

# THE INFLUENCE OF SOCIO-DEMOGRAPHIC CHARACTERISTICS ON ENVIRONMENTAL CONCERN AND ECOLOGICALLY CONSCIOUS CONSUMER BEHAVIOUR AMONG MACEDONIAN CONSUMERS

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**ABSTRACT:** *Western Balkan countries face a decisive moment in the development of their economies, societies and the environment. According to the European Environment Agency, household consumption patterns in these countries have changed rapidly in the recent years and are of key interest due to the fact that unsustainable patterns of consumption are an important cause of environmental problems. The main purpose of this paper is to add to the body of knowledge on environmental consumer profiling, especially in the context of post-transition economies. We present the results of a survey on 323 Macedonian consumers, relating their attitudes and consumption patterns to socio-demographic characteristics.*

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**Key words:** *environmental concern, ecologically conscious consumer behaviour, socio-demographic characteristics, the Republic of North Macedonia*

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## 1 INTRODUCTION

Over the last decades, substantial efforts have been put into policies aimed at production processes to cope with the depletion of natural resources, climate change, air pollution and waste generation. However, more recently the focus has shifted to the consumption perspective, as high levels of consumption endanger the quality of the environment and the processes of sustainable development (Liobikene & Bernatoniene, 2017). Unsustainable consumption puts a threefold of environmental burdens to the environment: via the natural resource depletion, pollution and biodiversity reduction. Consumption is directly related to global climate change, identified as the major environmental issue of modern life. Hence, one of the main responsibilities for environmental degradation lies with the consumers and their consumption choices (Berglund & Matti, 2006). Therefore, in order to reduce the environmental consequences of consumption, it is essential to stimulate

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the consumption of environmentally friendly products (Liobikiene, Grincevičiene, & Bernatoniene, 2017).

Understanding consumer behaviour is important for any marketer and it is especially critical for environmental products. There is a general belief among researchers and environmental activists that by buying environmentally friendly products consumers can contribute significantly to improve the quality of the environment (Abdul-Muhmim, 2007). Groening, Sarkis and Zhu (2018) point out that the need to understand green purchasing behaviour is especially relevant owing to environmental, scientific, and communication developments, such as the internet and social media, and increases environmental awareness and concerns in consumers.

Green consumers are those who associate the act of purchasing or consuming products with the possibility of acting in line with preservation of the environment (Hailes, 2007). In a similar vein, Roberts (1996) defines ecologically conscious consumers as individuals who try to consume only products that produce the least or do not cause any impact on the environment. When profiling green consumers, companies can use standard bases for customer segmentation. On the one hand, many companies focus primarily on socio-demographics when segmenting the market for green products, due to the fact that these segmentation measures are easily available and simple to implement (Park, Choi, & Kim, 2012; Patel, Modi, & Paul, 2017). Furthermore, socio-demographic variables are often used to improve the accessibility of segments for subsequent profiling and targeting strategies (Park et al., 2012). However, a review of literature indicates that several studies on socio-demographic profiling of green consumers report mixed results, therefore limiting the value of the use of socio-demographic variables for consumer segmentation and profiling (Diamantopoulos et al., 2003; Fisher, Bashyal, & Bachman, 2012). Further studies are therefore needed to determine whether these characteristics play a significant role in green consumer profiling, especially in markets where marketing research is not very developed. The reason why the present study focuses on socio-demographics is that in transition and post-transition markets, which are less developed in terms of marketing research, it is easier for companies to use simple variables for consumer profiling. However, it is important to establish how relevant they are in profiling green consumers and this is where this study aims to make a contribution.

The main purpose of this paper is to add to the body of knowledge on environmental concern and ecologically conscious consumer behaviour, especially in the context of transition and post-transition economies. Past studies on the attitudes of consumers toward the environment and ecologically conscious consumer behaviour have been conducted mostly in developed or developing countries (for an overview see Patel, Modi, & Paul, 2017), with less focus on transition and post-transition countries. However, according to the European Environment Agency (EEA Report No 1/2010, 2010), household consumption patterns in the Western Balkan countries have changed rapidly and are of key interest due to the fact that unsustainable patterns of consumption are an important cause of environmental problems. Therefore, it is important to advance our knowledge about

environmental attitudes and consumer behaviour in these markets. Of Western Balkan countries this study focuses on the Republic of North Macedonia, which has the worst air quality in Europe (Migrio, 2018). The problem intensifies every winter as a consequence of industrial emissions, smoke from wood-burning stoves and exhaust fumes from old cars (Georgievski, 2018), of which the last two pertain to consumers and could be better managed by having a deeper insight in consumer environmental concern and behaviour. The contribution of this study is therefore not only academic, but it gives implications for every day practice of policy makers and domestic and international marketers that are present or plan to enter this market.

The main goal of this research is to analyse consumers' environmental concern and ecologically conscious consumer behaviour and to discover if significant differences exist based on socio-demographic profiles that would enable companies to use them in profiling green consumers. This study should therefore provide answers to the following core research questions: (1) What is the awareness of the importance of environmental issues in the examined context? (2) What is the presence of ecologically conscious consumer behaviour in the market? (3) How are environmental concern and ecologically conscious consumer behaviour related to socio-demographic characteristics?

The paper is structured as follows. First, we define environmental concern and ecologically conscious consumer behaviour. This is followed by the section on demographic characteristics and their influence on environmental concern and ecologically conscious consumer behaviour. In the next section we present research design and research results. This is followed by a discussion of implications for theory and practice, limitations and opportunities for future research.

## **2 ENVIRONMENTAL CONCERN AND ECOLOGICALLY CONSCIOUS CONSUMER BEHAVIOUR**

### **2.1 Environmental concern**

There are some variations in the definition of environmental concern across the literature, but most researchers use the term to refer to attitudes about environmental issues or perceptions that such issues are important (Cruz, 2017). Liu, Vedlitz, and Shi (2014) stress that identifying and understanding the determinant factors of consumers' environmental concern is one of the major necessary conditions to make sound policies and promote consumers' engagement in pro-environmental behaviour.

As evidenced, almost all Europeans say that environmental protection is important to them personally and over 75% believe that environmental problems have a direct effect on their lives (Special Eurobarometer 416, 2014). By recognizing the severity of environmental problems, people in general have become more environmentally aware (Han, Hsu, & Lee,

2009) and their sensitivity and consciousness toward environmental issues should have an effect on their buying behaviour (Brochado, Teiga, & Oliveira-Brochado, 2017).

