

PERCEPTION OF THE STATE OF THE ENVIRONMENT IN NIŠ AMONG MEMBERS OF GENERATION Z AND THE ROLE OF DIGITAL CHANNELS IN SHAPING THEIR ENVIRONMENTAL AWARENESS

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Abstract: Informing every person is one of the most important segments that contribute to the development and deepening of awareness of the importance of environmental protection. With adequate information, the process of developing environmental awareness is shaped to the extent that the individual sees himself as an active social factor in an organized social community. Consequently, the role of man in environmental processes is increasing, because the amount of information on environmental issues is growing every day. Every individual, especially young people, by receiving timely and accurate environmental information, develops environmental awareness, which further leads to the desired results in environmental conservation. Sustainable development is the basic development concept of almost all countries today. As such, it requires that future generations have at least the same quantity and quality of resources as current generations. In order for any country to develop sustainably, it is necessary for citizens to have a developed environmental awareness. What also characterizes modern society is the process of digitalization. Members of Generation Z are digitally literate. They receive information primarily digitally, including information about the need to preserve the environment, sustainable development, and environmental disasters, which can have a major impact on the development of their environmental awareness.

The aim of this paper is to analyze the level of awareness of members of Generation Z about the state of the environment in the city of Niš, as well as to identify digital communication channels through which they receive useful messages related to the environment. The importance of identifying a specific channel or channels is reflected in the fact that public policy makers or brands that want to contribute to environmental protection through social marketing send their messages precisely through that/those channels. In order to achieve the aim of the paper, 102 members of Generation Z from the city of Niš were surveyed. The collected data was processed in the SPSS software package and the results obtained showed that in the eyes of members of this generation, the level of environmental quality is not at a satisfactory level, and that information related to the environment comes to them primarily through social networks.

Keywords: *environment, information, environmental awareness, digital channels, social networks*

Field: Economics

1. INTRODUCTION

The destruction of natural resources has experienced a significant increase, especially after the Industrial Revolution as a result of increased urbanization (Pinho et al., 2009). From an economic perspective, the process of industrialization has led to an improvement in the quality of life, however, with intensive industrial development, a wide range of pollutants and harmful chemicals have emerged, which have led to the degradation of natural resources (Samanta et al., 2002).

The everyday activities of modern man have caused climate change and the consequences of which are increasingly being observed at a global level (Rubio-Salcedo et al., 2017). It is precisely these continuous changes that lead to the deterioration of the physical, chemical and biological properties of the environment. Such a changed environment has a negative impact on people (Marcilio & Gouveia, 2007).

The insufficiently developed level of awareness of citizens about the need for environmental protection is a consequence of:

1. insufficient representation of this type of education in plans and programs, starting from preschool institutions, up to higher education institutions;
2. lack and insufficient availability of teaching materials
3. insufficient availability of informal forms of education in a given area
4. lack of an information system
5. lack of a high general educational level and low living standards of the population (Nacionalni

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program zaštite životne sredine, n.d.).

Considering that everything starts with the individual, informing members of Generation Z, but also members of Generation Alpha from an early age is of great importance. Their educators in primary and secondary schools, as well as later higher education institutions, play a major role in this process. However, in addition to education in schools, an extremely important medium for members of these generations are digital communication channels. What characterizes members of these younger generations is a short attention span and the need to convey information concisely and in the shortest possible time. This is precisely what digital communication channels, especially social networks, enable (Vučenović & Stojanović, 2004; Sun & Xing, 2002]. The works of numerous researchers have shown that information transmitted via social networks, blogs, websites, paid advertisements, messages from influencers and celebrities is of great importance when it comes to the behavior of members of Generation Z towards the environment (Sun & Xing (2022), Luqman et al. (2021) and Confetto MG et al. (2023). Also, many brands today, in order to be philanthropic and to bring the importance of the environment closer to the younger generation, implement commercial campaigns in which they talk about the importance of the environment, as well as social marketing campaigns, which do not have a commercial effect. In the Republic of Serbia, such campaigns are often implemented by Telekom Srbija, and the campaign "No Species Dies Alone" was particularly notable, while at the global level the Patagonia brand stands out in particular and their campaign "Don't Buy This Jacket" (Vučenović & Stojanović, 2004).

