is still lacking, however, Mukendi et al. (2020) explain sustainable fashion as eco-friendly fashion, brought to consumers in respect of fair trade principles, cruelty-free practice and environmental preservation. According to Reimers et al. (2016), ethical clothing is socially and environmentally responsible clothing which seeks to minimize negative effects on the environment, ecosystems and animal species and takes care of fair labour conditions and welfare of clothing factories' workers, relying upon processes which include, but are not limited to slow fashion. According to Reimers et al. (2016) ethical clothing is a higher-order construct which comprises responsibility towards the environment, animal welfare, well-being of clothing workers and slow fashion principles. Busalim et al. (2022) emphasizes that sustainable fashion not only focuses on the products consumed, but also on the ways in which they are consumed. Sustainable consumption behaviour, defined as the act of purchasing and utilizing products in an environmentally conscious manner, is an essential condition for advancing sustainable development (Wang & Shen, 2020). Studies indicate that consumer demand for eco-friendly products and sustainable fashion choices is on the rise, and that these preferences will become increasingly prevalent in the future fashion industry (Rao et al., 2021). However, Sinha et al. (2022) point out that, despite a growing awareness of sustainability issues among consumers, cost remains a significant factor in purchasing decisions and many consumers continue to choose cheaper, non-sustainable options. Moreover, Park and Lin (2020) have highlighted that, despite consumer awareness of the importance of sustainable clothing, this awareness does not necessarily translate into actual purchasing behaviour. This suggests a gap between consumer attitudes and behaviour when it comes to sustainable fashion choices.

Chang and Watchravesringkan (2018) suggest that consumer knowledge plays a crucial role in accounting for the gap between consumers' attitudes and intentions towards sustainable fashion products and their actual purchasing behaviour. They argue that a lack of knowledge regarding the materials and production processes used in sustainable fashion products may lead consumers to perceive these products as being more expensive and made from organic fibers. This perception may serve as a barrier that uptakes the adoption of sustainable fashion products, resulting in a reluctance to purchase such products. Research conducted by McNeill and Venter (2019) concurs that self-concept and social identity are the primary drivers of fashion consumption. Neumann et al. (2021) conceptualize the decision-making process as being informed by the combination of consumer values. In this case, values can be defined as the attitudes, beliefs, and principles that shape an individual's preferences and priorities, and inform their behaviour. The perceived value of a sustainable product encourages purchase intent, as consumers believe that by buying this type of product, they are contributing to the improvement of the environment (Castro-López, et al. 2021).

Chan and Wong (2012) have identified four variables with a significant impact on the decision-making process related to the consumption of sustainable fashion. The authors state that gender, age, level of education, and income level are the most critical determinants that influence consumers' purchasing decisions. The authors have indicated that women may be more inclined to prioritize eco-friendliness when making fashion purchases. This may be due to the fact that women are more likely to be the primary shoppers within a household and to have a heightened awareness of environmental and social issues. Gazzola et al. (2020) confirm that women, especially in the age group between 18 and 34 years, with a higher qualification and an occupation as a student, employee, or teacher, are on average more informed, aware, and passionate than men with regard to the applications of sustainability principles in various

fields. Busalim et al. (2022) have noted that younger consumers are more inclined to be interested in sustainable fashion and to prioritize eco-friendliness when making purchasing decisions. This may be attributed to a greater awareness of environmental issues among this demographic and a desire to make more sustainable lifestyle choices.

The studies conducted in various countries have explored the differences in attitudes and behaviour towards sustainable consumption of clothing across generations. The population can be divided into generational cohorts on the basis of the years of birth (Ladhari et al., 2019). Generational cohort theory posits that individuals who are born within a specific time frame, typically extending 20 to 25 years, share common attitudes, values, beliefs, and experiences. These shared experiences are largely shaped by macro-level events such as social, political, and economic factors that occur during the formative years of the individuals (Lissitsa & Kol, 2021). This understanding of generations has been supported by multiple sources (Lin & Chen, 2022; Yamane & Kaneko, 2021). The population is often divided into several generational cohorts, commonly referred to as Baby Boomers, Generation X, Generation Y (Millennials), Generation Z and Generation Alpha, which is the first generation to be born in the 21<sup>st</sup> century. Each of these cohorts is characterized by distinct values, beliefs, and behaviour that are influenced by historical events, technological advancements, societal changes (Gazzola et al., 2020) and culture (Ghali-Zinoubi, 2022). However, there is still a lack of consensus among researchers regarding the exact start and end dates of each generation category (Ladhari et al., 2019).

