

TOURISTS' ENVIRONMENTALLY RESPONSIBLE BEHAVIOUR IN RESPONSE TO CLIMATE CHANGE

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Abstract

Tourists' environmentally responsible behaviour (ERB) in response to climate change is a topic that is becoming increasingly important during the Covid-19 pandemic as people's values change. Tourism is facing an economic downturn and now is the time to prepare for a new upswing. Meanwhile, a new narrative is needed in response to climate change, as tourism is a net polluter of the environment. That is why tourist ERB studies are becoming more and more relevant in the world, including Latvia, too. The objective of this paper is to determine the ERB of tourists in response to climate change. The questionnaire included 30 research questions and generated 383 answers from respondents from the Vidzeme region of Latvia. Several research methods were used in the study: descriptive and correlation method, KMO and BARLETT'S, Cohen's Kappa and Cronbach's alpha tests, Exploratory factor analysis and Principal Components Analysis. The study found that the factors attitude, behaviour, awareness, control, environmental knowledge, experience and values influence tourists' ERB; however, environmental knowledge and experience show a slight advantage. To direct the continuation of the research towards the creation of the tourism ERB model in Latvia.

Key words: climate change; environmental behaviour; tourism.

Introduction

Both adapting to climate change and mitigating the causes of climate change have the goal of reducing negative impacts. The Fifth Assessment Report (AR5) assessed human interventions to reduce sources that may directly or indirectly contribute to climate change (IPCC) (IPCC, 2015). The IPCC concludes that there are not only technical, economic, political and institutional barriers, but also cultural, social and behavioural barriers. Choosing a sustainable consumption model depends not only on people's needs, but also on economic opportunities, people's knowledge and awareness (Saari *et al.*, 2021). Such prerequisites and actions also apply to tourism. COVID-19 reduced the flow of tourists, just 52% of Europeans participated in tourism in 2020, compared to 65% in 2019 (Eurostat, 2022).

In Latvia, the largest decrease in the number of guests admitted to tourist accommodation was – 96.5% in May 2020 compared to May 2019, while the largest influx of guests in July 2022 comprised only 57.8% compared to July 2019 (Official statistics portal, 2023, January).

The Covid-19 epidemic has also created new positive trends. Society's awareness for sustainability, and responsibility for the environment and health has increased (Redeemer, s.a.). The results of the European Investment Bank (EIB) study during the Covid-19 crisis on public perception of critical climate change shows that 72% of Europeans and North Americans and 84% of Chinese citizens believe that their individual actions can have a significant impact on the fight against climate change (Tourism 2030, s.a.).

The importance of individual action in this regard

in Latvia is also emphasized by the Latvian Tourism Development Plan for 2021–2027, which indicates the need to analyse the behaviour of tourists (Rozīte *et al.*, 2019). The authors chose the Vidzeme region (LV008) as the research area, taking into account that it is a European Union (EU) Nomenclature of Territorial Units for Statistics 3 (NUTS3) region with insufficient investments in the transition to a green and smart economy after environmentally responsible behaviour (ERB) (EIB, 2021).

Historically, researchers have defined the term ERB as the tendency to take actions with the intention of positively affecting the environment in order to minimize any negative impact on the natural world as caring for other people, species or ecosystems to reduce negative environmental impacts at home, work or tourist destinations to reduce environmental damage (Stern, 2000; Kollmuss & Agyeman, 2002; Meijers & Stapel, 2011; Chiu, Lee, & Chen, 2013). Barriers to achieving ERB have been studied using different models emphasizing external factors (e.g. institutional, economic, social and cultural) and internal factors (e.g. motivation, environmental awareness, awareness, values, attitudes, emotions and locus of control, as well as responsibilities and priorities) (Kollmuss & Agyeman, 2002).

