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Statistical estimation of the information influence regarding employees on the Romanian firms market capitalization

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Abstract

Romanian listed companies report information regarding the efficiency of the labor force usage and the availability of working equipment. Such information can be useful to investors, with impact on the investment decision and on the market capitalization. The study proposes to analyze the influence of the information regarding the employees on the market capitalization of companies by using the generalized linear model. The observed sample consists of 70 Romanian listed companies between 2006 and 2011. The obtained results indicate a significant influence of the companies' reported information regarding the employees and their results on the market capitalization

1. Introduction

In a company, the employees represent one of the most important resources. Their activity can determine the success and performance of the business (McGaughey et al., 2005). Through their activity, employees generate a series of costs, whose efficiency can be evaluated through the increase of labor productivity, of the turnover and the operating results (Blasco and Pertold-Gebicka, 2013).

Reporting information regarding the salaries and the employees within the financial statements can be useful to investors when evaluating the efficiency of the labor force usage (Kent and Zunker, 2013) with impact on the company investment decision and implicitly on the market value.

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The study proposes the statistical analysis of the influence of the information regarding the employees of the company on the market capitalization, estimated based on the priced offered by investors at the end of the financial exercise. The analysis takes into account the variation of the market capitalization under the influence of the determining factors of labor efficiency.

The study was conducted on a sample of 70 Romanian companies listed at the Bucharest Stock Exchange (BSE) between 2006 and 2011. The results of the research emphasize a significant influence of the reported information of the companies regarding the employees and their results on the market capitalization. In order to analyze the data, the regression analysis based on generalized linear model was used, with the SPSS 20.0 software.

2. Literature review and hypotheses development

In condition of using the IFRS by the BSE listed Romanian companies, the information from financial statements are relevant to the investors (Filip and Raffournier, 2010). The investors' decisions have a direct impact on the market capitalization of companies and are influenced by the accounting results that are reported at the end of the financial exercise (Filip and Raffournier, 2010).

2.1. The relevance of the information regarding the employees on the investors' decision

According to the Conceptual Framework of IASB (2013), information in financial statements must meet a series of fundamental characteristics, such as *relevance* and *fair representation*. The relevance indicates the capacity of the financial information to significantly influence the users' decisions, and especially the investors' decisions (IASB, 2013).

Beaver (1972) analyzes the influence of the financial information on the investors' decision regarding the acquisition of the companies' shares. The results of his study show that qualitative financial information will positively influence the investors' decision and lead to a growth of their prices. Starting from the same idea, Ohlson (1995) tests the influence of the company's profits variation on the variation of the shares' price, showing the existence of a significant influence of the financial information on the share list, when the accounting results are publicly announced. Felthan and Ohlson (1995) claim that only the assets that are used in the operating activities have a significant influence on the company's market value.

Regardless the form they are issued, the information that is reported by a listed company must offer an accurate description of the financial position and performance (IASB, 2013) and must reduce the uncertainty degree associated to the environment the company operates in (Casagrande, 1999). Amongst the users of the reported information, the Conceptual Framework of IASB (2013) considers the actual and potential investors as a priority, as well as the other capital lenders or financial creditors.

Investors are interested in the information regarding the financial position and performance which is reported in a comparative, accurate and transparent manner (Albu and Albu, 2012), in order to establish the value of the company (Nordlund, 2010). This information stand at the base of the establishment of the price investors are willing to offer for a share in order to gain the right to participate in the decision making process and obtaining future economic benefits (Butt et al., 2010).

Financial information is relevant to investors if it has a predictive value, a confirmation value or both (IASB, 2013). Such information can be used to estimate the market value of the company, calculated based on the market capitalization. In order to test the relevance of the information in the financial statements based on its predictive value, Barth *et al.* (2008) use the net result and the net asset value as indicators.

