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Gender Differences in Environmentally Sustainable Consumer Behaviour in the Context of Electronic Commerce

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ABSTRACT

The generation of young consumers born in the digital era sees online shopping as a normal part of their lives. Now, these people pay more and more attention to the aspects of sustainability. The aim of the research was to identify how gender differences shape not only the perception of sustainability among young consumers but also their consumer behaviour, all that in the context of electronic commerce. Primary data was obtained through a questionnaire survey attended by 506 young consumers. The results showed the existence of significant gender differences in the perception of selected aspects of sustainability in the context of electronic commerce, where women were showed to be more concerned about the environment than men. The existence of significant gender differences not only in environmentally sustainable consumer behaviour and also in terms of the intention to buy green products online were confirmed, as women showed more eco-friendly attitudes. The results can help marketers create tailor-made online marketing strategies targeting specific groups of consumers.

INTRODUCTION

The concept of sustainability is gaining a momentum, partially due to the influence of dynamic business innovations. These innovations make businesses reducing their financial concern (Civelek et al., 2023) and make businesses effectively competing their rivals (Civelek et al., 2021; Kljucnikov et al.,

2021). In this regard, sustainability provides competitive advantages for businesses and improves their organizational performance (Pereira-Moliner et al., 2021) to hit businesses' economic, environmental and social performance targets (Nastisin et al., 2021).

The demand for businesses to operate in a more sustainable manner is being driven by consumers who are seeking environmentally friendly and socially responsible products (Cheng et al., 2022; Koval et al., 2023). This growing demand has resulted in an increase in the popularity of sustainable brands (Liu et al. 2018).

In today's world, consumers are increasingly concerned about environmental protection and are becoming more aware of the detrimental effects of irresponsible environmental behaviour, such as climate change, global warming, and pollution (Lai and Cheng 2016). This awareness has caused a significant shift in consumer preferences toward environmentally-conscious consumption and behaviour (Ali and Ahmed, 2023). Electronic trading is currently seen as a viable alternative to fulfill consumers' environmental requirements.

The research was initiated with the primary objective of examining the disparities in how young consumers perceive sustainability and shop online. By drawing on these findings, practical implications can be deduced to guide the marketing and sales strategies of online vendors offering eco-friendly products.

1. LITERATURE REVIEW

As environmental consciousness grows, consumers are becoming more mindful of the environmental, health, safety, and quality-of-life implications associated with their purchases (Bryła 2019). This raising awareness mean that environmentally-friendly products market has become a promising sector with significant growth potential, capable of generating economic benefits, creating new employment opportunities, and playing a crucial role in driving the transition towards sustainable development (Zimon et al. 2020). The perception of sustainability by young people within smart concepts has strengthened especially after the Covid 19 pandemic and the experience of home office work (Androniceanu & Marton, 2021).

Multiple factors contribute to the rise of environmentally-conscious consumer behaviour. Previous research has highlighted subjective beliefs, concerns, and attitudes, with a predominant focus on environmental attitude as the key determinant of intention to make environmentally-friendly purchases. Studies suggest a shift in consumers' attitudes towards environmental protection, which in turn influences their consumer decisions and behaviour. A positive attitude towards eco-friendly and sustainable products plays a critical role in shaping the intention to purchase green products (Kumar et al. 2017; Al Mamun 2018; Sreen et al. 2018).

Although consumers are increasingly becoming more open towards buying green products, the actual number of green purchases is still relatively low. Previous research has revealed discrepancies and differences between consumers' environmental attitudes and intention to buy green products. Although consumers speak about their eco-friendly attitudes and intention to buy green products, only a small part of them translates these into their consumer behaviour. Despite holding pro-environmental attitudes, consumers often exhibit a lack of action in contributing to environmental sustainability. This phenomenon is commonly known as the 'green attitude-behaviour gap' (White et al., 2019; De Silva et al., 2021; Gonçalves et al., 2021). Previous research has identified several significant factors contributing to this gap between environmental attitudes and behaviour. These factors include the higher costs associated with green products, the challenges in recognizing and identifying such products, insufficient information on sustainability in product descriptions, and a lack of trust in eco-labelling. Additionally, consumers may lack awareness of the connection between their behaviour and the negative impact it has on the environment (Bacon and Krpan 2018; Torelli et al. 2020). The study Stefko et al. (2021) examined the connections between the use of renewable energy sources in selected sectors (transport, electricity, heating, and cooling) and the prevalence of selected groups of diseases in the European Union, within the framework of research on the environmental-social agenda (Androniceanu, 2021).

