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TOURISTS' ENVIRONMENTALLY RESPONSIBLE BEHAVIOR AND GREENING THE ECONOMY

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The impact of human behavior on the environment has caused climate and ecosystem changes over the past half century**.** Addressing environmental challenges through social innovations (SI) initiatives aim to achieve impacts beyond individual levels for the benefit of the general public. That is why tourists' environmentally responsible behaviour (ERB) studies are becoming more relevant, including regions of the Republic of Latvia. The aim of the study is to develop a conceptual model of environmentally responsible behavior (ERB) of tourists for the regions of Latvia. The research used KMO and BARLETT'S, Cohen's Kappa and Cronbach's alpha tests, Exploratory Factor Analysis and Principal Components Analysis, descriptive and Pearson correlation method. Based on the analysis of scientific literature, researches and the results of the survey of 383 respondents, in this paper the concept of the tourist ERB model in Latvia was developed. Model approbation indicated a mathematically higher positive correlation for female respondents over male respondents in all of the research factors, except for connection with gross income per month, when factor experience had a strong negative correlation (r = – 0.790).

Keywords: *environmental impact; tourist; model concept.*

INTRODUCTION

The environmental impact of human behaviour has grown on a global scale over the past 50 years. Such changes have had an impact on climate change, which in turn summed up as biodiversity loss, water and air pollution, and soil and land degradation (IPCC, 2001; Diaz et al., 2018).

There are many alternative SI definitions, however addressing environmental challenges social innovations (SI) initiatives aim to achieve impacts beyond the individual level for the benefit of the wider public (Moulaert et al., 2013; Edwards-Schachter & Wallace, 2017; Polman et al., 2017). That is why tourists' environmentally responsible behavior (ERB) studies are becoming more and more relevant, including regions of the Republic of Latvia.

The identification of tourism's contribution to global pollution is complicated by its interlinkage with different sectors (e.g. transport, energy supply, etc.) (Peeters, & Dubois, 2010). However, Gössling (2013) said tourism was second in global clearance changes, while by 2025 Greenhouse gas emissions (GHG) emissions growth was forecast at 12% (Lenzen et al., 2018). According to World Tourism Organization (UNWTO) COVID-19 restrictions globally reduced tourist numbers by 65% in the first half of 2020. They forecast that the numbers could return to 2019 levels only in 2024 (UNWTO, 2020). However, Latvian Tourism Statistics (Figure 1) show the possibility of faster recovery.

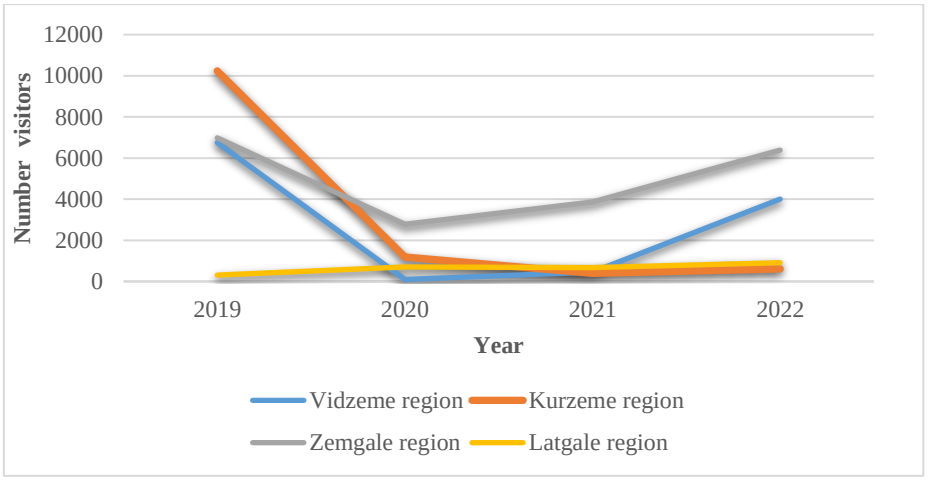

Figure 1. Number of tourism company visitors by region of Latvia 2019 – 2022.

A climate study by the European Investment Bank (EIB) on the impact of the COVID-19 crisis on citizens' understanding of the emergency climate situation, concluded that respondents believe that their action can make a difference in the fight against climate change (Tourism 2030, S.A.).

