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COMPARATIVE APPROACHES REGARDING THE
DEVELOPMENT OF REGIONAL STATISTICS
(BASED ON DATA FROM BACAU COUNTY, ROMANIA
AND CENTRE REGION, THE REPUBLIC OF MOLDOVA)

SPECIALITY: 523.02 ECONOMIC STATISTICS

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CONCEPTUAL REFERENCES OF THE RESEARCH

Timeliness and the importance of the research. One of the main factors contributing to the economic growth of a country is currently the development of regions, as an important "actor" of economic and social markets in world economies. The European Union's regional policy is considered the key element in the appearance of statistical areas and the development of regional statistics. In this respect, the essential role of regional statistics is to measure the regional socio-economic situation, which allows both the making of the best decisions in regional and national policy and the grounding of intervention criteria at regional level. Regional development is a current, real process that requires knowledge, analysis, diagnosis and can be interpreted statistically.

We are currently facing insufficient research in the field of comparative approaches regarding regional statistical developments, the evolution and impact of its development in grounding the best regional development decisions.

The research problem is the impossibility of performing international, regional, dynamic and structural comparative analysis, due to the lack of statistical data in the indicators' system, the existence of different methodologies, the dissemination of different statistical indicators determined on the same fields but which do not help with the making of comparisons or the determining of derived indicators, their limited availability, their variability.

The aim of the research is to make a comparative analysis of the development of regional statistics in terms of statistical indicators determined and disseminated for the two countries, and mainly based on the existing statistical data in Bacau County from Romania in parallel to statistical indicators calculated and disseminated for the Central Region of the Republic of Moldova, indicators based on a similar methodology, while performing an analysis of existing correspondences between the names of statistical indicators calculated and disseminated on-line and the most detailed administrative-territorial levels of their availability.

In order to achieve the purpose of this research, a number of **objectives** are considered:

- Presentation of the conceptual aspects regarding the notion of region and regional development, the typology of regions and the presentation of the existing statistical regions in Romania and the Republic of Moldova, according to the legislation in place;
- Identification and systematisation of data sources that represent the starting point in any statistical analysis, as well as determining the particularities of the main official statistical data sources;
- Determining the classification of statistical indicators in terms of literature and official statistics;

- Statistical analysis of the dynamics of the main indicators that characterize the territorial development of Bacau County compared to the Central Region. Thus, the comparative approaches regarding the specific indicators of social statistics (the population and demographic phenomena, the workforce, the educational system, the cultural activity) were taken into account.
- Comparison of the content and coverage area of the statistical indicators disseminated on-line by the official statistics from Romania and the Republic of Moldova, taking into account their temporal availability;
- Performing the analysis of the existing correspondences between the categories Romania and the Republic of Moldova, respectively the most detailed levels of dissemination of statistical data in these countries and the names of statistical indicators provided on-line in the databases of official statistics in the two states, with the followed dimensions (variables), analysis performed using the statistical programming language R.

The research hypothesis is the realization and presentation of a comparative framework of statistical indicators calculated and disseminated by the official statistics of the two states, at the most detailed levels of dissemination and according to their chronological availability.

Research methods. The interdisciplinary manner of this scientific research is obvious. The realization of comparative approaches regarding the system of indicators taken into analysis could not be done without the help of the fields of mathematics, econometrics, informatics, microeconomics and macroeconomics, management, etc. The use of the “pair” analysis of induction and deduction allowed the highlight of progress that took place within the theories regarding the region and regional development, the systematization and presentation of the specific features of the data sources. In the theoretical part of this paper, another pair was used, analysis and synthesis: the analysis of the definitions for the presented notions, of the indicators to be studied, the synthesis - which is relevant for expressing opinions. The paper predominantly involves practical research, because it focuses on the application of statistical methods necessary to perform a statistical analysis, in dynamics, of the main statistical indicators available and disseminated by official statistics, for various fields of official statistics, but also by applying an analysis model of the existing correspondences between the names of the statistical indicators available on-line and the levels of dissemination in the two states. The presented study therefore has a descriptive-exploratory character.

The scientific novelty and originality of the paper lies in :

- Deepening and developing the notions of region, regional development, official statistical data sources, statistical indicators, etc .;

- Synthesis and presentation of the main international organizations that provide a wide range of statistical information, representing important sources of statistical data.
- Highlighting the extremely low number of comparative analysis, in dynamics and structure, that could be performed between Bacau County of Romania and the Central Region of the Republic of Moldova.
- The drafting of comparative tables, for all economic and social fields, regarding the content and coverage area of statistical indicators disseminated on-line by official statistics from Romania and the Republic of Moldova, taking into account their methodological aspects and time availability, as well as the centralization of the number of statistical indicators calculated and disseminated on-line, on the most detailed levels of dissemination from Romania and the Republic of Moldova, respectively centralization according to the associated variables;
- Realization, with the help of the statistical programming language R, of the analysis of the existing correspondences between the most detailed levels of dissemination of statistical data in Romania and the Republic of Moldova and the names of statistical indicators provided on-line in the official statistical databases of the two states the dimensions (variables) pursued, for all economic and social fields, as well as the construction of confidence ellipses, for both the two countries with the most detailed levels of dissemination, and for the names of statistical indicators and associated variables.

The addressed scientific issue consists of the elaboration of comparative tables for the presentation of the statistical indicators disseminated by the Romanian NIS and the NBS of the Republic of Moldova, depending on the methodological aspect and the level of availability, which later led to the easy application of a model for analyzing existing correspondences between the names of statistical indicators and their dissemination levels, the achievement of confidence ellipses for dissemination levels and for the names of variables associated with statistical indicators, thus leading not only to establishing the image of the availability of statistical indicators in each economic and social field in order to carry out statistical research, but also to the directions that the official forums of the two states can currently undertake in order to improve their calculation and dissemination.

The theoretical relevance and practical value of the paper consists in highlighting, in quantitative and qualitative terms, the main comparative approaches to the development of regional statistics, the presentation of similarities and differences between the systems of indicators calculated and disseminated by institutions able to provide official data from the two states.

The theoretical relevance consists of the analysis of national and international approaches regarding the terms of region, regional development, official data sources, statistical indicators, etc., presentation of statistical regions from the two states, identification of comparative aspects from a methodological point of view of statistical indicators disseminated by official statistics from Romania and the Republic of Moldova.

The practical value of the paper consists in the usability of the results obtained both by creating comparative tables for all economic and social fields, with statistical indicators disseminated by the two official statistical forums in Romania and the Republic of Moldova, taking into account the specific methodologies for calculating them, the spatial and temporal variables pursued, as well as by determining, with the help of the model developed with the statistical programming language R, the degree of attraction between the names of statistical indicators available on-line and their levels of spatial dissemination. The research results can be used in the academic environment, by students and master students, scientific researchers, representing a real support for them in the use of statistical data sources necessary to perform various economic and social analysis. They also come in support of companies, public institutions, professional associations, etc. in order to carry out research in their fields of interest, and last but not least they can be used by the NIS in Romania and by the NBS of the Republic of Moldova in order to improve the activity, collection and dissemination of statistical data.

Implementation of scientific results: The results of this research are recognized by a number of 3 implementation certificates, , both in the teaching and research approach of the Faculty of Economic Sciences at the University "Vasile Alecsandri" Bacau, and in the practical dissemination activity within of Statistical County Directorate Bacau and the National Bureau of Statistics of the Republic of Moldova.

Approval of research results. The research results were presented and approved at 8 international scientific conferences and symposiums organized both in Romania and in the Republic of Moldova.

Publications with the thesis research theme. The research results were published in 9 scientific papers with a total volume of 5,264 copyright sheets, of which 6 articles - in specialized scientific journals in Romania and the Republic of Moldova, journals that are indexed in international databases and catalogues.

Volume and structure of the thesis. The dissertation is structured in four chapters, which represent the actual content of the thesis, being preceded by the introduction and completed at the end of the paper by general conclusions and recommendations, bibliography and annexes. The content of the paper is presented in 156 pages of basic text, 48 figures, 3 tables and 56 annexes, the number of bibliographic references being 218 titles.

Keywords: statistics, data sources, official statistics, statistical regions, regional development, statistical indicators, on-line dissemination, dissemination levels, correspondence analysis.

CONTENTS OF THE THESIS

Chapter 1. Data sources and indicators of official statistics on regional development available in the two states – intended to (in addition to presenting the theoretical elements related to the region and regional development) present conceptual aspects developed over time by various authors in different fields of activity and the presentation of data sources and their particularities, as a starting point in statistical analysis.

Spatial delimitation is one of the criteria found at the basis of the definition of the term of region, and also is of real importance in studying the content of the economy, through specific means, methods and techniques. As they are otherwise defined in the normative acts of their establishment, development regions, are not considered administrative-territorial units and do not have legal personality, the role of its establishment is to ensure the framework for the development, implementation and evaluation of development policies.

The delimitation between the undifferentiated and the differentiated space is the basis for the definition of the notion of space. Undifferentiated space is considered an abstract, geometric space, based on concepts such as: coordinates, distance and density (each economic phenomenon is associated with a point in a two-dimensional space, with its own rectangular or polar coordinates), as opposed to differentiated space which is in fact a way of representing real spatial phenomena. [13] We mention that these theoretical aspects of the definition of the notion of region, regional development, as well as other similar notions (area, zone) were presented in one of the published papers, as a co-author. [6].

