Ec. Ionela (SAMUIL) UNGUREANU

SUMMARY
PH.D.THESIS

Postindustrial tourism engineering and management in the Jiu Valley

Scientific coordinator:
Prof. univ. habil. dr. ing., ec. Andreea Cristina IONICĂ

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The thesis presents the results of an inter and multidisciplinary research with applicability in a field considered current and with a great potential for development, namely industrial heritage tourism.

Achieving the purpose and objectives set in the doctoral thesis required knowledge in various fields, such as engineering, social sciences, applied informatics and management.

Industrial tourism is proving to be an interesting topic, in a continuous change and enrichment and, although it has a rich history, the concept is not yet very clearly defined. The emergence and development of industrial tourism was triggered by the recognition of technological structures as monuments of the past and by the appreciation of their cultural and artistic value. Undoubtedly, industrial tourism can become a source of income and jobs, it can be helpful in the process of improving the image of the area in which it is developed, contributing to the enhancement of the tourist offer.

The growing importance of industrial tourism has had a positive impact on regional development and an influence on economic growth and can mitigate the effects of industrial restructuring on labor markets by creating new positions in the services sector. The use of technological heritage resources in tourism is beneficial for economic development, both locally and nationally. Industrial tourism is often seen as a means by which urban areas can offset the effects of economic restructuring and increase the tourism profile of cities and regions. Although at first glance industry and tourism seem two contrasting worlds, with very little in common, they are still connected in different ways.

Internationally, several industrial areas have been included in the list of UNESCO protected sites, as proof of their importance for the heritage of industrial culture, being protected because they are a testament to how different activities have taken place in different parts of the world, of the technology used and the living conditions.

The company has gained considerable experience in the development of industrial tourism and, although Romania could benefit from international experience, here, the preferences for the development of industrial tourism are barely emerging. The research carried out on the industrial heritage of Romania, used in tourism activities, shows us that, although it is considered a viable alternative, it is not capitalized. Although, at the level of Romania, the industrial patrimony does not occupy an important place on the list of priorities among the profile bodies, there are some noteworthy efforts. If such strategies are applied, the richness of the industrial heritage can be consolidated and promoted, acting as a lever for development based on tourism of special interest.

As in the rest of the country, in Hunedoara County many industrial sites were demolished, others were partially damaged and abandoned, while in other cases there was a radical change of use, in which the structure of the building was preserved, but all facilities / internal equipment has been relocated and maintained separately.

The Jiu Valley was formed and developed, in its current structure, as a result of coal mining and processing activities, and in the absence of this industry is trying to reinvent itself, being in search of other economic pillars to rely on. Although the development of industrial tourism, as an alternative to former industrial activities is generally accepted as the most viable development direction, taken into account in all area development strategies, none of the coal mines is capitalized in a tourism development project.

The context of the research is determined by the current economic and social situation of the area, as well as by the potential of the existing industrial heritage elements. The use of industrial heritage in tourism will create opportunities for social, economic and environmental improvement for both the area and the local community.

The research carried out in the doctoral thesis aims to identify the premises underlying the development of tourism in the area, in order to explore the potential of development of industrial tourism in the Petrila mining perimeter, Jiu Valley, area

drastically affected by deindustrialization, by creating a theme park on the old site mine.

The motivation for choosing the topic of the doctoral thesis lies in the very premises of the research. The negative effects generated by deindustrialization are reflected and felt by both the community and us, the individuals. Phenomena such as depopulation of the area due to both declining birth rates and population migration to other areas, rising unemployment due to massive layoffs in the extractive industry or declining pride of belonging to the area due to actions, such as mining, which -they promoted and created a negative business card must be combated with alternative development strategies. Petrila Theme Park can help redefine the Jiu Valley by adding color over the existing gray. The development of this tourist objective, in combination with the other natural and anthropic, adventure or historical objectives, the area having a diverse and rich tourist potential, being located, geographically, between Vâlcan and Parâng mountains, will offer a new identity to Jiu Valley.

