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# THE ANALYSIS OF THE INTERDEPENDENCE BETWEEN TURNOVER AND NET PROFIT IN IT COMPANIES IN ROMANIA

Case  
Study

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## Keywords

*Turnover,  
Net profit,  
Correlation,  
IT industry*

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## JEL Classification

*C01, E32, E51, I31, O15, O57*

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## Abstract

*This study aims to present an econometric analysis that shows the interdependence between the turnover and the net profit, being achieved by a number of 65 companies operating in the IT industry from all regions of Romania. To achieve the objectives, the research aims to analyze the dynamic (quarterly) relationship between turnover and net profit in the IT sector. The usefulness of this research follows the ever-increasing evolution of this new industry, which, from year to year, succeeds to impose itself in the service sector in Romania, exceeding the established sectors in the GDP.*

## INTRODUCTION

Through this study, we achieved an econometric analysis, which shows the existing interdependence between turnover and net profit, this being achieved by a number of 65 companies working in the IT industry in all regions of Romania, whose code of Classification of National Economy Activities (NACE) is 6201's Activities to develop custom software (software-oriented client).

To achieve the proposed objectives, the research aims to analyze the dynamic (quarterly) relationship between turnover and net profit in the IT sector. The usefulness of this research follows the ever-increasing evolution of this new industry, which, from year to year, succeeds to impose itself in the service sector in Romania, exceeding the established sectors in the GDP.

## IT INDUSTRY IN ROMANIA

This industry is relatively new for the Romanian economy, but it has been working for a very long time. We can find companies that have been active in the sector even since the 1990s, but the real boom began in the 2000s, precisely with the accession to European Union. Thus giant companies such as Microsoft, IBM, Oracle, Intel, etc. begin to make their appearance in Romania, where they found people highly professionally trained with a competitive salary cost. The number of IT companies increased between 2011-2016, from 9.823 to 14.339, forecasting that it will exceed 17.000 at the end of 2017. All these increases are also reflected in GDP formation, IT industry being one of the most important sectors for years leading to GDP growth. There is a strong increase in 2011-2014 in GDP formation compared to other industries, then a slight decrease for the period 2015-2016 (Table No. 1). This situation is the result of the still-present effects of the financial crisis on other industries, the IT industry not being affected. IT companies operating in the IT industry, code of Classification of National Economy Activities (NACE) is 6201's Activities to develop custom software (software-oriented client), are in continuous growth, showing an increase in 2011 - 2016, both in the turnover and the net income (Table No. 2), which shows that these companies, besides being in progress, are also very profitable.

In the past 6 years, there were registered with almost 50% more companies with an informatics profile. At the same time, the amassed turnover of IT companies doubled in the last 6 years, in the context where the IT sector is gaining an upper

hand in the national economy, exceeding, along with the communication technology sector, 6% of PIB (Aries Transilvania, 2017)

## DATA USED AND METHODOLOGICAL APPROACH

A good growth in turnover can often be a premise of profit growth, where to finance investment, thus leading to an increase in production and quality, respectively to the development and growth of the company.

Turnover is definitely a key indicator in determining the volume of business activity, being taken into account when looking for an enterprise performance analysis. Through turnover we can measure a company versus another, we can determine, with net profit, if a company is competitive or not ( Petrescu, 2008). The performance or profitability represents the ability of a company to make a profit by using production factors and capital regardless of their origin (Mironiuc, 2009).

By analyzing the turnover, we can appreciate the position of the company in the market sector where it operates, and an increase or decrease of this, directly influences other economic and financial indicators.

In the present article, after analyzing the correlation based on data series and graphical representation of the data, we also performed a study by using the simple linear regression model, where net profit ( $Y_i$ ) is the dependent variable and turnover ( $X_i$ ) is the factorial variable.

$Y_i = a_i + b_i x_i + v_i$ , where:

- ✓  $a_i$  - deregulation free parameter
- ✓  $b_i$  - coefficient (correlation parameter);
- ✓  $y_i$  - the dependent variable, in this case the net profit
- ✓  $x_i$  - the factorial variable, in this case the turnover
- ✓  $v_i$  - the residual variable.

Referring to all these aspects, the function of the simple linear regression model provides a complete and detailed analysis using the calculated regression parameters.