Yamane and Kaneko (2021) found that younger generations in Japan have a higher willingness to pay a premium for sustainable goods/services, but this does not necessarily indicate a higher level of sustainable living. Liang and Xu (2018) investigated the behaviour of Chinese consumers towards second-hand clothing and found that post-80s (Generation Y) held the highest perceived environmental values and the greatest interest in second-hand clothing. A study in Romania (Dabija et al., 2020) showed that younger generations (Gen Y and Z) were more likely to purchase green products, although this may be due to a lack of environmental education among older generations (Baby Boomers and Gen X). According to the study conducted by Dabija et al. (2019), Generation Z is characterized by a strong concern for environmental issues, such as pollution and sustainability. This generation demonstrates a preference for companies that prioritize environmental protection and is willing to pay a premium for eco-friendly products. Furthermore, Generation Z displays altruistic behaviour, actively participating in initiatives aimed at alleviating poverty and improving access to basic necessities, such as water and healthcare, for disadvantaged communities.

Lin and Chen (2022) examined the relationship between environmental consciousness, perceived value, and the intention to purchase sustainable apparel. The more environmentally conscious a consumer, the higher the perceived value and behavioural intention towards sustainable apparel. The study further found that Generation Z displayed stronger associations between environmental beliefs, attitudes, and intentions compared to Generation Y and X. The study in Taiwan suggests that environmental considerations and perceptions play an important role in determining consumer intention to purchase sustainable clothing. Ivanova et al. (2019) compared the impact of various factors, including perceived consumer efficiency, media exposure, family, peer influence, and self-identity, on the intentions of Generation X and Generation Y to purchase organic products in France. These studies demonstrate the importance of considering generational differences in consumer behaviour research and highlight the need for greater environmental education and awareness across all generations.

Ghali-Zinoubi (2022) conducted research on the barriers to organic product purchasing, revealing that factors such as limited environmental knowledge, high prices, beliefs in product efficiency, availability, and skepticism about environmental claims can be significant factors. Findings of this study indicate that individuals with high levels of altruism and concern for the

environment (Gen Z) are more likely to engage in eco-friendly behaviour, reflecting their belief in the importance of their individual actions in addressing environmental issues. Golob and Kronegger (2019) posit that environmental considerations have gained prominence in consumer decision-making, as evidenced by the willingness of consumers to pay a premium for socially and environmentally responsible products. The minimization of textile and apparel consumption is not the sole solution to environmental problems, but enhancing consumer awareness of the impact of their daily consumption habits on the environment, as well as promoting environmentally sustainable apparel consumption and disposal practices, is crucial (Liang & Xu, 2018).

Busalim et al. (2022) found that the majority of studies on sustainable fashion were conducted in North America (49%), Asia (17%) and Europe (13%). The remaining studies were conducted in Australasia (11%), cross-culture context (9%), and Africa (1%). This distribution of studies suggests a need for further cross-country research on sustainable fashion.

While it is generally believed that environmental concern is a key prerequisite of pro-environmental behaviour (Ogiemwonyi et al., 2023), little empirical research has been performed to examine whether various age cohorts differ when it comes to environmental concern. The paucity of research is particularly prevalent in the domain of sustainable clothing and in the context of CEE countries. In addition to environmental concern, previous research indicates concern for the well-being of clothing factories' workers, concern for endangering animal species and concern for the well-being of future generations as pertinent to (un)sustainable clothing production and consumption (Reimers et al., 2016; Rahman & Koszewska 2020). Whereas majority of previous studies have examined the determinants of consumers' behavioural intentions related to green apparel (Castro-López et al., 2021; Lin & Chen, 2022; Tewari et al., 2022; De Jesus et al., 2024), scarce attempts have been made thus far to examine actual purchases of sustainable clothing and explore eventual differences among consumers belonging to various age cohorts.