Greening economy (GE) in a green economy, traditional economic development strategies have been tailored to build a business that improves environmental outcomes (Shu-Yuan et al., 2018). In the tourism business, improving the environment is unthinkable without the tourist ERB, which researchers have defined differently. However fundamentally in would have a positive effect on the environment, minimising any negative impacts on species or ecosystems (Meijers & Stapel 2011; Chiu, Lee & Chen, 2014; Yue et al., 2020).

First author define the term of environmentally responsible behaviour (ERB) and its factors. Understanding ERB (Table 1) was defined while taking into account not only the research area (nature-based tourism, outdoor recreation, natural reserve areas, etc.), but also from the subjects, individuals or groups, that averts problems (Axelrod & Lehman, 1993).

Table1. Development of terminology of environmentally responsible behaviour 1993-2020

Author (s)	Year	Terminology
Axelrod & Lehman	1993	Environmentally concerned behaviour as actions that support environmental preservation and/or conservation
Stern	2002	Clarified ERB significance of behaviour as the extent to which it changes the availability of material or energy from the environment or alters the structure and dynamics of ecosystems or the biosphere
Kolmuss & Agyeman	2002	Defined ERB as that exhibited by an individual who engages in actions to minimize any negative impact on the natural and built world
Bamberg & Moser	2007	ERB is characterized by a combination of self interest and concern for other people, species, or ecosystems
Meijers & Stapel	2011	ERB defined as one who takes action to mitigate a negative environmental impact at home, work, or a tourism destination
Cheng, Wu & Huang	2012	…minimize damage to the environment and promote environmental protection
Chiu, Lee & Chen	2014	ERB depicts the environment problems, beliefs and understanding of ecology and mitigation of environmental problems.
Kiatkawsin & Han	2017	Environmentally responsible consumption behaviour
Han	2020	Types of consumer behaviour that help reduce environmental impact

Source: authors' construction.

Stern (2002) defines the ERB as the will to take action with a clear aim to facilitate the environment as the propensity to take actions with pro-environmental intent. Researcher believes that each of the EBR chain variables directly impacts the next and that on the other hand can influence the rest of variables, thereby understanding that each individual can act in order to reduce the threats to the environment and the personal behaviour norms activate actualisation of the society norms. Other researchers (Table 1) attributed the term ERB to caring for other people, species or ecosystems to reduce negative environmental impacts at home, work or tourist destination, resp., to reduce environmental damage. Kollmuss & Agyeman (2002), while looking into reasons for ERB in population and its obstacles analysed different models. The simplest models were based on coherent analysis of environment progression that lead to increased environment awareness and EBR. Kollmuss & Agyeman developed a model, dividing demographical and external factors (for instance, institutional, economic, social and culture factors) and internal factors (motivation, environmental awareness, understanding, values, attitude, emotions, and control), obligations and priorities.

Authors point the attention to the identified ERB obstacles within the Blake model: individuality, responsibility, practical dimensions (Blake, 1999). Individual obstacles are within the person himself, and his attitude. However even serious environmental problems can be no obstacle for desires and utility needs. For instance, air transportation is widely used despite the opportunity to use other types of transport that do not increase the warming processes as significantly. People who do not act in a manner that is environment conscious, believe that they are in no position to individually have an impact on the current state and thus they should not take responsibility. Practicality is a third restriction, related to the social and institutional factors that do not allow people to act in an environment friendly manner despite of their attitude or intentions (IPCC, 2001).

There is also importance to the control factor which is an important affective predecessor of ERB. The control is and individual confidence about the ability to carry out changes based on ones behaviour (Hwang et al., 2000). Researchers had concluded that those individuals, which had developed self-control, were more likely acting in a responsible manner, because they believe that their actions have the potential to bring about significant change. Meanwhile those who needed external control, more likely would participate in ERB facilitating activities (Hines & Hungerford, 1986; Hwang et al., 2000).

Majer and Stapel (2011) claimed that an individual who seriously evaluates the future side effects of present actions, are bound to act in a more sustainable manner and would make sustainable choices (Meijers & Stapel, 2011). Meanwhile Bamberg & Moser (2007) determined that the personal morale norms are not only attitude and behaviour control, but also a forecast of the behaviour pattern more related to the given environment. Multiple researchers have indicated that for creation of ERB, there is a need for knowledge of environment. The goal of environment education is to craft human behaviour while educating them about environment related questions, in order to develop the ability to react in an environment safe manner (Cheng, Wu & Huan, 2013; Chiu, Lee & Chen, 2014; Buonincontri et al., 2017).