Over time it has developed a correlation that exists between turnover and net profit in determining the profitability of an enterprise. In this analysis that we made in the research, we consider turnover as the independent variable and net profit are variable dependent for a period of six years, on a total of 65 companies working in the IT industry in Romania, whose code of the National Classification of Economic Activities (NACE) is 6201's Activities to develop custom software (software-oriented client).

The data used have a quarterly frequency ranging from 2011 to 2016.

### THE ANALYSIS OF THE SHORT-TERM CORRELATION BETWEEN TURNOVER AND NET PROFIT

The regression function obtained from the model has the form:

$$\text{Net profit} = a + b\text{Turnover} + v$$

Using the software EViews version 7.1, we analyzed the evolution of turnover and net profit in 2011-2016, through graphics and descriptive indicators also.

Between 2011 and 2016, the average value of the turnover of companies working in the IT industry amounted to 319902k lei, with a variation interval between 231685k lei in 2011 and 485231k lei in 2016, with a standard deviation of 84087k lei. The analyzed time series follows a normal distribution, because the value of the Skewness asymmetry coefficient is 0.57 (falls within  $\pm 1,96$ ), showing a slight positive asymmetry. The normal distribution of data is also confirmed by the probability value, associated with the Jarque-Bera Test, which is greater than 0.05 (Fig. No. 1).

The average value recorded by the net profit in the period 2011 - 2016 was 19201k lei, with a variation interval between 11892k lei in 2011 and 31987k lei in 2016, with a standard deviation of 5828k lei. The value of the Skewness asymmetry coefficient is 0.65, which demonstrates that the analyzed time series follows a normal distribution, with a slight positive asymmetry. The normal distribution of data is also confirmed by the probability value, associated with the Jarque-Bera Test, which is greater than 0.05 (Fig. No. 2).

From the graphical representation of the two indicators, but also from the value of the turnover coefficient, which shows the meaning of the link between the two variables, we can say that there is a direct link between turnover and inflation rate, as an increase in turnover can also influence net profit growth (Fig. No.3).

To determine the impact of turnover on net profit within IT companies, we have decided to build a simple linear regression model. The analysis of the two series was made by using the specialized software, EViews version 7.1, the results are presented in the table below:

From the positive value of parameter b, there is a direct link between turnover and net profit, so if the turnover changes with one unit, the net profit value changes in the same way as 6.71% of the unit (0.067108). Since the value of this coefficient is rather small, the impact of turnover on net profit is not very high. R-squared, the determination

coefficient, is 0.9375, which determines us to claim that 93.74% of the net profit variation is explained by the turnover variation, the rest being influenced by other factors. Standard calculated errors, related to the estimated parameters (standard error Turnover) = 0.0037 and standard error C(2) = 1220.34 are used to test the significance of regression function parameters. The two estimators are statistically significant, as probability values Prob (F-statistic) are 0. To test the model's validity the F statistic is used to calculate the three variations: variance explained by the model, residual variation and total variation. F = 329.97 and the model is statistically significant for a probability of 98% because Significance F has a value of 0 (Fig. No. 4).

### CONCLUSIONS

Using simple linear regression, we found that there is a modest correlation between turnover and net profit. Throughout the analyzed period, we can see increases from one year to the next, both turnover and net profit. It can be noticed that companies that activate in IT industry are companies that have seen a spectacular growth in the Romanian services sector in recent years, being for years performers that have contributed to the growth of Gross Domestic Product (GDP).

As a final conclusion, turnover and net profit are the most important indicators to measure the results of a company, the concomitant increase of the two indicators shows that the development policy of the society is development oriented. So, we can say that the simple linear regression model is efficient and the result of the analysis provides enough confidence for the management of companies operating in the IT industry in Romania.