Informing about environmental protection is a complex, specific and unique process, which aims to ensure the acquisition of elementary concepts and knowledge, the development of individual and collective environmental awareness and adequate forms of behavior for the successful protection and preservation of the living and working environment (Klemenović, 2004). In addition to the aforementioned authors, who in their research came to the conclusion that digital channels are the basis for educating younger generations about the state of the environment, there are also works that primarily point to the importance of formal education, and that digital channels can only be used as a support for formal education (Hajj-Hassan et al., 2024; Syamsiah et al., 2024).

The analysis of relevant documents has imposed the need for new research to determine the attitudes of young generations, who will be the carriers of the development of the city of Niš in the future (Sekretarijat za zaštitu životne sredine grada Niša, 2017). What is also worth emphasizing is that when it comes to Generation Z, care must be taken as to how messages are transmitted and through which channels. We have already mentioned that the attention span of Generation Z, compared to Millennials, is significantly shorter, and numerous studies have shown that it is particularly important for them that the key part of the message is conveyed in the first three seconds of a video, speech, or even written text. If this is not done in this way, they will not be interested in listening to the information that is conveyed to them to the end. This certainly applies when it comes to education in schools. Educators of the younger generation must immediately, at the beginning of the presentation, awaken the attention of their students with important facts, because otherwise, they will not be interested in listening to what the educator tells them in the rest of the presentation (Stanković et al., 2024; Ilić Krstić & Milutinović, 2026).

The aim of this paper is to analyze the attitudes of members of Generation Z in the city of Niš about the environment, as well as to identify the digital communication medium through which they obtain information about the state of the environment and the need to improve environmental awareness.

2. MATERIALS AND METHODS

Data collection for the research was carried out through a survey. The survey questions in the paper were defined based on the analysis of the works of Sun & Xing (2022), Luqman et al. (2021) and Confetto MG et al. (2023). The survey of respondents was conducted from January to March 2026. A sample of a total of 103 members of Generation Z was included. The main criteria for selecting respondents were that the respondents resided in the territory of the city of Niš, as well as that they were born between 1997 and 2012.

The survey questionnaire used defined 20 questions, divided into four groups. The first group of questions related to the demographic characteristics of the respondents regarding gender, year of birth and current level of education. The second group of questions in the questionnaire related to the respondents' views on the state of the environment and the respondents' awareness of the problems facing humanity when it comes to the environment. The third group of questions aimed to provide data on how information on the state of the environment and the need to improve environmental awareness reaches members of Generation Z. The fourth part of the questions related to the views of members of Generation Z on the importance of digital communication channels for improving environmental protection.

The respondents were informed that the survey was anonymous and that they were taking part in the survey voluntarily. The respondents were not limited by a specific time interval in which to complete the survey. Respondents were asked to try to give as honest answers as possible, and were informed that the survey results would be used exclusively for scientific research purposes. Respondents expressed their views on environmental protection issues using a descriptive method.

The results of the conducted research were obtained by processing and analyzing the data obtained from the survey. The results were presented in tables and graphs using the SPSS program. There were no invalid questionnaires, which means that 100% of the initial sample was processed. The tests used were the contingency table, the chi-square test, the Cramer's V test, as well as correlation and multiple regression analysis.

3. RESULTS AND DISCUSSION

Analysis The sample is relatively balanced according to the gender of the respondents, with a slight advantage of female respondents. When it comes to the age structure of the respondents covered by the survey, there is a dominance of respondents aged 21–23, whose participation is 40.2%, while the lowest participation is of respondents aged 24–26, who participate with 26.5%. The largest part of the respondents are students, i.e. the participation of undergraduate and master's students is 72.5%, while only 27.5% of the survey participants attend high school.