The economic space, in the view of some Romanian authors [1, p.22] is considered the type of space in which certain activities are carried out, the place where certain economical relationships develop. This economic space is obviously totally different from the mathematical space, considered an abstract space represented by a set of points or elements with certain properties, as well as the geographical space that is defined by geographical coordinates such as longitude, latitude. Considering the three types of space, J.R. Boudeville emphasizes the fact that the application of a mathematical space over a geographical space determines the obtaining of an economic space. [24] Also in the same paper [24], J.R. Boudeville makes the difference between the region and the economic space, emphasizing that the region is characterized by continuity, while the discontinuity is specific to the economic space.

The region represents the concrete and most efficient form of describing the space, it means an area within the national economic space with a specific structure that can function independently, but which also has close links with the rest of the economy. [13]

The notion of regional development is a new concept that derives from economic development and aims to stimulate and diversify the economic activities of a country / region, to create new jobs and improve the living standards of the population. According to the OECD definition, regional development is "a general effort to reduce regional disparities by supporting (employment and wealth generation) economic activities in the regions". [23] The purpose of regional development is the balanced structuring of the territory from the perspective of economic and social potential through various means, such as: balanced distribution of economic activities at the regional level, reducing gaps between space components, use and valorisation of resources, etc. The existing gaps in inter and intraregional development are due to the complex nature of socio-economic processes and phenomena that occur at the regional level. The evaluation of these gaps can be determined through clusters and by elaborating hierarchies of administrative-territorial units necessary to make comparisons in territorial profile. The hierarchies that can be made in order to analyse the gaps can be unicriteria and multicriteria. The multicriteria characterization of development regions involves the construction of synthetic indicators, such as: the global development index and the human development index.

The statistical analysis of the development at regional level required the creation of a unitary territorial system: NUTS - Nomenclature of Territorial Units for Statistics. It was developed by the Statistical Office of the European Union for the collection, improvement and alignment of regional statistics throughout the European Union, for the economic and social analysis of the regions, but also for the implementation of development policies.

The Romanian territory, according to the legislative framework, is organized in the following types of administrative-territorial units: county, municipality, city, bigger villages and smaller villages. According to the administrative organization of the Romanian territory, on December 31, 2020, there were: 103 municipalities, 216 cities, 790 component localities of municipalities and cities, 2862 bigger villages, 12959 villages (of which 468 belong to municipalities and cities). [8]

Starting with 1998, in Romania, the eight regions, with the component counties are:

- ✓ Region 1 Nord-Est: Bacău, Botoșani, Iași, Neamț, Suceava, Vaslui;
- ✓ Region 2 Sud-Est: Brăila, Buzău, Constanța, Galați, Tulcea, Vrancea;
- ✓ Region 3 Sud Muntenia: Argeș, Călărași, Dâmbovița, Giurgiu, Ialomița, Prahova, Teleorman;
- ✓ Region 4 Sud-Vest Oltenia: Dolj, Gorj, Mehedinți, Olt, Vâlcea;
- ✓ Region 5 Vest: Arad, Caraș-Severin, Hunedoara, Timiș
- ✓ Region 6 Nord-Vest: Bihor, Bistrița-Năsăud, Cluj, Maramureș, Satu Mare, Sălaj;

- ✓ Region 7 Centru: Alba, Braşov, Covasna, Harghita, Mureş, Sibiu
- ✓ Region 8 Bucureşti-Ilfov: Bucureşti, Ilfov.

The creation of these regions was based on the voluntary cooperation of the counties, they are not considered territorial administrative units nor do they have legal personality.

Regarding the administrative-territorial division of the Republic of Moldova, by categories of administrative units, as of December 31, 2020 is: 13 municipalities, 53 cities, 41 localities in the frame of cities (municipalities), 916 villages residences - the village with administrative council (commune council) and 659 localities in the frame of bigger villages (excepting residence villages). [3]

The development regions in the Republic of Moldova are established according to Law no. 438-XVI of 28.12.2006 on regional development in the Republic of Moldova, with subsequent amendments and completions. [10]

According to this normative act, the statistical regions of the Republic of Moldova are :

- ✓ Regiunea de Nord: Municipiul Bălţi, raioanele Briceni, Donduşeni, Drochia, Edineţ, Făleşti, Floreşti, Glodeni, Ocniţa, Rîşcani, Sîngerei, Soroca;
- ✓ Regiunea Centru: Raioanele Anenii Noi, Călăraşi, Criuleni, Dubăsari, Hînceşti, Ialoveni, Nisporeni, Orhei, Rezina, Străşeni, Şoldăneşti, Teleneşti, Ungheni;
- ✓ Regiunea Sud: Raioanele Basarabeasca, Cahul, Cantemir, Căuşeni, Cimişlia, Leova, Ştefan Vodă, Taraclia;
- ✓ Unitatea teritorială autonomă Găgăuzia ;
- ✓ Municipiul Chişinău ;
- ✓ Transnistria: Administrative units found on the North of the Nistru River, including Tiraspol şi Bender.

It is obvious that the regions differ from each other, each having specific characteristics, having strengths and weaknesses, so their approach will have to be done individually, but still their comparative analysis, in terms of statistical indicators determined within the regions, can bring important information for decision-makers in order to improve existing situations.

Statistical data sources are essential tools for any researcher or analyst, representing the starting point of their work, from documentation, research, analysis, to final presentation of the results of their work. The official statistical data sources are one of the cheapest methods of obtaining information and their credibility is unquestionable. The quantity of data and information provided by state statistical institutes, international organizations and government agencies can be effectively used to support decision-making, although decisions in many areas are often based on criteria other than statistical data.

The brief presentation of the characteristics of the main statistical data sources aims to highlight the existence of databases, through which various international institutions disseminate statistical data, some specialized in certain fields of activity, thus offering the possibility of identifying the various statistical indicators extremely necessary in socio-economic analysis that represent the foundation of decision making at micro and macroeconomic level. This topic was detailed in one of the published papers, as a co-author [11].

At international level, there are numerous organizations providing a wide range of statistical information, representing important statistical data sources. A global presentation of the institutions providing statistical data was made and presented by Global Edge through a web portal: globalEDGE™ created by the International Business Center of the University of Michigan. [21]

One of the most important international institutions that disseminates statistical data through databases, but also through various publications, is *Eurostat*. This is the portal that presents the latest statistical data provided by the European Commission, statistical news of the European Union. Statistical data is disseminated in a user-friendly manner in three international languages (English, French and German) for various domains such as economic, technical and social. Schematic presentation of statistical data through a navigation tree (databases by themes, tables by themes, tables on EU policy, etc.) helps users to easily obtain the data they need. [20]

A portal to a huge database of world statistics is provided by the World Bank, the information disseminated being organized by countries and subjects of interest. There are several websites on various topics of interest which we can mention: *Data, Doing Business Indicator and Investing Across Borders*.

The most eloquent radiography of the international labor market is given by the *International Labor Organization*. Through an interactive database, the indicators regarding the workforce are presented in monthly, quarterly and annual series, showing at the same time projections of some indicators up to the 2050s. [22]

The classification of statistical indicators in terms of literature and the presentation of statistical indicators disseminated by official statistics in Romania and the Republic of Moldova, on major economic and social fields, come to complete the theoretical aspects covered in this first chapter of the thesis.

The presentation of the indicators is made on the main fields of activity and interest, from social and economic statistics, finance, justice, environment, etc. to regional statistics. We mention that this tabular presentation was presented by the author in one of his papers. [7].

Table 1: Indicators of official statistics disseminated online in Romania and the Republic of Moldova

National Institute of Statistics - Romania	National Bureau of Statistics of the Republic of Moldova	National Institute of Statistics - Romania	National Bureau of Statistics of the Republic of Moldova	National Institute of Statistics - Romania	National Bureau of Statistics of the Republic of Moldova	
A. Social statistics		B. Economic statistics		C. Finances		
Population and its demographic structure	Population and demographic processes	National accounts	National accounts	Finances	Budget execution and Balance of payments	
Vital statistics	Number of population, Births, Deaths, Marriages, Divorces, Main demographic indicators	Research - development and innovation	Science and intellectual property	D. Justice		
		Prices	Prices	Justice	Justice – included in the Social Statistics domain	
		Agriculture	Agriculture	E. Environment		
		Silviculture	Forest fund - in Environment	Environment	Environment	
		Industry	Industry	F. Territory administration		
		Energy	Energy resources	Territory administration	Territory administration	
Internal and international migration	Migration	Constructions	Constructions	G. Public utilities of local interest		
Labour force	Labour force and earnings	Dwellings	Dwellings - included in the Social Statistics domain	Public utilities of local interest	Public utilities - in the Social Statistics domain	
Living standard	Living standard of the population	Investments	Investments in long term tangible assets		City infrastructure - in the Environment domain	
Social protection	Population social assistance	Statistical business register	Entrepreneurship	Gender statistics		
Education	Education	Transports	Transports	-	Women's economic empowerment	
Health	Health protection	Post and telecommunications	Information technologies	-	Education and training of women during lifetime	
Culture	Culture and sport	Domestic trade	Domestic trade and services	-	The participation of women in decision-making process	
Sport		Foreign trade	Foreign trade	-	Women's health	
-	Millennium Development Goals	Tourism	Tourism	Regional statistics		
-		Services	Services – in Domestic trade	-	For all the domains mentioned above	

Source: Adapted by the author after [5] and [8]

Chapter 2. Statistical analysis of the dynamics of the main indicators that characterize the territorial development of Bacau County compared to the Central Region - presents comparative approaches in terms of the main socio-demographic indicators available to make a "x-ray" of Bacau County of Romania and the Central Region from Moldova. The main purpose of this chapter was to exemplify the extremely small number of comparative analysis that could be performed, due to the lack of statistical data in the indicator system, the existence of different methodologies, the dissemination of different statistical indicators calculated on the same fields, their limited availability, their variability.