Taking the aforementioned into account, the objective of this study was twofold: (1), to examine whether age female cohorts differ in various concerns related to sustainable clothing, such as concern for the well-being of clothing factories' workers, concern for animal species that may be put to danger by clothing production, concern for the well-being of future generations, and environmental concern in general, and (2) to examine whether age cohorts differ regarding their actual purchases of sustainable clothing. To achieve the objective, quantitative research was conducted on a sample of female customers from Slovakia, Czech Republic, Slovenia and Lithuania.

To examine whether age cohorts differ, when it comes to various concerns related to sustainable clothing, we proposed the following hypotheses:

H0(a,b,c,d): *The mean ranks of concerns related to sustainable clothing are equal across age cohorts and*

H1(a,b,c,d): *The mean ranks of concerns related to sustainable clothing are not equal across age cohorts.*

To examine the differences across age cohorts related to actual purchases of sustainable clothing, the following hypotheses were proposed:

H0(e,f,g,h,i,j): *The mean ranks of actual purchases of sustainable clothing are equal across age cohorts and*

H1(e,f,g,h,i,j): *The mean ranks of actual purchases of sustainable clothing are not equal across age cohorts.*

## 2. Methodological approach

### 2.1. Sampling and measurement instrument

The study was performed on a convenience sample of female clothing customers born between 1945 and 2005 and classified into four age cohorts, such as Baby Boomers (1945–1964), Generation X (1965–1980), Generation Y (1981–1994) and Generation Z (1995–2005). Various studies have been performed on work engagement, attitudes, values and behaviour of generational cohorts, indicating slight variations in specific date ranges among cohorts depending on the study or its context (Bejtkovský, 2016). Respondents from Slovakia (428), Czech Republic (423), Slovenia (518) and Lithuania (427) participated in the study in 2021. Data collection was performed by means of a web-based structured questionnaire using quotas for each generational cohort to ensure their proportion in the overall sample. A link to the questionnaire was shared with prospective respondents via e-mails and social media platforms. The study addressed the perspective of female consumers, as they have been recognized by prior research as more fashion oriented and concerned about environmental issues than their male counterparts (Cho et al., 2015; Gazzola et al., 2020; Rahman & Koszewska 2020). Respondents filled questionnaire forms in their native language. Initially, questionnaire items were proposed in English language, taking into consideration extant literature and previously validated constructs. To ensure translation equivalence, we followed Mullen's (1995) suggestions. Questionnaire items were translated into target languages by the assistance of bilingual researchers and then backtranslated into English language. Prior to a large-scale survey, questionnaires were pilot tested, to examine their readability and comprehensibility. Feedback obtained from pilot research contributed to the minor amendments of the questionnaires.

Concern for the well-being of clothing factories' workers, concern for animal species, concern for the well-being of future generations and environmental concern in general were measured with multiple item scales and a mean value of corresponding items was used to represent the construct. Individual items were measured on a 7-point Likert-type scale, ranging from 1-strongly disagree to 7-strongly agree.

Constructs and items used in this study were proposed in line with previous research on sustainable or eco-friendly fashion. Items used to measure concern for the well-being of clothing factories' workers and animals were proposed in line with Reimers et al.'s (2016) discussion of sweatshops and the detrimental effects of clothing production on animal species, such as killing animals for their fur or testing dyeing processes or endangering ecosystems which are necessary for the survival of some animal species. Concern for the well-being of future generations was measured with a multiple-item scale, which was proposed in accordance with previous research on environmental and climate pressures of the clothing industry. Clothing items affect the environment and human health throughout their lifespan, due to release of hazardous pesticides and large quantities of water used in the production of textile fibers, water, energy and chemicals used in the maintenance of clothing and release of microplastics in the maintenance and the disposal of synthetic clothing, whereas discharged microplastics can end up in human food chain. (Sandin et al., 2019; Sajn, 2019). According to the European Environment Agency (2019), textile and clothing industry takes fourth place in terms of primary raw materials and water usage, after food, housing and transportation, fifth place in terms of greenhouse gas emissions and second place in terms of land use. Items used for measuring environmental concern in general were adopted from the work of Do Paco et al. (2018) and adjusted to the context of sustainable clothing.

