



Integration of Partial Least Squares Path Modeling for Sustainable Tourism Development

Nataliia Pavlenchuk, Serhii Mekhovych, Oksana Bohoslavets, Yurii Opanashchuk, Viktoriya Hotra, Inna Gayvoronska

Abstract: This study aims to reveal which factors and their indicators are significant (primary) for sustainable tourism from the point of view of the travellers themselves. The study was conducted in two stages and involved 415 (first phase) and 577 (second phase) respondents. The first stage was conducted online and personal communication, which allowed to question respondents in detail. The second stage was conducted only online using polls on Facebook, Twitter, Google Docs and email. Primary data were presented in the form of respondents' submissions, obtained as a result of observation through the distribution of questionnaires. Results were processed using a priori ranking technology - expert methods - using MS Excel for automatizing the process. The study revealed what factors generally accepted today and their indicators are significant (primary) from the point of view of the travellers themselves. The division of the empirical part of the study into two components allowed for a more detailed review of the opinions of the respondents and the identification of 9 leading indicators. This article draws attention to the fact that it is necessary to study phenomena not only from a theoretical point of view but also to test empirically, involving the participants in the process. The study will be useful for countries and regions that are committed to sustainable tourism. Technology, as a whole, can be used in any industry where people's opinion matters. The study is based on the theoretical basis of modern researchers and is supported by an experiment involving direct participants in the process (travellers), i.e. allows you to uncover sustainable tourism and factors affecting it from different angles.

Index Terms: sustainable tourism, tourism industry, expert assessment method, a priori ranking, affecting factors.

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I. INTRODUCTION

The tourism industry is one of the most dynamic sectors, rapidly developing in the world economy. Globalization and increasing incomes of the population have created favourable conditions for the rapid growth of the tourism sector. One of the main features of world tourism at the present stage is its sustainable development, which has been reflected in the documents of the United Nations, the World Tourism Organization and is now a historical fact. Today, an understanding of sustainable development in the tourism industry is increasingly gaining a general awareness of the unity of environmental, social, political and economic problems [1-2].

II. LITERATURE REVIEW

A. Sustainable Development

In the interpretation of modern scientists [3-5] sustainable development is a transition from a post-industrial society to the noosphere, as a balance between generations. As the well-known American scientist [6] notes, adherence to the principles of sustainable development provides for the solution of three global economic problems - allocation of resources, their distribution and scale of use, each of which is a separate goal, and solving one of them does not mean solving the other. The increasing concern about sustainability these days has shifted focus from the model of economic growth to the emerging model of sustainable growth [7]. In today's highly dynamic and competitive world, a mere maximizing of growth would not fetch up the valuable and desired wealth maximization [8].

In his studies, M. Jacobs [9] identifies the following three elements that form the distinctive features of sustainable development:

1. Informing economic policies, they always take into account financial goals.
2. Sustainable development invariably involves the implementation of ideas of social equality.
3. Sustainable development means uneven quantitative growth, but also a qualitative improvement in meeting the needs.

Thus, sustainable (harmonious, balanced development) is the development that provides a particular type of equilibrium, i.e. balance between its socio-economic and natural components.

We adhere to the viewpoint of Jędrzejczyk I. [10] that sustainable (continuous, integrated, ecological) development is such a necessary development option in which economic, environmental and social goals are balanced and integrated, and the commercial growth rates do not exceed the speed of reproduction of natural resources, and the leading indicator of this development is the improvement in the quality of life.

B. Sustainable Tourism and the Affecting Factors

In the context of a balanced for the long-term development of society, the concept of sustainable development of tourism is also interpreted. Many scientists [11-16] talk about the need to develop sustainable tourism in their regions. The World Tourism Organization [17] defines sustainable tourism as tourism, which takes into account its current and future economic, social and environmental consequences, satisfying the needs of all its participants.

Hypothesis 1: The main factors affecting tourism are the economy, society and environment (Fig. 1).