The intention to buy green products can be influenced to some extent by green marketing strategies. When launching a green product into the market, it is crucial to generate interest in environmental

concerns, enhance the perception of green benefits, and cultivate consumers' willingness to purchase eco-friendly products, thereby fostering greater environmental awareness (Nekmahmud and Fekete-Farkas, 2020). The intention to purchase green products serves as a significant predictor of consumers' eco-friendly purchasing behaviour (Lai and Cheng, 2016). Moreover, purchase intention positively affects green purchasing behaviour and plays a significant role in green marketing. Therefore, it is crucial for sellers of green products to analyze and understand the purchasing intentions of their target customers, as it can help predict their future consumer behaviour (Hsu et al. 2017; Fontes et al. 2021).

In addition to the above, the intention to buy green products and the eco-friendly consumer behaviour are influenced by socio-demographic factors, such as gender, age, income, profession, education and lifestyle (Comi & Nuzzolo 2016). Previous research into the issue has shown mixed results. The research by Li and Chen (2018) revealed that men displayed more substantial manifestations of sustainable behaviour, whereas Vicente-Molina (2013) identified significant patterns of environmentally sustainable consumer behaviour primarily among women. Moreover, when considering age as a factor, the findings indicated that young consumers exhibit the highest degree of environmental awareness and demonstrate a greater willingness to embrace green products.

The way of life of consumers and their habits was also significantly affected by the COVID-19 pandemic (Grondys et al., 2021). The pandemic also drew attention of consumers towards the aspect of sustainability. Lockdowns and other measures to prevent the spread of the disease have led to changes in consumer preferences and behaviour, with large numbers of consumers turning to online shopping and supporting local and sustainable brands and sellers. The global pandemic, together with the increase in Internet use, has accelerated the transition to e-commerce. Out of the total population of nearly 7.7 billion people, approximately 4.9 billion of them are Internet users. In 2022, 2.56 billion customers shopped online. The global retail e-commerce turnover for 2022 was 5.7 trillion US dollars. In 2026, the turnover is expected to be 8.1 trillion US dollars (Statista 2023).

When it comes to sustainability and environmental conservation, electronic trading emerges as a favourable option. E-commerce empowers sellers to expand their market reach globally, minimize operational costs linked to physical stores, enhance order fulfillment efficiency, conduct effective market research, facilitate seamless online transactions, and promptly adapt to shifting market dynamics and consumer needs. Additionally, e-commerce presents several benefits for customers, enabling them to compare products and prices, conveniently shop from home at any time, access comprehensive information and a diverse range of products and brands, and make purchasing decisions independently without any undue pressure from sellers (Bhowmik & Mukherjee 2015; Saluja 2019; Nolan 2022).

The advent of online shopping has changed the way consumers think about shopping. Expectations of e-commerce services, speed of purchase and selection are high and rising. Therefore, it is necessary to study consumer preferences and consumer behaviour patterns from different perspectives in order for marketing and sales strategies to be more targeted (Tokar et al. 2020).

This research was primarily aimed at examining differences in the perception of the aspect of sustainability in consumer behaviour in the context of electronic commerce. Based on the literature review, the following research questions were formulated:

- RQ1: Are there any significant gender differences in the perception of selected aspects of sustainability in the context of e-commerce?
- RQ2: Are there any significant gender differences in terms of eco-friendly consumer behaviour in the context of e-commerce?
- RQ3: Are there any significant gender differences regarding the intention to purchase green products online?

2. RESEARCH METHODOLOGY

The primary goal of this research was to investigate how gender influences the perception of sustainability and consumer behaviour among young individuals in the context of electronic commerce. The outcomes of this study would offer managers a more comprehensive understanding of this issue.