The research carried out within the doctoral thesis resulted in the fulfillment of all the proposed objectives, the results obtained answering the research questions. Thus, in an attempt to identify whether industrial heritage tourism is a solution for the revitalization of the former Petrila mining perimeter, a locality in the Jiu Valley traditionally involved in mining, now in decline and in the initial phase of alternative development, I concluded that in any conversion project it is necessary to preserve both the characteristics of the landscape, biodiversity, ethnofolkloric and cultural values and the development of harmonious relations between nature and society by promoting activities without environmental impact. Communities around the world, victims of the industrial decline, have shown that preserving former industrial sites, which were once synonymous with prosperity and development and turning them into industrial heritage tourist attractions, can serve as a means of mitigating, albeit marginally, the effects of the economic decline. In the case of these communities, tourism has proven to be an effective tool for transforming the geospatial, especially in the case of industrial heritage, all these records being centralized in *Chapter I*. Although the success of reconversion projects in other former industrial areas, with the help of tourism, does not guarantee the success of the project in our case I am entitled to consider that industrial heritage tourism can be a solution applicable to the former Petrila mining perimeter. The development of tourism, it would not be possible to preserve the industrial heritage that would otherwise be forgotten and the ravaged by time. This direction of development is also supported by the centralized data and information presented in *Chapter II* regarding the geographical location and the tourist potential of the entire area. The location of the Petrila mine includes a series of constructions made to serve the administrative area and the production process, from extraction to transport of coal production to the surface treatment plant. The recovery and reconversion of the industrial patrimony from the perimeter of the former Petrila Mining Ensemble is also supported by the inclusion of some important objectives from the perimeter in the lists of the National Patrimony, due to the passion and sustained work of some organizations.

The methodology used in the research process is detailed in *Chapter III*, being presented the research methods used to achieve each goal, research design and research process, including data collection and analysis.

But for the successful development of tourism in an area it is necessary to obtain a positive attitude of the locals towards this action and also the active involvement of the host community. Studies that follow the reactions of the local population to the idea of tourism development can help developers understand why the inhabitants of an area support or, on the contrary, oppose the specific actions of tourism development. Based on the results, the optimal development directions can be selected to minimize the negative

impact on the area and maximize support among members of the local population for tourism development. In the case under analysis, I identified the attitude of the inhabitants of Petrila regarding the development of tourism in the area and the factors that could determine and explain that attitude. Based on the results obtained, after applying the sociological analysis detailed in ***Chapter IV,*** I can argue that, in general terms, the local population believes that tourism will bring more advantages than disadvantages to the municipality. Basically, the positive perception that the local population has about the impact that tourism could have on the locality, leads to a favorable attitude towards tourism development plans. This attitude seems to be based on the reasoning that employment opportunities will be created and that tourism will act as a dynamic factor for the area.

Although a favorable attitude to the development of tourism, associated with the locals, increases the chances of success of the zonal reconversion project, to obtain the best results, it is necessary that the Petrila Theme Park be established based on the destinations considered to be most suitable for buildings proposed for transformation, taking into account the location, positioning and function currently held. In this sense, in ***Chapter V*** I developed and applied a selection algorithm with which are allocated future destinations for existing buildings in the Petrila mining perimeter, an algorithm that runs having as inputs the results of the previous studies and taking into account a number of criteria considered relevant to the transition to the development of industrial heritage tourism, but also a series constraints.