In order to identify the existing discrepancies, the dynamic analysis, with the latest available data, focused not only on the situation at the level of each territorial unit (Bacau County, respectively Central Region), but also on a comparative analysis with the situation registered at the level of each country, Romania, respectively the Republic of Moldova. To quantify the complex socio-demographic situations in the two territorial statistical units, a relatively small number of indicators were taken into account, the only ones available for comparative approaches, the main areas being: demography, workforce, education and culture.

The comparative approach, considering *the evolution of the population as well as the main demographic phenomena*, aims to assess the demographic situation in Bacau County, Romania, as well as in the Central Region of the Republic of Moldova, over a period of 5 years (2015-2019). In order to quantify the complex demographic situation in the two territorial units for statistics, we took into consideration a relatively small number of indicators, the most relevant ones, which should underline the evolution from a demographic point of view. The analysis of the changes in the population size, the modifications within its structure regarding age and gender groups, determining the relevant indicators for demographic vitality, demographic aging and demographic dependency ratio are a starting point in drawing up an overview of the more or less “dramatic” situations existing in the two areas.

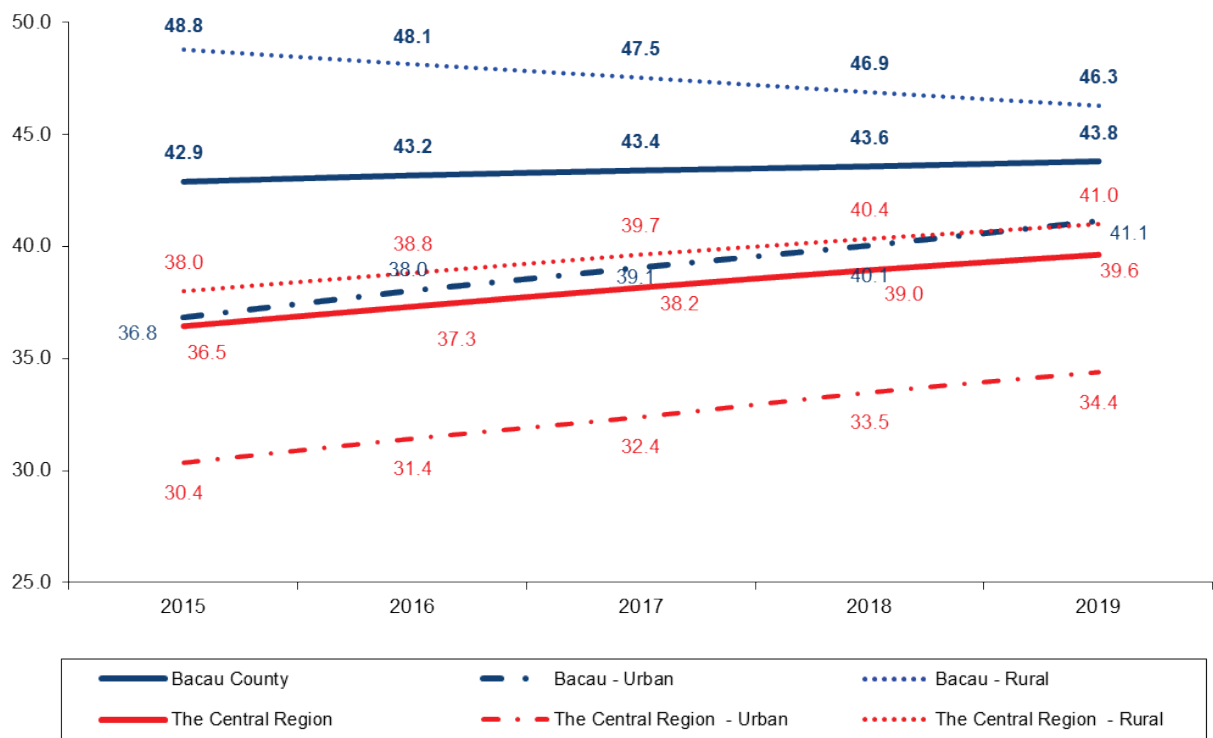


Figure 1: The demographic dependency report in the rural and the urban areas in Bacau County and in the Central Region during the period of time 2015-2019

Source: processing of the data collected from [5] and [8]

The demographic dependency in Bacau County has a downward trend, from 42.9 young and elder people per 100 adult people in 2015 to 43.8 people in 2019; the same trend was registered in the Central Region (from 36.5 young and elder people per 100 adult people in 2015 to 39.6 people in 2019). This statistical analysis was presented in detail in one of the articles published by the author in a scientific journal [17] and in an international conference for the period 2007-2015.

In order for any economic activity to take place, it has to involve the labour factor alongside the other factors of production. *Labour statistics*, as a branch of official statistics, studies the number of employees, the structure, the dynamics and utilization of labour resources of national economy, labour remuneration (forms of salary, average salary and salary funds, salary fund structure) and its productivity. The comparative approach to the evolution of the number of employees at the end of the year, but also of the gross earnings obtained by them aims to illustrate the situation of the existing labour market in Bacau County of Romania and the Central Region of the Republic of Moldova over a period of 6 years (2011-2016). In order to identify the existing discrepancies, the data on the number of employees are analysed by gender and ownership, while the data on average gross earnings were analysed only by gender. The analysis of the number of employees was presented in detail by the author in one of the papers in this thesis [18], while the analysis of earnings was detailed both in a journal and at an international conference as a co-author [12].

The same reasons concerning lack of data dissemination at the Region level for the Republic of Moldova made impossible a comparative dynamic analysis of the average net earnings which in fact represents the amount of money that the employee receives for the work performed, after the payment of the tax and other compulsory contributions of the employee to social security, health care, etc.

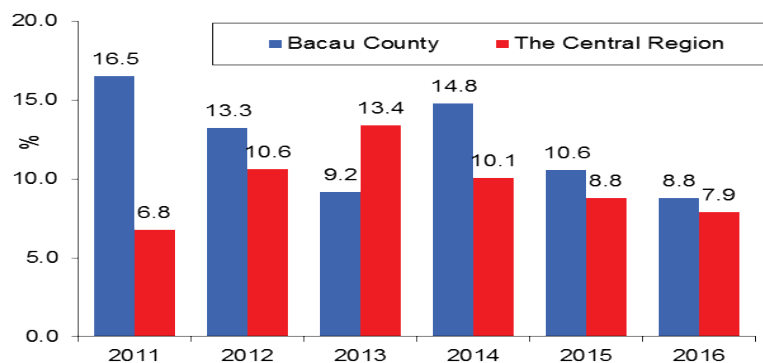


Figure 2: Evolution of gender gap in average monthly gross earnings (current prices), Bacau County and the Central Region (+/- %)

Source: processing of the data collected from [5] and [8]

An important factor in promoting economic development is the educational capital that should be seen as an investment in those who will generate economic growth. The present paper aims to carry out a statistical analysis of indicators in the field of education: early education. **Early education** includes early childhood education and preschool education. The disseminated statistical indicators are: school units (nurseries and kindergartens), registered children, teaching staff and infrastructure related to early education. According to the International Standard Classification of Education - ISCED 2001, early childhood and preschool education are included in early education category level 0, as the first stage in the educational system. The units operating at level 0 both in Romania and the Republic of Moldova are nurseries (for the institutionalization of children under the age of 3) and kindergartens (for children aged 3-5 years for Romania and 3-6 years for the Republic of Moldova).

The existence of a link between the population of the official age group (for Bacau County it is 0-5 years and for the Central Region of the Republic of Moldova it is 0-6 years) and the number of children registered in institutions, can be determined by one of the parametric methods for determining the link, namely the regression equation. According to the available data, both for Bacau County and for the Central Region, there is a direct link between the two indicators. The increase by 10 persons of the population has an average increase in the number of children registered with 4 persons in Bacau County, while at the level of the Central Region of the Republic of Moldova the increase with a child from the official age group would lead to an increase on average with a child registered in early education institutions. This statistical analysis was presented in detail, both in one of the articles published by the author in a scientific journal [19] and in an international conference, for the period 2013-2017, the thesis being updated and presenting the analysis for the period 2015 -2019.

