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TESTING AN OPERATION OF PROTOTYPE FOR AUTOMATED ASSESSMENT: CASE OF VISITOR PROFILE OF GAUJA NATIONAL PARK

Dr.oec. Iluta Berzina, Edgars Balodis

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Introduction

The study is based on the authors' research work started in 2017 that resulted in the development of theoretical strategic and tactical models for the construction of a prototype for automated assessment of tourism economic impact (EI) in specific regions, including regions of national parks (NP), as well as for other studies.

The prototype based on the open-source platform Drupal, MySQL used as a database management system (DMS). Drupal united with the Jupyter Notebook platform.

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The research aim

Testing the performance of the prototype in a research e-environment using the travellers' survey data obtained in the study conducted by ViA HESPI in 2019 on the national parks' target groups (visitor behaviour) during the Gauja National Park (GNP) Travellers' Days in order to determine the GNP visitor profile.

The research tasks

(1) Test the technical operation of the prototype;
(2) Describe the operation of the prototype;
(3) Present the results of the test study regarding the visitor profile of the GNP Travellers' Days;
(4) Draw conclusions.

The research methods

To determine the GNP visitor profile, quantitative research with details of qualitative research was performed in the prototype testing. For acquisition of primary data, simple random sampling was used, where the principle of equality is respected. The results, on the other hand, are the result of a partial statistical observation of a part of the general set – a sample, with the purpose of obtaining a general idea. Induction, deduction approach, synthesis, data sorting and segmentation, determination and expression in proportion, qualitative information quantification was used, comparative analysis was carried out, conclusions regarding the sample were made.

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The methodological substantiation of the test study is based on the aspects of an individual's purchasing or consumption decision:

(1) Economic (income level, solvency);
(2) Social (belonging to a particular social class, status in society, etc.);
(3) Cultures (cultural level, educational level, nationality, religion);
(4) Personal (age, life cycle stage, profession, lifestyle, character, etc.);
(5) Psychological (motivation, perception, attitude, habits).

The methodology applied is a combination of a number of scientific techniques which was developed and scientifically approbated in 2011 when formulating the profile of the Kemeri NP visitor profile. It is based on a combination of research techniques developed and tested in Australia, the USA and Finland, which is based on surveys (or interviews) as the data acquisition method.

The questionnaires are quite complex and include(Berzina & Grizane, 2011):

(1) Filter questions;
(2) Structured answers questions (closed questions);
(3) Multiple choice questions;
(4) Dichotomous choice questions;
(5) Unstructured answer questions (open questions);
(6) Free-answer questions;
(7) Response scale.

Final score is the result of each assessment with the highest frequency (‘majority wins’) in the analysis after the data collection, thus yielding a higher arithmetic mean value, which is normalized in proportion to the sample set.

The total sample of n = 268 consists of the GNP Travellers' Day direct target group - NP visitors (Association CDRP, 2019)

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The research used a part of the data set that could be obtained and processed even for the analysis of tourism EI – on the principles of this analysis the prototype design and technical development was based.

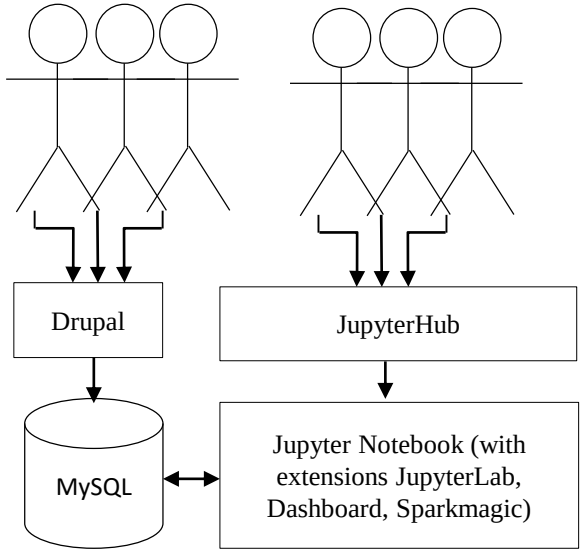

Figure 1. **Tested part of the prototype – fragment of the tactical model for the construction of the prototype for automatized assessment of appropriate tourism issues**
(Created by the authors, according to Berzina & Lauberte, 2019)

For the sake of controlling the accuracy of the results, the study was carried out both in MS Excel and by using the prototype capabilities for automated acquisition of results.

