

Protecting and disseminating cultural heritage values from the Carpathian Mountains region in Romania by modeling semantic tourist trajectories and integrating them into a digital marketing program

Field of Study : Arts and Culture, Management, computer Sciences, Digital Marketing, Social Media Mix

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ABSTRACT

In all countries and regions, tourism represents a field of great interest, developing in multiple ways, depending on social, economic, cultural, geographical, natural, etc. factors. In the region of the Carpathian Mountains in Romania, tourism associated with tangible and intangible cultural heritage has gained a large scale in the last 30 years, attracting tourists from the country and abroad, thanks to the specificity and uniqueness of many heritage elements: castle, fortresses and archaeological remains, monasteries, churches, a cheerful cemetery unique in the world, etc.

The purpose of this doctoral research theme is the preservation and, at the same time, the valorization through promotion/dissemination of the values of the Romanian cultural heritage in the area of the Carpathian Mountains through an innovative approach in the context of digitalization. The objectives of this research are: (1) to identify some semantic tourist trajectories in the Carpathian region of Romania; (2) analysis of the digital paths and creation of a representation model of the identified semantic trajectories; (3) testing the model by carrying out experiments in at least two different tourist areas in the area of the Romanian Carpathians; (4) implementation of a digital marketing program for the promotion of cultural heritage in the Carpathian Mountains region in Romania. The novel aspects that we bring consist in the semantic representation of the tourist routes in the Romanian Carpathians, creating a presentation model of signature tourist routes and developing a travel planning system based on digital marketing tools.



Research aims and methodology

The purpose of this doctoral research theme is the preservation and the valorization through promotion/dissemination of the values of the Romanian cultural heritage in the area of the Carpathian Mountains in the context of digitalization. We propose an integrated methodological approach, based on qualitative and quantitative research methods, so as to ensure the achievement of the proposed objectives. Thus, the netnographic method will be applied, suitable for studying communities and cultures by analyzing data collected from online sources (websites, social media platforms, blogs) to discover behaviors, attitudes and interactions at the level of tourists and communities, all of which serve when defining some semantic trajectories. In addition, the method of participatory ethnography will be used, which will involve the inclusion of tourists and members of local communities in the research process within focus groups. The hypotheses resulting from the qualitative research will be the basis of a quantitative research conducted among tourists, the information will be used to achieve the second objective. A modular platform will be used for experimental data processing (e.g. DA3T¹) "*able to build personalized processing chains by using services dedicated to processing mobility data*"². The digital marketing program will involve the capitalization of heritage data from the Romanian Carpathians by automatically publishing them in the form of items on online platforms, using different algorithms. Participation in the research will be based on volunteering.

Relevance and added-value of the proposed research in relation to the current state of knowledge

As is recognized in specialized literature³, digital resources are effective means of storing, protecting and promoting cultural heritage, being considered priorities in this regard, regardless of the degree of heterogeneity of the cultural heritage elements. The proposal presents a particular relevance, both conceptually and operationally, constituting the added value through doctoral research, bringing innovative solutions for the identification of semantic tourist trajectories, their integration into a model, the realization of experiments and the development of a digital marketing program aimed at preserving and promoting the cultural heritage of the Romanian Carpathians. From a practical point of view, the results of the research will be appreciated and applied by decision-makers in the field of tourism and in the field of cultural heritage conservation (tourist agencies and guides, individual tourists, museums, administrators of archaeological sites, local authorities, etc.). The digital marketing program resulting from the research will be able to operationalize the conservation and promotion strategies of the cultural heritage in the current context of digitalization. The exploitation of the advantages of generative artificial intelligence (GenAI) tools will also be taken into account.