Therefore environment education is vitally important for tourism, because it offers knowledge that create tourist behaviour. Meanwhile Buonincontri, Morvillo, Okumus & van Niekerk (2017) indicated towards the impact of individual experience on a given tourist and the behaviour of other tourists all along.

The researchers found that factors affecting tourist ERB are multidimensional and each has its own advantages and drawbacks. Similarly, minor differences exist in factor model architecture, tourist ERB research methods, such as the regression method Bamberg & Moser (2007) meta-analysis of environmentally unfriendly behavioural factors in Hines & Hungerford (1986) and Sterna (2000), or factor analysis in Bamberg & Mose (2007), Chiu, Lee & Chen (2014), Buonincontri, Morvillo, Okumi and van Niekerk (2017).

The literature analysis led to the conclusion that it cannot be argued that any of the architects of the factor models would be more diverse or inclusive, as already pointed out by Colmus & Agyeman (2000). The most important thing is to build on the theory of past researchers "experiences and its practical application, as Akintunde (2017) pointed out when studying primitive models, Behavioural change model and The Environmental Citizenship Model. Essentially, the conceptual model is an action plan that describes what's happening in a universal way. Models are used to describe the use of theories for a particular occasion. (Kivunja, 2013; Ravitch & Riggan, 2017). In view of the current nature of this topic, certain prerequisites should be recognised: research of the tourist ERB is also important for Latvia, as indicated by the survey of the tourist ERB planned for 2021–2027 in the framework of tourism development of Latvia (Rozite et al., 2019).

The Vidzeme regions was selected as a study area, taking into account three conditions: 1) the fact that it is a region of the European Union (EU) with insufficient investments for the transition to GE (EIB, 2021); 2) The breakdown of EU funds (as of May 2021) in comparison with other regions of Latvia is the smallest, according to the author's calculations, by approximately EUR 85 thousand (Cabinet of Ministers, 2021); 3) the biggest drop in tourist numbers amid the COVID-19 pandemic and the slow recovery of tourism companies (Figure1).

The aim of the study is to develop a conceptual model for environmentally responsible behavior (ERB) of tourists for the regions of Latvia. **Research tasks:** 1) analysis of scientific literature; 2) question analysis, identification and operational definition of variables; 3) determine the ERB dominating factors based on gender, gross monthly income (EUR) and education.

RESEARCH METHODS

Secondary data analysis is supplemented by the results of the primary research as of Data was collected from 2020–2022 (Grizane & Blumberga, n.d.), which was conducted via an online questionnaire on the sample of 383 respondents from Vidzeme region of Latvia. In this research the analysis method of the European Health Literacy Survey (HLS-EU-Q47) was applied (Sorensen et al., 2013; Kodrica & Grizane, 2022; Grizane & Blumberga, accepted.). Questions were asked through a telephone survey and by conducting surveys face-to-face when possible. A total of 30 usable questionnaires were collected. Each questionnaire item was assessed by item analysis, including Cronbach's alpha, means, and standard deviations. Measurement of each indicator on those variables in this research was conducted by using Likert scale of 4 levels, namely 1 = not important; 2 = moderately important; 3 = important; and 4 = very important, which indicate seven group of factors: attitude; behaviour; comprehension; control; environmental knowledge; experience and values (Grizane & Blumberga, accepted). The rating allows you to calculate an index for each seventh for the group factor. On the other hand, the formula (HLS-EU Consortium, 2012) was used to standardize the indices to equal values from 0 to 50:

$$index = (M - 1) \times (\frac{50}{n}), \quad (1)$$

where *index* – was the specific index calculated (%);
M – the mean of all participating items for each factor;
1 – the minimal possible value of the mean (leading to a minimum value of the index of 0);
n – the range of the mean;
50 – the chosen maximum value of the new metric.

Statistical analysis of survey questions is based on the frequency distribution of responses according to the questions. Each factor of tourists' ERB indicated by KMO and Barlett's test. Data suitability and selectivity coefficient determined using the Cronbach-Alpha test for ordinal data. The intra-correlation coefficient of survey questions was calculated to determine statistically significant relationships. The conceptual model determined the correlation between tourist ERB and gender, age, education and gross income per month. Data analysis was performed with the Statistical Package for Social Sciences (SPSS 20).