Financial position and performance of the company are directly influenced by the operating activities (Malhotra and Malhotra, 2008). The efficiency of the operating activities can be evaluated through the view of

the gained results, reported to the used resources (Yasin and Gomes, 2010), including the labor force and the technique used to endow labor (Blasco and Pertold-Gebicka, 2013).

Defining the influence of the operating activities, compared to the financial ones, on the market value of the company (Feltham and Ohlson, 1995) represents a premise for the evaluation of the relevance of the expenditures with the employees compared to investors. When evaluating the employees' activities, investors are interested in the employees' profile, their remuneration manner, the benefits gained during the reporting period, their working conditions (Kent and Zunker, 2013), by the registered productivity and the competences of the employees (Holmgren Caicedon and Mårtensson, 2010). Information regarding salaries and employees can be used by investors when evaluating the productivity of the company (Hong *et al.,* 1995) and the value they add, with direct impact on the market capitalization.

2.2. Reported information of the Romanian listed companies regarding the salaries and employees

Nowadays, Romanian listed companies use the International Financial Reporting Standards – IFRS when issuing the annual financial statements (MFP, 2009). In the case of the listed companies the main information classes regarding the employees, whose displaying in the financial statements, is demanded by the accounting rules, consider the employees' benefits and their number.

IFRS, through the International Accounting Standard 19 (*Employee Benefits*) enforces a company to recognize and report the short term benefits of the employees when they have carried out an activity/service for those benefits (IASB, 2013). The employees' short term benefits correspond to the cost registered by the company regarding the labour force and represent a payment obligation of these benefits, in exchange for the services carried out by the employees (Raffournier, 2012).

Considering their nature, salary expenses are included in the category of operating activities (Walton, 2011). These expenditures influence the operating result and implicitly the profitability and performance of the company. Salary expenses can though be found in the production costs of the goods or services carried out by the company. The payment obligation of the salary expenses corresponding to the short term benefits of the employees affect the financial position of the company (Raffournier, 2012). Recognition of these obligations leads to an increase of the current liabilities and implicitly of the indebtedness degree and at the same time to a decrease of the liquidity degree of the company.

Connecting the Romanian Accounting Standards to the Romanian fiscal rules (Istrate, 2011) enforces companies to report informative data. This data also includes information regarding the average number of employees and the real number of existing employees, at the end of the reporting period (MFP, 2014). Romanian companies are asked to report the number of employees (especially the average number) in order to calculate some *volume criteria* and to rank companies regarding the financial reporting accounting obligations.

2.3. Research hypothesis

Information reported by companies regarding the employees mostly consider the operating cycle. Information regarding the employees can be used by investors to evaluate the activity efficiency, respectively in order to evaluate the performance of companies. When evaluating the efficiency of the employees' activity, the technical endowment of employees is also considered, as well as the competences gained by employees.

The study proposes the testing of the following hypothesis:

The information regarding employees significantly influence the market capitalization of the Romanian BSE listed companies, being relevant to the investors.

3. Research methodology

The research objectives aim at estimating the influence of the information regarding employees on the market capitalization of the Romanian BSE listed companies, considering the labour efficiency and the technical endowment of the employees as indicators. The study proposes the analysis of the influence of the information regarding the employees on the market capitalization of the Romanian BSE listed companies

3.1. Target population and sample

To analyze the influence of the information regarding the employees on the market capitalization, the study considers the Romanian BSE listed companies as a target population. In Romania, BSE represents the main regulated capital market. BSE includes three sections (BSE, RASDAQ and ATS) which gather 806 companies. To ensure the comparability of the data collected between 2006 and 2011 (2011 represents the last exercise when the listed companies reported financial statements based on the national accounting standards and not on the IFRS), and companies in the financial-banking field were excluded, the investment and insurance funds, as well as the companies that did not have complete data needed for the analysis. Thus, the final sample includes 70 BSE listed companies.

