

AN EMPIRICAL RESEARCH ON THE EVOLUTION OF BUSINESSES OF THE MAIN RETAIL COMPANIES IN ROMANIA

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Abstract: *Global retail chains expanded rapidly in Romania since 2000 (Javorcik et al., 2013), their presence bringing significant changes in the landscape of the developing national economy. In this study we used data on six major retail companies in Romania, statistical data from Eurostat, and I proposed two models to highlight a link between the variables. The aim of this paper is to identify the relationship between the turnover and the number of employees of the main retail companies in Romania, in the first model using linear regression. In the second model we used multiple regression analysis to identify the relationship between the dependent variable (turnover) and independent variables (Internet users, Individuals having ordered / bought online). The result of the study paper is to evidence the fact that the increase in the number of employees in the retail sector will lead to the increase of their turnover.*

Keywords: Internet users, regression models, retail, turnover.

JEL classification: C26, L81

1. Introduction

Global retail chains expanded rapidly in Romania since 2000 (Javorcik et al., 2013), their presence bringing significant changes in the landscape of the developing national economy.

The Romanian retail market in the years 2007-2008 has seen a significant increase according to Buzila (2009), especially the significantly increased number of hyper / supermarkets. Besides extending and increasing the number of stores, retail companies became interested in making their product / service more efficient. Retail companies have turned to different marketing strategies, including online sales channel expansion, which began to develop (slower than in other EU countries) and have success in our country.

Electronic commerce in Romania is still in infancy (Vlad et al., 2012), most Romanians showing lack of confidence when it comes to this topic. The Romanians are skeptical because they are exposed to fraud (stolen credit cards, personal data's privacy, lack of compliance of the bought product with its presented description etc.). Although there are not many companies that have adopted this form of commerce, is a certainty the fact that their number and that of the online customers is increasing. Slowly the world will recognize and use the possibilities and advantages offered by the Internet.

Data from Eurostat website show an increasing trend in the number of Internet users and the number of people using the Internet to order / buy products or services. In these conditions, retail companies are forced to use the online environment to communicate more easily with potential customers and to keep them up to date with the novelty offered. In this paper from the European retail companies present in Romania we have chosen six of them to be studied (Auchan, Carrefour, Cora and Kaufland hypermarkets, as well as Metro and Selgros cash and carry).

The exploratory research presented in this paper aims to determine the relationship between turnover, the number of employees of the main retail companies in Romania and the number of Internet users and the number of people who use the Internet to order

/ buy online , contributing to broaden the perspective regarding ways of increasing the competitiveness of companies.

2. Data and methodology

In this paper, statistical data used are taken from the websites of Eurostat and www.listafirme.ro for the period 2006-2012. To process the data we used Excel that provides a set of tools for data analysis. The indicators used are the average turnover of the main retail companies in Romania for the period 2006-2012 expressed in billions of lei, average number of employees of these retail companies expressed in thousands of people, the number of Internet users expressed in millions of people, individuals having ordered / bought online expressed in hundreds of thousands of people. Table 1 contains data which will be considered below.

Table 1: Average turnover of the main retail companies in Romania and its influence factors

Year	Average turnover – billions of lei –	Average number of employees	Internet users –mil people-	Individuals having ordered/ bought online - hundreds of thousands people-
2006	1913.45	3350	5.52	6.08
2007	2523.92	4602	6.55	20.96
2008	3056.16	5501	7.42	49.03
2009	3255.56	5423	7.76	43.5
2010	3326.88	5648	8.72	54.1
2011	3490.83	5775	9.29	133.8
2012	3517.68	6246	10.45	267.07

Source: Own processing from <http://www.listafirme.ro/> and Eurostat

In Table 1 we can notice a significant increase in average turnover until 2008 after which the growth slows down. The average number of employees of large retails almost doubled during the period. The number of people who use the Internet for different things is growing; the Internet offers its users a wealth of information and services such as e-mail, www, FTP, web hosting and so on. Together with the increase of Internet users, the number of people using the Internet to order / buy goods and services for private use grow, the most significant increase occurring in 2012.

