MEASURING THE CONTRIBUTION OF HUMAN CAPITAL ON SMES PERFORMANCE

Abstract

In the context of a global economy, competitiveness between regions and businesses is increasingly driven by their specific and unique intangible resources - investing in R & D and innovation being considered to be the most important source of performance. Rapid technological changes and market globalization have a major impact on the competitive business environment and create new opportunities for the consolidation and development of small and medium-sized enterprises (SMEs). It can be said that an economy based on modern knowledge encompasses a wide variety of financial and production methods, creativity and innovation, expertise and high efficiency of human resources.

The literature review on human capital shows that a sustained development of human capital leads to a significant improvement in the performance of SMEs, and vocational training is considered the most important option for the development of human capital and the advanced performance of SMEs. This paper aims to examine the impact of human capital on the performance of SMEs, showing that there is a significant positive relationship between human capital and SMEs performance. The hypothesis was tested through linear, unifactorial and bifactorial regression models using the SPSS software, the results showing that SMEs performance is enhanced by a higher level of skills and labor education.

***Keywords*:** SMEs competitiveness, SMEs performance, econometric models, regional development

JEL CODES: D2, F6, L2, R1, R5

MĂSURAREA CONTRIBUȚIEI CAPITALULUI UMAN LA PERFORMANȚA IMM-URILOR

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Rezumat

În contextul unei economii globale, competitivitatea între regiuni și întreprinderi este din ce în ce mai mult determinată de resursele lor intangibile specifice și unice - investițiile în cercetare și dezvoltare și inovare fiind considerate cea mai importantă sursă de performanță. Schimbările tehnologice rapide și globalizarea pieței au un impact major asupra mediului de afaceri competitiv și creează noi oportunități pentru consolidarea și dezvoltarea întreprinderilor mici și mijlocii (IMM-uri). Se poate spune că o economie bazată pe cunoaștere modernă cuprinde o mare varietate de metode financiare și de producție, creativitate și inovație, expertiză și eficiență ridicată a resurselor umane.

Revizuirea literaturii privind capitalul uman arată că dezvoltarea susținută a capitalului uman duce la o îmbunătățire semnificativă a performanței IMM-urilor, iar formarea profesională este considerată cea mai importantă opțiune pentru dezvoltarea capitalului uman și performanța avansată a IMM-urilor.

Lucrarea urmărește să examineze impactul capitalului uman asupra performanței IMM-urilor, arătând că există o relație pozitivă semnificativă între capitalul uman și performanța IMM-urilor. Ipoteza a fost testată prin intermediul modelelor de regresie liniară, unifactorială și bifactorială utilizând software-ul SPSS, rezultatele demonstrând că performanța este îmbunătățită de un nivel mai ridicat de aptitudini și educație a forței de muncă.

Cuvinte cheie: competitivitatea IMM-urilor, performanța IMM-urilor, modelele econometrice, dezvoltarea regională

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1. INTRODUCTION

The strategies of the new 2014-2020 programming period focus on the European market economy for the 21st century and identify the main priorities for smart, sustainable and inclusive growth. EU policies seek to ensure not only a more favorable environment for the creation of SMEs but also the further development of existing small and medium-sized enterprises and the achievement of the competitive advantages of the European single market. These priorities will be achieved through more than 95% of SMEs, representing the largest part of enterprises that make up the national, regional and European economy, although the definition of what constitutes an SME varies greatly from one country to another. In addition, they make a substantial part of the economic output and employ the majority of the workforce. Expanding and deepening regional and global value chains has increased the importance of the sector, with SMEs becoming component suppliers, logistics providers, exporters and investors outside the country.

SMEs are often seen as dynamic and innovative. While some of these businesses remain productive and competitive, many firms remain small and rely on conventional technology to deliver standard products and services. The level of enterprise competitiveness is the result of many factors that tend to have an extremely dynamic character from time to time. These involve a set of external and internal conditions of the enterprise that affect the nature of its performance and its level of success over that of its competitors.

Among the factors that support the enterprise's productivity and competitiveness can be the knowledge and experience of the owner or entrepreneur, the decisions about the markets involved, the organization of production and distribution, investment in plant and equipment, financial management, supplier networks, marketing strategy, and human capital. At present, competitiveness does not focus on purely economic aspects but incorporates factors such as culture, social development, health, environmental sustainability, tourism, education, politics, human resources quality, spatial location etc. Human capital offers a competitive advantage firms in terms of skills, expertise and willingness to work (Hewitt-Dundas, 2006) and is an essential part of innovation (OECD, 2011).

Although SMEs play a major role in generating jobs and increasing the level of global economic development, and are traditionally also the main actors in domestic economic activities, especially as providers of employment opportunities and primary source generators (Palmarudi and Agussalim, 2013), they do not want to make any effort in the main human resource management practices, such as the recruitment efforts, due to the costs associated with such efforts (Ojokuku, 2012). Small businesses

are also generally not in a position to offer attractive compensation packages as those of larger and better-established enterprises.

Studies over the last 3 decades confirm that a more skilled workforce is linked to higher productivity. An enterprise invests in training because it aims to make its workers more capable of performing their tasks, either faster or at a higher quality level. