IMPLICATIONS OF SOCIAL AND ENVIRONMENTAL COSTS ON ECONOMIC AND FINANCIAL PERFORMANCE OF A COMPANY

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Abstract. By analysing the current context in which companies operate, we have observed that they must respond to new challenges to ensure adaptation to contextual market requirements. Therefore, over time, actions taken by companies aimed to identify, adapt and implement solutions, which even lead to reorganization of the means of action so that the results achieved would be successful. Taking into account especially the changes occurred in the business environment and the difficulty of identifying a set of determinants having a significant impact on organizational performance, we believe that this topic deserves increased attention, an aspect also reflected by the research activities conducted in the field, focused on the importance of these determinants for the success or failure of a business.

Keywords: economic performance, financial performance, social and environmental actions, multiple linear regression

JEL Codes: C32, L25, Q56

Introduction

Emergence of the concepts of sustainability and sustainable development has determined companies to reassess their approach to organizational performance measurement. Thus, we can say that all three components of sustainable development: economic prosperity, social equity and environmental integrity are closely correlated, and basically the effects of a component influence the performances of the other two. Under these circumstances, a business can be defined as sustainable if it succeeds to meet the needs of stakeholders without endangering meeting their own future needs. Increased environmental destruction is a major threat to long-term human survival. These long-term adverse influences can be attributed to the large companies in the industry for a large percentage, which is why, in recent decades, it has been shown that they aim at a sustainable development and are willing to compromise for this (Hart, 1997).

The main objective of this study is to identify and assess causal link between investments in social and environmental actions and economic performance obtained by Romanian companies.
Until recently, such comparisons were difficult because they were subjective and were made following own reporting templates. In recent years, however, the aid brought by the reporting tools provided by the Global Reporting Initiative (GRI), as well as the requirements imposed by authorities have forced the companies to turn their attention to reporting and measuring the impact of social and environmental actions undertaken by companies on economic performance.

It is difficult, in our country, to identify the number of companies reporting on their social and environmental actions. In 2011, according to a study of "Transparency International", 78 companies said that they report under the GRI grid, under their own grid or under one of the reporting standards SAB000, IASE300, LBG, AA1000, FTSE4Good. Up to now and certainly in the immediate future, due to Directive 2014/95/EU introducing the obligation to report non-financial actions by EU companies since January 2017, the number of those who report such actions will increase considerably.

Literature review

The literature describes a variety of practices and initiatives that can be implemented by a company to reduce environmental impact (Sarkis, 2001; Shrivastava, 1995b). This prompted a debate on the effects of competition, voluntary adoption of environmental management practices, more precisely, on the competitive results of a higher environmental performance (Schaltegger and Synnestvedt, 2002). Over the past few years, against the traditional view, a number of papers have argued that there are competitive opportunities associated with eco-management (Russo and Fouts, 1997; Sharma and Vredenburg, 1998).

As pointed out by Waddock (2003), increasing the transparency forced companies required to report not only on their financial performance, but also on social and environmental impact of the action taken.

Sun and Scott (2003) stated that the critical success factors of a company in a competitive environment were distinct and were in constant change and adaptation. According to Ulrich (1995), success factors are governed by flexibility, speed, adaptability and innovation, they are far different from those of the past, relating to structure, size control. Quantitative measurement proved to be ineffective in case of a dynamic economy, thus, Sun and Scott (2003) supported the need to also adopt qualitative approaches, besides quantitative approach and performance measuring.

Azapagic (2004) aimed, by the study conducted, to create a set of indicators that have a materiality level comparable to those proposed by GRI, a tool to be used in evaluating the performance of mining companies.

Berheci (2010) believes that the performance of a company based only on financial indicators calculated using past financial data is insufficient and sometimes even irrelevant. Addressing performance by combining financial aspects with non-financial ones we achieve a global performance and a more comprehensive vision of the company.

In 2011, a survey covering the period from 2000 to 2011 was carried out, and it consists of "defining a set of 65 questions - considered priorities for further research (Searcy 2012)." An analysis conducted on sustainability reports of 17 Greek companies, which sought to define and unify economic, social and environmental performance, identified a set of indicators commonly used: sales volume, costs for raw materials and supplies, costs of consumable resources (water, energy, CO2 emissions), donations and philanthropic activities. (Skouloudis, Evangelinos, 2009)

In 2001, Velev & Ellenbecker wanted to find by their study a new tool to measure global performance, based on 22 quantitative and qualitative indicators, and to provide the implementation method by presenting the strengths and weaknesses of the model created.