Members of Generation Z, who reside in the city of Niš, are aware of the presence of environmental problems and insufficiently developed environmental awareness, both in the city of Niš, in the Republic of Serbia and globally. This is shown by the results of their answers to the second group of questions asked in the survey. As many as 78.4% of respondents assess the state of the environment as bad or very bad, which can be seen in Table 1, while only 5 respondents assess the state of the environment as good.

Table 1. Crosstabulation - Gender * Environmental perception

Gender	Poor/Very poor	Other	Total
Male	34	12	46
Female	46	10	56
Total	80	22	102

Source: Authors

Table 2 shows the results of the H2 test, which aimed to show us whether there is an influence of gender when it comes to the perception of the state of the environment among members of Generation Z. As the results from the table show, there is no statistical relationship between gender and the perception of the state of environmental quality ($\chi^2(1) = 2.11$, $p = 0.146$).

Table 2. Chi-Square Tests

Test	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.11	1	0.146
Continuity Correction	1.78	1	0.182
Likelihood Ratio	2.13	1	0.144
Fisher's Exact Test	*	*	0.173
N of Valid Cases	102		

Source: Authors

The effect size, measured by Cramer's V ($V = 0.144$), suggests a weak association between the observed variables, as shown in Table 3, which presents the results. All these results indicate that environmental awareness is evenly distributed between the sexes when it comes to Generation Z in the city of Niš.

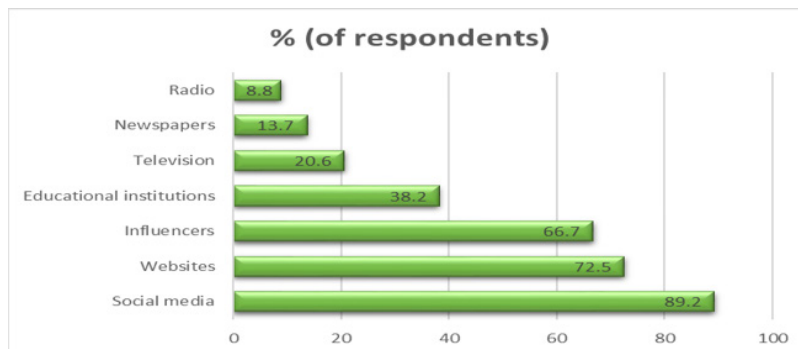
Table 3. Symmetric measures

Measure	Value	Approx. Sig.
Phi	0.144	0.146
Cramer's V	0.144	0.146
N of Valid Cases	102	

Source: Authors

The above tests were also applied to other demographic variables, including environmental perception and environmental awareness. All of them showed that there were no significant statistical differences in the perception of the environment by members of Generation Z of different ages or levels of current education. When it comes to environmental information channels, social networks are dominant among Generation Z, as shown in Chart 1.

Chart 1. Sources of information for Generation Z about the environment in the city of Niš



Source: Authors

As can be seen from the graph, for this question, respondents had the opportunity to choose more than one answer and as many as 89.2% of respondents indicated that social networks are the basis for their information about the environment. There is also a high participation of websites, which also represent a digital communication channel, while the smallest number of respondents of this generation indicated that they receive information about the environment through the radio. Table 4 below shows the distribution of the use of social networks as the main source of information about the environment by age.

Table 4. Crosstabulation - Age * Use of Social Media as information source

Age group	Uses social media	Does not use	Total
18-20	32	2	34
21-23	38	3	41
24-26	21	6	27
Total	91	11	102

Source: Authors

The results from Table 4 clearly show that almost all respondents gather information about environmental problems through social networks, especially the youngest group of respondents, Generation Z. Due to the presence of slight differences, Pearson's Chi-Square Tests of independence were conducted, which indicated a statistically significant difference between the age of the respondents and the use of social networks as the primary source of information ($\chi^2(2) = 6.87, p = 0.032$).

Table 5. Chi-Square Tests (Age * Use of Social Media as information source)

Test	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.87	2	0.032
Likelihood Ratio	7.12	2	0.028
Linear-by-Linear Association	5.94	1	0.015
N of Valid Cases	102		

0 cells (0.0%) have expected count less than 5.