Thus, obtaining the configuration of the Petrila Theme Park, its development is desired in a form of community-based tourism, a type of development that has often been cited as an alternative to mass tourism so that tourism becomes sustainable. If well developed, it can become a mechanism for reducing poverty and improving the quality of life, providing economic benefits to people in local communities. The most important achievements in community tourism are the participation of the community in the whole development process, the redistribution of economic benefits, mainly among the locals, the conservation of the environment and, last but not least, the preservation of the local culture. The results obtained in ***Chapter VI*** have a double value. First of all, it documents that by developing this form of tourism the local community will have the necessary resources to maintain and improve community structures and will therefore have financial support to meet the needs of its own inhabitants. Also, the local community of Petrila could be promoted through tourism while generating income flows with the help of which, later, it can build facilities and infrastructures of leisure, health and education that the inhabitants could use and capitalize on them along the way. Second, the results of Chapter VI validate the evidence presented in Chapters I and II, supporting the idea that industrial heritage tourism is the most appropriate solution for revitalizing the Petrila mining perimeter.

Given that the research activities for the development of the industrial tourism sector both in Romania and, especially, in the Jiu Valley are limited, the few existing analyzes do not offer concrete directions in this regard. This doctoral thesis evaluates the possibility of developing industrial tourism in Petrila, Jiu Valley, offering concrete solutions, rigorously documented by appropriate research methods.

In the paper are identified and presented a series of concepts specific to the analyzed topic, the main methodological and theoretical contributions derive from the following actions:

- ***Analysis of industrial tourism as vector of economic and social development;***

For this purpose, industrial tourism is treated from the perspective of conceptual evolution and also from the perspective of economic and social influence both internationally and nationally, highlighting the most representative models of good practice at international level and presenting the current situation in Romania.

The results of our research confirm the thesis according to which the revitalized industrial architecture could enrich the urban space with added value in several dimensions: social, economic and environmental and these changes are generally accepted.

- ***Economic analysis and justification of the need for economic and functional conversion of the area;***

In this sense, I considered important the identification and highlighting of the main socio-demographic and economic indicators, presenting their evolution over time, revealing values that justify the reuse of existing industrial heritage in alternative activities, with emphasis on tourism activities.

- ***Testing a model regarding the perception and attitude of the locals regarding the development of industrial tourism as an alternative to the former industrial activities;***

Not only the perception of the tourist impact, the attitude towards community satisfaction and the development of industrial tourism are examined, but also the relationships between the perception of benefits to be obtained from the development of tourism activities, types of impact, positive or negative, generated by tourism development. and its attitude towards the development of tourism.

- ***Offering a new approach to destination management focused on social responsibility and maintaining the interests of the local community in the process of tourism development;***

At the destination / community level, tourism is recognized as a solution for the sustainable use of available community resources to meet local needs. Community-based tourism, as a broad concept, supports a bottom-up approach, in which the process of managing tourism planning and controlling the development of tourism is led by the local community. Theoretically, it presents a viable concept, aimed at achieving economic and social objectives, in order to create a responsible tourist destination. However, significant problems arise when it comes to analyzing organizational and management issues related to implementation. One of the most important topics includes identifying stakeholders and involving them in the development of tourism at community level. Given the context, the community tourism organization is not a new organizational concept, but has proven to be, to some extent, unexplored.

The main application contributions are materialized in the following actions:

- ***Analysis of the possibility of capitalizing on the industrial heritage in tourism within the destination;***

The possibility of using the existing assets of the Petrila mining perimeter for the development of an industrial theme park is analyzed, within a technical-economic study, being also documented the necessary costs for the consolidation, rehabilitation and redevelopment of the spaces.

- ***Development of a modified Greedy algorithm with metaheuristics for the optimal choice of the future destinations of the buildings under analysis;***

The algorithm was applied in the design stage of the industrial Theme Park in Petrila. Thus, the presented algorithm has a proven practical applicability and is an approach to capitalize on the existing potential of industrial heritage tourism, taking into account the technical, economic and social aspects specific to the studied area. The solutions generated by the use of the algorithm are based on rigorous geo-technical, economic and social studies, included in the criteria considered. Thus, the theme park is proposed based on the identified destinations of the buildings, being evaluated the best solutions.