Raj and Seetharaman (2012) believe that it is necessary to redefine accounting standards, so that a future reporting system can provide updated information, thereby achieving a future-oriented outcome and provision of information on fast access roads.

In Romania, a study conducted by Mocanu - Perdichi in 2009 targeting the measurement of sustainable development resulted in obtaining a set of 19 indicators grouped into four dimensions: economic, social, environmental and institutional.

Determining the performance of a company with the help of various indicators (financial and non-financial) was the cornerstone of numerous studies: Capon, Farley and Hoening, Sharma and Kumar, Gonzales-Benito, Morgan and Strong, Stancu I, Stancu D and Oproiu; Lau and Martin-Sardesai, Wu, Lee and Yang, De Leeuw and Van den Berg etc.

Research methodology

The research activities conducted for this paper aim to analyse in detail the economic and financial performance and interdependence that may exist between this type of performance and investments in social and environmental actions.

The study includes a set of Romanian companies from various industries, from manufacturing, wholesale and retail trade, and even service companies. Since the acquisition, correctness, completeness, integrity and processing of information could cause problems, we decided to use a data

set consisting of 40 companies arranged geographically in western Romania. For this study, we analysed the annual financial statements and non-financial reports of 40 companies over a period of five years, between the years 2011 and 2015, and variables used in the regression model can be found in Table 1.

Table 1. Variables used in research

Type of performance	Software used	Variables used
Financial	eViews	Return on Assets
Financial	eViews	Return on Equity
Financial	eViews	Turnover
Financial	eViews	Net earnings for the year
Financial	eViews	Profit margin
Social	eViews	Volume of social costs
Environmental	eViews	Level of environmental costs

Source: Own processing

A complete and correlated image was provided by checking the correlations and results achieved from the work carried out using the econometric modelling software EViews 9, a regression analysis based on panel data, where information was synthesized from financial documents provided, as well as from non-financial statements of companies. In this case, we first used the descriptive method by observing and describing the histograms of the indicators used in regression, and then using the Fisher, Jarque-Bera tests, we analysed variables, the dependence and influence of some on the others, which resulted in the multiple regression equation.

According to the regression model, the first steps of normalization and descriptive analysis of the data series are followed by the analysis of relationships and influences between variables. To see if and how the dependent variable Y is influenced by the independent variables X, we used the Pearson correlation coefficient.

$$r = \frac{\sum_{i=1}^{n}(x_i - \bar{x}) * (y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2} * \sqrt{\sum_{i=1}^{n}(y_i - \bar{y})^2}}$$

where: $y_1 y_2 y_3 \dots y_i$ and $x_1 x_2 x_3 \dots x_i$ represent thFine measured values and $\bar{y}, \bar{x}$ are the sampled means of those data series.

The Pearson coefficient can take on values in the range [-1, 1] and may indicate the intensity of the relationship between the analysed variables by the obtained value, and direction of the relationship according to the sign. Thus, a coefficient value close to -1 indicates a strong and inverse correlation between the variables, a value close to 1 indicates that the analysed variables determine one another and have a strong and directly proportional correlation, while a coefficient value close to 0 indicates that between the analysed variables there is no a linear correlation, they are independent or have a non-linear correlation.

Based on the arguments presented in the literature review, the objective of this study is to test the validity of the following hypotheses

H1: Return on Assets is directly linked with the level of social and environmental costs.

H2: Result for the year may explain the relationship between social and environmental costs and Return on Assets.

H3: Return on assets can contribute to explaining the relationship between company size and investment in social and environmental actions.

In the present study, to determine the regression model, we will use descriptive statistics by determining statistical indicators of central tendency (mean, median), distribution indicators - standard deviation, and shape indicators (kurtosis and skewness coefficient). To get more meaningful data, homogenization of data is required, and the most common mathematical process to do this is based on logarithms.

Results

Statistical properties of logarithmized Return on Assets

Following the application of logarithms, statistical indicators have improved, the median is closer to the mean, standard deviation is halved thereby reducing data variance.

The kurtosis coefficient decreases significantly, reaching to a value close to 3. The skewness coefficient also changes its value, leading to a histogram tending to be left-skewed. Jarque-Bera test value has decreased significantly, and the probability associated with the test is 1%, well below the materiality threshold of 5%, which leads to rejection of the null hypothesis. By logarithmating data as a consequence of negative values of Return on Equity, sample size was reduced from 200 to 157 variables.

Statistical properties of Net Earnings in the logarithmized year

Comparing the mean and median, we noted that they have very close values, therefore variable values tend to align around the core values of the variable. The standard deviation decreased, which confers this dataset a low volatility.

The skewness coefficient indicates almost a symmetry of the dataset, with a value of only -0.01, we can say that the symmetry curve is almost imperceptibly left-skewed.

The kurtosis coefficient indicates a flattening trend, therefore we have a platykurtic distribution, flatter compared to a normal distribution, with more dispersed values that do not necessarily focus around the mean. In this case, the possibility for extreme values to occur is lower.

Jarque-Bera test value has decreased significantly, and the probability associated with the test is 80.66%, well above the materiality threshold of 5%, which leads to acceptance of the null hypothesis.

Statistical properties of the logarithmized turnover

In Romania, due to the area of operation, scope of business, products or services provided, labour productivity, and a whole set of determinants, turnover level of companies is very different.

The median and mean have decreased, reaching very close values, which lead to a normal distribution. Standard deviation is below the mean level and thus we have a centred data distribution. The skewness coefficient has a negative value, indicating a left-skewed asymmetry, with high values in the right, while the kurtosis coefficient tends to tail at a value significantly above 3, thus getting a leptokurtotic vertical asymmetry. As far as the Jarque-Bera test is concerned, it suffered a reduction following logarithmazing, but the probability of this test remains below the materiality level, therefore the null hypothesis is rejected.

Statistical properties of the logarithmized profit margin

The skewness coefficient shows a slightly asymmetrical left-skewed distribution, values are increasing and focused on right-skewed distribution. It is similar to the kurtosis coefficient, that has a value very close to 3, with a platykurtic distribution curve, flatter compared to a normal distribution, with more dispersed values that do not necessarily focus around the mean. In this case the possibility for extreme values to occur is lower. Thus, opposed to leptokurtotic distribution, in this case, values close to the median are easily identifiable and those next to extremities are hardly identifiable.

Jarque-Bera test value has decreased significantly, and the probability associated with the test is 79.37%, well above the materiality threshold of 5%, which leads to acceptance of the null hypothesis.

Statistical properties of logarithmized social costs

Following logarithm operations carried out on social spending, we have obtained an approximately normal distribution of the dataset. The skewness coefficient shows a slightly asymmetrical left-skewed distribution, values are increasing and focused on right-skewed distribution. It is similar to the kurtosis coefficient, that has a value very close to 3, with a platykurtic distribution curve, flatter compared to a normal distribution, with more dispersed values that do not necessarily focus around the mean. In this case, the possibility for extreme values to occur is lower.

The probability associated to the Jarque-Bera test is of 2%, well below the materiality threshold of 5%, which leads to rejection of the null hypothesis.

Statistical properties of logarithmized environmental costs

Logarithmating clearly shows that both the mean and median values decreased and thus they have very close values, leading to a normal distribution. Standard deviation is below the mean level and thus we have a centred data distribution.

The skewness coefficient has a positive value, indicating a right-skewed asymmetry, with high values in the left, while the kurtosis coefficient tends to tail at a value significantly above 3, thus getting a leptokurtotic vertical asymmetry.

As far as the Jarque-Bera test is concerned, the probability of this test remains below the materiality level, therefore the null hypothesis is rejected.

Existing correlations in the model subject to analysis are:

Covariance Analysis: Ordinary

Sample: 2011 2015
Included observations: 155
Balanced sample (listwise missing value deletion)

Correlation	LN_RENT_EC	LN_REZ_N...	LN_CIFRA_...	LN_MARJA...	LN_CH_SO...	LN_CH_EC...
LN_RENT_EC	1.000000					
LN_REZ_NET_EX	0.727246	1.000000				
LN_CIFRA_AFACERI	0.105877	0.575824	1.000000			
LN_MARJA_PROFIT	0.727855	0.567582	-0.346294	1.000000		
LN_CH_SOCIALE	0.102138	0.432252	0.912045	-0.422492	1.000000	
LN_CH_ECOLOG...	0.169448	0.569732	0.777593	-0.129328	0.755173	1.000000

In terms of correlations, there are the following relationships between Return on Assets and the other indicators:

- Return on Assets has a direct correlation with the net result for the year
- Return on Assets has a direct relationship with turnover
- Return on Assets has a direct relationship with the profit margin
- Return on Assets has a direct relationship to the level of social costs
- Return on Assets has an inverse relationship with environmental costs