Actual purchases of sustainable clothing were measured with six items, such as buying clothes made up of eco-friendly or organic materials, buying clothes made up of recyclable materials, selecting fabrics which require cooler washing temperature, shorter drying time or less ironing, avoiding apparel made up of synthetic fabrics, buying clothes made up of natural materials and buying clothes with low or no impact of dyeing on the environment. Individual items were used to represent the dependent variable, which were proposed in line with Cho et al.'s (2015) construct of environmental apparel purchase.

## 2.2. Analysis

Kruskal-Wallis tests were used to test proposed hypotheses. The choice of this non-parametric test was influenced by the significance of Shapiro-Wilk normality tests ( $p < .05$ ) per each dependent variable and each age cohort, which indicated the deviation from normal distribution. Data analysis was performed using SPSS v.19.

## 3. Results and discussion

Results of Kruskal-Wallis test showed that concern for the well-being of clothing factories' workers (mean\_II.5.1), concern for animal species (mean\_II.5.2), concern for the well-being of future generations (mean\_II.5.3) and environmental concern in general (mean\_II.5.4) *differed across age cohorts*, as displayed in Table 1. Therefore, hypotheses H1a, H1b, H1c and H1d are accepted.

Table 1. Results of Kruskal-Wallis tests (Test Statistics)

Test Statistics				
	mean_II.5.1	mean_II.5.2	mean_II.5.3	mean_II.5.4
Kruskal-Wallis H	11.547	24.895	16.676	35.913
df	3	3	3	3
Asymp. Sig.	.009	.000	.001	.000

Grouping Variable: age cohort

Note: 1 – Baby Boom, 2 – Gen X, 3 – Gen Y, 4 – Gen Z

Source: *own compilation*

When we look more closely at assessments provided by the respondents e.g. in the Czech sample we can see an expressed lack of information. A large part of the total sample rated their knowledge with a number from 1 to 3, indicating a very low level of information. Although the respondents who noted that they had knowledge about the consequences they felt insufficiently informed. These findings suggest an interest in information on sustainability in the fashion industry which is not being met.

To examine which age cohorts significantly differed in terms of mean ranks related to various concerns, we performed Kruskal-Wallis post hoc tests and compared each age cohort with each other age cohort, as displayed in Table 2. When it comes to concern for the well-being of clothing factories' workers (mean\_II.5.1), post-hoc K-W test with Bonferroni corrected p-value (Table 2)  $Z = -2.713$   $p < 0.05$  indicated significant difference between Gen Z (group 4) and Baby Boomers (group 1), i.e. according to mean ranks (Table 3) Gen Z showed significantly higher concern for the well-being of clothing workers. Significantly higher concern for the well-being of clothing workers, in comparison with Baby Boomers, was also expressed by Gen Y ( $Z = -3.138$ ,  $p < 0.05$ ), whereas the difference in concern for the well-being

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of clothing factories' workers was not significant between Gen Y, with the highest concern, and Gen X and Gen Z. The finding of Gen Z's higher concern for the well-being of clothing factories' workers is in compliance with McNeill and Moore's (2015) finding from New Zealand of higher concern of consumers in their 20s for fair labor practices in clothing manufacturing countries. Higher concern for the well-being of clothing factories' workers of Gen Z, in comparison with Baby Boomers, can also be associated with Djafarova and Foots' (2022) explanation of Gen Z consumers as being tech-savvy consumers spending significant amount of time using online media and who are therefore very much aware of real-world realities and justice oriented.

Table 2. Kruskal Wallis post hoc test (Pairwise comparisons)

mean II.5.1			mean II.5.2			mean II.5.3			mean II.5.4		
Std. Test Statistic (Z)	Adj. Sig. (p)		Std. Test Statistic (Z)	Adj. Sig. (p)		Std. Test Statistic (Z)	Adj. Sig. (p)		Std. Test Statistic (Z)	Adj. Sig. (p)	
1-2	-1.739	0.492	1-2	-3.484	0.003	4-1	0.785	1.000	4-1	2.698	0.042
1-4	-2.713	0.040	1-3	-3.460	0.003	4-3	2.174	0.178	4-3	3.863	0.001
1-3	-3.138	0.010	1-4	-4.821	0.000	4-2	3.825	0.001	4-2	5.871	0.000
2-4	-1.041	1.000	2-3	-0.053	1.000	1-3	-1.321	1.000	1-3	-1.059	1.000
2-3	-1.505	0.793	2-4	-1.441	0.897	1-2	-2.891	0.023	1-2	-2.929	0.020
4-3	0.471	1.000	3-4	-1.356	1.000	3-2	1.581	0.683	3-2	1.895	0.349