In accordance with the prototype Software Design Description (SDD), the prototype includes the following users and their roles:

(1) System Administrator;
(2) Content Administrator;
(3) Public user (respondents);
(4) Analyst.

Results

In the test study, no negative features were observed in the visualization of the results.

If the functions of the prototype are evaluated in comparison to MS Excel, the authors have arrived at several conclusions and also agree with Natter, E. (2019) – for instance:

- The calculations must be entered into the spreadsheet as formulas;
- Many classes are available to learn the skills necessary to use these formulas;
- The spreadsheets can be shared, but only one user can change data at a time;
- ect.

The mentioned and etc. shortcomings of MS Excel **are not observed in the prototype environment** and **work on it requires significantly less time**.

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Sequence of actions performed	Indicators/ criteria groups				MS Excel (spent time h:m:s)	Prototype (spent time h:m:s)
'Data bank'						
Preparation of questionnaire					01:06:00	00:49:00
Data entry					00:05:00*	00:01:00**
'Data analysis'						
	Demography	Activities	Information sources	Attitude		
Selection of data	00:03:30	00:03:30	00:02:00	00:03:30	00:12:30	00:03:00
Summing of data	00:01:00	00:01:00	00:01:00	00:01:00	00:04:00	00:00:06
Results expression in proportions (%)	00:04:30	00:04:30	00:01:00	00:04:30	00:14:30	00:00:05
Selection and preparation (sorting) of results for visualisation	00:06:00	00:06:00	00:03:00	00:06:00	00:21:00	00:00:04
Visualization of results (graphic presentation)	00:08:00	00:08:00	00:05:30	00:08:00	00:29:30	00:00:12
				Total:	01:20:30	00:03:27

* Data entry on one device (1 questionnaire)

** Data entry from five devices simultaneously (5 questionnaires)

Table 1 **Processing time of questionnaire and data in MS Excel and prototype environments**
(Created by the authors)

Main conclusions

1. The performance of the prototype, corresponding to its stage of technical development, has been tested and demonstrates that:

1.1 Drupal is fast-performance and it has features for managing content types, which is useful for creating data views, and it has a good user permission management;
1.2 From a technical point of view, it was the right choice of the programming language selection where the database management system (DMS) MySQL for traditional data used.
1.3 The use of Jupyter Hub and Jupyter Notebook with extensions in the development of the prototype has been useful;
1.4 Users' roles did not cause any problems in the prototype testing. This allows assuming that they are organized in an appropriate hierarchy and proportions;
1.5 Collecting and analysing the data necessary for research requires **23.3 times less time** in the prototype environment **compared** to the same workload in the **MS Excel environment**;

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2. By using the prototype, the authors have been able to determine the profile of GNP Travellers' Days visitors, which is characterized by a sample of the survey. The methodology used to determine the visitor profile is consistent with the current technical capabilities of the prototype to perform automated simple calculations;

The determined profile of the direct target group of the GNP Travellers' Days: A woman living in Latvia - a one-day traveller aged 16-45 with a university degree having a job in trade or finance sector. The monthly salary is up to 500-900 EUR. She spends the weekend in the GNP Travellers' Days travelling with 3-4 family members, friends, relatives or acquaintances aged 18-65. She covers a distance of up to 100 km, travelling by a private car and spending up to 1.5 hours during the trip. When attending the event, her expenses of up to € 20 are mostly made up of transportation-related and catering services. As an alternative to visiting the GNP's Travellers' Days, the traveller would choose to stay home or visit relatives, friends, acquaintances or colleagues. The attended activities of the event are rated with 4-5 points, but she would wish for a variety of activities, better value for money and thinks that the provision and availability of information is a major issue to be improved by the event organizers.

3. The technical development of the prototype should be continued so that the statistical verification of the obtained research results can also be performed.

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