Despite traditional beliefs that environmental concern is limited to the wealthy nations, research shows that consumer environmental concern is not dependent on national wealth (Dunlap & York, 2008). People in poor and developing countries have shown as much concern about environmental issues as those in developed countries, which is confirmed in North Macedonia as well (Angelovska, Sotiroska, & Angelovska, 2012).

## **2.2 Ecologically conscious consumer behaviour**

Kuchinka et al. (2018) point out that in general consumer behaviour is primarily motivated by benefits and costs, and can bring instant personal gain or gratification benefit, while environmentally conscious behaviour is attempting to achieve a future outcome with benefits for the entire society. If consumers care about the environment, they will most likely consider the consequences of their purchasing decisions (Brochado et al., 2017).

There has been a lot of research attention devoted to the study of consumers' environmentally friendly behaviour because it is extremely beneficial for companies to understand what factors influence consumers' behaviour (Fisher et al., 2012). The growing importance of protecting the environment has changed the way people see the market, and consumers now believe that their purchasing behaviour will find a better match in products (Akehurst, Afonso, & Gonçalves, 2012).

As already pointed out in the introduction, green (named also pro-environmental or ecologically conscious) consumers associate the act of purchasing or consuming products with the possibility of acting in line with preservation of the environment (Hailes, 2007). In this study, the focus is on the pro-environmental purchase behaviour (e.g., eco-labelled products, reusable packaging, lower emission cars, and low-energy appliances) and not on the pro-environmental consumption (e.g., household waste separation, noise control, use of recycling points and water saving) (Sánchez, López-Mosquera, & Lera-López, 2016).

Researchers have studied several factors leading to ecologically conscious consumer behaviour. Groening, Sarkis, and Zhu (2018) provide a comprehensive overview of green marketing and green consumerism theoretical relationships. They draw upon existing models and include topics featuring factors affecting relationships between attitudes and behaviours (e.g., situational, sociological and psychological factors) and barriers to environmental action. Based on the prior consumer decision making literature, Groening et al. (2018) propose six theory groupings: values and knowledge, beliefs, attitudes, intentions, motivations, and social confirmation. Values and knowledge are the foundation for beliefs, which in turn form attitudes that predict behaviour (as in Theory of Reasoned Action by Fishbein & Ajzen, 2011). However, contradictory results were found regarding the relationship between attitude and behaviour, leading to conclusion that the fact that

consumers exhibit a positive attitude towards green products does not necessarily indicate they will engage in green purchase behaviour (Kuchinka et al., 2018). Groening et al. (2018) also present theory groupings that could explain why attitudes do not directly result in green purchase behaviour, including intentions, motivations, facilitators or instantiators, and social confirmation.

### 3 SOCIO-DEMOGRAPHIC CHARACTERISTICS AND THEIR INFLUENCE ON ENVIRONMENTAL CONCERN AND ECOLOGICALLY CONSCIOUS CONSUMER BEHAVIOUR

The latest green marketing consumer-level literature has among others illustrated the focus on identifying the profile of the environmentally conscious consumers (e.g., Akehurst et al., 2012; Brochado et al., 2017; Sánchez et al., 2016; Pinto et al., 2014), including the socio-demographic characteristics of environmentally conscious consumers, such as age, gender, education, income and so on. The inconsistency of the results in a variety of studies (for an overview see Diamantopoulos et al., 2003; Fisher et al., 2012; Verain et al., 2012) has perhaps shown how complicated it is to accurately identify the demographic profile of an environmentally conscious consumer. Even though these results provide insufficient data for profiling environmentally conscious consumers, they can be a useful tool to marketers in describing market segments (D'Souza et al., 2007). In the following sections we present the socio-demographic characteristics that have been most often related to environmental concern and environmentally conscious consumer behaviour (Diamantopoulos et al., 2003; Fisher et al., 2012) and we propose hypotheses about the Macedonian consumers.

Groening et al. (2018) provide a large-scale review of more than 20 consumer-level theories used in the field of green marketing. This study builds on role theory (Biddle, 1986) to explain the differences in consumers' environmental concern and ecologically conscious consumer behaviour. Biddle (1986) proposes that individuals hold social positions in society which reflect their roles and create expectations for their own behaviours and others' expectations of behaviour. Role theory can be used both to explain and predict social behaviour of individuals based on situations and identities. According to role theory, different groups of people playing different roles exhibit different patterned behaviours. Gender role theory argues that women and men behave according to roles related with their genders. Han, Hsu and Lee (2009) provide a review of studies that found differences in gender roles analysed in environmental studies. These studies show that women are more nurturing, which is associated with their greater concern for the environment and willingness-to-pay more for green products (Han et al., 2009). Role theory has also been utilised to explain the differences in pro-environmental behaviours among sustainable and apathetic consumers (Park & Ha, 2012). In line with role theory this study proposes that there are differences in attitudes and behaviour of consumers based on the roles they play in the society (for example, based on gender, educational level, income level and similar). Argumentations for the differences are provided in the next sections.

This study therefore focuses on socio-demographic characteristics and with those related social roles in explaining environmental concern and ecologically conscious consumer behaviour. Due to the low explanatory power of socio-demographic characteristics to predict ecologically conscious consumer behaviour (e.g., Roberts, 1996; Diamantopoulous et al., 2003; Brochado et al., 2017), in the last step the analysis will be complemented by adding environmental concern as an additional predictor of ecologically conscious consumer behaviour. Various studies report that consumers with higher environmental concern are more likely to evaluate the environmental consequences of their purchase behaviour and that environmental concern positively influences ecologically conscious consumer behaviour (Mainieri et al., 2007; Nath et al., 2013; Brochado et al., 2017).