Source: Authors

The effect size of the observed differences was measured by Cramer's V test ($V = 0.259$), and it indicates that there is no extremely high deviation between the observed variables. The obtained results clearly show that younger respondents, between 18-23 years of age, rely more on social networks as the main source of information about the environment compared to older members of Generation Z from the territory of the city of Niš.

Table 6. Symmetric Measures (Age * Use of Social Media as information source)

Measure	Value	Approx. Sig.
Cramer's V	0.259	0.032
N of Valid Cases	102	

Source: Authors

Considering that the surveyed members of Generation Z indicated that social networks were the most important digital marketing communication channels, but also indicated that there is a high level of trust in information obtained through digital channels, Table 7 establishes the correlation between these variables as dependent and environmental awareness as an independent variable.

Table 7. Correlations analysis

Variables	1	2	3	4	Sig. (2-tailed)	1	2	3	4
1. Frequency of social media use	1				1.	—			
2. Following influencers	.58**	1			2.	.000	—		
3. Trust in digital channels	.61**	.55**	1		3.	.000	.000	—	
4. Environmental awareness	.69**	.54**	.71**	1	4.	.000	.000	.000	—

N = 102. $p < 0.01$

Source: Authors

The presented Pearson correlation results show that there is a statistically significant positive relationship between all variables observed ($p < 0.01$). The analysis yielded an extremely strong positive correlation between trust in digital channels and environmental awareness ($r = 0.71$), suggesting that higher levels of trust are associated with greater awareness. Also, frequency of social media use ($r = 0.69$) and influencer following ($r = 0.54$) show moderate to strong positive correlations with environmental awareness.

Table 8. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.740	.550	.530	.480

Source: Authors

In addition to correlation, multiple regression analysis was applied in the paper. The results of this analysis show that the model is statistically significant, as can be seen from Table 9 ($F(3, 98) = 39.82$, $p < 0.001$), which confirms that the selected predictors together contribute to explaining the environmental awareness of members of Generation Z in the city of Niš. The model explains 55% of the variance in environmental awareness ($R^2 = 0.55$), which indicates a high level of explanatory power.

Table 9. ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	27.51	3	9.17	39.82	.000
Residual	22.57	98	0.23		
Total	50.08	101			

Source: Authors

Among the predictors that have an impact on the environmental awareness of Generation Z in the city of Niš, the use of social media has the strongest effect as can be seen from Table 10 ($\beta = 0.48$, $p < 0.001$), followed by influencers ($\beta = 0.31$, $p < 0.001$) and websites ($\beta = 0.19$, $p = 0.016$).

Table 10. Coefficients

Model	Unstandardized B	Std. Error	Standardized Beta	T	Sig.
(Constant)	0.84	0.21	—	4.00	.000
Social media use	0.48	0.08	0.48	6.12	.000
Influencers	0.31	0.08	0.31	4.02	.000
Websites	0.19	0.08	0.19	2.45	.016

Source: Authors

The results obtained showed that members of Gen Z who were surveyed are both very aware of environmental problems and interested in solving them, but also that information that has an impact on raising environmental awareness primarily comes to them through digital channels, dominated by social networks.

4. DISCUSSION

A quality environment is a prerequisite for the survival of humanity. Without taking care of the quality of natural resources and taking measures to improve the quality of the environment, society cannot develop sustainably (Samanta et al., 2002; Rubio Salcedo et al., 2017). What is particularly important is that younger generations, on whom the world rests, are aware of this, and who should ensure progress in the future, but while respecting environmental standards and leaving as little ecological footprint as possible.

As part of this work, a survey was conducted among Generation Z, in which respondents from the territory of the city of Niš, who belong to this generation by age, participated. After processing the data, what was determined was that the respondents are very aware of the presence of environmental problems and the need to solve them, which certainly indicated a high level of developed awareness of this young population. However, what is extremely important is that solving environmental problems requires constant education, constant information, not only of the younger population, but of the entire population, in order to direct them towards environmentally correct behavior, which will leave the smallest possible ecological footprint.