RESEARCH RESULTS AND DISCUSSION

In the study sample (Table 2), men and women in approximately equal proportions are the least represented respondents aged 40-49 (7.05%). The majority of respondents were aged between 20 and 29 (34.98%) and the third largest group was composed of respondents aged between 30 and 39 (30.54%).

Given the level of education, more than a fifth of respondents (27.42%) had a higher education. Respondents with vocational or vocational secondary education (34.98%) and respondents with general secondary education (30.55%), while primary or lower than primary (7.05% only). Other identifying data included the respondent's monthly income. The

largest groups consisted of respondents with a gross income of between 400 and 700 euro (27.65%), between 700 and 1000 euro (24.54%).

If the gross income of respondents in the month from > EUR 1500 (4.69%), then EUR 200–400 was received by a respondent from Vidzeme region of Latvia (13.38%). An analysis of gross monthly income (EUR) shows that around 60% receive a salary of around EUR 400–1000 per month and 5% even more, i.e. potential tourists.

Table 2. Profiles of respondents and Chi-Square test.

Variable	*N*	Mean	Median	Std. Deviation	Chi-Square test	
					x^2	*p*
Gender	–	0.5	0.00	0.50	0.03	0.959
male	191	–	–	–	–	–
female	192	–	–	–	–	–
Age (years old)	383	2.17	2.00	0.92	70.253	0.00
18–19	105	–	–	–	–	–
20–29	134	–	–	–	–	–
30–39	117	–	–	–	–	–
40–49	27	–	–	–	–	–
Education	–	2.17	2.00	0.92	70.253	0.00
higher	105	–	–	–	–	–
vocational or vocational secondary	134	–	–	–	–	–
general secondary	117	–	–	–	–	–
primary or lower than primary	27	–	–	–	–	–
Gross income per month (EUR)	–	3.25	3.00	1.32	147.428	0.00
< = 200	53	–	–	–	–	–
>200–400	37	–	–	–	–	–
>400-700	136	–	–	–	–	–
>700–1000	94	–	–	–	–	–
1500>	18	–	–	–	–	–

Based on the findings of Colmus & Agyeman (2002), that any choice of their factors is the responsibility of the authors, depending on the purpose of the study, but it is important to base the study on the experience of previous authors, the author's study was based on the use of seven factor groups (Table 3) in the tourist ERB model: attitude; behaviour; comprehension; control; environmental knowledge; experience and values (Grizane & Blumberga, accepted).

Table 3. Research questions and groups of factors of tourists' ERB.

N^O	Research questions	Mean	Std.Dev.
	Group of factors Attitude		
Q1	How important for you is the attitude towards environment pollution?	2.67	0.599
Q2	How important for you is the need for environment user payments?	2.49	0.646
Q3	How important is sorting waste?	2.66	0.638
Q4	How important for you is energy saving initiatives?	2.62	0.623
Q5	How important for you is the conservation of natural resources?	2.47	0.743
Q6	Estimate your future Behaviour towards environmental pollution?	2.49	0.657
	Group of factors Behaviour		
Q7	Estimate your future behaviour towards saving of natural resources?	2.49	0.646
Q8	Estimate the importance for you to participate in the cleaning of the tourist destination area?	2.51	0.646
Q9	Estimate how important is it for you to pay the tourist tax, if the levy was to be invested in environment protection?	2.48	0.646
Q10	Estimate how important is it for you to choose the travel means with less CO_2 emissions?	2.53	0.657
	Group of factors Comprehension		
Q11	Estimate whether you pay attention to environment protection when attending tourist destination alone?	2.48	0.646
Q12	Estimate whether you pay attention to environment protection when attending tourist destination in a group?	2.64	0.630
Q13	Estimate how important is it for you to voice your opinion towards environment polluters?	2.60	0.613
	Group of factors Control		
Q14	Estimate whether the current environment control measures and laws are sufficient for reaching the end-goal?	2.54	0.644
Q15	Estimate whether the current environment control system enforcement approach is sufficient?	2.59	0.640
	Group of factors Environmental knowledge		