Note: 1 – Baby Boom, 2 – Gen X, 3 – Gen Y, 4 – Gen Z

Source: *own compilation*

Table 3. Means ranks

Mean Ranks					
Age cohorts	N	mean_II.5.1	mean_II.5.2	mean_II.5.3	mean_II.5.4
1	403	831.87	792.58	866.87	886.1
2	486	890.68	912.64	967.33	988.35
3	443	940.34	914.42	913.77	923.87
4	464	924.62	960.49	839.3	790.93
Total	1796				

Note: 1 – Baby Boom, 2 – Gen X, 3 – Gen Y, 4 – Gen Z

Source: *own compilation*

A Kruskal Wallis test showed that concern for animal species (mean\_II.5.2) significantly differed over generational cohorts  $H(3)=24.895$ ,  $p<0.05$  (Table 1). Post-hoc K-W test with Bonferroni corrected p-value (Table 2) indicated significantly lower level of concern for animal species expressed by Baby Boomers (group 1) in comparison with Gen X ( $Z=-3.484$ ,  $p<0.05$ ), taking into account mean ranks per generational cohorts, and significantly lower concern of Baby Boomers in comparison with Gen Y ( $Z=-3.460$ ,  $p<0.05$ ) and Gen Z ( $Z=-4.821$ ,  $p<0.05$ ). The difference in concern for animal species was not significant between Gen Z, with the highest concern in terms of mean ranks, and Gen Y nor were significant differences between Gen Z and Gen X. It indicated significant differences in the level of concern for the well-being of future generations (mean\_II.5.3) among generational cohorts,  $H(3)=16.676$ ,  $p<0.05$ . In terms of mean ranks Gen X expressed the highest concern. Post-hoc pairwise comparisons indicated that Gen X did not differ significantly from Gen Y ( $Z=1.581$ ,  $p>0.05$ ), but the concern of Gen X was significantly higher than the concern of Gen Z ( $Z=3.825$ ,  $p$



<0.05). Concern of Baby Boomers was significantly lower than the concern of Gen X ( $Z=-2.892$ ,  $p<0.05$ ). A Kruskal-Wallis test indicated significant differences in the level of environmental concern among generational cohorts,  $H(3)=35.913$ ,  $p<0.05$ . In terms of mean ranks the highest concern was recorded by Gen X. Post-hoc pairwise comparison indicated that Gen X did not differ significantly from Gen Y ( $Z=1.895$ ,  $p>0.05$ ), but Gen X expressed significantly higher level of concern than Gen Z ( $Z=5.871$ ,  $p<0.05$ ) and higher level of concern than Baby Boomers ( $Z=-2.929$ ,  $p<0.05$ ). Post-hoc analyses also indicated lower concern overall of Gen Z in comparison with Baby Boomers ( $Z=2.698$ ,  $p<0.05$ ), Gen X ( $Z=5.871$ ,  $p<0.05$ ), and Gen Y ( $Z=3.863$ ,  $p<0.05$ ).

To examine whether various modes of pro-environmental clothing purchases differ across generational cohorts in selected European countries, we applied a series of Kruskal-Wallis tests with post-hoc analyses. Results of the study, displayed in Table 4, indicate significant differences between age cohorts when it comes to various modes of pro-environmental clothing purchases. Hypotheses H1e, H1f, H1g, H1h, H1i, H1j can be accepted.