Based on the above research questions, the following research hypotheses were established:

- H1: It is assumed that there are statistically significant gender differences in the perception of selected aspects of sustainability in the context of e-commerce.
- H2: It is assumed that there are statistically significant gender differences in terms of eco-friendly consumer behaviour in the context of e-commerce.
- H3: It is assumed that there are statistically significant differences in the intention to buy green products online.

To conduct the literature review and analyze the obtained results, international scientific and statistical databases served as the sources of secondary data. Primary data were obtained using a questionnaire survey. The questionnaire was created through Google Forms and data collection took place from November 2022 to February 2023. The research sample consisted of young consumers shopping online, and their selection was based on availability and voluntariness (employing non-probability sampling method with convenience sampling (Lunsford and Lunsford 1995)). The rationale behind selecting this particular research sample primarily stemmed from the fact that young consumers interact with digital technologies (Androniceanu, 2023), including online shopping, on a daily basis and are known to take an interest in environmental issues Consequently, the research sample consisted of consumers belonging to Generation Y and Generation Z. The questionnaire was distributed to consumers through the authors' private email database and the social networking platform Facebook.

The introduction of the questionnaire contained 4 socio-demographic identification items, namely gender, year of birth, education acquired and net monthly income. The core of the questionnaire consisted of 31 questionnaire items. The respondents were required to express the extent to which they agreed or disagreed with the items on a 7-point Likert scale, where 1 = strongly disagree, 7 = strongly agree. These items related to the perception of selected aspects of sustainability in the context of e-commerce. Specifically, these were aspects of digitalization in green marketing (Papadas 2017) environmental attitudes (Peterson 2021; Cuc 2022), willingness to pay extra for green products (Hojnik 2021), eco-friendly lifestyle (Cuc 2022), and subjective standards (Yang at al. 2018). Other items related to eco-friendly consumer behaviour online (Peterson 2021; Cuc 2022) and intention to buy green products online (Peterson 2021). To process the obtained results, the following analyzes were used. For the internal consistency reliability analysis Cronbach's Alpha coefficient was calculated. According to Kline (2011), critical values for Cronbach's Alpha coefficient are evaluated as follows: ≥ 0.7 adequate internal consistency of answers; ≥ 0.8 very good internal consistency of answers; ≥ 0.9 excellent internal consistency of answers. The Shapiro-Wilk normality test (or Kolmogorov–Smirnov test) was used to verify the normality of the data. Then, the non-parametric Mann-Whitney U test was used to investigate gender differences between respondents. The statistical program IBM SPSS Statistics 26 was used to process the obtained data.

3. RESEARCH RESULTS AND DISCUSSION

The initial research sample consisted of 537 respondents, and after removing incomplete or irrelevant answers, the final research sample comprised 506 respondents. Table 1 presents the socio-demographic characteristics of the research sample.

Table 1. Frequency table of socio-demographic characteristics of respondents

Item	*Value*	*Frequency*	*Percentage*
Gender	Male	146	28.9
	Female	360	71.1
Generation	Generation Y	313	61.9
	Generation Z	193	38.1
Education	Secondary education	289	57.1
	University education - 1st degree	150	29.7
	University education - 2nd degree	67	13.2
Monthly Income	less than 500€	326	64.4

	501 – 1000€	110	21.7
	1001 – 1500 €	46	9.1
	1501 – 2000€	12	2.4
	2001 – 2500€	6	1.2
	more than 2500€	6	1.2

Source: Author's own work based on results of the questionnaire survey

In the process of evaluating and analyzing the remaining questionnaire items, the average response was computed for each aspect by averaging the individual item scores. Descriptive statistics, such as Mean, Median, Standard Deviation, Skewness, and Kurtosis, were calculated and are presented in Table 2 for each aspect. Moreover, Table 2 includes the Cronbach's Alpha coefficient values obtained through internal consistency reliability analysis. The Cronbach's Alpha coefficient values ranged from 0.81 (Environmental Purchasing Behaviour) to 0.91 (Future Purchase Intention), demonstrating a high level of internal consistency within the measurement tool.