The authors focused on the barriers identified in Blake's model of ERB: individuality, responsibility and practical dimensions. Individual barriers are within the person himself and his attitude, as well as control factors underlying the individual's belief in his ability to make changes based on his behaviour (Blake, 1999; Hwang, Kim, & Jeng, 2010). Researchers concluded that individuals with

self-control can create significant change, while those with a need for external control were more likely to participate in ERB-promoting activities (Marquart-Pyatt, 2015). A number of researchers have indicated that environmental knowledge is necessary for the creation of ERBs (Cheng, Wu, & Huang, 2013; Chiu, Lee, & Chen, 2013). The goal of environmental education is to shape human behaviour while educating about issues related to the environment in order to develop the ability to respond safely to the environment. Therefore, environmental education is very important for tourism because it offers knowledge that shapes tourist behaviour. No less important is the influence of individual experience (Buonincontri *et al.*, 2017).

Factors influencing tourist behaviour are multidimensional and each has its own impacts. There are also differences in the architecture of factor models and ERB assessment methods, which are: regression method; a meta-analysis on environmentally non-friendly behavioural factors, and factor analysis (Stern, 2000; Bamberg & Moser, 2007; Chiu, Lee, & Chen, 2013; Buonincontri *et al.*, 2017). Therefore, it cannot be claimed that any of the factor model architectures are more diverse or inclusive, but it is important to base research on the experience of previous researchers (Kollmuss & Agyeman, 2002).

Given the topicality of this topic, some prerequisites must be recognized: (1) the United Nations World Tourism Organization (UNWTO) Davos Declaration encourages tourists to reduce carbon dioxide emissions; (2) climate and environmentally responsible economic recovery is a priority of the EU agenda; (3) society recognizes sustainability issues and responsibility for the environment; (4) The Latvian Tourism Development Plan for 2021–2027 includes activities aimed at conducting a survey of tourists' behaviour; (5) In Latvia, including Vidzeme (LV008), no analysis of environmentally responsible tourism behaviour has been carried out so far. The authors analysed the Latvian statistical region Vidzeme (LV008), taking into account the fact that it is an EU NUTS3 region that lacks targeted investments for the transition to a green and smart economy (EIB, 2021).

The goal of this paper is to determine the tourists' environmentally responsible behaviour in response to climate change. In order to fulfil the goals, the following tasks were carried out: (1) analysis of scientific literature; (2) question analysis, identification and operational definition of variables; (3) determine data applicability and selectivity; (4) exploratory factor analysis and principal components analysis.

Materials and Methods

The population of this study consists of potential Latvian tourists who live in the LV008, where there are 126 529 working age inhabitants, which hold a greater economic opportunity to travel (Official statistics portal, 2020, July). The population size was calculated as $n = 383$. Taking into account the gender proportion within the given LV008, which stands at 1.017, it was decided to include an equal number of men and women in the questionnaire. Before conducting the survey, questions were validated. Altogether 402 filled questionnaire sheets were submitted of which 9 were partially filled and thus deemed invalid. Data was collected from 2020–2022, during a period when in Latvia, similarly to other regions in the world, the Covid-19 pandemic had spread with structural lock-downs in place that negatively affected data collection efforts. Questions were asked through a telephone survey and by conducting surveys face-to-face when possible. Distributed data collection was also conducted by the next-to-pass method (Kabir, 2016). A total of 30 usable questionnaires were collected. Each questionnaire item was assessed by item analysis, including Cronbach's alpha, means, and standard deviations. In the ERB model, which could react to response to climate change the following seven factors were used: attitude (A); behaviour (B); comprehension (Com); control (Con); environmental knowledge (En); experience (Ex) and values (V). The value of each indicator of the variables in this research was conducted by using the Likert scale of 4 levels, namely 1 = not important; 2 = moderately important; 3 = important; and 4 = very important. Assumption for demographical questions was based on measures of nominal data determined with Cohen's Kappa. The statistical analysis of questionnaire results was conducted while determining distribution frequency of responses according to the corresponding questions. By using Cronbach's Alpha (reliability) test for ordinal data, data suitability and select ability coefficient was conveyed. An internal correlation factor of survey questions was carried out in order to determine important interrelations. For ordinal data (individual Likert-scale questions), non-parametric tests such as Chi-square test for independence was used. Statistical Package of Social Sciences (SPSS 20) was used for analysing the data.