Q16	Estimate your knowledge about the ecological footprint?	2.54	0.656
Q17	Estimate your knowledge about gathering information on environment protection?	2.43	0.642
Q18	Estimate your knowledge about protected species?	2.48	0.657
Q19	Estimate your knowledge about environment polluting emissions?	2.69	0.604
Q20	Estimate your knowledge about the impact of tourism on the climate change?	2.45	0.620
	Group of factors Experience		
Q21	Estimate the importance of your experience in clean-up of tourism destination?	2.44	0.643
Q22	Estimate the importance of your experience in attending a tourism hiking event?	2.69	0.676
Q23	Estimate the importance of your experience in reduction of wasteful actions in the tourism destination?	2.41	0.628
Q24	Estimate the importance of your experience in using recycled materials when traveling for tourism destinations?	2.48	0.646
Q25	The previous experience made me more aware of nature protection efforts?	2.60	0.673
	Group of factors Values		
Q26	Estimate the contribution of tourism to the human well-being?	2.70	0.673
Q27	Please evaluate the treatment by tourists of environment as an ethical response the climate change	2.60	0.661
Q28	How important is it for the tourists to acknowledge the social and cultural values of the local inhabitants of the tourism destination?	2.73	0.662
Q29	Estimate how important is it to harmonise the tourism activities with the values within the hosting regions and countries?	2.80	0.734
Q30	Estimate the role of responsibility as a value by a visiting tourist	2.62	0.669

Assumption for Measures of Reliability and Measurement for factors of tourists' ERB of Vidzeme region of Latvia to compare the given questions was determined by Cronbach's alpha coefficient (Table 4). Each factor of tourists' ERB is important for it, which is indicated by KMO and Barlett's test (Table 5).

Table 4. Assumption for Measures of Reliability and Measurement for factors of tourists' ERB.

Factor	Mean	St. Deviation	Cronbach's alpha	Average variance extracted
Attitude	2.33	0.657	0.757	O.535
Behavior	2.33	0.657	0.970	0.467
Control	2.45	0.560	0.912	0.449
Environmental knowledge	2.40	0.549	0.914	0.443
Experience	2.38	0.589	0.908	0.421
Values	2.56	0.545	0.814	7.427

Table 5. KMO and Barlett's test for factors of tourists' ERB.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.913
Bartlett's Test of Sphericity	Approx. Chi-Square	3111.338
	df	10
	Sig.	.000

KMO and Barlett's test (Table 5) indicate should be greater than 0.70 indicating according to Yong & Pearce (2013) sufficient for each factor and should be significant (less than 0.05), indicating that correlation matrix is significantly different from an identity matrix, in which correlations between variables are all zero.

The author's research concept model (hereinafter Model) (figure 2) makes it possible to assess tourist ERB's dependence on influence factors through the prism of gender, age, education and gross income per month. Female respondents based on age indicated a moderate positive correlation for factor attitude (r = 0.353) and factor environmental knowledge (r = 0.364), while moderate positive correlation for factor experience (r = 0.607); for education – moderate factor attitude (r = 0.353), factor values (r = 0.417), factor control (r = 0.457), factor comprehension (r = 0.500) and factor experience (r = 0.669); based on gross income per month low positive correlation factor comprehension (r = 0.189); factor control (r = 0.216), factor environmental knowledge (r = 0.309) and factor attitude (r = 0.331), also factor values (r = 0.228). For male respondents based on age was weak correlation for factor attitude (r = 0.291), factor environmental knowledge (r = 0.343), moderate positive for factor comprehension (r = 0.383), factor value (r = 0.416) and factor control (r = 0.404); based on education low correlation factor attitude (r = 0.291) and factor environmental knowledge (r = 0.343), moderate correlation factor comprehension (r = 0.383), factor comprehension (r = 0.404) and moderate correlation factor experience (r = 0.607); based on gross income per month low correlation is for factors comprehension (r = 0.244), attitude (r = 0.267) and factor environmental knowledge (r = 0.298).