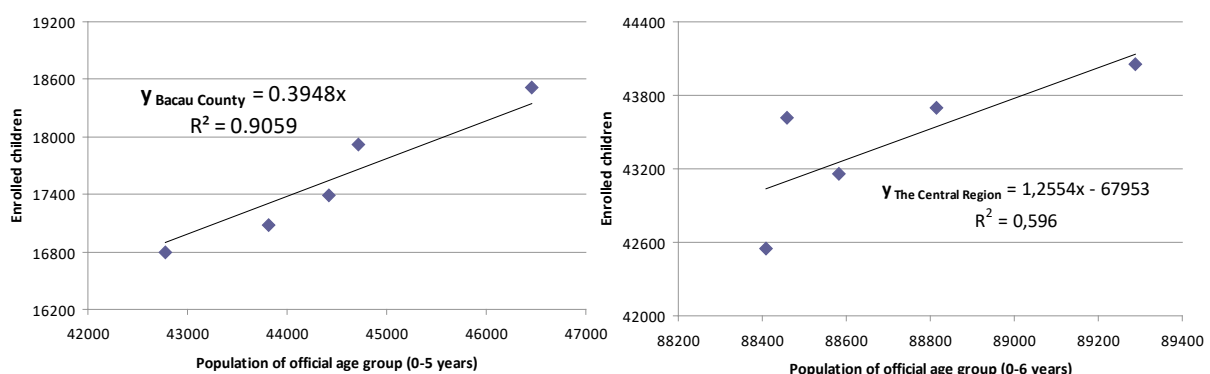


Figure 3: The existing link between the population of the official age group and the number of children registered in the early education institutions in Bacau County and the Central Region of the Republic of Moldova

Source: processing of the data collected from [5] and [8]

The determinant factor calculated for Bacau County data shows an influence of 90.6% of the population of the official age group on the number of children registered in the early education system, while for the situation of the Central Region of the Republic of Moldova the influence is only 59.6%, explainable by the small number of places in early education institutions (low number of such institutions in relation to demand).

The population's access to the cultural act, the knowledge of the aspects related to both the production and the cultural consumption are the basis of the analysis regarding the people's degree of culture. The main statistical indicators that characterize the cultural system refer to the activity of libraries, museums, entertainment and concert institutions, printing houses and those related to radio and television broadcasts.

Unfortunately, the lack of dissemination by the National Bureau of Statistics of the Republic of Moldova at the regional level of indicators specific to publishing activities and those related to radio and television broadcasts, led this analysis to focus only on the presentation of indicators specific to library activity, museums and cultural institutions. From the databases of the National Institute of Statistics of Romania and of the National Bureau of Statistics of the Republic of Moldova, the most recently published indicators were extracted for the study, related to a period of seven years (2013-2019), in order to follow in dynamics their evolution.

Chapter 3. Comparing the content and coverage of statistical indicators disseminated online by the official statistics in Romania and the Republic of Moldova - has as main purpose the presentation of the results of the study on comparative analysis of statistical indicators disseminated online by the two official institutions, through content, coverage area, but also time availability. The analysis carried out in this chapter, materialized in 25 annexes, had as main objective *the parallel presentation, from a methodological point of view, of the absolute and / or relative calculated statistical indicators, for all economic-social fields.*

In order to create these tables, the official websites of the National Institute of Statistics of Romania and the National Bureau of Statistics of the Republic of Moldova were studied, which provide users with free statistical databases that are easy to query (Tempo-Online and StatBank) and all publications made available on-line by these institutions. The indicators were presented at the most detailed level of dissemination, providing the image of the degree of "coverage" with statistical information in territorial profile, thus supporting statistical data users, researchers and all those interested in developing economic and social analysis.

The results of the study made by the author highlighted that there are a large number of common indicators from a methodological point of view, available in territorial profile, disseminated by NIS and NBS on population and its demographic structure, vital statistics and

internal and international migration. Centralization of statistical information available for subdomains such as: labor force, standard of living, social protection, education, research and development, culture, sports, agriculture, housing, transport, tourism, finance, foreign trade brings an advantage to Romania, not only in terms of the large number of indicators calculated, but also by the large number of publications available online. The Republic of Moldova is visibly different from Romania in terms of the number of statistical indicators calculated and disseminated online in the sub-domains: health, forestry, mail and telecommunications, internal trade and market services, justice and crime.

Considering the large volume of the comparative framework made for the domains / subdomains presented in the thesis, next we will exemplify from the domain: ***Population and its demographic structure, vital statistics and internal and international migration only one subdomain: Internal and international migration.***

Population and its demographic structure refers to the legally resident population, usually resident population or stable population, census population. The vital statistics provides information on live-birth, death, natural increase, wedding and divorce rate.

Internal and international migration captures the evolution of indicators on both internal and external migration. *Internal migration* determined by the change of permanent residence provides information on settling of domicile, departures from domicile and net settling of domicile, the data being available in Romania since 1990 (at county level - by urban/rural area, and for variables gender and age groups the dissemination is only at national level). In the Republic of Moldova, the Quarterly Statistical Bulletin provides information on these indicators at the national level (urban/rural area and main age groups), while the study of the on-line publication "Territorial Statistics" provides annual data at district level, by urban/rural area. In addition, Romania presents through the Tempo-online database (also since 1990) the situation of changes of residence, at locality level, but also the structure of urban and rural internal migration flows determined by permanent residence changing, at national level, both in absolute value and rates per 1000 inhabitants.

In Romania, the data is provided by the Tempo-online database, the years of availability are different depending on the level of dissemination as follows: for the situation of permanent emigrants / immigrants by permanent residence change, depending on nationalities and country of destination, the data are provided at national level since 1990, their situation according to gender and age groups at county level since 1992, and the dissemination of the total number by locations being carried out since 1994. Data on temporary emigrants / temporary immigrants - by usual residence set in Romania, are available at national level since 2008, and starting with 2012

these data are also available at county level, the main variables followed being: gender, age groups and urban/rural area.

Table 2: Comparing of the content and coverage of the indicators on Internal and international migration in the domain: Population and its demographic structure, vital statistics and internal and international migration.

<i>Internal and international migration</i>		National Institute of Statistics - Romania			National Bureau of Statistics of the Republic of Moldova			
Domain	Subdomain	Statistical indicator	Dimensions (Variables)	The most detailed level of dissemination	Statistical indicator	Dimensions (Variables)	The most detailed level of dissemination	
A. Social statistics	Changes of permanent residence	Settling of domicile	- gender - age group	National	Settling of domicile	- age group	National	
			- urban/rural area	County		- urban/rural area	Districts	
		Departures from the domicile	- gender - age group	National	Departures from the domicile	- age group	National	
			- urban/rural area	County		- urban/rural area	Districts	
		Net settling of domicile	- age group	National	Net settling of domicile	- age group	National	
			- urban/rural area	County		- urban/rural area	Districts	
		Settlings of the residence	- urban/rural area	County				
			- total	Locality				
		Departures of the residence	- urban/rural area	County				
			- total	Locality				
		Net settling of the residence	- urban/rural area	County				
		Settling of domicile (including international migration)	- total	Locality				
Departures from domicile (including international migration)	- total	Locality						

<i>Internal and international migration</i>		National Institute of Statistics - Romania			National Bureau of Statistics of the Republic of Moldova			
Domain	Subdomain	Statistical indicator	Dimensions (Variables)	The most detailed level of dissemination	Statistical indicator	Dimensions (Variables)	The most detailed level of dissemination	
	Emigrants and immigrants	Structure of urban and rural internal migration flows determined by permanent residence changing	- internal migration flows (number of persons and rates per 1000 inhabitants)	National				
		Permanent emigrants – by permanent residence change	- nationalities - country of destination	National				
			- gender - age group	County				
			- total	Locality				
						Emigrants	- country of destination - gender - age group	National
						Emigrants based on border crossing data	- gender - age group	National
		Permanent immigrants – by permanent residence change	- nationalities - country of origin	National				
			- gender - age group	County				
			- total	Locality				
						Immigrants	- country of destination - - purpose of arrival - nationalities - gender - children under 16 years - level of education	National
				Immigrants based on border crossing data	- gender - age group	National		

<i>Internal and international migration</i>		National Institute of Statistics - Romania			National Bureau of Statistics of the Republic of Moldova		
Domain	Subdomain	Statistical indicator	Dimensions (Variables)	The most detailed level of dissemination	Statistical indicator	Dimensions (Variables)	The most detailed level of dissemination
					Repatriates	- gender - nationalities - categories - country of emigration	National
					Refugees	- gender	National
					Asylum seekers	- gender	National
		Temporar emigrants - by usual residence change	- gender - age group - urban/rural area	County			
		Temporar immigrants - by usual residence change	- gender - age group - urban/rural area	County			

Source: Elaborated by the author based on data: [3], [4], [5] and [8].

If in Romania, the data on emigrants and immigrants have the same starting year in dissemination, the same cannot be said about the situation in the Republic of Moldova. All data on international migration are provided at national level, as follows: data on emigrants (by country of destination, gender and age groups) are available from 2001, and emigrants based on border crossing data (by gender and age groups) from 2014. Information on immigrants (country of emigration, purpose of arrival, nationality) has been available since 1993, and that of immigrants based on border crossings data (by gender and age group) since 2014. Data on repatriates are disseminated through the NBS database since 1994, the main variables followed being: gender, nationality, categories and country of emigration.

Two statistical indicators disseminated by the NBS through the annual publication: The Statistical Yearbook which are not available in Romania through the publications provided by the NIS are: refugees and asylum seekers.

The centralization of the number of statistical indicators calculated and disseminated on-line for the subdomain Population and its demographic structure, vital statistics and internal and international migration, is presented in table 3, and the number of indicators with associated variables is presented in table 4.

The category “Unavailable” includes either indicators that are not calculated by those countries or are calculated but have different calculation methodologies.