Table 4. Results of Kruskal-Wallis tests (Test Statistics)

Test Statistics	II.6.1.	II.6.2.	II.6.3.	II.6.4.	II.6.5	II.6.6
Kruskal-Wallis H	60.653	24.835	83.436	61.094	36.340	61.529
df	3	3	3	3	3	3
Asymp. Sig.	.000	.000	.000	.000	.000	.000

Grouping Variable: age cohort

Note: 1 – Baby Boom, 2 – Gen X, 3 – Gen Y, 4 – Gen Z

Source: *own compilation*

A Kruskal Wallis test showed that buying clothes made up of eco-friendly or organic materials (II.6.1.) significantly differed over generational cohorts  $H(3)=60.653$ ,  $p<0.05$  (Table 4). Post-hoc K-W test with Bonferroni corrected p-value (Table 5) indicated that Gen X, which according to mean ranks displayed in Table 6 recorded the highest score, did not differ significantly in buying clothes made up of eco-friendly materials from Baby Boomers ( $Z=-2.397$ ,  $p>0.05$ ), but differed significantly from Gen Z ( $Z=7.666$ ,  $p<0.05$ ), i.e. recorded higher level of buying clothes made up of eco-friendly materials than Gen Z. Gen X also recorded significantly higher level of buying clothes made up of eco-friendly materials than Gen Y ( $Z=3.274$ ,  $p<0.05$ ). Gen Z recorded significantly lower scores when it comes to buying eco-friendly clothes in comparison with all other age cohorts. The finding of Gen Z recording significantly lower score in comparison with all other age cohorts, when it comes to buying clothes made up of eco-friendly or organic materials, is in compliance with Djafarova and Foots' (2022) explanation of Gen Z as being more attitudinally than behaviourally green. After deeper investigation of our data, our findings suggest that the design of clothing items is usually a more important factor than the fact whether the item is sustainable. Respondents were more likely to purchase sustainable clothes if they matched or even exceeded the attractiveness of designs of available fast fashion alternatives.

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Table 5. Post-hoc analyses of various models of sustainable clothing purchases

II.6.1			II.6.2			II.6.3			II.6.4			II.6.5			II.6.6		
Std. Test Statistic (Z)	Adj. Sig. (p)		Std. Test Statistic (Z)	Adj. Sig. (p)		Std. Test Statistic (Z)	Adj. Sig. (p)		Std. Test Statistic (Z)	Adj. Sig. (p)		Std. Test Statistic (Z)	Adj. Sig. (p)		Std. Test Statistic (Z)	Adj. Sig. (p)	
4-3	4.253	0.000	4-1	0.988	1.000	4-3	4.706	0.000	4-3	3.888	0.001	4-3	2.953	0.019	4-3	2.653	0.048
4-1	4.936	0.000	4-3	2.776	0.033	4-1	7.622	0.000	4-1	5.385	0.000	4-1	4.697	0.000	4-1	5.722	0.000
4-2	7.666	0.000	4-2	4.652	0.000	4-2	8.085	0.000	4-2	7.553	0.000	4-2	5.558	0.000	4-2	7.155	0.000
3-1	0.778	1.000	1-3	-1.701	0.534	3-1	2.998	0.016	3-1	1.575	0.692	3-1	1.797	0.434	3-1	3.100	0.012
3-2	3.274	0.006	1-2	-3.483	0.003	3-2	3.230	0.007	3-2	3.531	0.002	3-2	2.506	0.073	3-2	4.387	0.000
1-2	-2.397	0.099	3-2	1.790	0.441	1-2	-0.086	1.000	1-2	-1.834	0.400	1-2	-0.607	1.000	1-2	-1.110	1.000

Note: 1 – Baby Boom, 2 – Gen X, 3 – Gen Y, 4 – Gen Z

Source: *own compilation*

Table 6. Means ranks related to various modes of sustainable clothing purchases

Mean Ranks							
Age cohorts	N	II.6.1	II.6.2	II.6.3	II.6.4	II.6.5	II.6.6
1	403	927.22	860.30	992.51	943.48	949.61	965.94
2	486	1009.56	979.82	995.47	1006.62	970.10	1003.83
3	443	899.92	919.94	886.73	888.10	887.67	857.78
4	464	755.87	826.03	726.52	756.11	789.46	768.48
Total	1796						