### 3.1 Gender

Gender has been one of the most often used variables when profiling green consumers. One important, well-established finding is that females are more environmentally sensitive about general environmental issues than males and more likely to express concern about the social and environmental impacts of their consumption (Koos, 2011; Zelezny, Chua, & Aldrich, 2000; Park et al., 2012). They consider the environmental issues in the purchase decisions to a larger extent and are more willing to engage in ecologically conscious consumption than men (Brochado et al., 2017; Liobikiene et al., 2017; Sánchez et al., 2016; Diamantopoulous et al., 2003; Luchs & Mooradian, 2012). Furthermore, women show more willingness to buy and pay a premium price for environmentally benign products (Laroche, Bergeron, & Barbaro-Forleo, 2001). On the other hand, Mostafa (2007) found that men possess a deeper knowledge of environmental issues, express higher levels of environmental concern and have more positive attitudes towards green purchase, while Chen et al. (2011) and Rice (2006) found no significant relationship of gender with environmental variables.

Based on the results of the study of purchase differences of environmentally labelled products in 18 European countries, women are more likely to consider the environmental issues when they do their shopping (Koos, 2011). Similarly, Zelezny et al. (2000) evaluated 13 studies on environmentally responsible consumption and state that in nine of them women appeared to have a higher level of pro-environmental attitudes and behaviours, three reported no significant differences between sexes, but only one has shown that males were more environmentally concerned than females.

Based on the above, we can conclude that gender is an important socio-demographic predictor of environmental concern and ecologically conscious consumer behaviour; women appear to be more concerned about the environment and are more likely to act in accordance to those concerns when making a purchase decision. Therefore, it is hypothesised that:

*H1a: Females are more concerned about the environment than males.*

*H1b: Females demonstrate more ecologically conscious consumer behaviour than males.*

### 3.2 Age

Age is another demographic variable that has been widely examined in past studies. Findings about the age of consumers can provide a useful base in market segmentation, however, the results in relation to this demographic variable have been inconsistent. Most studies reveal that younger individuals are likely to be more sensitive and concerned about environmental issues (Chen & Peng, 2012; Diamantopoulos et al., 2003). On the other hand, Liu et al. (2014) found a positive relationship between age and environmental concern.

When researching consumer behaviour, the results are somewhat different. Roberts (1996) found that age is significantly related to ecologically conscious consumer behaviour, concluding that middle aged consumers are more prone to ecologically conscious consumption activities. Likewise, Anić, Jelenc and Šebetić (2015) and Mohr and Schlich (2016) examining sustainable food consumption detected that middle aged respondents show the highest level of environmentally conscious consumption behaviour. Also, Brochado et al. (2017) found that older consumers (compared to the youngest group) are more prone to ecologically conscious consumer behaviour. These results might be due to the fact that younger individuals are mostly students without jobs who have a lower buying power and who cannot afford environmentally friendly products or more expensive alternatives (Jain & Kaur, 2006). On the other hand, some researchers have found that the relationship between age and ecologically conscious consumption is significant and negative (Zimmer, Stafford, & Stafford, 1994). In relation to these mixed findings, Chan (1996) in his two-country study, found that the respondents' age has a significant influence on the environmentally sustainable purchases in Canada (i.e., younger respondents more frequently purchase recyclable products), while no association between these two variables was found for respondents in Hong Kong. Due to the contradicting results related to the relationship between the age of consumers and their environmental concern and environmentally conscious consumer behaviour, we posit exploratory hypotheses, only assuming that differences exist, but not predicting the direction of these differences.

*H2a: Younger and older consumers differ in terms of environmental concern.*

*H2b: Younger and older consumers differ in terms of ecologically conscious consumer behaviour.*

### 3.3 Educational level

A consumer's level of education is in many studies considered as a socio-demographic factor that affects environmental practices of the consumer. In terms of education, most empirical studies have shown that more educated people are more sensitive and



aware of environmental issues (Zsóka et al., 2013; Zhao, Wu, & Wang, 2014). They show higher preferences for environmental protection and willingness to pay leading to environmentally conscious consumer behaviour (Diamantopoulos et al., 2003; do Paço, Raposo, & Filho, 2009; Zhao et al., 2014). For illustration, Koos (2011) in his study on sustainable consumption across Europe states that buying environmentally-labelled products increases with education. Because higher educated people in general are better informed and could understand environmental issues better, they express higher concern about the quality of the environment and have strong desire to protect it. Consequently, they are more willing to practice ecologically conscious consumer behaviour (Torgler & Garcia-Valinas, 2007; Zhao et al., 2014). Based on these findings, it is hypothesised that:

*H3a: Less educated people are less environmentally concerned than people with higher educational levels.*

*H3b: Less educated people exhibit less ecologically conscious consumer behaviour than people with higher educational levels.*

### **3.4 Income level**

Consumers with higher income have less economic problems and can turn to other concerns; at the same time they have higher willingness and ability to pay for goods (Franzen & Vogl, 2013). Results from previous research show that consumers with higher income are more interested in protecting the environment (Royne, Levy, & Martinez, 2011) and prefer life style based on environmentally friendly consumption (Anić et al., 2015). A positive relationship between respondents' income and their environmental concern is also confirmed in the studies by Zimmer, Stafford and Stafford (1994) and Roberts (1996). On the other hand, Park et al. (2012) report a non-linear relationship between these two variables. In their study, consumers in the lowest and in the highest income group were found to be the most environmentally concerned. In relation to ecologically conscious consumer behavior, the results from previous research are somehow mixed but still mostly indicate that income has positive and meaningful influence on purchase decision (do Paço et al., 2009; Hines, Herald, & Audrey, 1987; Anić et al., 2015; Welsch & Kühling, 2009). This notion is mainly based on the fact that pro-environmental products are usually priced higher than conventional ones, and people with higher income may be more likely to buy these products because they can bear the associated marginal increase in their cost (Zhao et al., 2014). On the other hand, some researchers have found that people with a lower level of income are more prone to ecologically conscious consumer behaviour (Roberts, 1996) or even that the income level does not affect their green consumption decisions significantly (Straughan & Roberts, 1999; Ci-Sheng, Xiao-Xia, & Meng, 2016). Therefore, due to contradicting results related to the relationship between income of consumers and their environmental concern and environmentally conscious consumer behaviour, we posit exploratory hypotheses, only assuming that differences exist, but not predicting the direction of these differences.