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## ANNEXES

Table no. 1

*Contributions to GDP formation*

	<b>Contributions to GDP formation - %</b>					
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Agriculture, forestry and fishing	6.50%	4.70%	5.40%	4.70%	4.20%	3.90%
Industry	28.80%	24.40%	25.20%	24.00%	23.20%	23.10%
Construction	8.10%	8.50%	7.00%	6.30%	7.40%	6.00%
Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; hotels and restaurants	11.30%	17.30%	14.70%	15.80%	15.80%	18.10%
<b>Information and communications</b>	<b>3.40%</b>	<b>4.50%</b>	<b>4.90%</b>	<b>6.00%</b>	<b>5.70%</b>	<b>5.60%</b>
Financial intermediation and insurance	2.50%	3.00%	3.90%	2.90%	3.50%	3.70%
Real estate transactions	8.40%	8.00%	8.00%	9.40%	8.00%	8.20%
Professional, scientific and technical activities; administrative service activities and support service activities	5.60%	5.00%	6.40%	7.10%	7.30%	7.40%
Public administration and defense; social security in the public system, education, health and social assistance	10.00%	9.50%	10.00%	9.30%	10.20%	10.20%
Activities of cultural and recreational performances, repair of household products and other services	2.90%	2.90%	2.50%	3.00%	2.60%	3.30%
Net taxes on product	12.50%	12.20%	12.00%	11.50%	12.10%	10.50%
<b>GROSS GDP</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

*Source: National Institute of Statistics, Source: Author's calculations*

Table no. 2

*Turnover and Net Profit - annual frequency of data*

-k lei

<b>Year</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Turnover	233,215	240,681	274,412	325,612	387,956	457,538
Net profit	14,708	12,312	17,590	18,511	22,890	29,200

*Source: National Administration of Tax Administration / Tax Information and Balances, Source: Author's calculations*

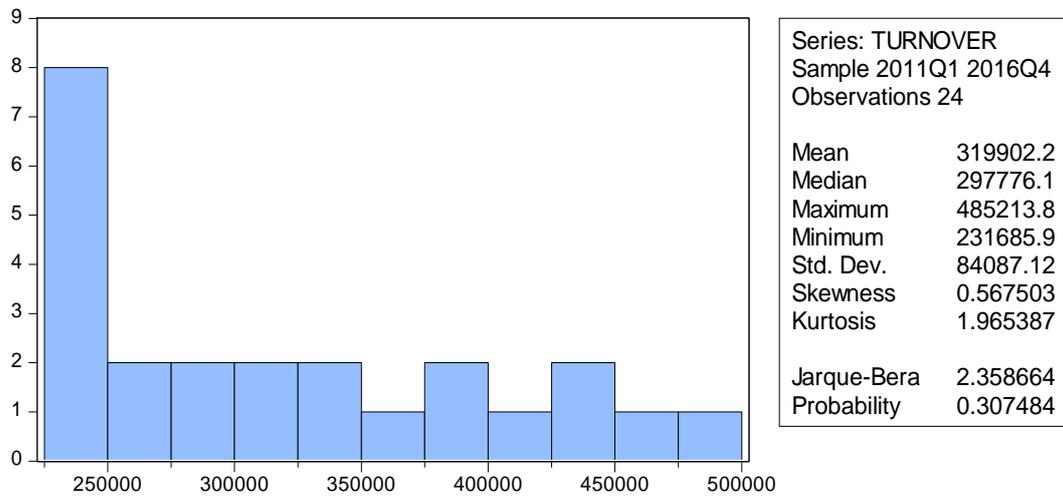


Fig. no. 1: The results of the statistical tests conducted for Turnover 2011Q1- 2016Q4  
 Source: Author's calculations