Note: 1 – Baby Boom, 2 – Gen X, 3 – Gen Y, 4 – Gen Z

Source: *own compilation*

When it comes to buying clothes made up of recyclable materials (II. 6.2.), Gen X recorded the highest score in terms of mean ranks. It did not differ significantly from Gen Y ( $Z=1.790$ ,  $p>0.05$ ), but Gen X recorded significantly higher score than Gen Z ( $Z=4.652$ ,  $p<0.05$ ) and Gen X recorded significantly higher score than Baby Boomers ( $Z=4.652$ ,  $p<0.05$ ). Gen Z did not differ significantly from Baby Boomers when it comes to buying clothes made up of recyclable materials ( $Z=0.988$ ,  $p>0.05$ ), but Gen Z recorded significantly lower score than Gen Y ( $Z=2.776$ ,  $p<0.05$ ). Significantly lower score of Gen Z in comparison with Gen X and Gen Y, related to purchasing clothes made up of recyclable materials, is in compliance with Djafarova and Foots' (2022) finding of high perceived price of green or ethical products from the perspective of Gen Z customers.

When it comes to selecting fabrics which require cooler washing temperature, shorter drying time or less ironing (II.6.3), Gen X in terms of mean ranks again recorded the highest score. Gen X did not differ significantly from Baby Boomers ( $Z=-0.086$ ,  $p>0.05$ ), but Gen X recorded a higher score than Gen Y ( $Z=3.230$ ,  $p<0.05$ ) and a higher score than Gen Z ( $Z=8.085$ ,  $p<0.05$ ). Post-hoc analysis with Bonferroni corrected  $p$ -value indicated that Gen Z recorded significantly lower scores when it comes to selecting fabrics which require cooler washing temperature, shorter drying time or less ironing than all other generations.

When it comes to avoiding apparel made up of synthetic fabrics (II.6.4.), Gen X again recorded the highest mean rank. Post-hoc analysis indicated that Gen X did not differ significantly from Baby Boomers ( $Z=-1.834$ ,  $p>0.05$ ), but Gen X differed significantly from both Gen Y ( $Z=3.531$ ,  $p<0.05$ ) and Gen Z ( $Z=7.553$ ,  $p<0.05$ ). Gen Z significantly less avoided apparel made up of synthetic materials than all other generations.

When it comes to garments made up of natural materials (II.6.5.), again Gen X recorded the highest score in terms of mean ranks. However, Gen X did not differ significantly from Baby Boomers ( $Z=-0.607$ ,  $p>0.05$ ) and Gen Y ( $Z=2.506$ ,  $p>0.05$ ), but Gen X expressed higher level of preference for natural materials than Gen Z ( $Z=5.558$ ,  $p<0.05$ ). Preference for garments made up of natural materials of Gen Z was significantly lower than the preference of Baby Boomers ( $Z=4.697$ ,  $p<0.05$ ) and Gen Y ( $Z=2.953$ ,  $p<0.05$ ). Significantly lower score of buying garments made up of natural materials of Gen Z, in comparison with all other age cohorts, may be explained by Gen Z's strong sense of frugality (Djafarova & Fouts, 2022), or perhaps their frequently limited budgets, and higher price of eco-friendly clothing items.

When it comes to buying clothes with low or no impact of dyeing on the environment (II.6.6.), Gen X again recorded the highest score in terms of mean ranks. Post-hoc analysis indicated that Gen X's behaviour did not differ significantly from the behaviour of Baby Boomers ( $Z=-1.110$ ,  $p>0.05$ ), but Gen X expressed a higher level of buying clothes with low or no impact of dyeing on the environment than Gen Y ( $Z=4.387$ ,  $p<0.05$ ) and Gen Z ( $Z=7.155$ ,  $p<0.05$ ). Besides recording lower level of buying clothes with low or no impact of dyeing on the environment of Gen Z in comparison with Gen X, Gen Z also recorded significantly lower score in comparison with Baby Boomers ( $Z=5.722$ ,  $p<0.05$ ) and Gen Y ( $Z=2.653$ ,  $p<0.05$ ).

## Conclusion

Findings of the study bear theoretical and managerial contribution. From the theoretical perspective, by addressing thus far barely examined perspective of CEE female consumers, this study's findings contribute to the body of knowledge on consumers' concerns and behaviour related to sustainable fashion.