Compared to the Eurobarometer 501 study conducted by the European Commission (2020) EU28, the age group 15 – 24 is the highest concern for the decline or loss of species and habitats as well as natural ecosystems (forests, fertile soils) (42%), slightly behind the age group 45–54 (39%). You can drag in parallel that the age of respondents correlates with the factor attitude. Attitudes to this decline or lapse depend on the level of education and the respondent with higher education shows the

highest rate (42%), as with higher incomes (47%). Women (56%), less men (51%) and the older the better (54% – 55%) value the environment. Education levels lead to higher environmental assessment (55% – 60%) with higher education, while income dependency is as high as 61%. According to Model, the most problematic factor in Vidzeme region of Latvia is factor value compared to EU28. Factor value importance compared to environmental and climate change has been researched in Lithuania and mirrored in research by the author, that respondents who are older than 15-29 years have a higher level of personal responsibility despite the fact that there are more young people in this age category who have voiced (signalled) openly their responsible behavior nature and climate change (Vaznonienė, 2022). Although there is a belief that individual values are non-controllable, a persons beliefs can be altered with help of information provision (Onel & Mukherjee, 2017; Ünal et al., 2018). Due to these reasons in this research it has been recommended that environment friendly behavior towards tourism settings should be promoted.

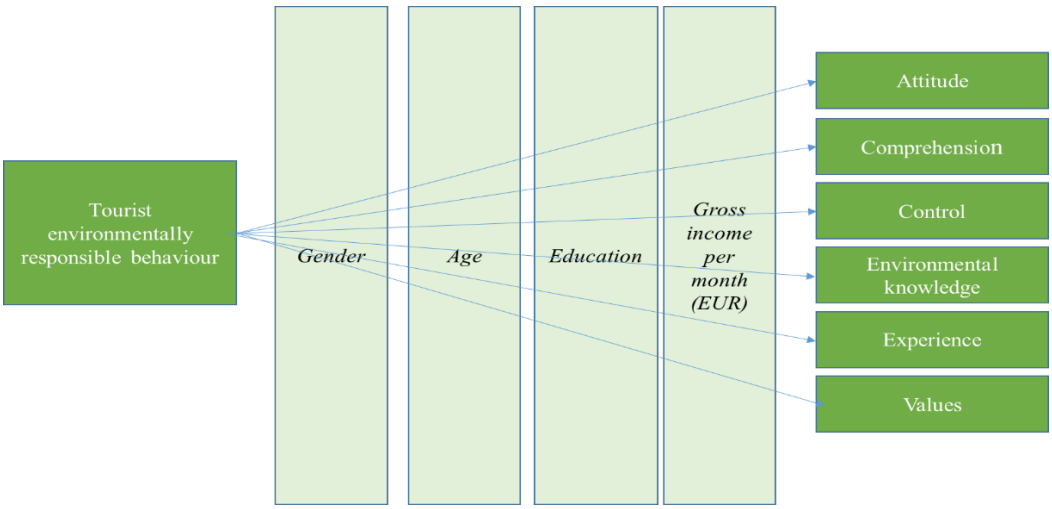

Figure 2. Tourist environmentally responsible behaviour (ERB) concept model for regions of Latvia.

According to Model, knowledge must also be improved, but knowledge alone is not sufficient to be environmentally responsible, while knowledge of the environment and its rules by some individuals could encourage them to be treated well. Other respondents need control, such as being affected by other people's actions or staying firmly confident in doing the right thing despite other actions against the environment.

CONCLUSIONS

1. Despite the definition of environmentally responsible behavior (ERB), the diversity of influence factors, the development of models continued to adapt to each specific case of research.
2. When comparing the model on the basis of respondent gender it was determined that factor comprehension for females indicate mathematically higher moderate positive correlation (r = 0.500) against (r = 0.383) for male respondents; based on age factor control (r = 0.457) against (r = 0.404) and factor experience (r = 0.669) against (r = 0.607) for male respondents. Also in the case of other factors female respondents indicated upper hand, with the exception of connection with gross income per month, where male respondents receive higher incomes and factor experience has a strong negative correlation (r = – 0.790), while for female respondents there is a low negative correlation (r = – 0.128). These results should be further analysed in future research.
3. Comparison between results of the given research and the European Commission's (2020) EU-28 Eurobarometer study " Special Eurobarometer 501: Attitudes of European citizens towards the Environment" indicated that the factor's attitude towards the decline or disappearance of species habitats and natural ecosystems depends on the level of education (with higher education 42%), income (47%), gender (women 56%, and men 51%), age (the older, the higher environmental awareness value, 54% - 55%). The value of the factor in the author's study in Latvia, similarly to situation in Lithuania, is higher for respondents older than 15-29 years.
4. Given the role of tourism as a potential natural pollutant, further study of the tourist environmentally responsible behavior (ERB) in Latvia is important.
5. The practical use of the author's ERB model provides for the mapping of influence factors for further exploring the tourist environment.

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