Through the research conducted in the paper, it was found that 89.22% of respondents of generation Z, from the territory of the city of Niš, collect information about environmental problems and desirable behavior in order to mitigate or solve them precisely through social networks, in addition, information that they collect by reviewing websites, as well as recommendations they receive from influencers, are also important for them, while formal education (primary and secondary schools and colleges) was only in fourth place as a source of information. These results showed the almost dominant influence of social networks and generally digital communication channels when it comes to members of gen Z. This result was expected, because members of this generation want to receive useful information in a short time and have a lower level of attention to listen for a long time compared to their predecessors, the Millennials (Vučenović & Stojanović, 2024; Sun & Xing, 2022).

The tests conducted, which were further implemented in the work, further supported the fact that the role of social networks is greater compared to other digital and non-digital communication channels when it comes to informing and directing Gen Z in Niš towards environmentally friendly behavior. The results obtained are in line with the results of researchers Sun & Xing (2022), Luqman et al. (2021), Confetto MG et al. (2023) and Vučenović & Stojanović (2024).

Hajj-Hassan et al. (2024) and Syamsiah et al. (2024) in their work, as already presented in the previous text, came to opposite results, i.e. indicated the dominance of formal education over digital channels, when it comes to the environment. However, what is worth emphasizing is that they also emphasized in their work that digital channels should be used as a support for formal channels and that only their combination can contribute to strengthening environmental awareness. Based on the results of the research in this work, when it comes to members of Gen Z in the city of Niš, it can be emphasized that they should primarily be sent messages via digital channels, especially social networks, and that all other channels, including formal education, should be as active as possible in order to solve or mitigate the accumulated environmental problems. The results obtained are useful for economic policy makers, educational institutions, as well as for brands, because they indicate through which channels they should communicate with Gen Z in Niš and convey environmental messages. For the state and local government units, as well as educational institutions, the results obtained indicate that social networks and other

digital channels must include in their strategy and campaigns aimed at improving the quality of the environment. For brands, the results obtained show that high respect for environmental problems should be communicated through their campaigns on social networks because members of Gen Z will appreciate this, regardless of whether they are commercial campaigns or social marketing campaigns (which do not have a commercial effect). Like most other empirical research, this research also faced certain limitations. First of all, the sample size may represent a disadvantage, which may lead to the generalization of the results. The survey questionnaire, which was applied in this work, always carries the risk of subjectivity, i.e. the expression of socially desirable behavior by the respondents. The recommendation for future researchers on this topic is to investigate the long-term effects of different communication channels (through which messages about the environment and desirable behavior are transmitted to Gen Z) by including a larger number of respondents, which will help create an adequate communication strategy with this younger population and enable their guidance towards environmentally desirable behavior.

5. CONCLUSION

During the period of industrial development of civilization, the environment was an issue that was not given enough attention because economic prosperity was the only concern. This behavior led to the degradation of natural resources, and in recent decades, great attention has been paid, both at the local and national levels, and at the global level, to the problem of protecting and improving the quality of the environment, all with the aim of ensuring the survival of human civilization and ensuring that all countries in the world develop sustainably.

In order to solve the problems of environmental degradation and improve its quality, it is necessary to constantly inform and educate citizens, in addition to other measures implemented by the state. It is especially important to constantly inform and educate the younger population, in order to instill in them the attitude that they should leave as small an ecological footprint as possible. Generation Z (born between 1997 and 2012), from the territory of the city of Niš, whose attitudes were analyzed in this paper, showed that they are very aware of the state of the environment. Members of this generation emphasized that it is important for them to receive information about the state and quality of the environment, as well as about the actions that need to be taken in order to leave the smallest possible ecological footprint, through digital channels, which they are primarily focused on as a generation. Information from social networks is especially important for them, which is clear and concise and on the basis of which they can direct their future activities with the aim of protecting and improving the quality of the environment.

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