Important insights for practitioners also stem from the study's findings. Although the study does not offer ready-made solutions for policy-makers and fashion retailers, it contributes to the understanding of generational differences in sustainable clothing concerns and the real behaviour of females in selected CEE countries. Herewith, it emphasizes the need for effective communication strategies to bridge the gap between consumers' concerns and actual behaviour, especially among young consumers. Our study investigated the concern for the well-being of clothing factory workers, for animal species, for the well-being of future generations, and environmental concern among different female generational groups. The results indicated significant differences in these aspects across cohorts studied. In terms of concern for the *well-being of clothing factory workers*, Gen Z expressed significantly higher levels of concern compared to Baby Boomers. This finding aligns with previous research indicating that younger consumers, such as Gen Z, show greater awareness and concern for fair labor practices in clothing manufacturing countries (Djafarova & Fouts, 2022). This difference between Gen Z

and Baby Boomers may be explained by higher reliance of young consumers on current fashion trends and their exposure to online sources and social media platforms which convey news and unexpected practice of global brands. Regarding *concern for animal species*, Baby Boomers expressed significantly lower levels of concern compared to all other generations (X, Y, Z), whereas Gen Y and Gen Z exhibited higher levels of concern for animal species. Regarding the level of *concern for the well-being of future generations*, Gen X showed the highest levels of concern from all generational cohorts, with significantly higher levels of concern compared to Gen Z and with very similar level of concern with Gen Y. This difference may arise from the parental status of Gen X in comparison with young consumers, and greater exposure of Gen X to online media conveying information related to climate change and its global consequences, in comparison with consumers belonging to the oldest age cohort. In terms of *environmental concern*, Gen X exhibited the highest levels of concern from studied generational cohorts. Gen X did not significantly differ from Gen Y, but both expressed higher levels of concern compared to Gen Z and Baby Boomers. Additionally, Gen Z showed lower levels of environmental concern compared to all other generational cohorts that was quite surprising. As young consumers are technologically-savvy, fashion retailers offering eco-friendly apparel could target young consumers and raise their awareness and concern for environmental issues by higher presence on social media and with the assistance of digital influencers (Gazzola et al., 2020). The study also investigated various *modes of pro-environmental clothing purchases*. Gen X displayed higher levels of engagement in buying clothes made from eco-friendly or organic materials compared to Gen Y and Gen Z. Gen Z showed the lowest levels of engagement in pro-environmental clothing purchases across all categories examined. This finding is consistent with previous research suggesting that Gen Z may have more environmentally conscious attitudes than behaviour (Gazzola et al., 2020; Taborecka et al., 2023). This difference points to the necessity for more thorough examination of Gen Z's perceptions related to eco-friendly clothing. A recent study on a sample of Polish consumers has indicated that consumers' choices, when it comes to fashion purchases, are more influenced by aesthetics, style, quality, value for money than environmental appeal (Rahman & Koszewska, 2020). Other research (Musova et al, 2021) also showed similar results where there were also confirmed positive changes in consumers' perception and approaches to environmental issues (rethink), although they are less pronounced (purchasing environmentally friendly products, bio products and organic food).” On the other hand, our research revealed that younger generations (Gen Z and Gen Y) exhibit higher levels of concern for the well-being of clothing factory workers, animal species, and the environment compared to Baby Boomers. In addition to eventually low aesthetic appeal, lower purchasing power of Gen Z may be another obstacle towards their actual sustainable clothing. This indicates potential for new fashion market entrants and fashion retailers interested into expanding their businesses into collaborative consumption of fashion. Gen X generally demonstrated higher levels of concern for the well-being of future generations and environmental issues compared to the other cohorts, which also points to the potential for fashion rental systems to target this consumer segment.

Several limitations of the study, which provide directions for future research, should be noted. Motivated by time and financial constraints related to primary data collection, which are generally inherent to academic research, the study applied convenience sampling framework. Consequently, one should be cautious in generalizing the study's findings. Future studies would benefit from a probabilistic sampling method. Online interviewing represents another drawback of the study, as it precluded from participation in the study those members of the oldest generational cohort who are not familiar with the usage of digital technologies. Another limitation of the study is related to addressing the perspective of female consumers solely. Fashion retailers targeting male consumers would benefit from deeper insights into the

antecedents of male consumers' sustainable fashion choices and eventual differences among consumers belonging to different age cohorts. To inform market segmentation and positioning strategies it would be worthwhile to examine cross-cultural similarities and differences in attitudes and consumers' sustainable clothing practice.

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