Table 2. Descriptive statistics of researched aspects

Aspect	*Mean*	*Median*	*SD*	*Skewness*	*Kurtosis*	*Cronbach´s α*
Digitization in Green Marketing	5.17	5.33	1.40	-0.81	-0.29	0.89
Environmental Attitudes	4.03	4.00	1.24	0.05	0.14	0.84
Environmental Purchasing Behaviour	3.52	3.50	1.26	0.24	-0.33	0.81
Willingness to Pay for Green Products	3.57	3.75	1.47	0.01	-0.67	0.86
Eco-Friendly Lifestyle	5.33	5.50	1.19	-1.02	1.07	0.84
Future Purchase Intention	3.95	4.00	1.43	-0.12	-0.47	0.91
Subjective Norms	3.51	3.60	1.31	0.22	-0.46	0.81

Source: Output from IBM SPSS Statistics 26

The mean values of the responses indicate that young consumers exhibit a high level of perception towards selected environmental aspects, particularly Digitization in Green Marketing. They also demonstrate strong Pro-environmental Attitudes and Future Purchase Intention (to purchase green products online). Moreover, they display a willingness to pay more for green products and embrace an Eco-Friendly Lifestyle to a significant degree. Generation Y and Generation Z are currently perceived as the most environmentally conscious generations. As agents of change in consumer behaviour and intentions to buy green products online, they play a crucial role in transitioning towards sustainability (Bassiouni, Hackley 2014; Financial Times 2018). What sets them apart from older generations is their inclination to adopt green products, their inherent pro-environmental attitudes, and their ability to inspire others towards sustainable behaviour (Nielsen 2018; Financial Times 2018).

Before testing the research hypotheses, the normal distribution of the data was assessed using the Shapiro-Wilk test of normality and the Kolmogorov-Smirnov test (Table 3). In all cases examined, the significance level was found to be $p < 0.05$, indicating that the assumption of normal data distribution necessary for parametric tests was not satisfied. Therefore, the non-parametric Mann-Whitney U test was employed to examine the hypotheses concerning the presence of statistically significant gender differences.

Table 3. Results of Shapiro-Wilk test of normality and Kolmogorov-Smirnov test

Aspect	*Shapiro-Wilk test*		*Kolmogorov-Smirnov test*	
	W	*p-value*	*K-S*	*p-value*
Digitization in Green Marketing	0.934	0.000	0.113	0.000
Environmental Attitudes	0.993	0.018	0.053	0.002
Environmentally Sustainable Consumer (eco-friendly) Behaviour	0.988	0.000	0.065	0.000
Willingness to Pay for Green Products	0.978	0.000	0.062	0.000
Eco-Friendly Lifestyle	0.925	0.000	0.136	0.000
Future Purchase Intention	0.984	0.000	0.056	0.001
Subjective Norms	0.986	0.000	0.053	0.002

Source: Output from IBM SPSS Statistics 26

The first hypothesis verified the existence of statistically significant gender differences in the perception of selected aspects of sustainability in the context of e-commerce. The results of the Mann-Whitney U test, which show the existence of significant gender differences ($p < 0.05$) are shown in Table 4. Statistically significant gender differences were found in one aspect, namely Environmental Attitudes, where the mean value showed that women show more eco-friendly attitudes in the context of e-commerce than men. These results are consistent with previous research, e.g. that of Steiner et al. (2017) and Jones et al. (2017).

Table 4. Results of Mann-Whitney U test (Hypothesis 1)

	Gender differences	
	Mann-Whitney U	*Asymp.Sig. (p-value)*
Digitization in Green Marketing	23986.500	0.122
Environmental Attitudes	22641.000	**0.015**
Willingness to Pay for Green Products	24008.500	0.127
Eco-Friendly Lifestyle	24692.500	0.285
Subjective Norms	24926.000	0.363

Source: Output from IBM SPSS Statistics 26

The aim of the second hypothesis is to verify the existence of statistically significant gender differences in environmentally sustainable consumer behaviour in the context of e-commerce. The aim of the third hypothesis is to verify the existence of statistically significant gender differences in terms of the intention to buy green products online. The results of the Mann-Whitney U test ($p < 0.05$) are shown in Table 5. The results showed the existence of statistically significant gender differences in Environmentally Sustainable Consumer Behaviour and Future Purchase Intention. Based on the mean values, it can be argued that women scored higher in both variables. Thus, women exhibited a greater inclination towards environmentally sustainable behaviour when shopping online, along with a stronger intention to purchase green products online.