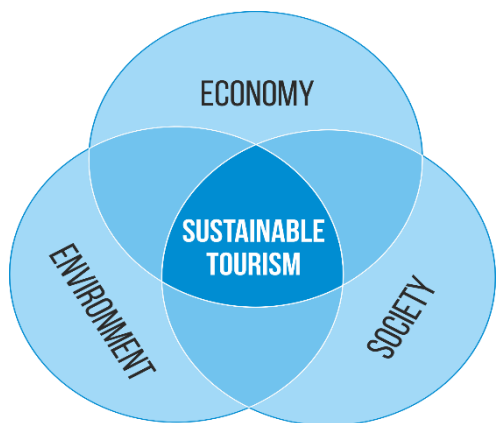


Fig. 1: Components of sustainable tourism

As a basis for the classification of factors influencing the sustainable development of tourism in the region, it is proposed to consider:

- *place of formation of elements* (concerning the area). According to the location of establishment, factors of external and internal (concerning the region) environment differ.

- *ways of manifestation of factors*; According to the method of indication, the elements are divided into manifesting only with the participation of man, with the interaction of man and nature, only as a result of the action of the forces of nature.

- *the significance of the influence of factors*. The importance of the impact of regulated factors on the sustainability of tourism activities is proposed to assess the following criteria: the level of state regulation of tourist activities; the level of development of tourist infrastructure; quality of tourist resources and the level of tourist attractiveness of the region.

- *hierarchy of factors*. By authority, elements can be divided into primary (principal, factor) and secondary (effective). It is the identification of which factors and their indicators that are generally accepted today are significant (primary) from the point of view of the travellers themselves.

is the primary goal of the article.

Many scientists call various factors of sustainable tourism development, but we want to identify the position of the authors of the article immediately. We believe that there are factors that destroy entirely tourism as an industry in this region for some time. These include:

- ecological state of the region
- hostilities

Nobody will go to rest in the radioactive zone or where the war is going. Accordingly, these factors do not affect the sustainable development of tourism.

Hypothesis 2: Conditions threatening the life of a tourist completely exclude his tourism in this area.

III. METHODOLOGY

As mentioned above, the purpose of the article is to determine the factors that most influence the sustainable development of tourism. The analysis of this study were residents of one country. The study was conducted in two stages and involved 415 (1 phase) and 577 (2 phase) respondents who were divided into five groups (Fig.2):

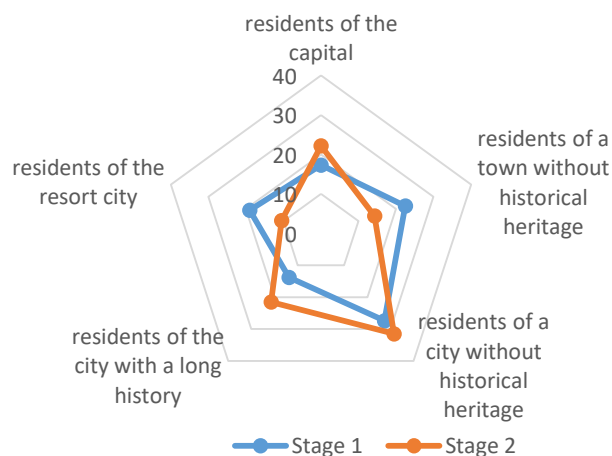


Fig. 2: Distribution of respondents (source: Authors, 2019)

The first stage was conducted online and personal communication, which allowed to question respondents in detail. The second stage was conducted only online using polls on Facebook, Twitter, Google Docs and email. Primary data were presented in the form of respondents' submissions, obtained as a result of observation through the distribution of questionnaires similar to the one used was used by Bashynska I. and Dyskina A. [18]. Initially, the questionnaires contained more response options and with the ability to comment on a question or answer. This made it possible to discard irrelevant possibilities and at the second stage to narrow down the factors affecting sustainable tourism (Fig. 3, Table 1).

Analysis and evaluation of the results for each stage were carried out according to the same methodology: a questionnaire was compiled, which initially included 28 different indicators of factors chosen by us based on



literature research. The result of processing the results revealed 16 indicators that fell into the second stage of the study. It is among them that the most significant ones that affect sustainable tourism in terms of meeting the needs of travellers will be revealed.

In table 1, we present the indicators of sustainable tourism development proposed for the region with a developed tourism sector.