Interdisciplinary nature of the research together with the alignment with the CHORAL programme and complementarity expertise of the teams

The complex issue of improving and valuing cultural heritage opens the field to different disciplinary perspectives, recognizing the need to shift the focus away from the specific context technical-scientific skills towards economic, management, classical and digital marketing, social media, art and culture. Thus, the multidisciplinary approach to cultural assets is confirmed. At the same time, it is not just about bringing new

¹ Cayère, C.; Faucher, C.; Sallaberry, C.; Bessagnet, M.N.; Roose, P. Tools for processing digital trajectories of tourists. In Proceedings of the 21st IEEE International Conference on Mobile Data Management (MDM), Versailles, France, 30 June–3 July 2020; pp. 232–233.

² Cayère, C.; Sallaberry, C.; Faucher, C.; Bessagnet, M.-N.; Roose, P.; Masson, M.; Richard, J. Multi-Level and Multiple Aspect Semantic Trajectory Model: Application to the Tourism Domain. *ISPRS Int. J. Geo-Inf.* 2021, 10, 592. <https://doi.org/10.3390/ijgi10090592>.

³ Xiong, S., & Yang, W. (2023). The application of digital virtual images in the protection and dissemination of cultural heritage. *Revista Ibérica De Sistemas e Tecnologías De Información*, 457-467. Retrieved from <https://www.proquest.com/scholarly-journals/application-digital-virtual-images-protection/docview/2880949572/se-2>



different points of view, moving from considered objective approach to an eminently subjective one, which includes other perspectives, but on the contrary, integrating the various perspectives related to the conservation, improvement and valorization of the cultural heritage into a unified one. The approach is in full agreement with the objectives of the CHORAL program, falling under the theme of Enhancement and dissemination of cultural and natural heritage, with direct reference to tourism and valorisation, education, communication, heritage management, digitalisation/digital tools, storytelling, institutions and heritage.

The project team brings together complementary expertise. Gheorghe Epuran is the holder of the courses Business Communication, E-marketing and social-media mix, Cybermarketing, Marketing strategies in tourism. He coordinated doctoral theses in tourism, published research results in WOS indexed journals and in other international databases, regarding organic growth in tourism, permaculture and downshifting - sources of sustainable tourism development in rural areas, Innovative forms of economy and sustainable urban development- sharing tourism, a conceptual framework of consumers' pro-environmental attitudes and behaviors in the tourism context, From 4P's to 4 E's—How to avoid the risk of unbalancing the marketing mix in today's hotel businesses, Responsible Consumption- Source of Competitive Advantages and Solution for Tourist Protection, co-creation and others. Gheorghe Epuran is Guest Editor of the special issue „Analytical Research on Consumer Behavior and Digital Marketing Connection for Facilitating Sustainable Marketing Effectiveness” of the Sustainability Journal, indexed WO. 2018-2021: Institutional coordinator of the projet PN-III P1-1.2-FPRD-2017-0800 „Empirical modeling and experimental development of tools associated with emerging technologies in the field of online social networks” - 86PCCDI / 2018. Sébastien Laborie is an expert in Information Systems and Semantic Web technologies. He co-supervised several doctoral theses concerning heterogeneous data management, and published research results in Computer Science International Journals and Conferences. Currently, he is the head of the T2I research team at the UPPA computer science laboratory, which has a recognized activity in the field of Heritage as well as Tourism.

Output plan including publication and dissemination activities

Output plan:

1. Analysis of specialized literature;
2. Identification of semantic trajectories using specific methods;
3. Creation of the representation model of semantic trajectories;
4. Carrying out experiments and testing the created model;
5. Elaboration of the marketing program for the protection and designation of the cultural heritage of the Romanian Carpathians.

Dissemination plan:

1. Organization of workshops, according to the plan established by the methodology
2. Participation in international conferences
3. Publishing of articles in a specialized scientific journal (e.g., WOS or BDI) on the research conducted and the results obtained.



Estimated schedule

Output	Due date
Scientific reports (SR)	
SR 1	May 2026
SR 2	December 2026
SR 3	May 2027
Articles	
Article 1	Juin 2026
Article 2	April-May 2027
Article 3	December 2027 - January 2028
International Conferences (IC)	
IC1	December 2026
IC2	Juin 2027
IC3	Mars 2028
PhD thesis	September 2028