Table 3: Number of statistical indicators calculated and disseminated on the most detailed levels of dissemination, in Romania and the Republic of Moldova, for the subdomain: Population and its demographic structure, vital statistics and internal and international migration

		Republic of Moldova = 56		Unavailable
		National	District	
Romania=52	National	2		1
	County	9	10	11
	Locality	5	3	11
Unavailable		17	10	

Source: Elaborated by the author

Table 4: Number of statistical indicators depending on the associated variables calculated and disseminated on the most detailed levels of dissemination, in Romania and the Republic of Moldova, for the subdomain: Population and its demographic structure, vital statistics and internal and international migration

		Republic of Moldova = 172		Unavailable
		National	District	
Romania=166	National	25		14
	County	32	18	54
	Locality	4	4	15
Unavailable		65	24	

Source: Elaborated by the author

Chapter 4. Analysis of existing correspondences between statistical indicators available online and dissemination levels of official statistics published by Romania and the Republic of Moldova - presents the results of the study made by using the statistical programming language R on the analysis of existing correspondences between the most important levels of dissemination of statistical data from Romania and the Republic of Moldova and the names of statistical indicators provided online in the databases of official statistics from the two states, with dimensions (variables) followed, for all economic and social fields.

The analysis of the correspondences was performed separately on each domain / subdomain, thus offering those interested the possibility to obtain the image of the statistics they are interested in. The graphical representations complete the calculations which were made and are presented in a number of 23 annexes of the thesis (from Annex 31 to Annex 53).

The degree of attraction existing at the level of the two states of the disseminated indicators, ie highlighting the words (names) that are attracted by the categories that use them excessively and rejected by those that use them little It was presented simultaneously on the same graphical representation,

The realization of the confidence ellipses both for the two states with the most detailed levels of dissemination, and for the names of the indicators and associated variables contributes to a better comparative analysis of the availability of statistical indicators in administrative-territorial profile.

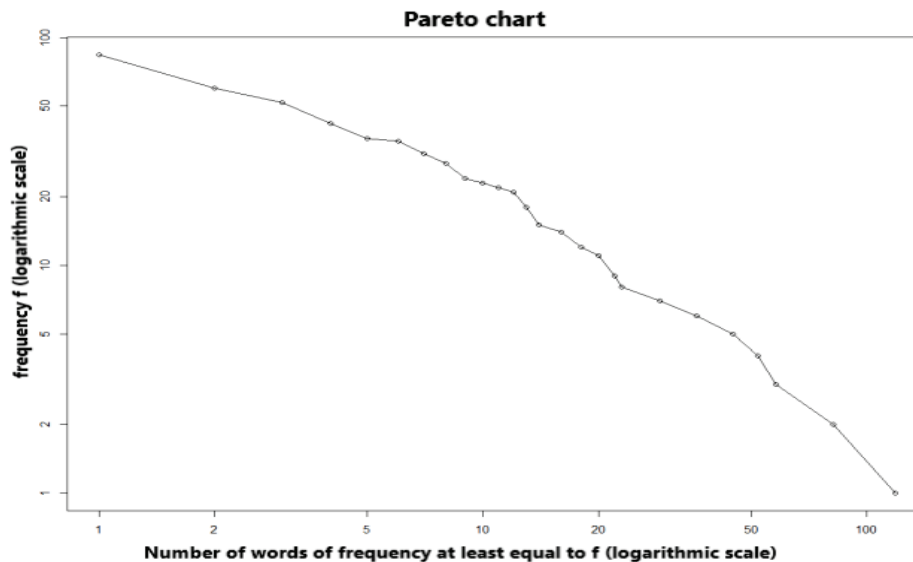
From the analysis of the corpus created based on the statistical indicators disseminated online by the two official statistical institutions, it was found that from the 154 existing documents, 53.2% are for Romania and 46.8% for the Republic of Moldova. The analysis by dissemination levels highlights a positive aspect in Romania, because the number of existing documents at lower levels (locality and county) exceeds the number at national level, the sum of the indicators practically increasing the number of documents at national level.

The structure by levels of document dissemination indicates that most were registered for the national level of the Republic of Moldova (49 documents, respectively 31.8%), followed by the county level with 45 documents (29.2%), the district level of The Republic of Moldova with 23 documents (14.9%), the locality level with 19 documents (12.3%), and the remaining 11.7% at the national level of Romania (18 documents).

Analysed by subdomains, the structure of this database indicates the large number of existing documents on the vital statistics (63%), 22.7% on the internal and international migration and 14.3% on the subdomain of population and its demographic structure.

The construction of the aggregate table (ALT) taking into account the frequency 43 as the minimum occurrence in the case of words and a minimum frequency of 6 in the case of occurrence in documents provides information on the most used words in the corpus under analysis. Thus, from the index of the 10 most common words used in demographic statistics, we find the preference for "averages", "age", "residence", "rate", "usual", "born", "gender", "group", "population" and "deaths".

Given that there are, at the same time, many rare words and very few more frequently used words, a Pareto chart is often used to represent the frequency range.



**Figure 4: Pareto chart for statistical indicators in the subdomain:
Population and its demographic structure, vital statistics and internal and international migration**
Source: Elaborated by the author using the statistical programming language R

After conditioning the minimum occurrences mentioned above, the selected part of the corpus consists of 601 occurrences of 10 distinct words. The lexical table has 5 categories of documents (rows) and 10 words (columns). The analysis of the ALT table (Aggregate documents x Word table) indicates the county level of Romania as the longest document with 213 appearances, and the name “averages” is the most frequently encountered, its occurrence being 84 times. Row profile analysis compared to average row profile indicates the most frequent use of the names of the available indicators or the variables below which they appear, at the following levels of dissemination, as follows:

- At national level in Romania: “age” (21.0%), “group” (16.1%), “born” (14.8%), 12.4% for “residence” and “usual” and “deaths ”(7.4%).
- At national level in the Republic of Moldova: “averages” (15.1%), “gender” (13.6%), “rate” (12.1%), “usual” (11.1%) and “deaths” (8.0%).
- At the level of Romanian counties: “averages” (19.3%), “rate” (13.2%), “residence” (13.2%), “usual” (10.3%) and “population” (8.5%).
- At the level of Romanian localities: “residence” (23.1%), 15.4% for “deaths”, “born” and “usual” and “population” (11.5%).
- At the level of the districts of the Republic of Moldova: “population” and “rate” with 21.4% each, “averages” (16.1%), “age” (12.5%), “born” (10.7%) and “gender” (8.9%).

The average row profile points out that, when grouped between different levels of dissemination, 'averages' is the dominant indicator (14.0%), followed by information on 'age' (12.2%), while the least common, with 7.3% of the total is: "deaths".

The analysis of the column profile indicates that the specific names of the indicators that characterize this field of statistics are found in uniform proportions, the highest being: "averages" and "rate" at the county level of Romania, in proportion of 48.8%, respectively 40, 6%. The average profile of the column or the centroid of the column shows an approximately equal proportion between the county and the national level of the Republic of Moldova (35.4%, respectively 33.1%), these being followed by the national level of Romania (13.5%), the level district (9.3%) and the level of localities (8.7%).

The ratio of the observed count with respect to the expected count for a given row point (document *i*) and column point (word *j*) measures the association between this document and this word. The calculation of the association rates and their analysis indicate a mutual "attraction" between the different levels of dissemination and the names of the available indicators, the values greater than 1 of these rates, calculated and presented in the annex, indicate the existing attraction. Thus, the most important associations, in descending order of the values of the association rates obtained are:

- ✓ the national level of Romania with: "group", "age", "born", "usual", "residence" and "deaths".
- ✓ the national level of the Republic of Moldova with: "gender", "averages", "rate", "usual" and "deaths".
- ✓ the county level in Romania with: "averages", "rate", "residence", "population" and "usual".
- ✓ the level of the localities in Romania with: "deaths", "residence", "born", "usual" and "population".
- ✓ level of districts in the Republic of Moldova with: "population", "rate", "births", "averages", "age" and "gender".

χ^2 calculated for this case is 112.5. The associated p value ($p = 8,4 \times 10^{-10}$) corresponds to the statistical significance of the result; the lower the p-value, the greater the significance. Here, the p-value is very small, much lower than 0.05, the usual threshold in practice. This leads us to reject the hypothesis of independence between documents and words.

Inertia is a measure of the variation or dispersion of individual profiles around the average profile and is a measure of the deviation from independence.

The correspondence analysis applied for the constructed LTD indicates a Cramer coefficient *V* of 0.216 and a total inertia of 0.187.

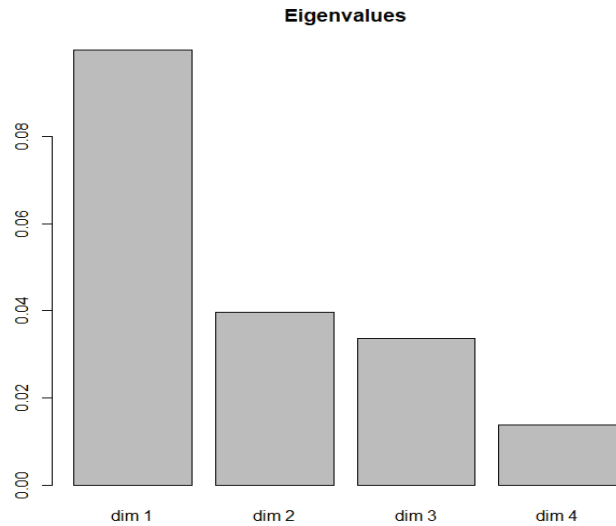


Figure 5: Eigenvalues associated with the factorial axes in the subdomain: Population and its demographic structure, vital statistics and internal and international migration
 Source: Elaborated by the author using the statistical programming language R

Simultaneous representation of rows and columns on the same graph is possible by using transition formulas that allow the transition from row space to column space and vice versa. On these axes, words are attracted to the categories that use them excessively and rejected by those who use them rarely.