3.2. Variables and data source

The main information used in the study regarding the employees aim the salary expenses and the average annual number of employees as well as the results of their activities (the net result and the turnover), reported in the annual financial statements. Based on this information, indicators that reflect the efficiency of the work force and the employees technical endowment degree were calculated (*Tabelul 1*).

Table 1. Variables analyzed in the study

Variable symbol	Definition	Computing formula
Nsal	Annual average number of employees	-
SalExp	Anual employees expenses in RON (Romanian New Currency)	-
NI	Net income (RON)	-
TO	Turnover in (RON)	-
SalExp/OpExp	Weight of employees expenses in total operating expenses (%)	((Salaries Expense)/(Operating Expense))·100
TO/SalExp	Efficiency of salaries expense in relation to turnover (%)	((Turnover)/(SalExp))·100
SalExp/Nsal	Salaries expense per employees (RON/employee)	(Salaries Expense)/(Annual number of employees, in average)
NI/Nsal	Net income per employees (RON/employee)	(Net Income)/(Annual number of employees, in average)
OpFA/Nsal	Technical endowment of the employees (RON/employee)	(Fixed Assets used in Operating Activities)/(Annual number of employees, in average)
MC	Market Capitalization (hundreds of millions RON)	(Share Price at 31st December)·(Company's Shares Outstanding)

The indicators calculated in *Table 1* were calculated based on the information collected from the financial statements reported by the companies included in the analyzed sample to the BSE (www.bvb.ro).

3.3. Methods for data analysis

To analyze the influence of the information in the financial statements on the market value, Barth *et al.* (2008) proposes the use of the linear regression analysis. When studying the influence of the financial factors on the market capitalization within a sample of companies, observed for a certain period of time, Jaba *et al.* (2013) uses the panel data analysis and estimates the existence of some temporal and cross differences between companies at the level of the market capitalization value.

The use of the linear regression analysis must respect a series of hypotheses (Jaba, 2002): the normal distribution of the dependent variable (Y) and the residual variable ($\varepsilon \sim N(0, \sigma_\varepsilon^2)$), the homoschedasticity feature of the errors variance ($\sigma_\varepsilon^2 = M(e_\varepsilon^2)$),the lack of the error autocorrelation and the absence of the correlation between the explanatory variable (X) and the residual variable (ε).

In this study, we apply the generalized linear model (GLM) in order to estimate the influence of the factors on the dependent variable. This method is applicable when the hypotheses demanded by the linear regression analysis are violated (Green, 2003). As well, the study uses the GLM to test the influence of the interactions between the factors that were proposed for the analysis of the market capitalization.

Data analysis was carried out using SPSS 20.0.

4. Results and discussions

Depending on the objectives of the study, the information that was obtained is the result of estimating the influence of the determining factors and their interactions on the market capitalization between 2006 and 2011. Starting from the data used in the study, average values of the variables used in the model proposed for analysis were calculated, in order to describe the analysed sample (*Table 1*).

Table 2. The average level of the variables value considered in the model

Variable	2006	2007	2008	2009	2010	2011	Total
SalExp/OpExp	18.6527	18.6471	19.1215	22.0908	20.4826	19.9013	19.8160
TO/SalExp	874.1287	818.4980	888.7466	833.8340	1380.6681	2120.6216	1152.7495
SalExp/Nsal	22616.0857	26870.4714	32495.2429	35584.3857	38257.3429	45888.0571	33618.5976
NI/Nsal	12601.9429	4227.4000	-931.3857	-6101.8857	-13314.8714	-28299.1143	-5302.9857
OpFA/Nsal	132031.1571	192999.7714	223912.3286	276696.4857	329534.5143	408612.7571	260631.1690
MC	6.6716	7.2374	2.3478	3.4313	4.4999	4.1030	4.7152

(Source: own processing in SPSS 20.0)

The results in *Table 1* indicate an increase in salary expenses and in the technical endowment of the employee. To evaluate the influence of the information regarding the employees on the market capitalization using GLM, the study proposes estimating and testing the following econometric model:

$$MC = \beta_0 + \beta_1 \cdot SalExp/OpExp + \beta_2 \cdot TO/SalExp + \beta_3 \cdot SalExp/Nsal + \beta_4 \cdot NI/Nsal + \beta_5 \cdot OpFA/Nsal + \varepsilon \qquad (1)$$

The estimations of the regression model parameters in *equation (1)* are displayed in *Table 3*.