Further on we calculated the Average Turnover Index, Average number of employees Index, Internet users Index, Individuals having ordered / bought online Index to highlight the increase / decrease of the indicator against the previous year.

Table 2: The dynamics of the average turnover of the main retail companies in Romania and its influence factors (previous year=100)

Year	Average Turnover Index	Average number of employees Index	Internet users Index	Individuals having ordered/bought online Index
2006	100	100	100	100
2007	131.9	137.38	118.52	344.75
2008	121.09	119.55	113.41	233.91

2009	106.52	98.57	104.56	88.72
2010	102.19	104.15	112.35	124.39
2011	104.93	102.25	106.47	247.29
2012	100.77	108.16	112.47	199.6

Source: according to data from table 1

The most spectacular growth can be noticed to all indicators studied in 2007 against the previous year. A slight rebound can be noticed in 2009 both at the average number of employees and the Individuals having ordered / bought online. These indicators are increasing since 2006, perhaps because these retails companies have not ceased to expand and prosper in Romania.

Using the Internet has become an essential part of our lives, something comfortable, because we can obtain information on a regular basis and we also provide information about almost “anything”. The Internet provides access to a global market for many companies that without its contribution would have never had the opportunity to appeal to customers worldwide. Thus the Internet has become an important business environment. Starting from this fact we tried further on to establish the connection between the average turnover, number of employees and average Internet users, Individuals having ordered / bought online.

For this purpose we created two models to study the influence of the three indicators on average turnover of the main retail companies in Romania. For the first model that expresses the interdependence of the average turnover (AT) and average number of employees (ANE) we have applied linear regression analysis method which has the following equation:

$$AT = \beta_0 + \beta_1 \cdot ANE + \varepsilon_{it} \quad (1)$$

The second model reflects the interaction between average turnover (AT) and average number of employees (ANE) and Internet users (IU) and individuals having ordered/bought online (IOBO), and it uses the following multiple regression equation:

$$AT = \beta_0 + \beta_1 \cdot ANE + \beta_2 \cdot IU + \beta_3 \cdot IOBO + \varepsilon_{it} \quad (2)$$

Where β_0 – intercept, express influence of factors not included in model

$\beta_1, \beta_2, \beta_3$ – regression coefficients that indicate independent variables’ effect on the dependent variable

i – retail companies

t - years

As it can be noticed in both models the average turnover (AT) is the dependent variable, the other variables representing independent variables.

3. Main findings

The predictions for the first model and the results of the linear regression analysis are presented in Table 3.

Table 3: ANOVA

				Alpha	0.05
Model 1	df	Sum of Squares	Mean Square	F	Significance F
Regression	1	2009132.52	2009132.52	123.543038	0.000102757
Residual	5	81313.06105	16262.61221		

Total 6 2090445.581

Source: made by the author

From Table 3 we can conclude that Model 1 is statistically significant because *Significance F (P value) < 0.05*.

The predictions for the second model and the results of the multiple regression analysis are presented in Table 4.

Table 4: ANOVA

Model 2	df	Sum of Squares	Mean Square	F	Significance F
Regression	3	2055489.499	685163.2	58.802057	0.003652447
Residual	3	34956.08161	11652.03		
Total	6	2090445.581			

Source: made by the author

From Table 4 we can conclude that Model 2 is significant statistically, because *Significance F (P value) < 0.05*.

Table 5: Regression Statistics

Model	Explanatory variables	Regression Coefficient	t Statistic
1	Intercept	-131.09	-0.457
R Square 0.961			
Adjusted R ² 0.953	Average number of employees	0.602	11.115
2	Intercept	-667.35	-1.77
R Square 0.983			
Adjusted R ² 0.966	Average number of employees	0.396	2.86
	Internet users	226.46	1.90
	Individuals having ordered/bought online	-2.347	-1.916

Dependent variable : average turnover

Source: realized by the author

In the first model Multiple R is 0.98, which shows a very strong link between the average turnover of the main retail companies and the average number of employees.

R Square (the coefficient of determination) is 0.961, meaning that 96.1% from the variation of the average turnover of the main retail companies can be explained by its linear relationship with the average number of employees. Adjusted R Square provides a better estimation of R².