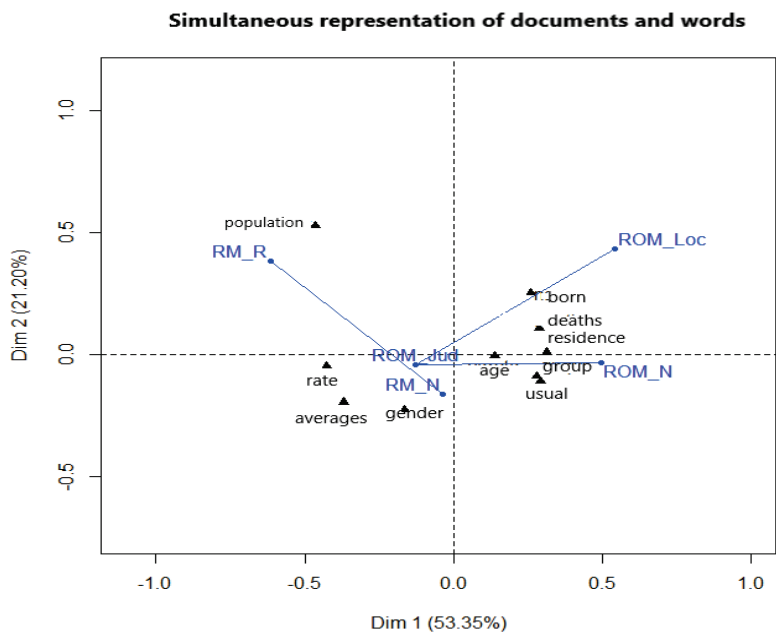


Figure 6: Simultaneous representation of data dissemination levels with the names of the indicators in the statistics Population and its demographic structure, vital statistics and internal and international migration
 Source: Elaborated by the author using the statistical programming language R

The first axis clearly contrasts the words “population” and “rate” that are overused at the level of the Republic of Moldova, with the name of “residence” overused at the level of Romania. "Age" is close to CoG, because it is used by all categories with a similar relative frequency (thus its projection is close to the average).

Regarding the second axis, which separates the levels of dissemination between the 2 states (except for the county level which is located in the dominant plan of the national) the names of "averages" and "gender" stand out on the negative side, due to excessive use of the national level of the Republic of Moldova, but also associated with the county level in Romania, while the word “population” has the highest positive value of the coordinate.

The representation of the confidence ellipses shows us that the overlap at the national level of the Republic of Moldova with the county level of Romania, as well as the slight overlap at the level of localities with the Romanian national, indicate that the names of statistical indicators and their variables are similar.

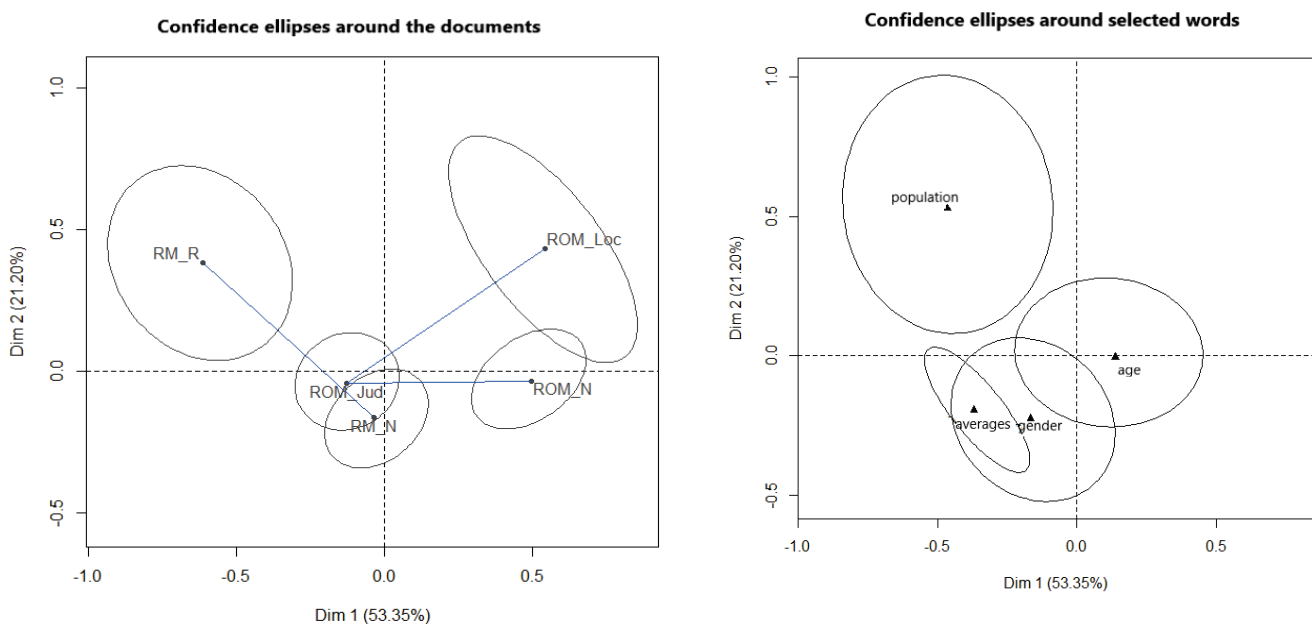


Figure 7: Validation of the representations. Left: representation of the confidence ellipses around documents (dissemination levels); Right: representation of the confidence ellipses around selected words in the statistics Population and its demographic structure, vital statistics and internal and international migration

Source: Elaborated by the author using the statistical programming language R

Regarding the graphical interpretation of the confidence ellipses for the words chosen for the graphical representation, it is found that the dissemination of statistical indicators specific to this field is available on the groups: "averages" and "gender", "age" and "gender".

GENERAL CONCLUSIONS AND RECOMMENDATIONS

Based on the study of the theoretical, methodological and applied aspects of the research, the following **conclusions** can be highlighted:

1. Ensuring quality regional statistics for the development of regional policies involves the production and dissemination of statistics in line with the best European and international practices. The volume, diversity and quality of statistical data disseminated by the two official statistical organizations are largely according to the requirements and standards of the EU. We are currently facing insufficient research in the field of comparative approaches to regional statistical developments, the evolution and impact of its development in substantiating the best regional development decisions.

2. Impossibility to carry out international, regional, dynamic and structural comparative analysis, due to the lack of statistical data in the system of indicators, the existence of different methodologies, the dissemination of different statistical indicators calculated on the same fields, their limited availability, variability, was exemplified by the extremely small number of comparative analysis that could be performed. Even for the analysed fields, all from the social one, the small number of statistical indicators calculated and disseminated at the level of the two countries, and mainly based on the existing statistical data at the level of Bacău County in Romania in parallel with the Central Region of the Republic of Moldova only facilitated the drawing of an overview of comparative situations, and not a detailed analysis so necessary for the micro and macroeconomic decision-making system.

3. The realization and presentation of a comparative framework of statistical indicators calculated and disseminated on-line by the official statistics of the two states, at the most detailed levels of dissemination, presented in a number of 25 annexes, completed with a description of their chronological availability, was a first step taken in the research. The results of the study present the determining of the image of the availability of statistical indicators in each economic and social field so necessary to carry out statistical research, but also of the directions that the official forums of the two states can take to improve their calculation and dissemination. The availability of statistical indicators on categorical or temporal dimensions emphasizes the degree of complexity and diversity of the dissemination of the calculated indicators, contributing to the overall image of what exists and what can be obtained. Another important aspect of the study is the presentation of the beginning of the availability of these data, being necessary to perform statistical analysis in dynamics to describe the image of economic and social development of the country, development regions or other administrative-territorial units. The existence of common

statistical indicators (from a methodological point of view) is not sufficient to make comparative analysis, if their chronological availability is not ensured.

4. Centralizing the number of statistical indicators, on the most detailed levels of dissemination in Romania and the Republic of Moldova, respectively grouping the number of statistical indicators according to the associated variables, for all economic and social fields allow an „x-ray” of the existing situation regarding the comparative availability of indicators. From a quantitative point of view. The results of the study made by the author highlighted that there are a large number of common indicators from a methodological point of view, available in territorial profile, disseminated by NIS and NBS on population and its demographic structure, natural and migratory movement. Centralization of statistical information available for subdomains such as: labor force, standard of living, social protection, education, research and development, culture, sports, agriculture, housing, transport, tourism, finance, foreign trade brings an advantage to Romania, not only in terms of the large number of indicators calculated, but also by the large number of publications available on-line. The Republic of Moldova is visibly different from Romania in terms of the number of statistical indicators calculated and disseminated on-line in the sub-domains: health, forestry, mail and telecommunications, internal trade and market services, justice and crime.

5. Another objective of the scientific research of this thesis was the simultaneous presentation on the same graphical representation of the degree of attraction by the two states of the disseminated indicators, ie highlighting the words (names) that are attracted by the categories that use them excessively and rejected by those that use them less. Using the statistical programming language R to analyse the existing correspondences between the most detailed levels of dissemination of statistical data in Romania and the Republic of Moldova and the names of statistical indicators provided on-line, with the dimensions (variables) followed covered all economic and social fields. The validation of the correspondence analysis was performed by making graphical representations of the confidence ellipses around the documents (dissemination levels), respectively of the graphical representations of the confidence ellipses around selected words for the domain or subdomain of the analysed statistics.