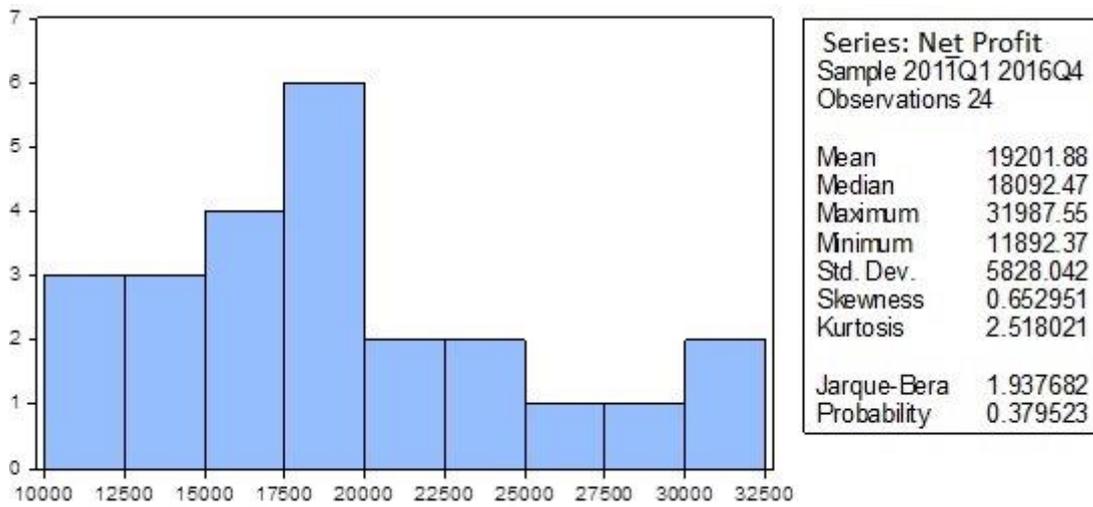


Fig. no. 2 The results of the statistical tests conducted for Net Profit 2011Q1-2016Q4  
 Source: Author's calculations

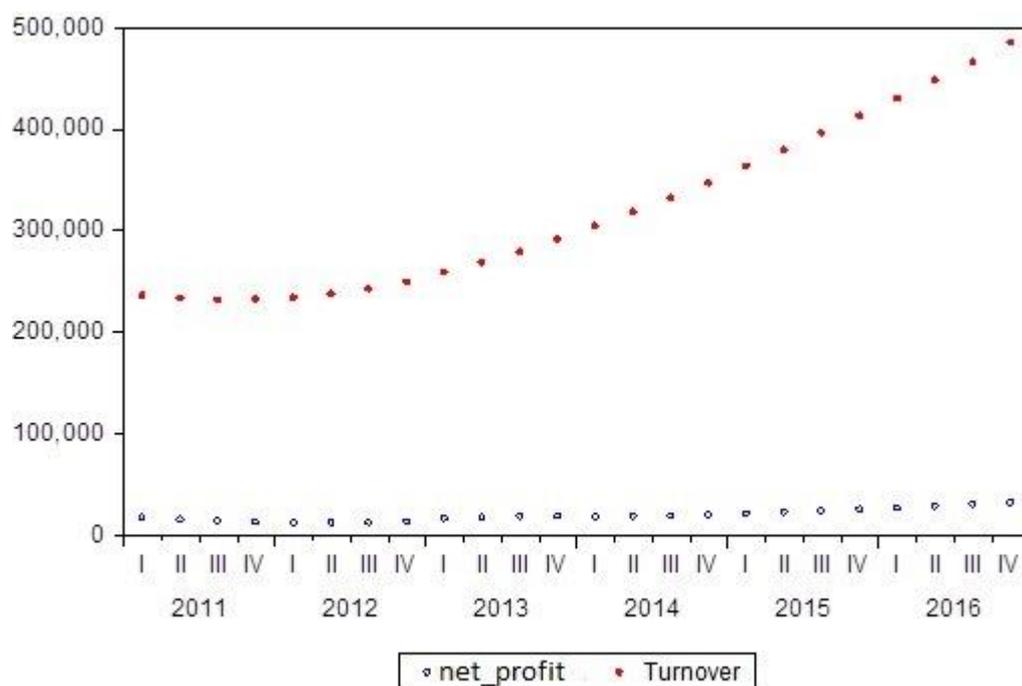


Fig no. 3 Correlation Turnover - net profit 2011Q1 – 2016Q4  
 Source: Author's calculations

Dependent Variable: Net Profit  
 Method: Least Squares  
 Date: 03/29/18 Time: 19:50  
 Sample: 2011Q1 2016Q4  
 Included observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TURNOVER	0.067108	0.003694	18.16495	0.0000
C	-2266.264	1220.344	-1.857069	0.0767
R-squared	0.937494	Meandependent var		19201.88
Adjusted R-squared	0.934653	S.D. dependent var		5828.042
S.E. of regression	1489.830	Akaike info criterion		17.53037
Sumsquaredresid	48831042	Schwarz criterion		17.62854
Log likelihood	-208.3644	Hannan-Quinn criter.		17.55641
F-statistic	329.9653	Durbin-Watson stat		0.402436
Prob(F-statistic)	0.000000			

Fig. no 4. Estimation of regression parameters  
 Source: Author's calculations