Table 3. Model summary and parameter estimates of the proposed model

Variable	Intercept	SalExp/OpExp	TO/SalExp	SalExp/Nsal	NI/Nsal	OpFA/Nsal	R^2	Sig. ANOVA
Estimate	-77649038.54	-14466923.62	-7184.577	18246.059	5840.604	1004.062	0.072	0.000
t (test)	-0.252	-1.367	-0.295	3.218	3.710	2.482	-	F ANOVA
Sig.	0.801	0.172[**]	0.768	0.001[*]	0.000[*]	0.013[*]	-	6.451

Dependent variable: MC
Significant value for: [*]5% risk level; [**]20% risk level.

(Source: own processing in SPSS 20.0)

According to the data in *Table 3*, we can see that the model in *equation (1)* is significant, but the information regarding the employees barely explain the variation of the market capitalization. Indicators that have a significant influence on the *MC* are *SalExp/NSal, NI/NSal* and *OpFA/NSal*. An increase of the salary expenditures values for each employee positively influences the investors' decisions and leads to an increase in the market value of the company. The same effect belongs to the net result of the employees' activity and also the technical endowment degree of employees. We can conclude that investors will pay more for the companies that have well paid, qualified employees whose activities lead to profit gains and with a higher degree of working technical endowment (a growth of the fixed assets in the operating activity of an employee).

The *TO/SalExp* indicator, which reflects the efficiency of the salary expenditures, has no significant influence on the market capitalization. Companies with a low level of the turnover compared to salary expenditures are not attractive to investors. These companies that do not pay their employees according to their activities are in danger to face eventual productivity disturbances. A significant influence also belongs to the *SalExp/OpExp* indicator that reveals the fact that investors' decisions are not affected by the share of the salary expenditures.

After applying the *Backward* procedure on the model in *equation (1),* in order to eliminate the variables with no significant influence on the *MC*, the following model results in *equation (2):*

$$MC = \beta_0 + \beta_1 \cdot SalExp/Nsal + \beta_2 \cdot NI/Nsal + \beta_3 \cdot OpFA/Nsal + \varepsilon \qquad (2)$$

Table 4 presents the estimates of the parameters in the second regression model. An increase with one unit of the value of the salary expenditures for each employee (*SalExp/NSal)* causes an increase in average of 17416.683 units of the market capitalization value. An increase of a unit of labour productivity, expressed based on the registered net result of one employee leads to a growth in average of 5688.318 units of the market capitalization, and an one-unit increase of the technical endowment degree of work also determines an growth in average of 1113.687 units of the market capitalization.

Table 4. Model summary and parameter estimates of the model 2, obtained by removing the non-significant variables from model 1

Variable	Intercept	SalExp/Nsal	NI/Nsal	OpFA/Nsal	R^2	Sig. ANOVA
Estimate	-3.741E8	17416.683	5688.318	1113.687	0.068	0.000
t (test)	-1.711	3.090	3.633	2.830	-	F ANOVA
Sig.	0.088	0.002[*]	0.000[*]	0.005[*]	-	10.131

Dependent variable: MC
Significant value for a [*]5% risk level.

(Source: own processing in SPSS 20.0)

We can notice that the models in *equation (1) and (2)* are statistically significant. But, compared to other studies that tested the relevance of the financial information (net income and book value) to investors, the values of the determination coefficient (R^2) obtained in this study are inferior to the ones reported by Filip and Raffournier (2010), also for the Romanian BSE listed companies. This indicates that information regarding employees are relevant to investors but not as much as the ones regarding the profitableness degree of the company and the value of the net assets.

