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INVESTMENTS IN HIGH TECHNOLOGY COMPANIES IN ROMANIA AND IN THE EUROPEAN UNION

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***Abstract*—**The paper presents the evolution of some indicators regarding the evolution of some indicators in high – tech companies also in Romania as well as in the European Union. The indicators take into consideration refers to total expenses of the companies that activates in this field as well as the evolution of the personnel which works in high – tech technology companies. It is presented also the high-tech technology exports also in Romania and in the European Union. The paper also wants to present a prediction of those indicators for the next three years. In the same time the paper contain a correlation between the whole expenses of the high – tech technology companies and the number of employees also in Romania as well as in the European Union.

***Keywords*—** correlation, employees, expenses, high-tech technology companies**,.**

I. INTRODUCTION

THE present technological level of many fields of activity like medicine, aeronautics, software products and so on, as well as the high interest in implementing those technologies, requires a close attention of high – tech technology companies [1].

The paper presents the evolution of two indicators from high-tech technology in Romania and in the European Union.

The objectives of this paper are:

-to analyze the evolution of total expenses of the companies from high-tech technology and, in the same time the evolution of the employees from those companies in Romania and in the European Union;

-to make some predictions regarding the total expenses and the personnel for the next three years also in Romania and in the European Union;

-to determine if it is any correlation between the total expenses supported by the companies from high-tech sectors and the number of employees from these companies.

The analyze is based on official statistical information (EUROSTAT) and refers to a comparison between Romania and the European Union average (27 countries).

II. HIGH-TECH TECHNOLOGY COMPANIES EXPENSES

The evolution analyze take into consideration five years, between 2006 and 2010 and the dates are expressed in millions of euro.

The evolution of the total expenses in the high – tech technology companies during 2006-2010 in Romania and in the European Union is presented in the next table:

TABLE I
TOTAL EXPENSES IN THE HIGH – TECH TECHNOLOGY COMPANIES DURING 2006-2010 IN ROMANIA AND IN THE EUROPEAN UNION

Year	Total expenses EU (millions of euro)	Total expenses Romania (millions of euro)
2006	127.127	163
2007	137.301	215
2008	145.942	272
2009	151.598	242
2010	146.012	223

The weight of total expenses of high – tech technology companies in Romania comparison with the European Union is presented in the next table:

TABLE.II
THE WEIGHT OF TOTAL EXPENSES OF HIGH – TECH TECHNOLOGY COMPANIES IN ROMANIA COMPARISON WITH THE EUROPEAN UNION

Year	Weight (%)
2006	0,13
2007	0,16
2008	0,19
2009	0,16
2010	0,15

From the previous table we can observe that during those five years the weight of total expenses of high – tech technology companies in Romania comparison with the European Union increase in the first three years from 0,13% in 2006 to a maximum of 0,19 % in 2008. In the next two years those expenses began to decrease and in 2010 rich to a level of 0,15% weight from the European Union level.

III. . HIGH-TECH TECHNOLOGY COMPANIES EXPENSES EVOLUTION IN ROMANIA

The evolution of the total expenses in the high – tech technology companies during 2006-2010 in Romania is presented in the next figure:

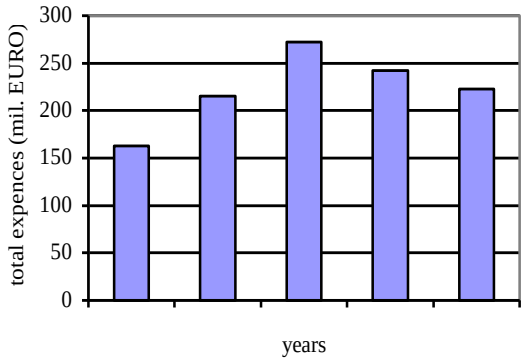

Fig. 1. Total expences in the high – tech technology companies during 2006-2010 in Romania

Applying the statistical indicators of chronological series we can observe that during the analyzed period in Romania, the total expenses increases with 31% in 2006 and with 26 % in 2007 comparison with the previous year, in absolute values meaning increases with 52, respective 57 millions of euro.

In the next two years the total expenses in the high – tech technology companies in Romania decreases with 30 millions of euro (12%) in 2009 comparison with the previous year 2008 and with 19 millions of euro (8%) in 2010 comparison with 2009.

Comparison with the firs year 2006 we can observe that the total expenses increase in 2007 with 52 millions of euro, meaning with 31%, and a maximum increase in 2008 with 109 million of euro, meaning with 66 %.

After that period the total expenses increase also comparison with 2006 but not so much, meaning with 79 million of euro in 2009 (48%) and with 60 millions of euro in 2010 (36%).

In average, in Romania, during the entire analyzed period 2006-2010, the total expenses in the high – tech technology companies increases every year with 15 millions of euro, meaning 10,14% in each year.