*H4a: There are differences in the concern about the environment based on the income level.*

*H4b: There are differences in the ecologically conscious consumer behaviour based on the income level.*

### 3.5 Marital status

There have been some attempts to link environmental attitude and behaviour to marital status (Diamantopoulos et al., 2003; Fisher et al., 2012; Chen et al., 2011). The argument behind these relationships is that spouses can act as a social referent in influencing environmental attitude and behaviour (Neuman, 1986). Not many studies found support for the influence of marital status on environmental concern (e.g. Research 2000 in Diamantopoulos et al., 2003). On the other hand, few studies indicate that married people are more likely to participate in green activities (Diamantopoulos et al., 2003; Fisher et al., 2012). Although this is a rarely tested variable in environmental research, we build on argumentation developed by Neuman (1986) and for transitional context expect positive relationships between these variables.

*H5a: Single people are less concerned about the environment.*

*H5b: Single people exhibit less ecologically conscious consumer behaviour.*

### 3.6 Number of children

Research shows that the presence of children in the household positively affects environmental concern and environmentally conscious behaviour (Laroche et al., 2001; Loureiro, McCluskey, & Mittlehammer, 2002). The reason would be that due to discussions on ecology at school children have certain expectations regarding environmentally friendly behaviour of their parents (Schlossberg, 1992). On the other hand, Diamantopoulos et al. (2003) did not find significant relationships between the number of children and environmental consciousness measures (knowledge, attitudes and behaviour), while Fisher et al. (2012) found that only one part of behaviour (usage of recyclable bags) is related to the number of children in the household. In line with role theory and findings of Laroche et al. (2001) and Loureiro et al. (2002) we expect a positive relationship between the number of children and environmental concern and behaviour.

*H6a: The more children a consumer has, the stronger the concern about the environment.*

*H6b: The more children a consumer has, the greater the participation in ecologically conscious consumer behaviour.*

## 4 RESEARCH DESIGN

### 4.1 Questionnaire design

Existing scales were used to measure constructs under study. To measure environmental concern we used statements from the Socially Responsible Consumption Behaviour scale (Antil, 1984), while for ecologically conscious consumer behaviour we used statements from the Ecologically Conscious Consumer Behaviour scale (Roberts, 1996). Respondents were presented with statements and they were asked to evaluate them on a five point Likert scale (1 = I entirely disagree, 5 = I entirely agree). The last set of questions was related to demographic characteristics of the respondents. Gender, age, educational level, income, marital status and number of children under 15 years were included.

The questionnaire applied for collecting the primary data was translated twice, from English into Macedonian and vice versa, to ensure that all difficulties due to language differences would be minimized and that the meanings of the statements were properly transferred. Then, the questionnaire was tested on a small sample of 15 respondents of different age, gender and educational level. The questionnaire testing was made in order to identify possible problems related to the questionnaire's clarity, bias and possible ambiguity. The participants were asked for their opinion regarding the wording, sequencing and timing as well. No difficulties in understanding the statements were indicated and it was not suggested that the time needed for answering the questions was too long.

### 4.2 Data collection and sample characteristics

The research population is defined as persons over the age of 18 years living in Skopje, the capital of the Republic of North Macedonia. Printed questionnaires were administered to teachers in four primary schools in different areas in Skopje and their students later forwarded them to their parents or grandparents. In addition, questionnaires were distributed to students at a private university and to additional known citizens with different demographic characteristics. Altogether, we distributed 399 questionnaires and 368 were returned (response rate of 81%), while the number of fully filled questionnaires bearing the status of "completed" was 323, on which the final analysis was done. Sample characteristics were compared to the latest attainable official statistical data for the inhabitants of Skopje and the population of North Macedonia acquired from the State Statistical Office of the Republic of North Macedonia. The inspection indicated that despite some deviations the sample was close enough to the population to continue the analysis.

Some of the respondents' socio-demographic characteristics used in further analysis are presented in Table 1. Regarding the gender structure, 46.7% of respondents were male and 53.3% female. The average age was 39.6 years (standard deviation 13.4). Regarding the level of education, a substantial number (48.9%) of the respondents completed at least a bachelor degree. The majority reported to have an average monthly household income

(62.5%). Additionally, the majority were married or living with a partner (71.8%), while the rest were single, separated, divorced or widowed. The average number of children under the age of 15 years was 1.0 (standard deviation 0.9), where one third of the sample had no children.

Table 1: *Some demographic characteristics of the respondents*

Demographic characteristics	Frequency	Relative frequency in %
<b>Age</b>		
00 – 20	44	13.6
21 – 30	33	10.2
31 – 40	98	30.3
41 – 50	96	29.7
51 – 60	25	7.7
61 – 70	20	6.2
71 +	7	2.2
Total	323	100.0
<b>Level of education</b>		
Elementary school	11	3.4
Vocational school	117	36.2
Secondary (high) school	37	11.5
Bachelor degree	139	43.0
Master's degree	12	3.7
PhD	7	2.2
Total	323	100.0
<b>Household average monthly income</b>		
Below average/ in lower half of below average	12	3.7
Below average/ in upper half of below average	15	4.6
Average	202	62.5
Above average/ in lower half of above average	42	13.0
Above average/ in upper half of above average	37	11.5
I do not know	15	4.6
Total	323	100.0
<b>Marital status</b>		
Single	73	22.6
Married	229	70.9
Living together without being married	3	0.9
Divorced	8	2.5
Separated	3	0.9

Demographic characteristics	Frequency	Relative frequency in %
Widowed	7	2.2
Total	323	100.0
<b>Number of children</b>		
0	109	33.7
1	104	32.2
2	105	32.5
3	3	0.9
4	1	0.3
5	1	0.3
Total	323	100.0

### 4.3 Data analysis

We used univariate statistical techniques (frequencies, means and standard deviations) to present sample characteristics and results for the statements measuring environmental concern and ecologically conscious consumer behaviour. The reliability of measurement for the individual constructs (Table 2) was evaluated before the hypotheses test. We tested the hypotheses using independent samples t-test, one-way ANOVA and correlation analysis. In the end, multiple regression analysis was carried out to test the effect of all variables at the same time. Further results validation was performed using clustering and discrimination analysis.

The value of reliability coefficient (Cronbach's  $\alpha$ ) for the ecologically conscious consumer behaviour scale consisting of eleven items is 0.859, which shows good internal consistency of the scale. Cronbach's alpha coefficient for environmental concern (0.610) is below the recommended 0.7 threshold, but since the value of over 0.60 for Cronbach alpha can be still considered acceptable (Kline, 2000, p. 13), we can use both constructs in further analyses. Both constructs are also sufficiently different from each other (correlation coefficient is 0.509,  $p < 0.01$ ).

