

# **Economic and Financial Efficiency, Correlated with the Dimension of the Human Resources used by Companies in the Industry and Agriculture Fields in Constanta County, Romania**

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## **Abstract**

*This paper presents a quantitative research of a database based on two economic and financial indicators: the "value added" and the "average number of employees" registered and reported during 2016 and 2017 by the companies operating in Constanta County, which belong to four fields of activity, corresponding to the Classification of Activities in the National Economy (CAEN): "Agriculture, forestry and fishing", "Extractive industries", "Manufacturing industry" and "Construction".*

*The results obtained by processing the database have created the framework for a comparative and dynamic analysis regarding the particularities and the contribution of each selected field of activity to the economy of Constanta County, over the analyzed period.*

*The specificity of this study is that it started from a microeconomic approach, and the meso-economic level has been reached after processing the database. Interpretation of the results can be used to inform and determine decisions at all economic levels.*

**Key words:** balance sheets, indicators, companies, evolution, county

**J.E.L. classification:** C10, C40, M10, M20, M21, O11, O12

## **1. Introduction**

Any economic study, regardless of its objective and the level at which it is done, involves the use of information. The creation of databases is a complex activity, which implies registration, measurement of economic phenomena, transmission of information to different institutions (corresponding to the national and European legal framework) in order to be centralized and processed, so that, in the end, the information is accessible to all stakeholders (business sector, political sector, academic sector, etc.). In conducting this study, we have used available information provided by the Ministry of Public Finance, the National Institute of Statistics, Constanta County Department of Statistics, and the Chamber of Commerce, Industry, Navigation and Agriculture (CCINA) Constanta, which we have processed and interpreted. (Constanta Chamber of Commerce, Industry, Navigation and Agriculture, 2017 and 2018; Statistics Directorate Constanta, 2018; Ministry of Public Finance).

## **2. Theoretical background**

The classification of the activities within the national economy was carried out by the National Institute of Statistics (NIS) in order to ensure the specific organization of the information, in accordance with the requirements of the market economy and the transition to the system of national accounts (National Institute of Statistics, 2007). CAEN has replaced the Classification of Branches of the National Economy - CREN, implemented in Romania in 1963, based on the provisions of the Council of Ministers' Decision (HCM) no. 483/1962.

The legal framework for the elaboration and implementation of CAEN at national level was ensured by Government Decision no. 575/1992 on creating unitary nomenclatures of general interest provided in the general context of computerization in Romania (National Institute of

Statistics, 2007) and by Decision no. 656/1997 on the Classification of Activities in the National Economy - CAEN. According to these normative acts, CAEN becomes the unitary framework of general interest, the use of which is mandatory for organizing information regarding economic and social activities. Furthermore, CAEN also applies to all areas of economic and social activity and is mandatory for all central and local public administration bodies, budget units, economic agents, regardless of the type of ownership, employers' organizations, trade unions, professional and political organizations, foundations, associations and other natural and legal persons, when completing official documents whenever it is required to specify the activity. (National Institute of Statistics, 2007).

In collaboration with the National Trade Register Office and the Chamber of Commerce and Industry of Romania, NIS introduced CAEN gradually, between 1993 and 1997, into the national statistical and economic system. At the same time, CAEN was updated twice in the 1997 – 2007 period: in 2002 (CAEN Revision 1) and in 2007 (CAEN Revision 2). (National Institute of Statistics, 2007).

CAEN allows the collection of data on homogeneity criteria regarding "statistical units" (represented by an economic entity) and creates "the basis for the preparation of a wide range of statistical data (production, production factors, capital formation and financial transactions) of these units". (National Institute of Statistics, 2007, p. 1)

The emergence of new activities and products (an increasingly obvious phenomenon), due to new technologies and the change in economic structures, must be seen as a constant challenge for statistical classifications. One can say that, at present, at the European Union level, there is an integrated system in which the different classifications have been harmonized and each country has established the appropriate national system. The current structure of CAEN (respectively, CAEN Revision 2) is compatible with The Statistical Classification of Economic Activities in the European Community - NACE Revision 2. Moreover, CAEN Revision 2 is harmonized with ISIC Revision 4 (International Standard Industrial Classification of All Economic Activities). (National Institute of Statistics, 2007).