Table 5. Results of Mann-Whitney U test (Hypothesis 2 and Hypothesis 3)

	Gender differences	
	Mann-Whitney U	*Asymp.Sig. (p-value)*
Environmentally Sustainable Consumer Behaviour	22589.500	**0.013**
Future Purchase Intention	22471.500	**0.011**

Source: Output from IBM SPSS Statistics 26

The results of previous research vary widely. For example, the research results of Nogueira et al. (2023) showed that socio-demographic characteristics influence respondents' attitudes and also cause differences in consumer behaviour. Their findings are consistent with those arrived hereunder, as it has also been found that women exhibited a greater inclination towards environmentally sustainable consumer behaviour when shopping online than men. In the research conducted by Steiner et al. (2017), socio-demographic characteristics such as gender, age, salary, and education were utilized to identify and delineate distinct consumer segments based on their motivation to purchase green products. The findings of their study revealed gender disparities, with women exhibiting a greater inclination towards environmentally sustainable consumer behaviour and expressing higher intentions to buy green products. The same results were also pointed out by Jones et al. (2017) and Zha et al. (2020). Conversely, Liu et al. (2017) and Owusu-Sekyere et al. (2020) observed a higher prevalence of green product purchases among men in their respective research. Conversely, Deliana and Rum (2019) found no evidence of gender differences in the environmental online shopping behaviour of consumers.

Most researchers agree that it is necessary to investigate and understand the characteristic patterns of behaviour of different categories of online consumers, as the Internet has become an integral part of life of people (Rai et al. 2019; Iweala et al. 2019). By understanding the preferences, priorities, needs, and behaviours of online consumers, online retailers will be able to devise effective marketing strategies. Furthermore, this knowledge can serve as a foundation for developing an information and communication strategy to enhance online consumers' awareness regarding product sustainability and the purchasing process (Oliveira et al. 2017).

CONCLUSION

Young consumers have been immersed in a dynamic and fast-paced digital world since birth, where digital technologies are an indispensable part of their existence, and thus hold high expectations of the purchasing process, particularly in terms of sustainability. Online shopping has swiftly emerged as an integral aspect of modern consumers' lives. Acknowledging this fact is imperative for any business entity aiming for long-term economic growth and profitability (Androniceanu & Georgescu, 2023; Androniceanu et al., 2022).

The aim of the research was to identify gender differences among young consumers, in particular in the perception of the aspect of sustainability and in their consumer behaviour in terms of electronic commerce. By addressing three research questions, the study successfully attained its objective of uncovering gender disparities in the perception of specific sustainability aspects. The findings revealed that women exhibit higher levels of eco-friendly attitudes compared to men. Additionally, gender discrepancies were observed in consumer behaviour and intention to purchase green products online, with women demonstrating a greater level of engagement than men.

To effectively address sustainability concerns, companies and online retailers should prioritize the implementation of trustworthy and altruistic environmental policies. Simultaneously, incorporating social proof within green marketing strategies can yield positive outcomes. The research in question contributes to enriching the theoretical understanding of the subject matter. The results can provide insights for planning and formulating marketing strategies for online sellers, taking into account gender differences among consumers. Furthermore, they can facilitate the creation of compelling and innovative communication strategies to foster greater awareness among online consumers regarding sustainability in electronic commerce. Sellers who capitalize on this trend and make appropriate preparations stand a higher chance of gaining a competitive advantage compared to their peers. This provides an important impetus for future research to investigate the effects of environmental factors on online shopping.

This research has certain limitations in terms of its scope, as it was conducted within a single country. Therefore, it is crucial to acknowledge that the results cannot be extrapolated to all online consumers due to this geographical limitation of the research sample. However, there is an opportunity to research this issue in other countries as well and compare the findings. Future research could also delve into other socio-demographic factors or explore additional characteristics, including cultural or psychological factors, related to sustainability in the context of electronic commerce.

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