Table 2: *Statistics for environmental concern and ecologically conscious consumer behaviour*

Environmental measures	Number of items	Summary statistics			
		Mean	Standard deviation	Possible range	Cronbach's $\alpha$
Environmental concern	6	24.05	3.23	6 - 30	0.610
Ecologically conscious consumer behaviour	11	38.90	7.06	11 - 55	0.859

5 FINDINGS

5.1 Descriptive statistics for environmental concern and ecologically conscious consumer behaviour

Descriptive statistics for statements measuring the focal constructs are presented in Tables 3 and 4. Consumer **environmental concern** was measured with six items. As presented in Table 3, all items have a mean value above the neutral/undecided response option in the range between 3.77 and 4.27, which means that on average, Macedonian consumers are environmentally concerned. The highest average agreement was expressed with the statement that pollution affects their life.

Table 3: *Descriptive statistics for consumer environmental concern*

Scale item	<i>M</i>	<i>SD</i>
You feel that pollution affects your life personally.	4.27	0.77
You think all the worried comments made about air and water pollution are all justified.	4.11	0.90
You become incensed when you think about the harm being done to the plant and animal life by pollution.	4.11	0.85
You have often thought that if we could just get by with a little less there would be more left for future generations.	4.00	1.01
Natural resources must be preserved even if people must do without some products.	3.81	0.94
Pollution is presently one of the most critical problems facing this nation.	3.77	1.04

Descriptive statistics for individual scale items of **ecologically conscious consumer behaviour** are presented in Table 4. All items have a mean value above the neutral/undecided response option in the range between 3.18 and 4.02. The overall conclusion is that on average the respondents seem to engage in ecologically conscious consumer behaviour, yet the average scores are lower than at environmental concern. The easier behaviour (When you have a choice between two equal products, you always purchase the one less harmful to other people and the environment;  $M = 4.02$ ,  $SD = 0.93$ ) is more practiced than the more demanding forms (for example, buying only products that can be recycled and avoiding or not buying products that have excessive packaging).

Table 4: *Descriptive statistics for ecologically conscious consumer behaviour*

Scale item	M	SD
When you have a choice between two equal products, you always purchase the one less harmful to other people and environment.	4.02	0.93
If you understand the potential damage to the environment that some products can cause, you do not purchase those products.	3.78	0.90
When you purchase products, you always make a conscious effort to buy those products that are low in pollutants.	3.74	0.99
You do not buy a product if the company that sells it is ecologically irresponsible.	3.69	1.10
When there is a choice, you always choose the product that contributes to the least amount of pollution.	3.66	0.98
Whenever possible you buy products packaged in reusable containers.	3.54	1.06
You have switched products for ecological reasons.	3.46	1.03
You have convinced some members of your family and friends not to buy some products that are harmful to the environment.	3.35	1.04
You normally make a conscious effort to limit the use of products that are made of or use scarce resources.	3.27	0.84
You try only to buy products that can be recycled.	3.21	1.05
You do not buy products that have excessive packaging.	3.18	0.99

## 5.2 Testing individual influences of socio-demographics on environmental concern and ecologically conscious consumer behaviour

With the first set of hypotheses we tested the effect of gender on environmental concern and ecologically conscious consumer behaviour. Based on an extensive literature review we proposed that women demonstrate more ecologically conscious consumer behaviour than men. The results (Table 5) are in line with the proposed hypotheses. Women are on average more environmentally concerned and report more sustainable consumer behaviour than men. Therefore, H1a and H1b are supported.

Table 5: *Impact of gender on environmental concern and ecologically conscious consumer behaviour*

	Gender		t-value (1-tailed sig.)
	Female	Male	
Environmental measures	M (SD)	M (SD)	
Environmental concern	24.57 (3.07)	23.45 (3.30)	3.16 (0.001)
Ecologically conscious consumer behaviour	39.75 (6.43)	37.94 (6.43)	2.28 (0.011)

With the second set of hypotheses we tested the effect of age on consumers' attitudes and behaviour. The results of the correlation analysis indicate that there is a significant positive relationship between age and environmental concern ( $r = 0.229, p < 0.01$ ), as well as age and ecologically conscious consumer behaviour ( $r = 0.303, p < 0.01$ ). In order to test the differences among age groups we used one-way ANOVA. We used three age groups (30 years and less, 31 to 50 years old, and 51 years and above) to differentiate consumers. The analysis of variance shows that the effect of age for both environmental concepts is significant ( $F = 16.341, P = 0.000$  for environmental concern;  $F = 28.215, P = 0.000$  for ecologically conscious consumer behaviour). The Bonferroni post hoc test indicates that the average for environmental concern is significantly lower in the youngest age group ( $M = 22.38, SD = 3.16$ ), compared to the other two age groups (for 31 to 50 years old  $M = 24.40, SD = 2.99$ , and for 51 years and above  $M = 25.24, SD = 3.30$ ). The results are similar to the ones about ecologically conscious consumer behaviour. The youngest age group ( $M = 34.18, SD = 7.82$ ) scored significantly lower than the other two age groups (for 31 to 50 years old  $M = 39.97, SD = 6.12$ , and for 51 years and above  $M = 41.92, SD = 5.93$ ). We can therefore support H2a and H2b that differences exist between younger and older consumers regarding environmental concern and ecologically conscious consumer behaviour.

With the third set of hypotheses we tested the influence of educational level on the consumers' environmental concern and ecologically conscious consumer behaviour. The educational level of respondents as an independent variable originally presented with six groups (1 – elementary, 2 – vocational, 3 – secondary, 4 – bachelor degree, 5 – master and 6 – PhD) was regrouped in two groups (respondents with lower education comprising groups 1 to 3 and respondents with higher education comprising groups 4 to 6). Although the results indicate that the respondents with lower education exhibit lower environmental concern and ecologically conscious consumer behaviour, the differences between the two groups are not statistically significant (Table 6). Therefore, at  $\alpha = 0.05$  we cannot conclude that in this research context less educated people exhibit lower environmental concern and less ecologically conscious consumer behaviour than people with higher educational levels. We also conducted a more detailed analysis (one-way ANOVA), comparing environmental concern and ecologically conscious consumer behaviour among all six educational groups. The results indicate there are no statistically significant differences among different educational groups ( $F = 0.911, P = 0.474$  for environmental concern;  $F = 1.167, P = 0.325$  for ecologically conscious consumer behaviour). Thus, hypotheses H3a and H3b are not supported.