Table 1: Indicators of sustainable tourism to identify the most significant of them (source: Authors, 2019)

Indicator	Designation in the model	Indicator	Designation in the model
Income level	A1	Street pollution	C1
Duration of a working day	A2	Ban on the use of plastic bags	C2
Vacation time	A3	Radiation level	C3
Tolerance of the population to tourists	A4	Water pollution	C4
Rental price	B1	Condition of historical objects	D1
Development of transport	B2	State of beaches	D2
Infrastructure development	B3	Level of crime and confidence in the police	D3
Availability of high-speed internet	B4	Value of deductions from the budget	D4

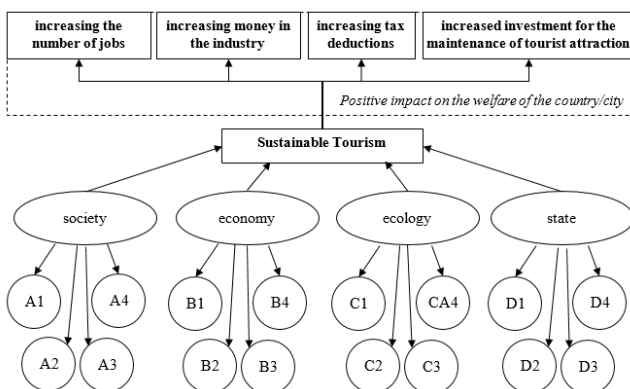


Fig. 3: Factors and indicators of sustainable tourism (source: Authors, 2019)

Results were processed using a priori ranking technology [19], i.e. expert methods using MS Excel for automatizing the process (Fig. 4-5).

Fig. 4: Matrix of expert assessments (fragment “beginning”) (source: Authors, 2019)

Fig. 5: Matrix of expert assessments (fragment “end”) (source: Authors, 2019)

Then using MS Excel check whether there are any related (equally) evaluations in the experts' statements (they should not be, under the condition of using the algorithm). Calculate the coefficient of concordance:

$$W = \frac{12 \times \sum (S_j - S_{av})^2}{m^2 \times (n^3 - n)} \tag{1}$$

$$W = \frac{12 \times 97285754,9}{332929 \times (4096 - 16)} = \frac{1167429059}{1358350320} = 0.8594$$

With a coefficient equal to zero, there is no consistency of opinion; with a ratio similar to one, - the highest level of flexibility. So it is checked whether the hypothesis about the agreement between experts is accepted and whether it is possible to trust the results of the questionnaire of the expert group. In our case, the coefficient is quite high (0.86), so we can accept the consequences.

IV. DISCUSSION / ANALYSIS

A. Discussion points

First of all, it is necessary to evaluate the hypotheses.

Hypothesis 1: The main factors affecting tourism are the economy, society and environment.

The hypothesis was partially confirmed. In addition to these factors, additional ones were identified during the survey, namely, state support for tourism. Moreover, two indicators were among the most significant, namely: Level of crime and confidence in the police and Condition of historical objects.

Hypothesis 2: Conditions threatening the life of a tourist completely exclude his tourism in this area.

The hypothesis was also partially confirmed. We have noted above that the ecological state of the region and hostilities affect the development of tourism. However, a survey of respondents showed that among the respondents, 22% would not go only in the case of a direct threat to life; At the same time, if the vouchers were not paid in advance, then in 100% of cases, people prefer to travel in other places.

B. Results analysis

Analysing the results of the second stage, we can draw the following conclusions: travellers find the following factors the most important for the sustainable tourism industry (presented in descending order):

1. Development of transport
2. Radiation level
3. Rental price
4. Level of crime and confidence in the police
5. Infrastructure development
6. Condition of historical objects
7. Income level
8. Availability of high-speed internet
9. Tolerance of the population to tourists

It is these components that need to be developed if society is committed to sustainable tourism.

V. CONCLUSION

The study revealed what factors generally accepted today and their indicators are significant (primary) from the point of view of the travellers themselves. The division of the empirical part of the study into 2 components allowed for a more detailed review of the opinions of the respondents and the identification of 9 leading indicators. The study draws attention to the fact that it is necessary to study phenomena not only from a theoretical point of view but also to test empirically, involving the participants in the process. The study will be useful for countries and regions that are committed to sustainable tourism. Technology, as a whole, can be used in any industry where people's opinion matters.

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