

**BUCHAREST UNIVERSITY OF ECONOMIC STUDIES
FACULTY OF CYBERNETICS, STATISTICS AND ECONOMIC INFORMATICS
DOCTORAL SCHOOL OF CYBERNETICS AND ECONOMIC STATISTICS**

HABILITATION THESIS

**STATISTICAL-ECONOMETRIC METHODS APPLIED
IN THE ANALYSIS OF THE INTERDEPENDENCE BETWEEN
TOURISM - REGIONAL DEVELOPMENT – SUSTAINABILITY**

Candidate:

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SUMMARY

The qualification thesis entitled "**Statistical-econometric methods applied in the analysis of the interdependence between sustainability - regional development - tourism**" highlights the synthesis of the main scientific and professional results obtained by conf. univ. dr. **Gogonea Rodica-Manuela**, after being awarded the doctoral degree in the discipline of Cybernetics and Economic Statistics in accordance with the provisions outlined in the Order no. 3824 of 13.05.2006 issued by the Minister of Education, Research and Youth, as well as the future directions of professional career development.

The main objective of the scientific research is represented by the analysis of problematic issues pertaining to the advancement of tourism at various scales, namely regional, national, and international in the context of the manifestation of the sustainability phenomenon.

The interrelationship underscored in the study between tourism, regional development, and sustainability is predicated upon sustainable economic progress at the resource economy level, the economy focused on environmental conservation, the social economy encompassing education and the increasingly influential digitization process. The challenges of quantifying sustainable tourism activity at regional, national and international levels necessitated a comprehensive and multifaceted approach, demanding extensive research efforts. The evaluation process employs indicators in conjunction with statistical-econometric methodologies and methods to analyze the progression of tourism, measure its impact, and forecast outcomes at regional, national, and international scales. Such assessments aim to evaluate tourist behavior within the context of demonstrating sustainability. The current orientation was approached from a scholarly perspective, emphasizing the scientific and practical significance of the triunivocity of the interrelationship between tourism, regional development and sustainability.

Taking into account the chronological order of the activity in the educational field of the univ. dr. Gogonea Rodica-Manuela from the moment of obtaining the scientific title of doctor until now, the habilitation thesis was thought out and structured in three parts:

- the brief presentation of the academic, scientific and professional career (part I);
- contributions and achievements in scientific research regarding statistical-econometric methods applied in highlighting the interdependence sustainability — regional development – tourism (part II);
- professional and academic evolution and development plans (part III).

The first part of the habilitation thesis (part I) briefly presents the academic, scientific and professional career, successively highlighting the primary achievements stemming from the author's professional endeavors, educational engagements and research undertakings. The professional trajectory of teaching and research endeavors is primarily pursued through the

hierarchical stages within the university, ranging from assistant to lecturer in the present context. At the same time, the active involvement in the educational process is also highlighted, reflected by stimulating student scientific research and by participating in the organization of scientific conferences for students.

The second part of the qualification thesis (part II) presents a synthesis of the main relevant scientific achievements in highlighting the interdependence between tourism-regional development-sustainability. The research objectives were outlined based on a comprehensive framework that highlights the conceptual aspects of how tourism, regional development, and sustainability are interconnected. Furthermore, particular attention was given to evaluating the measurement of tourism within the context of achieving sustainable regional development.

Following the application of both conceptual methods and statistical-econometric analysis models, the following objectives were pursued and achieved:

(O1) analysis of the tourists behavior involved in tourism activities in general and rural tourism in particular, at the level of the development regions of Romania and at the national level, from the perspective of sustainability;

(O2) studying the manifestation of the eco-innovation phenomenon at the Romanian level compared to the European level, from an ecological point of view, as a significant factor in sustainable economic development;

(O3) researching the evolution of the main elements with a significant impact on sustainability, at European level: energy, ecological footprint, waste, biocapacity and e-commerce.

The thematic orientations of the habilitation thesis were centered on the elaboration of a *chapter* aimed at elucidating the *conceptual approaches surrounding the interplay between tourism, regional development and sustainability in Romania*. This chapter delves into the conceptual considerations concerning the *interconnectedness between tourism, regional development, and sustainability*. It examines the prerequisites for attaining a harmonious equilibrium of sustainable economic advancement, wherein the preservation of the environment and promotion of quality of life are of utmost importance. This is closely interlinked with the well-being of individuals and the impacts of tourism on their health. At the same time, taking into account the approaches to sustainable development (ecological and environmental, economic, socio-human and educational-cultural, technical-technological, legislative, political) the indicators of sustainable development are presented as indicators of: resources, synthesis, results, sectoral, regional and locals. The chapter is completed by highlighting the *process of commensuration of tourism in the vision of sustainable regional development*. Therefore, the significance and contribution of tourism to the process of sustainable regional development can be examined by taking into consideration eight key aspects of tourism: its role in diversifying

economic structures, its ability to leverage and capitalize on local resources, its contribution to national income generation, its capacity to generate employment opportunities, its ability to stimulate investments, its role in mitigating inflationary pressures and its involvement in external relations. Simultaneously, sustainable tourism is assessed and interpreted utilizing two distinct categories of indicators: fundamental (the level of national or international tourist regions) and additional (used only in tourist areas).

The second chapter presents the methods and models for analyzing the sustainable regional development of Romania, as a result of the implications of tourism.