Table 6: *Impact of educational level on environmental concern and ecologically conscious consumer behaviour*

	Educational level		t-value (1-tailed sig.)
	Lower	Higher	
Environmental measures	<i>M (SD)</i>	<i>M (SD)</i>	
Environmental concern	23.78 (3.05)	24.32 (3.39)	-1.51 (0.065)
Ecologically conscious consumer behaviour	38.36 (7.28)	39.46 (6.81)	-1.40 (0.081)

Next, we tested the effect of household income on environmental variables. We regrouped the original five categories of household income into three (below average, average and above average) to ensure sufficiently large groups for analysis. The results indicate that significant differences exist between these three groups for environmental concern ( $F = 6.635$ ,  $P = 0.002$ ) but not for ecologically conscious consumer behaviour ( $F = 1.720$ ,  $P = 0.181$ ). There are statistically significant differences in environmental concern between consumers with below average household income ( $M = 25.81$ ,  $SD = 3.24$ ) and those with above average household income ( $M = 23.27$ ,  $SD = 3.41$ ), indicating that those coming from less wealthy households are more concerned about the environment. H4a is therefore supported, while H4b is not.

The results for the influence of marital status on environmental variables (Table 7) indicate that on average single people are less environmentally concerned and practice less ecologically conscious consumer behaviour. Therefore, H5a and H5b are supported.

Table 7: *Impact of marital status on environmental concern and ecologically conscious consumer behaviour*

	Marital status		t-value (1-tailed sig.)
	Single	Married	
Environmental measures	<i>M (SD)</i>	<i>M (SD)</i>	
Environmental concern	22.96 (3.27)	24.48 (3.11)	-3.89 (0.000)
Ecologically conscious consumer behaviour	34.76 (7.24)	40.53 (6.30)	-7.09 (0.000)

The last set of hypotheses tested the relationship between the number of children (under the age of 15) and environmental variables. The results of the correlation analysis indicate that there is a significant positive relationship between the number of children and environmental concern ( $r = 0.172$ ,  $P < 0.01$ ) and the number of children and ecologically conscious consumer behaviour ( $r = 0.235$ ,  $P < 0.01$ ). H6a and H6b are thus supported.

### 5.3 Testing the joint influence of socio-demographics on environmental concern and ecologically conscious consumer behaviour

In the next section we present the results of multiple regression analyses that were carried out to test the joint explanatory value of socio-demographics for environmental attitudes and behaviour. We performed two regression analyses, where environmental concern and ecologically conscious consumer behaviour were separately used as dependent variables and the earlier discussed socio-demographic characteristics as the independent variables. Age and number of children were measured on ratio scales, so they were directly entered in the regression analysis. Gender, marital status, educational level and income had to be transformed into dummy variables. In the case of the first three each was represented by a single dummy variable, while income was measured with two dummy variables (the details are explained below in Table 9 and Table 10). The inspection of correlations among the predictors did not indicate collinearity concerns (the highest correlation coefficient was 0.481), which was also confirmed by multicollinearity checks with assessment of tolerance (values in the range 0.643 – 0.948) and variance inflation factor (values in the range 1.055 – 1.555). Both regressions are significant and independent variables account for 13.2% of variance in environmental concern and 18.4% in ecologically conscious consumer behaviour (Table 8).

Table 8: *Regression results*

Environmental measures	Summary statistics			
	Multiple R	Adj. R2	F value	Significance
Environmental concern	0.388	0.132	7.962	0.000
Ecologically conscious consumer behaviour	0.449	0.184	11.313	0.000

Table 9: *Regression coefficients for environmental concern*

Independent variables	Summary statistics		
	$\beta$	$t$	Significance
Gender	0.200	3.708	0.000
Age	0.156	2.559	0.011
Educational level	0.048	0.880	0.380
Income below average	0.139	2.606	0.010
Income above average	-0.085	-1.537	0.125
Marital status	0.099	1.520	0.130
Number of children	0.102	1.767	0.078

Codes for dummy variables: Gender (1 = female, 0 = male), Education level (1 = bachelor and higher, 0 = secondary or lower), Income below average (1 = below average, 0 = otherwise), Income above average (1 = above average, 0 = otherwise), Marital status (1 = married, 0 = single).

Table 10: *Regression coefficients for ecologically conscious consumer behaviour*

Independent variables	Summary statistics		
	$\beta$	$t$	Significance
Gender	0.178	3.414	0.001
Age	0.178	3.012	0.003
Educational level	0.008	0.150	0.881
Income below average	0.018	0.339	0.735
Income above average	-0.034	-0.641	0.522
Marital status	0.251	3.984	0.000
Number of children	0.112	2.006	0.046

Codes for dummy variables: Gender (1 = female, 0 = male), Education level (1 = bachelor and higher, 0 = secondary or lower), Income below average (1 = below average, 0 = otherwise), Income above average (1 = above average, 0 = otherwise), Marital status (1 = married, 0 = single).

Environmental concern (Table 9) is predicted by gender, age and income below average, with gender having the strongest influence. As already indicated in hypothesis testing, women and those consumers that reported to have below average income tend to be more concerned about the environment. Environmental concern on average also increases with age. On the other hand, ecologically conscious consumer behaviour (Table 10) is predicted by gender, age, marital status and number of children. The main difference to the previous analysis is that while in the regression analysis marital status and number of children do not seem to significantly influence environmental concern, they still have a positive effect on ecologically conscious consumer behaviour.

When environmental concern is included as a predictor in the regression analysis of ecologically conscious consumer behaviour, this substantially increases the percentage of explained variance (adjusted  $R^2$  is 0.336 compared to  $R^2$  of 0.184 without environmental concern), as expected. In this case ecologically conscious consumer behaviour is explained by environmental concern ( $\beta = 0.417$ ,  $P = 0.000$ ), marital status ( $\beta = 0.211$ ,  $P = 0.000$ ), age ( $\beta = 0.117$ ,  $P = 0.031$ ) and gender ( $\beta = 0.099$ ,  $P = 0.042$ ).