The important scientific problem solved in the field consists in creating comparative tables of statistical indicators disseminated online by INS and NBS, as well as determining of a correspondence analysis, with the help of the model developed with the statistical programming language R, for all economic and social fields. We consider that the results obtained in this thesis will facilitate the work of theorists and practitioners, giving them the image of the availability of

comparable statistical data, both methodologically and categorically, on levels of dissemination and time availability, at the level of the two states.

The large volume of statistical publications published by both the National Institute of Statistics and the National Bureau of Statistics of the Republic of Moldova, respectively the less easy access to them, determined that this investigation should be limited to studying statistical publications available on-line, respectively of studying the statistical indicators that are available by querying the databases of the two institutions.

Based on the above conclusions, we consider the following recommendations appropriate:

1. This analysis is a starting point for the two official institutions in order to improve their activity, their extensive and intensive development. Extensive development consists in calculating new relevant statistical indicators, necessary to adapt to the increasingly demanding information requirements of society, given the new demands for data on sustainable development, quality of life, protection of natural resources, gender disparities, etc. The specific and varied requests, more and more numerous, advanced by different categories of users for the territorial profile determine the orientation towards intensive development, which involves the calculation and dissemination of indicators already existing at national level, at lower administrative-territorial levels.
2. Providing users with "official numbers" of a wide range of uses facilitating quick and low-cost access must be the main objective of the official dissemination policy of the institutions.
3. The considerable extension of the system of indicators at county / district, regional level, in accordance with the requirements of the development policy in territorial profile must be a primary way to bring official statistical organizations closer to the requirements of users, by providing the necessary information, in conditions of comparability and quality.
4. Improving and diversifying the means of providing statistical data on-line, both by creating / developing dissemination methods in open (editable) format and by improving the database query system.
5. 5. The research results can be used at: theoretical-methodological level - *in the academic environment*, in the didactic process within the higher education institutions; *at macroeconomic level* - by the NIS and the NBS in order to improve the online dissemination activity of the calculated statistical indicators; *at the microeconomic level* - by companies, public institutions, professional associations, etc. in order to carry out research in their fields of interest, starting from the availability of official statistical data, depending on the detailing of the variables followed spatially and temporally.

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1. Articles in journals

1.1. In recognized foreign journals - databases supported by ANACEC

1. **Ciomârtan, Vasilica Lăcrămioara.** *Regional comparative approaches on population and main demographic phenomena – Bacau County of Romania versus the Central Region of the Republic of Moldova.* Studies and Scientific Researches. Economics Edition. No 25 (2017) Pp. 7-18, 0,434 p.s., ISSN: 2066-561X (print), ISSN: 2344-1321 (online). The journal is indexed in 11 BDI: *RePEc (Ideas, EconPapers, Socionet), DOAJ, Index Copernicus, Ulrich's Periodicals Directory, WorldCat, ECONIS (ZBW-German National Library of Economics), BASE (Bielefeld Academic Search Engine), ERIH PLUS, J-Gate Management, Google Scholar.*

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2. **Ciomârtan, Vasilica Lăcrămioara.** *The number of employees, basic statistical indicator in the evolution of the labor market. Comparative study based on data from Bacau County and the Central Region of Moldova.* Studies and Scientific Researches. Economics Edition. No 28 (2018) Pp. 39-47, 0,333 p.s., ISSN: 2066-561X (print), ISSN: 2344-1321 (online). The journal is indexed in 11 BDI: *RePEc (Ideas, EconPapers, Socionet), DOAJ, Index Copernicus, Ulrich's Periodicals Directory, WorldCat, ECONIS (ZBW-German National Library of Economics), BASE (Bielefeld Academic Search Engine), ERIH PLUS, J-Gate Management, Google Scholar.*

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1.2. In journals from the National Registry of Specialty Journals

1. Pârțachi, Ion; **Ciomârtan, Vasilica Lăcrămioara**. *The salary earnings, basic statistical indicator of labour market evolution. Comparative study based on data from Bacau County and the Central Region of Moldova*. ECONOMICA – scientific and didactic journal, Academy of Economics Studies of Moldova. No 4 (106)/2018 Pp. 112-130, 0,970 p.s., ISSN: 1810-9136. The journal has category B and is indexed in 4 Databases and International Catalogs.

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2. Articles in conference proceedings and other scientific events

1. **Ciomârtan, Vasilica Lăcrămioara**. *The Republic of Moldova and Romania, through of the Main Structural Indicators on Social Cohesion*. SCIENTIFIC SYMPOSIUM OF YOUNG RESEARCHERS - XV Edition (April 28-29, 2017) - Collection of articles Volume I - PHD STUDENTS – Contribution of young researchers to the development of economic sciences, Chisinau – 2017. Pp. 199-203, 0,157 p.s., ISBN 978-9975-75-877-2.

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3. **Ciomârtan, Vasilica Lăcrămioara**. *The particular aspects of on-line statistical data sources*. Materials / Theses of the International Scientific Symposium of the Young Researchers – Edition XVI (April 27-28, 2018), Chisinau, Pp. 26-29, 0,336 p.s., e-ISBN 978-9975-75-927-4.

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ADNOTARE

Ciomârtaș Vasilica-Lăcrămioara: „Abordări comparative privind dezvoltarea statisticii regionale (în baza datelor județului Bacău, România și regiunii Centru, Republica Moldova)”, teză de doctor în științe economice, Chișinău, 2021

Structura tezei: introducere, patru capitole, concluzii generale și recomandări, bibliografie din 218 de titluri, 56 de anexe, 156 de pagini de text de bază, 48 de figuri, 3 de tabele și 8 formule. Rezultatele obținute sunt publicate în 9 lucrări științifice.

Cuvinte-cheie: statistică, surse de date, statistici oficiale, regiuni statistice, dezvoltare regională, indicatori statistici, diseminare on-line, niveluri de diseminare, analiza corespondențelor.

Domeniu de studii: Specialitatea - 523.02 Statistică economică.

Scopul lucrării: îl constituie realizarea unei analize comparative a dezvoltării statisticii regionale prin prisma indicatorilor statistici calculați și diseminați la nivelul celor 2 țări, indicatori ce au la bază o metodologie asemănătoare, concomitent cu efectuarea unei analize a corespondențelor existente între denumirile indicatorilor statistici calculați și diseminați on-line și nivelurile administrativ-teritoriale cele mai detaliate de disponibilitate a acestora.

Obiectivele cercetării: prezentarea aspectelor conceptuale privind noțiunea de regiune, dezvoltare regională, tipologia regiunilor și prezentarea regiunilor statistice existente în România și Republica Moldova; identificarea și sistematizarea surselor de date - punct de pornire în orice analiză statistică; analiza statistică a dinamicii principalilor indicatori ce caracterizează dezvoltarea teritorială a județului Bacău comparativ cu Regiunea de Centru (abordările comparative privind indicatorii specifici statisticii sociale: populație și fenomene demografice, forță de muncă, sistem educațional, activitate culturală); compararea conținutului și ariei de acoperire a indicatorilor statistici diseminați on-line de statistica oficială din România și Republica Moldova, luând în considerare și disponibilitatea temporală a acestora; realizarea analizei corespondențelor existente între categoriile România și Republica Moldova, respectiv nivelurile cele mai detaliate de diseminare a datelor statistice din aceste țări și denumirile indicatorilor statistici furnizați on-line în bazele de date ale statisticii oficiale din cele două state, cu dimensiunile (variabilele) urmărite, analiză realizată cu ajutorul limbajului de programare statistică R.

Noutatea și originalitatea științifică: elaborarea tabelor comparative, pentru toate domeniile economico-sociale, referitoare la conținutul și aria de acoperire a indicatorilor statistici diseminați on-line de statistica oficială din România și Republica Moldova, luând în considerare aspectele metodologice și disponibilitatea temporală a acestora; realizarea, folosind limbajul de programare statistică R, a analizei corespondențelor existente între nivelurile cele mai detaliate de diseminare a datelor statistice din România și Republica Moldova și denumirile indicatorilor statistici furnizați on-line în bazele de date ale statisticii oficiale din cele două state, cu dimensiunile (variabilele) urmărite, pentru toate domeniile economico-sociale; evidențierea numărului extrem de redus de analize comparative, în dinamică și în structură, ce au putut fi efectuate între județul Bacău al României și Regiunea de Centru a Republicii Moldova, ca urmare a lipsei datelor statistice, a existenței unor metodologii diferite, a diseminării unor indicatori statistici diferiți calculați pe aceleași domenii dar care nu ajută la efectuarea de comparații sau determinarea unor indicatori derivați, a disponibilității limitate a acestora, a variabilității lor.

Rezultatele obținute care contribuie la soluționarea unei probleme științifice importante: în elaborarea unor tabele comparative de prezentare a indicatorilor statistici diseminați de INS din România și BNS al Republicii Moldova, în funcție de aspectele metodologice și de nivelul de disponibilitate, fapt care a condus ulterior și la aplicarea facilă a unui model de analiză a corespondențelor existente între denumirile indicatorilor statistici și nivelurile de diseminare a lor, a realizării elipselor de confidență pentru nivelurile de diseminare și pentru denumirile variabilelor asociate indicatorilor statistici, conducând astfel nu numai la stabilirea imaginii disponibilității indicatorilor statistici din fiecare domeniu economico-social atât de necesară în vederea realizării cercetărilor statistice, dar și a direcțiilor pe care forurile oficiale ale celor 2 state le pot întreprinde în vederea îmbunătățirii calculării și diseminării acestora.