By using the OLS method, we obtained the following multiple linear regression equation:

$$ln\_rent\_ec=10.14*ln\_rez\_net\_ex+10.10*ln\_cifra\_afaceri+11.09*ln\_marja\_profit+0.54*ln\_ch\_sociale-0.30*ln\_ch\_ecologice-1.68$$

Dependent Variable: LN_RENT_EC
Method: Panel Least Squares

Sample: 2011 2015
Periods included: 5
Cross-sections included: 38
Total panel (unbalanced) observations: 155

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN_REZ_NET_EX	33.69850	18.46458	1.825035	0.0708
LN_CIFRA_AFACERI	34.26702	18.47039	1.855241	0.0663
LN_MARJA_PROFIT	34.65058	18.46570	1.876484	0.0633
LN_CH_SOCIALE	-0.065696	0.072709	-0.903549	0.3682
LN_CH_ECOLOGICE	-0.059339	0.112999	-0.525126	0.6006
C	-7.132680	1.259888	-5.661361	0.0000

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.955635	Mean dependent var	-2.405308
Adjusted R-squared	0.936739	S.D. dependent var	1.497983
S.E. of regression	0.376770	Akaike info criterion	1.130793
Sum squared resid	15.33119	Schwarz criterion	2.053638
Log likelihood	-40.63647	Hannan-Quinn criter.	1.505632
F-statistic	50.57271	Durbin-Watson stat	1.359855
Prob(F-statistic)	0.000000		

Source: Own processing using EViews 9

Determination of the regression coefficient is 96%, this is the percentage based on which the model describes the dependent variable. The adjusted determination coefficient also shows a 94% dependency between the model and variable. The probability of the F tests rejects the null hypothesis, which reveals that at least one of the independent variables has significant influence.

The coefficient having a strong and direct correlation with Return on Assets is the profit margin, which has the highest value of the regression coefficient, i.e. 34.65. In other words, the change by one unit of the profit margin leads to a change with 34.65 units of Return on Assets. This relationship is statistically significant for a confidence interval of 93%.

The net result for the year, as expected, has a strong and direct influence on the turnover, namely its increase by one unit would generate an increase in Return on Assets by 33.70 units. This is also confirmed by literature, which is an indicator that takes part directly in the Return on Assets calculation relationship.

Moreover, regression reveals that there is a direct and highly correlated relationship between turnover and Return on Assets, with a regression coefficient of 34.27. Such an increase in sales volume leads to an increase in economic results, with a probability of 93%.

We can say with certainty, but with a 99% probability that a change in ecological costs by one unit results in a change of Return on Assets with 0.059 units. The influence is not very big, but we have a reverse effect. The regression coefficient of this relationship is -0.59. Also in the case of social costs, we found an inverse relationship with Return on Assets, namely an investment of on unit has an inverse influence of 0.066 units on Return on Assets.

Check of statistical hypothesis and their correlation with the results achieved

Hypothesis H1: in the case of simple linear regression, just like in the case of the Pearson correlation coefficient, Return on Assets develops a direct and precise relationship with social costs, which is not the case for the case of multiple regression, when, influenced by the introduction of other determinants, the relationship between the two variables reverses.

With regard to environmental costs, although weak, there is an inverse correlation between Return on Assets and ecological costs in the case of multiple regression and an inverse correlation in the case of simple regression.

Hypothesis H2: in the case of simple linear regression, correlation between social costs and Return on Assets could not be demonstrated, but using multiple regression, both social and ecological costs show an inversely proportional influence on Return on Assets, which validates the assumption by the fact that introduction of the net result variable for the year determines the causal link.

Hypothesis H3 is verified by multiple regression and Pearson correlation coefficient; therefore, an investment in social and environmental actions is strongly linked to turnover.

Conclusions

The concept of performance sets new standards going beyond the economic aspects of a business. To create and maintain a healthy business, activities conducted must integrate social and environmental processes and actions. Sustainable development of a company and its strength in the current environment should aim at achieving performance that is built on principles of social ethics and environmental conservation.

Performance reflects a relative notion, as regardless of how it is determined, it requires understanding, judgement and interpretation by the person interested. Therefore, beyond the method of enunciation and measuring, performance expresses the result of thoughts and desires to achieve the objectives set.

In short, performance of a company measures and reveals the extent to which that company is willing to progress as a result of the efforts made. Performance is not a stand-alone, independent concept, it fluctuates in close relation to business objectives.

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