Results and Discussion

It was determined that the proportion between male and female respondents was almost perfectly equal. This population was chosen proportionally to the gender proportion in the LV008. According to age, respondents were mostly comprised of people in the age group of 18–39 years with the presence of almost equal groups. Similarly the % was divided according

to the level of education, where the only group which was not proportionally distributed among others were those respondents with primary or lower than primary level of education (only 7%).

Analysing the gross income per month (EUR), it is noted that approximately 60% receive a salary of approximately 400–1000 EUR per month, while 4.7% earn more, which means that the respondents, as potential tourists, can actually afford the tourist service.

Cross-tabulation of gender and education showed that education and gender reports do not provide similar information about respondents' education, as Cohen's Kappa is equal to -0.037. Women with a higher education constitute 6.6% and women with a secondary education constitute 1.8% more than men. However, within the men group there are 7.3% more people with vocation education or vocational secondary education than those with primary or lower education level.

Assumption for measures of reliability for respondents to compare the given questions was determined by Cronbach's alpha coefficient which is the usual one to report 0.979, but Cronbach's alpha based on standardized Items indicated even 0.980. The alpha for competence scale was larger than > 0.80 indicating good internal consistency. The average scale score for the 30 summed items for the

383 respondents was 76.17. The general linear model was used to carry out Manova.

The test examined whether the education (four education groups: EDUC1 – higher; EDUC2 – vocational or vocational secondary; EDUC3 – general secondary; EDUC4 – primary or lower than primary) differ on a linear combination of the dependent variables: A; B; Com; Con; En; Ex and V. Bivariate scatterplots were checked for multivariate normality. A statistically significant difference was found, Wilk's $\Lambda = 0.521$, $F(21, 1071) = 13.01$, $p < 0.001$. The results indicate the percentage of variance in each of the interaction and its associated error that is accounted for by that interaction. These results show that 15.4% of variance is associated with A, 18.7% with B, 28.8% with Com, 26.4% with Con, 19.5% En, 19.3% with Ex and 23.2% of variance is associated with V. This allows to conclude that when evaluating the impact of education on the ERB, the largest dispersion is linked to B, Com and V. The interaction of other dependent variables are also important. When evaluating the educational groups, the following results were obtained in Table 1.

Since in EDUC4 group the number of responses is relatively higher than average number of variables of the general linear model Manova, their results are closer to zero and are not analysed within the SPSS instruments.

Table 1

Manova test results of environmentally responsible behaviour for education groups of potential tourists of Vidzeme region in Latvia (n = 383)

Variable (%)	Education groups		
	EDUC1*	EDUC2**	EDUC3***
Attitude	6.9	2	4
Behaviour	8.6	3	4
Comprehension	13	7	2
Control	9	3	7
Environmental knowledge	13	2	6
Experience	9	2	1
Values	13	1.4	1.4

Note: education groups * EDUC1 – with higher; EDUC2** – with vocational or vocational secondary; EDUC3*** – with general secondary education.

In EDUC1 group, the highest valued values are interaction with En, V and Con. EDUC2 group – Con; EDUC3 – Con and En. Manova test for A, B, Com, Con, En, V by age and gender to assess whether respondents with higher, vocational or vocational secondary, general secondary and primary

or lower than primary education have different dependent variable test scores and whether there was an interaction between dependent variables age and gender, was conducted. Bivariate scatterplots were checked for multivariate normality. A statistically significant difference was found, Wilk's $\Lambda = 0.941$,

F (21, 1060) 1, $p = 0.357$, multivariate $\eta^2 = 0.2$; age – Wilk's $\Lambda = 0.539$, F (7, 369) 2, $p = 0.06$, multivariate $\eta^2 = 0.19$; and gender – Wilk's $\Lambda = 0.964$, F (7, 369) = 0.20, $p = 0.06$, multivariate $\eta^2 = 0.4$. This indicates that the linear composite of dependent variables test differs for males and females. Follow-up ANOVAs indicate that effects of age are statistically significant for AGE1 by all dependent variables, but not for other age groups. Parameter estimates parameter EDUC of the depend variables A, B, Com, Con, En and V indicated statistically significant values, but parameter gender – was not statistically significant. Meanwhile, by gross income per month (EUR) a statistically significant difference was found, Wilk's $\Lambda = 0.507$, F (35, 1563) = 8, $p < 0.001$, multivariate $\eta^2 = 0.13$. This indicates that the linear composite of dependent variables test for gross income per month.