To validate the results we additionally performed a cluster analysis on attitudinal and behavioural variables (the seventeen variables measuring environmental concern and ecologically conscious consumer behaviour). The TwoStep cluster analysis revealed a two cluster solution (with cluster quality rated as fair) where variables related to behaviour carry a heavier importance at predicting cluster membership than those related to attitudes. The largest cluster (55.8% of sample elements) consisted of consumers that rank consistently lower in environmental concern and ecologically conscious consumer behaviour than the smaller group (44.2% of sample elements). The results for the summated scales of ecologically conscious consumer behaviour ( $M_1 = 34.63$ ,  $SD = 6.00$ ;  $M_2 = 44.32$ ;  $SD = 3.93$ ) and environmental concern ( $M_1 = 22.16$ ;  $SD = 2.68$ ;  $M_2 = 26.43$ ;  $SD = 2.10$ ) also

revealed greater variability in the less ecological group. In the discriminant analysis that we performed with the previously mentioned socio-demographic variables, the percentage of variance explained was similar to our previous analyses (16%). The correlation between the discriminant scores and the levels of the dependent variable was weak to moderate (0.371) and Wilks' lambda (0.862) was statistically significant ( $P = 0.000$ ). The analysis revealed that the two groups differ significantly in marital status, age, number of children, gender and education, while the difference in income is not statistically significant. In line with the results of the previous analysis, consumers in the more ecological group are to a larger extent married, older, female, with higher education and have on average more children.

## 6 DISCUSSION AND CONCLUSIONS

The main goal of this research was to analyse consumers' environmental concern and ecologically conscious consumer behaviour and discover if significant differences exist based on socio-demographic characteristics that would enable companies and policy makers to use these variables in profiling green consumers. In regards to the recognition of the importance of environmental issues among consumers, it can be said that Macedonian consumers seem to be quite concerned about the general issues related to environmental protection. Although people seem to be highly concerned about the state of the environment due to high pollution the country experiences, this has not yet translated into their buying decisions.

### 6.1 Theoretical implications

The broad theoretical underpinning of this research is role theory (Biddle, 1986) that can be used both to explain and predict social behaviour of individuals based on situations and identities. In line with role theory this study proposes that there are differences in attitudes and behaviour of consumers based on the roles they play in the society (for example, based on gender, educational level, income level and similar). Testing these relationships in the examined context can give better insights to companies and policy makers with more prominent roles. Although the results of previous studies are quite mixed and ambiguous (Verain et al., 2012), the majority of the proposed hypotheses were supported in our research.

Women are on average more environmentally concerned and report to engage more in ecologically conscious consumer behaviour than men, which is in line with the findings of several authors (e.g., Brochado et al., 2017; Diamantopoulos et al., 2003; Koos, 2011; Luchs & Mooradian, 2012; ). We can conclude that gender is a socio-demographic variable that seems to work across cultures and level of market development and can be used in post-transition contexts, as well as for profiling green consumers.

Age is also an important predictor of environmental variables in the examined context. The results indicate that age is positively related to both environmental concern and ecologically conscious consumer behaviour. Further analyses revealed that the youngest age group (30 and below) is less environmentally concerned and less engaged in ecologically conscious consumer behaviour than the other two age groups (31 to 50 years and 51 years and above). Mixed results exist on these relationships in the literature and our research adds to the group of authors that found that older consumers are more environmentally concerned (Liu et al., 2014) and more engaged in ecologically conscious consumer behaviour (e.g. Anić et al., 2015; Brocado et al., 2017; Mohr & Schlich, 2016).

Furthermore, our research did not find statistically significant differences in environmental concern and ecologically conscious consumer behaviour regarding educational level, which is in contradiction to previous research. Most empirical studies have shown that higher educated people tend to perceive environmental issues better and are more sensitive and aware of environmental issues (e.g. Zhao et al., 2014; Zsóka et al., 2013) and that highly educated people are more prone to ecologically conscious consumption in developed (Diamantopoulos et al., 2003; do Paço et al., 2009) and developing countries (Zhao et al., 2014; Zsóka et al., 2013). A closer inspection of the results reveals that differences among the groups exist and are statistically significant at  $P = 0.065$  and  $P = 0.081$ , respectively, but not at our threshold ( $\alpha = 0.05$ ). Therefore, at a less stringent threshold ( $\alpha = 0.10$ ) both hypotheses regarding education would be supported. However, the results of clustering and discriminant analysis reveal that when ecologically conscious consumer behaviour and environmental concern are jointly analysed, the level of education discriminates between the more and less ecological groups.

Regarding income, the results indicate that significant differences exist in environmental concern between consumers with below average household income and those with above average household income, indicating that those coming from less wealthy households are more concerned about the environment. This is in contradiction with most previous studies, except partially with Park et al. (2012) who also found people from less wealthy households to be more environmentally concerned compared to the group with average income. No differences regarding income exist for ecologically conscious consumer behaviour, which is in line with mixed findings in the published literature, especially with Ci-Sheng et al. (2016) and Straughan and Roberts (1999) who also found that income level does not affect green consumption decisions significantly. The explanation for these findings could be in line with the discussion offered by Roberts (1996) that pollution and environmental degradation may have reached the point where consumers from all (also the lower) socioeconomic strata are becoming involved. Skopje is one of the most polluted European cities and it is possible that consumers from poorer households live in more polluted areas and are consequently more concerned about the environmental problems.

In the last section, we tested the influence of spouses and children on environmental concern and ecologically conscious consumer behaviour. Regarding the marital status (married were those living together with a significant other in a household), our results

support that on average married people are more environmentally concerned and report to exhibit more ecologically conscious consumer behaviour. This study therefore adds to the scarce empirical evidence of the influence of marital status on environmental concern (e.g. Research 2000 in Diamantopoulos et al., 2003) and ecologically conscious consumer behaviour (Diamantopoulos et al., 2003; Fisher et al., 2012). The relationship of the number of children in the household is closely related to environmental variables. The results indicate that the number of children is positively related to environmental concern and ecologically conscious consumer behaviour, which supports the results of previous studies on environmental concern and environmentally friendly behaviour (Laroche et al., 2001; Loureiro et al., 2002). We can conclude that in this context, possibly due to discussions on ecology at school, children influence environmentally friendly behaviour of their parents. The other explanation could be in line with role theory that parents play the role of responsible adults and try to lead by example.