### **3. Research methodology**

In this quantitative research (Jugănar, M., 1998), selected data from a large database were used, comprising a series of economic indicators that companies are required to transmit. (Matiș D. *et al*, 2007 ; Accounting Law no. 82, 1991; Ministry of Public Finance, 2014 ).The database, processed at Constanta Chamber of Commerce (CCINA), is represented by the information recorded in the financial and accounting balance sheets from 26,978 companies in 2016 and 28,292 companies in 2017. (Constanta Chamber of Commerce, Industry, Shipping and Agriculture, 2017 and 2017 ; Ministry of Public Finance). To ensure that the results obtained through processing are correct, the companies that reported zero turnover and declared a number of zero employees were excluded from the initial database. After this filtering, 11,186 companies for the year 2016 and 11,945 companies for the year 2017 were kept in the study. The information recorded in the companies' financial and accounting balance sheets was grouped according to the field of activity (corresponding to the CAEN classification), out of which, for this study, the following four fields were selected: "Agriculture, Forestry and Fisheries", "Extractive industries", "Manufacturing industry" and "Construction".

For the data processing, the system of absolute, relative and mean indicators of chronological series (Aivaz, K., 2007a, Aivaz, K., 2007b) was used, and the SPSS software program was used for information systematization and statistical indicators calculation (Field, A. 2009).

### **4. Data, results and discussion**

In this study, a limited database was used, represented by the economic and financial indicators: "value added" and "average number of employees" in the 2016-2017 period, reported by the companies operating in Constanta County, from four fields of activity.

At the database processing stage, a statistical description of the value added and the average number of employees was made using the following statistical indicators: the average level (mean), the number of companies (N), the aggregate value of the financial indicators (Sum), the lowest value of the analyzed financial indicator (Minimum), respectively the highest (Maximum), amplitude variation (Range), the structure of the financial indicator - value added (% of Total Sum) and the structure of the number of firms (% of Total N). The results obtained are presented in the table below.

Table no.1. The statistical description of "value added" and "average number of employees" in the companies operating in Constanta County, in the 2016-2017 period, grouped into four fields of activity

Report 2016			Report 2016		
CAEN group		Value added	Average number of employees	Value added	Average number of employees
<b>Agriculture, forestry and fishing</b>	Mean	832659.46	5.80	790843.60	6.06
	N	729	729	773	773
	Minimum	-408538	1	-17209311	1
	Maximum	15352537	148	20557739	156
	Range	15761075	147	37767050	155
	Sum	607008746	4231	611322106	4685
	% of Total Sum	7.2%	3.1%	6.8%	3.5%
	% of Total N	3.9%	3.9%	3.9%	3.9%
<b>Extractive Industries</b>	Mean	716031.92	11.36	-3020424.85	16.06
	N	39	39	34	34
	Minimum	-1937727	1	-133816679	1
	Maximum	6474927	85	12663033	162
	Range	8412654	84	146479712	161
	Sum	27925245	443	-102694445	546
	% of Total Sum	.3%	.3%	-1.1%	.4%
	% of Total N	.2%	.2%	.2%	.2%
<b>Manufacturing industry</b>	Mean	1208857.64	17.84	1185611.87	16.02
	N	1467	1467	1468	1468
	Minimum	-1627707	1	-18474272	1
	Maximum	671486448	2389	614247620	1988
	Range	673114155	2388	632721892	1987
	Sum	1773394159	26169	1740478230	23519
	% of Total Sum	21.1%	19.5%	19.5%	17.5%
	% of Total N	7.9%	7.9%	7.4%	7.4%
<b>Construction</b>	Mean	412848.31	8.96	382008.05	8.12
	N	1473	1473	1529	1529
	Minimum	-4511623	1	-30308786	1
	Maximum	21806236	558	44095930	414

Range	26317859	557	74404716	413
Sum	608125562	13203	584090312	12417
% of Total Sum	7.2%	9.8%	6.5%	9.2%
% of Total N	7.9%	7.9%	7.7%	7.7%

Source: Data obtained by processing the information from the financial and accounting balance sheets of companies operating in Constanta County

1. In 2016, the field of activity "Agriculture, forestry and fishing" had a share in the contribution to the economy of Constanta County of 7.2% and 6.8% in 2017. One can see that the number of companies operating in this field increased, over the analyzed period, from 729 in 2016 to 773 in 2017. This was accompanied, on the one hand, by the increase in total value added from 607,008,746 lei in 2016 to 611,322,106 lei in 2017 and, on the other hand, by the decrease in the mean level of value added from 832,659.46 lei in 2016 to 790,843.60 lei in 2017. The number of employees in this field of activity increased, both in absolute value: from 4,231 employees in 2016 to 4,685 employees in 2017, and in terms of mean value: from 5.8 in 2016 to 6.06 employees in 2017. Moreover, 3.1 % in 2016 and 3.5% in 2017 of the total number of employees of the companies operating in the county is concentrated in the field of activity "Agriculture, Forestry and Fisheries". In CAEN Revision 2 (National Institute of Statistics, 2007,p.15) all the activities included in this field are presented, however, for Constanta County we consider the following to be representative: Cultivation of non-permanent plants; Cultivation of plants from permanent crops; Animal breeding; Hunting; Forestry and logging; Fisheries and aquaculture.