For the multivariate test, eta is 0.36, which is medium effect size. The univariate etas are 0.45 (much large than typical), 0.43, 0.41, 0.40, 0.39, 0.38, for En, A, B, V, Con, Com and Ex, respectively.

Chi-Square test was used in order to test the EDUC impact on the ERB factors A, B, Com, Con, En, Ex

and V qualitative indicator changes. The purpose of the test is to evaluate how likely the observed frequencies would be assuming the null hypothesis is true. Based on the acquired results, significant impact was indicated on the relation between the ERB and EDUC and all researched factors, except for factor A and Com. The Kaiser-Meyer-Olkin (KMO) sample fit measure and Bartlett's test of sphericity were used to determine the feasibility of factor analysis. As a result, $KMO = 0.913 > 0.9$ (absolute fit) and Bartlett's $p\text{-value} = 0.000 < 0.05$ indicate the possibility of factor analysis.

Each factor on the tourists' ERB is important, which is indicated by KMO and Bartlett's test, indicating that correlation matrix is significantly different from an identity matrix, in which correlations between variables are all zero. Rotation factor matrix indicated that the items cluster into these three groups was defined by the highest loading on each item. The highly on item in Table 2 are factors value and environmental knowledge at 1. component, experience and behaviour at 2.

Table 2

Factor analysis test results of environmentally responsible behaviour for education groups of potential tourists of Vidzeme region in Latvia (n = 383)

Variable (%)	Mean	St. Deviation	Communalities	Factor	
				1	2
Attitude	2.46	0.519	0.933	0.740	0.613
Behaviour	2.33	0.657	0.940	0.591	0.766
Comprehension	2.48	0.538	0.912	0.556	0.777
Control	2.52	0.537	0.940	0.726	0.656
Environmental knowledge	2.57	0.510	0.907	0.795	0.534
Experience	2.38	0.589	0.907	0.544	0.803
Values	2.56	0.545	0.905	0.800	0.535

The screen plot shows that after the first components the differences between the eigenvalues decrease (the curve flattens) and are less than 1.0. The study confirmed the correlation between the attitude and behaviour of the factors ($r = 0.935$), as well as the coincidence of the attitudes of potential tourists visiting Latvia's region, with those reflected in the EIB climate study on the relationship of behavioural factors to climate change, the significant impact of knowledge on ERB. In addition, systematic heterogeneity in environmental attitudes and behaviour was noted, mainly in terms of respondents' education, gender, age and income, which coincides

with the findings of the authors. However, these studies are mainly focused on the general EU population, while the authors of this study target tourists (DeSombre, 2018; Tourism 2030, s.a.; Saari *et al.*, 2021; Meyer, Shamon, & Vögele, 2022).

The presented study is the first step towards determining environmentally sustainable tourist's behaviour in Latvian regions as a countermeasure to global climate change. The presented study is the first step towards determining the environmentally sustainable behaviour of tourists in Latvian regions as a countermeasure to global climate change. The presented study is the first step towards determining

the environmentally sustainable behaviour of tourists in Latvian regions as a countermeasure to global climate change.

Conclusions

1. The study indicates that there are significant differences in terms of gender, gross monthly income (EUR) and the relationship between education and environmentally responsible behaviour (ERB) in general potential tourists who live in the Vidzeme region of Latvia (LV008).
2. The effect of tourists with higher education on ERB is related to factor comprehension (13%), value (13%) and control (9%). The latter is an important factor for respondents with vocational or vocational secondary education. Meanwhile,

the education group with vocational or vocational secondary education has the highest dispersion of comprehension (7%) and education group environmental knowledge (6%).

3. The effect of tourists with higher education on ERB is related to factor comprehension (13%), value (13%) and control (9%). The latter is an important factor for respondents with vocational or vocational secondary education.
4. These conclusions will make it possible to create a support system for changing environmentally responsible behaviour of tourists. Considering the influence of tourists as potential environmental polluters, it is important to continue research on ERB patterns of tourists in Latvia.

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