IV. . HIGH-TECH TECHNOLOGY COMPANIES EXPENSES EVOLUTION IN THE EUROPEAN UNION

The evolution of the total expenses in the high – tech technology companies during 2006-2010 in the European Union is presented in the next figure [2]:

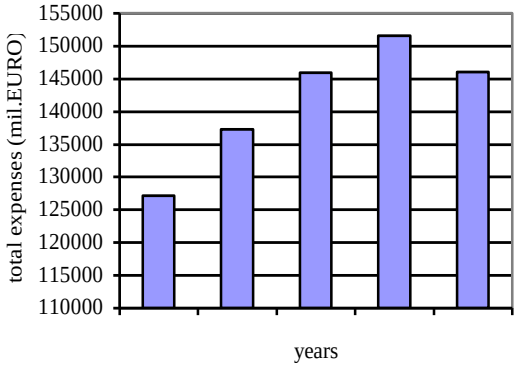

Fig. 2. Total expenses in the high – tech technology companies during 2006-2010 in the European Union

In the European Union, the evolution of total expenses of high-tech technology companies, comparison with the firs year of the series shows that these expenses increase with 10.174 millions of euro in 2007, meaning with 8%, with 24.471millions of euro in 2008 and in 2009, meaning an increase with 19% and in 2010 with 18.885 millions of euro meaning with 14%.

Taking into consideration the evolution for the previous year the situation shows that the main increase was in 2007 comparison with the previous year 2006 with 10.174 millions of euro (8%). In the next two years the expenses increases also, but not so much, with 8641millions of euro in 2007 (6%), 5656 millions of euro in 2009, meaning with 3%.

In the last year of the analyzed period 2010 the total expenses decrease with 5586 millions of euro meaning with 4% less than in the previous year 2009.

In average, in every year of the analyzed series in the European Union were spend 141.596 millions of euro. In the same time every year, in average, the total expenses of high-tech technology companies increase with 4721,25 millions of euro, 4,21%.

V.. THE HIGH-TECH TECHNOLOGY COMPANIES EMPLOYEES

In the analyzed period 2006-2010 the evolution of the employees in high-tech technology companies is presented in the next table [2]:

TABLE III
THE EVOLUTION OF THE EMPLOYEES IN HIGH-TECH TECHNOLOGY COMPANIES

Years	Number of employees Romania	Number of employees European Union
2006	16.647	1.304.106
2007	14.438	1.397.161
2008	13.468	1.459.814
2009	12.144	1.538.666
2010	11.147	1.534.439

From the previous table we can observe that during those five years the weight of employees of high – tech technology companies in Romania comparison with the

European Union decrease during the whole period from 1,27% in 2006 to 0,73% in 2010.

VI. THE HIGH-TECH TECHNOLOGY COMPANIES EMPLOYEES IN ROMANIA

During the analyzed period the high-tech technology companies employees evolution in Romania is presented in the next figure [3]:

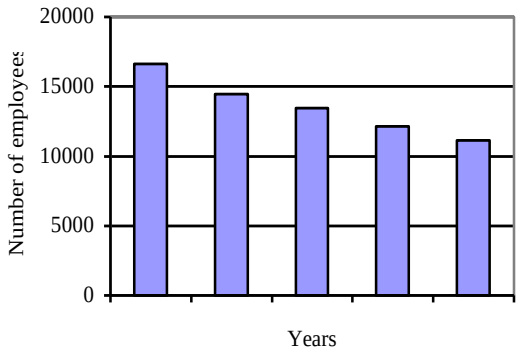

Fig. 3. The high-tech technology companies employees evolution in Romania

In Romania the number of employees hired in high-tech technology companies decrease continuous during the period analyzed with 14%, 7%, 10%, and with 9% in the last year 2010 comparison with the previous year.

That means a decrease with 2209 employees in 2007 and with 997 employees less in 2010.

In average every year the number of employees from those companies decrease with 1375 persons meaning with 13,16%.

VII. THE HIGH-TECH TECHNOLOGY COMPANIES EMPLOYEES IN THE EUROPEAN UNION

At the European Union level the evolution of in high-tech technology companies' employees is presented in the following figure [2].

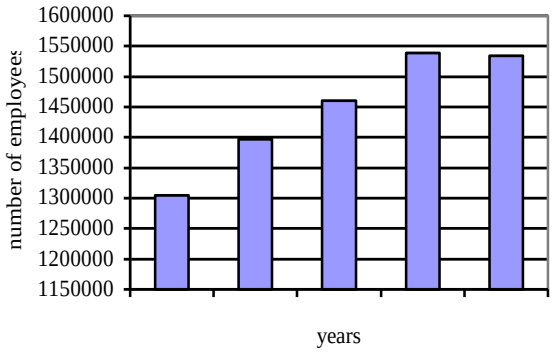

Fig. 4. The evolution of in high-tech technology companies employees in the European Union

During the analyzed period 2007-2010 in European Union the number of employees increases for the first four years with 7%, 4%and 5% comparison with the previous year, meaning with 78.852 employees more in 2009.