When testing the joint influence of socio-demographics on environmental concern and ecologically conscious consumer behaviour, there are some differences compared to hypotheses testing. Environmental concern is predicted by gender, age and income below average, with gender having the strongest influence, which is in line with the findings using role theory (Han et al., 2009). Marital status and number of children that were significantly related to environmental concern when tested individually do not have a statistically significant effect on environmental concern. When age was not in the equation, marital status had a statistically significant effect on environmental concern, while the effect of the number of children became significant only after also marital status was excluded from the equation. Despite multicollinearity not being an evident issue in this dataset, a close inspection of the correlations reveals that correlations between the independent variables (marital status, age and number of children below 15 years) are higher than correlations between the respective independent variables and environmental concern), which is a possible explanation why not all of the above mentioned regression coefficients are statistically significant when examined jointly. Ecologically conscious consumer behaviour is predicted by gender, age, marital status and number of children, which is in line with our previous analyses.

The results indicate that in the examined context, socio-demographic variables have substantially larger explanatory power for environmental concern and ecologically conscious consumer behaviour than in more developed economies. For example, in the study on U.S. consumers, conducted by Roberts (1996), socio-demographic variables explained 6% of variance in ecologically conscious consumer behaviour, while for the UK, with slightly different scales, Diamantopoulos et al. (2003) had less than 6% of variance in environmental measures explained (5.7% for environmental attitudes and 3.9% for purchasing behaviour). More recently, Brochado et al. (2017) explained 12.9% of variance in ecologically conscious consumer behaviour with socio-demographic variables, compared to 13.2% for environmental concern and 18.4% for ecologically conscious consumer behaviour in our study. The percentage of variance that remains unexplained indicates there might be other influences, such as psychographic characteristics or the

impact of other situational factors on consumers' purchase decisions rather than socio-demographics. When we included environmental concern as a predictor in the regression analysis of ecologically conscious consumer behaviour, this, as expected, considerably increased the percentage of the explained variance (adjusted  $R^2$  is 0.336 compared to 0.184 without environmental concern). However, in transition or post-transition markets where companies do not spend a lot of money on marketing research, this  $R^2$  indicates that socio-demographic variables do offer a relevant, although not ideal, base for profiling green consumers.

## 6.2 Implications for managers and policy makers

Even though in general consumers want to take a part in ecologically conscious behaviour and there are varieties of available options to do so, the environmental impacts from consumption are continuously increasing. Therefore, it is essential that researchers shed more light on consumer behaviour. In that line, this research gives its own impact investigating attitudes toward the environment and ecologically conscious consumer behaviour in the context of a post-transition and heavily polluted country, where this type of research is quite scarce.

Companies can use the results presented in this research in several ways. First, the research offers information about the level of environmental concern and ecologically conscious consumer behaviour in the examined market. This information can be used to assess market readiness for green products and initiatives. Second, the results of testing individual and joint influences on environmental variables can be used in profiling green consumers. Due to not very developed market in terms of marketing research, it is easier for companies to use socio-demographic variables for segmentation of green consumers. This research suggests which variables could be used.

This study also offers some implications for policy makers. It is evident from the results that the general public needs more education to raise environmental awareness and motivation for ecologically conscious consumer behaviour. This is especially the case for younger consumers who scored lower on environmental variables compared to older consumers. The implication for policy makers is to incorporate more environmental content in the curriculum to properly educate the youngest population in the country, even though it might take years to see the effect of the educational system on their higher awareness of environmental issues. Thus the country could be on the right way to create a more environmentally responsible society of active, environmentally conscious consumers and citizens. In the short term, policy makers should offer more financial stimulation for replacing old wood-burning stoves and old cars with greener ones in order to reduce air pollution. In this context ecologically conscious behaviour is not significantly affected by income, but environmental awareness is. The results show that consumers from households with below average income are more environmentally aware than others, but they do not have the budget to transform their environmental attitudes to behaviour.



Additionally, by accepting and implementing the concept of sustainable development, the government develops strategies to promote more ecologically conscious consumer behaviour. Regarding their effectiveness, it is important to understand and evaluate consumer behaviour in order to develop ways which can help to influence consumer behaviour in the desired direction. Thus, the results from the current study concerning the relation between socio-demographic, attitudinal and behavioural factors might be used by all relevant players involved in implementing the strategies for promoting more ecologically conscious consumption in the society. It seems a lot of additional efforts are needed to bring consumers' behaviour into accordance with the sustainable development policy on the national and international levels.

### 6.3 Limitations and opportunities for future research

As with any research, the present study has its own limitations. One of the limitations is the use of non-probability sampling, which limits its generalization; although, due to a careful selection of respondents, the sample does resemble the population in several characteristics. Nevertheless, the results give insights into the situation on the Macedonian market regarding the current issues of ecologically conscious consumption. In order to achieve a more representative sample, the use of probability sampling is one of the options suggested for further research. Additionally, the respondents gave self-reported responses that might not be entirely accurate because they tended to show their perception of their own behaviour, rather than their actual behaviour. The data was collected outside of the actual buying situation, which might give an inaccurate picture of real decision-making processes. Thus, we suggest that further data collection needs to be performed in real purchase situations in order to examine the relevant product categories more effectively.

The current study can be seen as the beginning of a journey into further research of ecologically conscious consumer behaviour in transition and post-transition contexts. Since the issue with all of its relevant factors has not yet been comprehensively studied in these contexts, there is a great opportunity for further research in the field by examining additional factors that may impact ecologically conscious consumer behaviour. Besides socio-demographic characteristics several psychographic characteristics could be included (e.g., values, attitudes and lifestyles), which would also increase explanatory power. Groening et al. (2018) offer future theoretical directions for green marketing research, especially in the area of behavioural intentions, which can also be tested in the context of transition and post-transition economies. One highly interesting topic for further research could also be the influence of eco-labels on consumer decision making. Another research with great potential could be examining young people's knowledge of sustainability issues in general, which could help find ways to implement appropriate educational strategies in order to motivate, enable, and empower future consumers to engage in more ecologically conscious consumer behaviour and sustainable development processes.

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