Initially in this chapter are included aspects regarding the modeling of tourists' behavior. This subchapter encompasses a discussion on the notable evolutionary trend of Romanian rural tourism in the context of sustainable regional development and further explores the intricate relationship existing between tourism, tourist pressure and sustainability. Considering the existence of a positive feedback loop between rural tourism and economic growth, this study emphasizes the impact of gross domestic product fluctuations on tourist circulation patterns and their subsequent implications on sustainable development. This investigation adopts a panel model to analyze this relationship. At the same time, a clearer vision regarding the causes that influence the development of agriculture as well as the development of strategies designed to meet the real needs of this economic sector, implicitly tourism, led to the identification and outline of some patterns of specific geographical areas. These patterns shed light on the local-level determinants that affect agricultural efficiency and subsequently impact the competitiveness of Romanian agriculture. Next, the relationship tourism - tourist pressure - sustainability is approached through the lens of the imperative to construct a behavioral model for tourists. The measurement of tourist pressure indicators, including the territorial density of tourist pressure, intensity and duration of tourist pressure and social impact of tourist pressure, have been examined in relation to economic growth, environmental sustainability and social equity. The analysis of these indicators has been conducted at both macro-regional and regional scales within Romania.

Eco-innovation is also included in the subchapter as an important component for tourism, being in the sphere of action of the sustainable economic development of Romania, with a significant impact on the ecological growth and sustainability of Europe. In this context, the Romanian eco-innovation performances are highlighted, in the period 2003-2013, by building a composite index, simultaneously with the identification of the main eco-innovation poles at the European level.

Tourism, through its content, evolution and consequences of its practice, highlights the interdependence of nature - ecology - sustainable development - sustainability, thus defining the second part of the chapter which includes the modeling of the components of sustainability carried out at the level of the EU countries.

A first component addressed that highlights the interdependence of tourism-regional development-sustainability concerns the field of *energy policy*. It represents an important pillar in the experimentation and launch of new products and services in the tourist circuit. In this context, the analysis of a cluster design was carried out regarding the influence of energy taxation in the development of an economic paradigm of the EU-28 with the identification of possible convergences and causalities between PIB growth and energy taxation. Effective environmental protection measures and an appropriate tax system are indispensable components of energy policy. It is imperative that we consistently implement and adhere to these measures in order to achieve a universally accepted energy taxation framework that effectively mitigates greenhouse gas emissions.

The ecological footprint represents another significant component in rendering the interdependence of tourism-regional development-sustainability. To appropriately exemplify this mutual reliance, the matter was analyzed from two distinct perspectives. The initial aspect pertains to the manner in which social and environmental responsibility codes uphold the concept of ecological footprint, encompassing a range of sustainable practices in economic development. This is considered a paramount approach for transforming the bioeconomy into a domestically focused field of intelligent specialization. The second aspect considers the perspective of the ecological footprint, as a tool for measuring and monitoring sustainability, through the interdependence between the ecological footprint of consumption and three component elements of some basic pillars: the spatial pillar (through the variable Region), the pillar of innovation (through the variable Eco-Innovation Index) and the pillar of economic freedom (with the variable Employment in Foreign Controlled Enterprises).

Waste is added to the other two components, their reduction representing a permanent concern for all countries of the world. In terms of the manifestation of the phenomenon of sustainability, the amount of waste is directly influenced by the residential environment of the households, significant differences are noticed depending on the location of the household located in the rural or urban environment, implicitly at the regional level, with a significant impact on tourism. Hence, the correlation between the quantity of waste produced by individual countries and the external factors such as population size with respect to the level of urbanization (i. e, cities, towns, suburbs, rural areas), as well as the number of students and teachers at various educational levels, has been emphasized by the educational community as a crucial factor in predicting the trajectory of waste generation and subsequently achieving a reduction in waste production.

Lastly, it is important to highlight that *biocapacity* plays a substantial role in the interrelationship observed between tourism, regional development, and sustainability. The context allowed for a complex, multidimensional analysis of the biocapacity reserve or deficit. Thus, its main determinants were identified, covering all three main dimensions of sustainable development: the economic, social and environmental pillar. At the same time, the tools that can be used to restore a balance between consumption and resource availability were also highlighted.

After the emergence of the Covid-19 pandemic, notable transformations were observed across various domains, including the tourism industry. These changes also had a significant impact on the relationship between it, regional development and sustainability. The evolution of *e-commerce* activities has illustrated their efficacy as a means of establishing connections and mitigating crises. The COVID-19 pandemic has had noticeable implications on consumer behavior in various demographic and economic groups, particularly those purchasing products and services within the tourism sector in the digital realm. These changes were observed extensively across European countries during the year 2020, as compared to the preceding year, 2019.

Part III of the habilitation thesis includes proposals aimed at professional and academic evolution and development plans.

In the habilitation thesis, a section with **general conclusions** was added, in which the motivations and results obtained as a result of the research undertaken are briefly presented.

Upon the culmination of the habilitation thesis, the **bibliographic references** was presented in a diligently arranged alphabetical order, revealing the foundation upon which this research was conducted.

The original approach to the thesis consists in the ability to select the studies that are most suggestive and to apply the appropriate statistical - econometric methods (multidimensional data analysis methods, clustering method, panel data models and those specific to series of time, the construction of composite indices) in terms of the issue of tourism-regional development-sustainability interdependence.

The *constraints* encountered in this study primarily involve the challenges in obtaining the essential data variables that could have provided greater clarity on the interdependencies existing among the components influencing the relationship between tourism, regional development and sustainability.