Semnificația teoretică și valoarea aplicativă: rezidă din concluziile și recomandările aferente temei studiate, care vor contribui la perfecționarea sistemului statistic de indicatori calculați și diseminați.

Implementarea rezultatelor științifice: Rezultatele prezentei cercetări sunt recunoscute printr-un număr de 3 certificate de implementare, atât în demersul didactic și de cercetare a Facultății de Științe Economice din Universitatea "Vasile Alecsandri" din Bacău, cât și în activitatea practică de diseminare din cadrul Direcției Județene de Statistică Bacău și din cadrul Biroului Național de Statistică al Republicii Moldova.

АННОТАЦИЯ

к диссертации на соискание ученой степени доктора экономических наук: «Сравнительные подходы к развитию региональной статистики (на основе данных уезда Бакэу, Румыния и Центрального региона Республики Молдова)», Кишинев, 2021

автор: Чиомыртан Василика-Лэкрэмиоара

Структура диссертации: введение, четыре главы, выводы и рекомендации, библиография из 218 наименований, 56 приложений, 156 страниц основного текста, 48 рисунков, 3 таблиц и 8 формул. Результаты исследования опубликованы в 9 научных статьях.

Ключевые слова: статистика, источники данных, официальная статистика, статистические регионы, региональное развитие, статистические показатели, онлайн-распространение, уровни распространения, анализ соответствия

Направление исследования: Специальность - 523.02 Экономическая статистика.

Цель данной работы: сравнительный анализ развития региональной статистики с точки зрения статистических показателей, рассчитываемых и распространяемых на уровне этих двух стран. Показателей, которые основаны на аналогичных методологиях, при этом выполняется анализ существующих соответствий между названиями рассчитываемых статистических показателей, и распространяемых в режиме онлайн, а так же их доступности на различных административно-территориальных уровнях.

Научно-исследовательские задачи: представление концептуальных аспектов понятия региона, регионального развития, типологии регионов и описание существующих статистических регионов в Румынии и Республике Молдова; выявление и систематизация источников данных - отправная точка любого статистического анализа; статистический анализ динамики основных показателей, характеризующих территориальное развитие уезда Бакэу по сравнению с Центральным регионом (сравнительные подходы по показателям социальной статистики: население и демография, рабочая сила, система образования, культурная деятельность); сравнение содержания и области охвата статистических показателей, распространяемых в режиме онлайн, официальной статистикой Румынии и Республики Молдова, с учетом их временной доступности; анализ существующих соответствий между категориями используемыми, соответственно, в Румынии и Республике Молдова, подробное описание уровней распространения статистических данных в этих странах и названий статистических показателей, представленных онлайн в базах данных официальной статистики двух государств, с наблюдаемыми измерениями (переменными), анализ выполнен с использованием языка программирования R.

Научная новизна и оригинальность: разработка сравнительных таблиц по всем экономическим и социальным направлениям, касающихся содержания и охвата статистических показателей, распространяемых в режиме онлайн, официальной статистикой Румынии и Республики Молдова, с учетом методологических аспектов и их временной доступности; детальный анализ, с помощью языка программирования R, соответствий между уровнями распространения статистических данных в Румынии и Республике Молдова и названиями статистических показателей, представленных в режиме онлайн в базах данных официальной статистики двух государств с указанием параметров (переменных) для всех экономических и социальных областей; в работе подчеркивается чрезвычайно низкое количество сравнительных анализов как в динамике так и в структуре, которые можно было провести между уездом Бакэу Румынии и Центральным регионом Республики Молдова, из-за отсутствия статистических данных, существования различных методологий, распространение различных статистических показателей рассчитываемые для одних и тех же сфер деятельности, но не помогающие проводить сравнения или определять производные показатели, а так же их ограниченная доступность, и изменчивость.

Полученные результаты, которые способствуют решению важной научной задачи: разработка сравнительных таблиц для представления статистических показателей, распространяемых НИС Румынии и НБС Республики Молдова, в зависимости от методологических аспектов и уровня доступности, что позже привело к возможности применения определенной модели для анализа соответствий между названиями статистических показателей и уровнями их распространения, создания эллипсов достоверности для уровней распространения и названий переменных, связанных со статистическими показателями, что привело не только к созданию имиджа доступности статистических показателей в каждой экономической и социальной сфере, столь необходимого для проведения статистических исследований, а также направлений, которые официальные форумы двух государств могут использовать для улучшения их расчета и распространения.

Теоретическая значимость и практическая ценность: заключаются в выводах и рекомендациях по изучаемой теме, которые будут способствовать совершенствованию статистической системы рассчитываемых и распространяемых показателей.

Внедрение научных результатов: результаты этого исследования отмечены тремя сертификатами внедрения, в дидактический и исследовательский процесс на факультете экономических наук в Университете «Василе Александри» города Бакэу, в практическую деятельность по распространению информации, в Управлении статистики уезда Бакэу и в Национальном бюро статистики Республики Молдова.

ANNOTATION

Ciomârtan Vasilica-Lăcrămioara: „Comparative approaches regarding the development of regional statistics (based on data from Bacau county, Romania and Centre region, the Republic of Moldova)”, Phd thesis in Economics, Chişinău, 2021

Thesis structure: introduction, four chapters, general conclusions and recommendations, bibliography made of 218 titles, 56 annexes, 156 pages of main text, 48 figures, 3 tables and 8 formulas. The obtained results have been published in 9 scientific papers.

Keywords: statistics, data sources, official statistics, statistical regions, regional development, statistical indicators, online dissemination, dissemination levels, correspondence analysis.

Research field: Specialty - 523.02 Economic statistics.

The aim of the research is: to make a comparative analysis of the development of regional statistics in terms of statistical indicators calculated and disseminated at the level of the 2 countries, indicators based on a similar methodology, while performing an analysis of existing correspondences between the names of statistical indicators calculated and disseminated online and the most detailed administrative-territorial levels of their availability.

Research objectives: presentation of the conceptual aspects regarding the notion of region, regional development, typology of regions and presentation of the existing statistical regions in Romania and the Republic of Moldova; identification and systematization of data sources - starting point in any statistical analysis; statistical analysis of the dynamics of the main indicators that characterize the territorial development of Bacau County compared to the Central Region (comparative approaches on indicators specific to social statistics: population and demographic phenomena, labor force, education system, cultural activity); comparison of the content and coverage area of the statistical indicators disseminated online by the official statistics from Romania and the Republic of Moldova, considering their temporal availability; performing the analysis of the existing correspondences between the categories Romania and the Republic of Moldova, respectively the most detailed levels of dissemination of statistical data in these countries and the names of statistical indicators provided online in the official statistics databases of the two states, with the dimensions (variables) taken into consideration, analysis performed using the statistical programming language R.

The scientific novelty and originality: elaboration of comparative tables, for all economic and social fields, regarding the content and coverage of statistical indicators disseminated online by official statistics from Romania and the Republic of Moldova, considering the methodological aspects and their temporal availability; realization, with the statistical programming language R, the analysis of the existing correspondences between the most detailed levels of dissemination of statistical data in Romania and the Republic of Moldova and the names of statistical indicators provided online in the official statistical databases of the two states, with the dimensions (variables) pursued, for all economic and social fields; highlighting the extremely low number of comparative analyzes, in dynamics and structure, that could be performed between Bacau County of Romania and the Central Region of the Republic of Moldova, due to the lack of statistical data, the existence of different methodologies, the dissemination of indicators different statistics calculated on the same fields but which do not help to make comparisons or determine derived indicators, their limited availability, their variability.

The results that address important scientific issues' settlement consists in the elaboration of comparative tables for the presentation of the statistical indicators disseminated by the Romanian NIS and the NBS of the Republic of Moldova, depending on the methodological aspect and the level of availability, which later led to the easy application of a model for analyzing existing correspondences between the names of statistical indicators and their dissemination levels, the achievement of confidence ellipses for dissemination levels and for the names of variables associated with statistical indicators, thus leading only to establishing the image of the availability of statistical indicators in each economic and social field in order to carry out statistical research, but also of the directions that the official forums of the 2 states can currently undertake information about their calculations and dissemination.

Theoretical significance and practical value: result from the conclusions and recommendations related to the studied theme, which will contribute to the improvement of the statistical system of calculated and disseminated indicators.

Implementation of scientific results: The results of this research are recognized by a number of 3 implementation certificates, both in the teaching and research approach of the Faculty of Economic Sciences at the University "Vasile Alecsandri" Bacau, and in the practical dissemination activity within of Statistical County Directorate Bacau and the National Bureau of Statistics of the Republic of Moldova.

CIOMÂRTAN VASILICA-LĂCRĂMIOARA

**COMPARATIVE APPROACHES REGARDING THE DEVELOPMENT OF
REGIONAL STATISTICS (BASED ON DATA FROM BACAU COUNTY, ROMANIA
AND CENTRE REGION, THE REPUBLIC OF MOLDOVA)**

Scientific specialty: 523.02 ECONOMIC STATISTICS

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