The equation of the linear regression has the following form:

$$AT = -131.09 + 0.602 \cdot ANE + \varepsilon_{it} \quad (3)$$

The increase of the average number of employees by one value unit leads to an increase of average turnover with 602.000 lei.

Figure 1 for model (1) shows a linear dependence trend (straight shape) between the two variables which justify the choice.

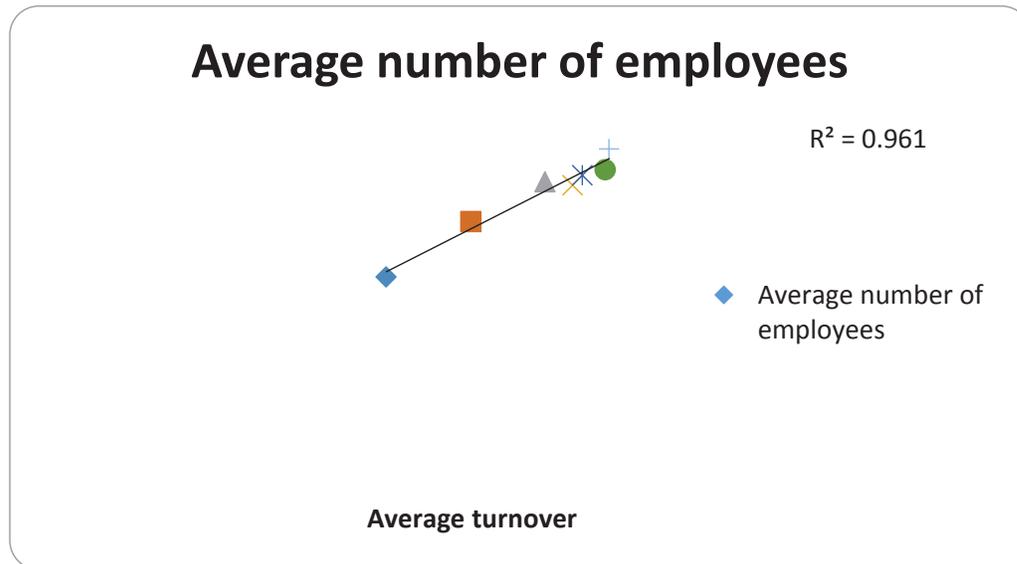


Figure 1: The relationship between the average turnover and the average number of employees

Source: made by the author

However, it is important to keep in mind that the linear relationship that has emerged is not perfect, because all points on the scatter diagram belong to the line that we scattered, resulting the need to introduce an error ε_{it} .

In model 2 we used the average turnover for the dependent variable and the remaining variables we considered them independent, as can be noticed in Table 5. The equation of the multiple linear regression has the following form:

$$AT = -667.35 + 0.396 \cdot ANE + 226.46 \cdot IU - 2.347 \cdot IOBO + \varepsilon_{it} \quad (4)$$

This model shows that at an increase of one unit of the average number of employees, the turnover increases on average with 396.000 lei. As well as at an increase of one unit in the number of people using the Internet, turnover increases on average with 226.46 million lei.

The two models offer almost a perfect fit for the data (95.3% Adjusted R Square respectively 96.6% Adjusted R Square).

4. Conclusions

This study uses data at company level in Romania and data taken from the Eurostat website to examine the connection between the main performance indicators and Internet usage indicators.

In this paper we used regression analysis for the first linear model because our goal was to describe the relationship between two variables based on observed data and to predict the value of the dependent variable based on the value of the independent variable. For model 2 we used multiple linear regression which uses more than one independent variable.

The results lead us to conclude that the expansion of retail chains lead to an increase in average turnover and an increase in average number of employees, the more pronounced

increase is noticeable in 2007. Retail companies, taking into account the development of the IT sector, may stimulate faster the economic growth.

The analysis performed using the two linear regression models show the existence of a strong relationship between the number of employees and turnover of the main retail companies.

The result of the study paper is to evidence the fact that the increase in the number of employees in the retail sector will lead to the increase of their turnover.

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