To estimate the influence of the interactions between the factors held in *equation (2)* on the market capitalization, we propose the econometric model in *equation (3).* The model with interactions between factors has the following form:

$$MC = \beta_0 + \beta_1 \cdot SalExp/Nsal + \beta_2 \cdot NI/Nsal + \beta_3 \cdot OpFA/Nsal + \beta_4 \cdot (NI/Nsal) \cdot (OpFA/Nsal) + \beta_5 \cdot (SalExp/Nsal) \cdot (OpFA/Nsal) + \varepsilon \qquad (3)$$

For the model in *equation (3)*, *Table 5* presents the estimated values of the associated parameters, of the factor variables and their interactions.

Table 5. Model summary and parameter estimates of the model with interactions between factors

Variable	Intercept	SalExp/Nsal	NI/Nsal	OpFA/Nsal	SalExp/Nsal· OpFA/Nsal	NI/Nsal· OpFA/Nsal	R^2	Sig. ANOVA
Estimate	-6.897E8	27888.778	13115.405	1419.452	-0.014	-0.006	0,086	0.000
t (test)	-2.008	2.662	3.747	2.542	-1.232	-2.590	-	-
Sig.	0.045	0.008[*]	0.000[*]	0.011[*]	0.219	0.010[*]	-	-

Dependent variable: MC
Significant values for a [*]5% risk level.

(Source: own processing in SPSS 20.0)

The results displayed in *Table 5* reveal a negative influence of the interactions between the information regarding the employees (the level of the salary and the registered result of an employee) and the technical endowment degree of employees. An increase in the salary expenditures given the existence of a high degree of work endowment (the *SalExp/Nsal·OpFA/Nsal* interaction) causes an increase of the market capitalization. In the case of BSE listed Romanian companies, an increase in salaries expenses leads to an increase in the payment of taxes to the state budget. To reduce the level of taxes paid, there is a preference for companies to set spending limits imposed by law wage, compensating the employee benefits with goods or services which are not subject to unlimited taxation. At the same time, ensuring a high level of technical endowment of employees is based on the achievement of certain expenses, which may lead to a reduction in the tax base and hence paying taxes, in this case, such costs are preferable to wage because they lead to a reduction in taxes payable, with direct impact on the net income of distributed investors.

In this case, an increase in loss of the net result, obtained by each employee in the company, for which an increase in the technical endowment of employees is registered, negatively influences the value of the market capitalization. Investors are not attracted by the companies where employees do not report a productivity growth though there is a high degree of technical endowment of work.

5. Conclusions

The main results of the analysis indicate the existence of a significant influence of the information regarding the employees (salary expenditures, the results of their activities and the degree of technical endowment of employees) on the market capitalization. An increase in the salary expenditures that leads to a growth of employees' productivity, given the growth of the efficiency of the work force use and the existence of a high degree of technical endowment of employees, lead to a growth of the market capitalization.

Amongst the information regarding the employees that have no significant influence on the market capitalization, the results of the analysis revealed the ones regarding the structure and the efficiency of the salary expenditures. In the case of the BSE, investors are interested in the companies that properly pay their employees, so that the results of their activities would determine a financial performance growth.

Reporting the information regarding the employees is useful to the investors when analysing the companies' performance, with direct impact on the capital placement decisions. In the analysis of the performance of the listed company and the establishment of their market price, investors must also consider the value of the salary expenditures, the employees' productivity, and also the degree of the technical endowment of employees.

The limits of the study are represented by the relatively low volume of the analysed sample, that is specific to the BSE, and the future research directions aim at estimating some temporal differences and between companies regarding the variation of the market capitalization under the influence of the indicators that are calculated based on the information regarding the employees.

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