2. The Extractive Industries is the field of activity which, in 2016, had a contribution rate to the value added in Constanta County of 0.3%, and in 2017 of -1.1%. With a smaller number of companies (34 in 2017, compared with 39 in 2016), but with a higher number of employees (546 in 2017, compared to 443 in 2016), this area of activity has seen a decrease in the value added indicator level. It should be noted that from 27,925,245 lei (total value added / summed up in 2016), the negative level reached was -10,2694,445 lei (total value added / summed up in 2017). While in 2016 the average value added was 716.031,92 lei, in 2017 the value was negative (-3,020,424.85 lei). In Constanta County, the following activities can be found in this field (according to CAEN Revision 2 (National Institute of Statistics, 2007, p.17) : Extraction of crude oil and natural gas; Extraction of ores; Extraction of stone, sand and clay.

3. The Manufacturing Industry is said to be the field of activity (of the four analyzed) with the highest contribution rate to the value added in Constanta county, i.e. 21.1% in 2016 and 19.5% in 2017.

The number of companies operating in this field of activity is almost unchanged: 1,467 in 2016 and 1,468 in 2017, but in terms of share, it decreased, from 7,9% to 7,4%. The two analyzed indicators registered a decreasing trend. The total value added decreased from 1,773,394,155 lei in 2016 to 1,740,478,230 lei in 2017, and in terms of mean level the decrease was from 1,208,857.64 lei in 2016 to 1,185. 611.87 lei in 2017. If in 2016 in this field of activity there was a total number of 26,169 employees, in 2017 there were 23,519 employees. Similarly, the share of employees in the manufacturing industry dropped from 19.5% in 2016 to 17.5% in 2017. Among the activities included in this field (corresponding to the CAEN), which are present in the economy of Constanta County, are: Food industry; Manufacture of wearing apparel; Woodworking, manufacture of wood and cork products, except manufacture of furniture; Binding and related services; Manufacture of petroleum products; Manufacture of chemicals and chemical products; Manufacture of pharmaceutical base products and pharmaceutical preparations; Manufacture of cement, lime and plaster; Cutting, shaping and finishing of stone. (National Institute of Statistics, 2007, p.19)

4. The "Construction" field of activity had a share of 7.2% in 2016, respectively 6.5% in 2017 in the value added in Constanta County. In this field of activity, the total value added decreased from 608,125,562 lei in 2016 to 584,090,312 lei in 2017, and the mean value added decreased from 412,848.31 lei to 382,008.05 lei, over the same period. The total number of employees decreased in absolute value, from 13,203 in 2016 to 12,417 in 2017, and also in terms of average number of

employees, from 8,96 in 2016 to 8,12 employees in 2017, and in terms of share, from 9.8% to 9.2%, within the time frame. The activities in this field (according to CAEN), present in the economy of Constanta County, refer to: Building construction; Road and railway construction works; Hydrotechnical structures; Special construction works. (National Institute of Statistics, 2007, p.41)

## 5. Conclusions

This analysis highlights relevant aspects of the economic activity's evolution, recorded at the meso-economic level, in terms of the changes shown (and expressed in absolute and relative terms) of the "value added" and "number of employees" indicators.

The four fields of activity analyzed had a contribution rate to the total value added (aggregate) in Constanta County of 35.8% in 2016 and 31.7% in 2017.

Only in the "Agriculture, Forestry and Fisheries" field the "value added" indicator (in absolute terms) increased in 2017, compared to 2016.

In all the fields of activity, the mean value of the "value added" indicator decreased in 2017, compared to 2016.

In three fields of activity: "Agriculture, Forestry and Fishing", "Manufacturing industry" and "Construction" the number of companies in operation increased over the analyzed period, but the number of employees increased only in Agriculture (total and average value).

Unlike the other fields, the "Extractive Industries" field of activity is characterized by the negative trend recorded in 2017 by the "value added" indicator.

The values obtained by processing the database show that in 2017 the results registered by the companies in each field of activity, on the one hand, and by the four fields, viewed as a whole, on the other hand, decreased compared to 2016. This study emphasizes only the trend manifested in the evolution of the activity, it does not analyze the causes / phenomena which determined this evolution.

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