In 2010 comparison with the previous year 2009 the number of employees decreases with 4227 persons, meaning with 1%.

In average the number of employees increase every year with 57.583,25 persons, meaning with 4,97%.

VIII. HIGH-TECH TECHNOLOGY EXPORTS IN ROMANIA AND IN THE EUROPEAN UNION

In this part of the paper it will be analyzed information about advanced technology or high-tech in Romania and in the European Union.

To create, to exploit and to commercialize new technologies is essentials to ensure competitively for companies and those companies are the main actors for economic development, social protection, productivity and, in general a very well paid jobs [4].

At global level, the value of high-tech products exports represented 16% from total exports value in 2011. World leaders in this field are China with 21,6%, European Union with 15,9% and United States with 13,5%.

In Romania the high technology exports evolution during 2006-2010 is shown in the next figure:

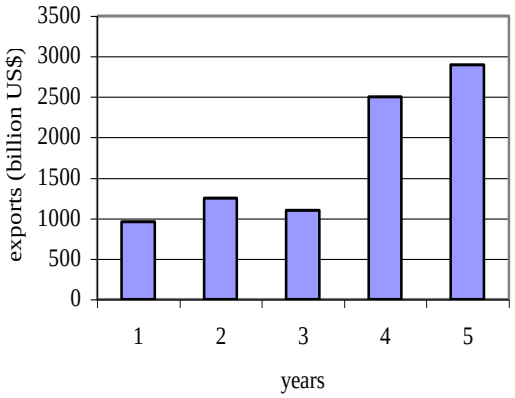

Fig. 5. High technology exports evolution in Romania

The export tendency in Romania shows that in 2007 we had an increase with 30,21%comparison with the previous year 2006. In the following year it was a decrease with 12,0%.

The next two years bring to Romania a large increase of high technology exports, meaning with 127,7% more in 2009 comparison with 2008, and with 16% more in 2010 comparison with the previous year 2009.

Comparison with other countries in the European Union, we can observe that the most important countries in created new technologies are Germany, Great Britain, Sweden, Denmark, Finland, Belgium, France and Austria [5].

Together those countries has 35 regions of research in high technologies and use 45,0% of total research expenses in the European Union.

At the European Union level, the evolution of the analyze indicator is presented in the next figure [6]:

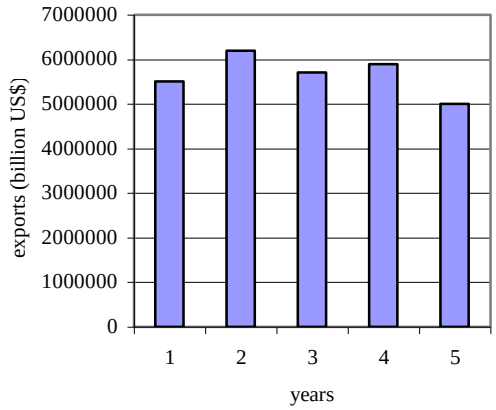

Fig. 6. High technology exports evolution in the European Union

In the European Union the evolution of high technology exports fluctuated during the analyzed period.

Thus, in 2007 it was registered an increase with 12,73% comparison with the previous year 2006. In the next year 2008 we can observe a decrease of exports with 8,06% than an increase with 3,51% and again a decrease in 2010 with 15,25% comparison with the previous year 2009.

IX. . PREDICTION AND CORRELATION OF EXPENSES AND THE NUMBER OF EMPLOYEES

For the prediction the research take into consideration three methods of prediction.

After the results we can say that the best method was the medium deviation method because generates smaller deviations than the others.

After the model application it results that for the next three years for the European Union the total expenses in high-tech technology companies will be: 150.733 millions of euro in 2011, 155.455 millions of euro in 2012 and 160.176 millions of euro in 2013.

For Romania, the predicted values are: 238 millions of euro in 2011, 253 millions of euro in 2012 and 268 millions of euro in 2013.

The correlation showed that between the two variables exists an indirect link. The Person correlation coefficient value is -0,65515 meaning an inverse correlation. The correlation ratio shows that the number of employees influenced the total expenses in 42,92%, the rest of 57,08 meaning the other factors influence [7].

For the exports of high technology the prediction is positive also for Romania and for the European Union.

In Romania the tendency was positive almost the entire period with a single exception in 2008. The prediction shows that the evolution will be positive during the following years and after three years could reach 5 billion US $ [8].

In the European Union , even the evolution of exports of high technologies fluctuated the prediction shows an increase in the next three years at over 600 billion US$.

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