- ***Identifying and evaluating advanced approaches to representing optimal business models to facilitate and support new businesses, such as the Petrila Theme Park, without costly experimentation;***

An analysis of both static and dynamic business models was carried out. These were identified as strategy tools designed to outline formal conceptual representations of how an organization operates and creates value.

The study led to a new direction of research for the development of dynamic business modeling tools, based on simulation. As many of the challenges of sustainable business modeling can be properly addressed through a systemic and dynamic approach, there is increased potential in exploring new simulation and design tools. In terms of the business area, conceptualizing the approach to the dynamic business model adds value to how a company's business model can be understood, adapted and changed over time to create sustainable value. In addition, the study also illustrates how decision makers can use the framework to obtain scenarios and answers to "if" questions from different actors in a variety of contexts.

- *Using Vensim PLE to experiment with investment decisions in marketing expenses necessary to achieve the objectives set for the Petrila Theme Park;*

The research aims to demonstrate the usefulness of obtaining a tool to help managers make decisions based not only on intuition, but also scientifically based that can help them build different investment scenarios. Our model uses a modeling and simulation environment (Vensim PLE) to determine the optimal level of investment in marketing expenses. Vensim PLE provides support for modeling and testing dynamic systems, regardless of their nature. Starting with a classic model of systems dynamics theory, choosing appropriate inputs, we were able to experiment with different investment scenarios. In the case under analysis, in an attempt to establish the necessary budget for investments in marketing expenses to achieve the proposed objectives, Vensim PLE allowed the experimentation of three alternative scenarios, the choice being based on science and not on intuition. After running the simulation, the results can be displayed using graphs that illustrate the trajectories of the variables.

The studies carried out open new directions of research that can be approached in the future, especially to eliminate the current limitations.

As identified limitations, the analysis captures the perception of the inhabitants at a given time, but this perception may change over time. To eliminate this limitation, a longitudinal study can be carried out on the attitude of the inhabitants towards the development of sustainable tourism. Further research is needed to investigate data on the host population over several years to better understand this model of support for the development of sustainable tourism.

New variables can be incorporated into the model, both extrinsic and intrinsic, which can allow enrichment and improvement of results with the discovery of new factors that condition the attitude of locals towards the development of tourism in general and the industrial tourism segment in particular.

It is necessary to approach the study of new variables of an internal nature that condition the attitude of the individual, such as, for example, how the feeling of belonging or solidarity with the community influences the attitude of the local population towards the development of industrial tourism. This appreciation generates the need to integrate other theoretical approaches, such as the attachment of locals to their community.

Regarding the dynamic modeling of business models, the main limitation is that the conceptualization of this technique still does not allow the operationalization of the quantitative framework. Secondly, although the illustrative example encourages a better understanding of the framework, the validity of the model must be obtained. In the third line, the specific types of data that need to be captured to model each component of the business model are not yet defined and need further refinement. In particular, the ability to quantify and simulate a dynamic business model is quite difficult due to the major

complexity of obtaining reliable data on the long-term results (ie, sustainable value) generated by an organization.

Being proposed a business idea we did not use real data, our goal being to prove that we can build a mathematical model with some complexity only by using Vensim PLE. Some of the variables defined in the model developed in Vensim, such as the target tourist market or the entrance fee, are defined as estimates, but the research can be extended using real data, available after the development of the park.

Extending the research in order to apply the algorithm to some underground destinations but also to unite several destinations in a tourist circuit.

Continuing the research to obtain an immersive tourist product, by using alternative realities. The term augmented reality (AR) is used to describe a combination of technologies that allow real-time mixing of computer-generated content with physical reality. AR is based on techniques developed in virtual reality (VR) and interacts not only with a virtual world there is a degree of interdependence with the real world so that although reality cannot be increased, its perceptions can be. In an increasingly competitive environment, augmented reality is proving to be a crucial point of differentiation for tourist offers, improving the experiences of tourists. This technology can be easily accessed from a smartphone or tablet and works by superimposing digital content over the environment, thus improving the real world.