**THE BUCHAREST UNIVERSITY OF ECONOMIC STUDIES**
**Council for Doctoral Studies**
**Doctoral School of Cybernetics and Economic Statistics**

**Ph. D. THESIS – SUMMARY**

# APPLICATIONS OF INFORMATIONAL STATISTICS - REGIONALIZATION OF ROMANIA

Ph. D. Student Ioana-Ruxandra LIE

Scientific coordinator:
Prof. univ. Niculae V. MIHĂIȚĂ, Ph. D.

**Bucharest, 2017**

# CONTENTS OF THE Ph. D. THESIS

**Rezumat**

**Summary**

**Aknowledgements**

**CONTENTS**

**INTRODUCTION**

**1. THEORETICAL FRAMEWORK AND RESEARCH**

**1.1. REGIONALIZATION, REGION, REGIONAL POLICY, REGIONAL DEVELOPMENT: CONCEPTUAL CLARIFICATIONS AND MECHANISMS OF FUNCTIONING**

**1.2. REGIONS IN HISTORY**

1.2.1 Territorial organization in the world

1.2.2 Romania's territorial organization in history

**1.3. NOMENCLATURE OF TERRITORIAL UNITS FOR STATISTICS (NUTS)**

**1.4. THE NEED FOR REGIONALIZATION AND REGIONAL DEVELOPMENT**

**1.5. EUROPEAN EXPERIENCE OF TERRITORIAL REORGANIZATION**

1.5.1. Denmark

1.5.2. Greece

1.5.3. France

1.5.4. Germany

1.5.5. United Kingdom

1.5.6. Czech Republic

1.5.7. Slovakia

1.5.8. Hungary

1.5.9. Conclusions of the European experience

**2. OBJECTIVES AND METHODOLOGY OF RESEARCH**

**2.1. RESEARCH OBJECTIVES**

**2.2. METHODOLOGY OF RESEARCH**

**3. EMPIRICAL FINDINGS**

**3.1 ANALYSIS OF ROMANIAN REGIONS' HOMOGENEITY BASED ON INFORMATION ENERGIES**

3.1.1 Analysis of regions' homogeneity - population

3.1.2 Analysis of regions' homogeneity - industry

3.1.3 Analysis of regions' homogeneity - agriculture

3.1.4 Analysis of regions' homogeneity – foreign trade

3.1.5 Analysis of regions' homogeneity - tourism

3.1.6 Analysis of regions' homogeneity - services

3.1.7 Analysis of regions' homogeneity - education

3.1.8 Analysis of regions' homogeneity – health services

**3.2 GROUPING ROMANIA'S COUNTIES BASED ON FACTOR ANALYSIS**

3.2.1 Grouping variables in relevant factors

3.2.2 Grouping counties based on relevant factors

3.2.3 Counties hierarchy based on relevant factors

**3.3 INTERREGIONAL COOPERATION MODEL. ANALYSIS BASED ON ONICESCU INFORMATIONAL STATISTICS**

3.3.1. Cooperation between the Northwest, West and Center regions

3.3.2. Other decisions that might improve the process of interregional cooperation

**4. CONCLUSIONS AND PROPOSALS**

**BIBLIOGRAPHICAL REFERENCES**

**ANNEXES**

**List of abbreviations and acronyms used in the paper**

**List of tables in the paper**

**List of figures and graphs in the paper**

**List of annexes to the paper**

**Keywords:** *factor analysis, informational gain, cooperation, regional development, NUTS, regional policies, informational statistics.*

**Summary**

Since ancient times, the basis for countries' and societies' development was efficient management and applying policies that stimulate development, taking into account the strengths and opportunities of each region.

In 1998, Romania's territory was divided into 8 development regions, which are not administrative units and do not possess legal personality. Short before a new financial term in the European Union (2014-2020), regions were brought again to public attention, because the European vision is to focus on regions as the basis for cooperation in the Union; unfortunately, this public attention was not translated into territorial reorganization. In this context, as it necessary to access and use more efficiently European funds, the decision regarding NUTS 2 regions needs to be taken as soon as possible.

The aim of this thesis is to identify optimal formulas for regionalization, in order to have regions with little differences between their counties and to create the frame for future development.

The paper is made of four chapters.

The first one of them presents the theoretical notions needed in order to analyze the theme: region, regional development, regional policies, NUTS regions. It also shows the main reasons why Romania's regionalization is needed and how it is expected to induce economic and social development.

This chapter also contains a brief description of the way space was organized during history, both in Romania and the world, in order to show that territorial reorganization with the purpose to induce development is not a new concept. Additionally, as there can always be lessons to learn from other countries' experiences, this chapter also analyzes how different European states have reorganized their territorial administrative units. This way, the author was able to identify some aspects that need to be taken into account when shaping Romanian regions (consulting the population, dimensions and competences of the regions, assuring financing sources for the new regions, besides central government), and also aspects that need

to be avoided (unequal treatment for the regions in the same country, potential hindrance from local governments or central government representatives, who lose influence by decentralization).

The second chapter presents the main goals of the research, and also the methods used: Onicescu Informational Statistics (informational energy, informational gain), factor analysis,

The third chapter, the most important one, contains the analysis and interpretation of data, accomplished with the methods mentioned before and also the comments and suggestions that can be reached from the results obtained.

In the first step of the research, the homogeneity of the development regions (both in their current and proposed versions) of Romania is analyzed, with the help of informational energies. The analysis is based on relevant variables for areas like demographics, industry, foreign trade, tourism, agriculture, infrastructure, health services, education. In most of the studied domains, it was found that regions are very homogeneous. This is a positive result, as many other researchers suggest that it is better if the areas that form a region are homogeneous. Additionally, this homogeneity will be useful after the territorial reorganization, when each region will be able to draw and apply development policies, tailored to the specifics of each of them, which can take into account the strengths of the region and solve existing development issues.

The second part of the research is also based on the variables mentioned earlier and was accomplished using IBM/SPSS. Three, four or five relevant factors were identified, and Romanian counties were grouped and ranked according to them. One of the reasons for this grouping was to see if counties from a specific region are part of the same category. The second reason was to identify the similarities between counties, even if they are geographically apart, as they can find ways to cooperate (the cooperation between regions is more important than their structure, as it is suggested by other countries' experience, by the European Union recommendations, and by the diplomatic idea of the common interest, able to unite what was formerly divided). This analysis also shows that regions are homogeneous, most of the counties in a region being part of the same group. The analysis shows better performing counties in each region, which can serve as development poles for the entire area around them, according to modern theories on development through cooperation, know-how transfer and positive spillover effects.

Regarding cooperation, the third part of the research presents a model to analyze interregional cooperation using Onicescu Informational Statistics, in order to see what types of connections (hidden, false, weak, illusive, strong) exist between the factors involved. The highway infrastructure is chosen as a common project, as it is a very important aspect for Romania's development. Potential decisions of involved regions are analyzed, along with projects favoured by each one of them, and the elements that can be useful for a private investor in these projects. It is shown that it is very important to know as much information as possible, and also to analyze hidden relations between factors involved, in order underlying a decision. Positive results and advantages of an altruistic behaviour of the partners are also shown here.

The thesis concludes with the conclusions and some recommendations resulting from the research.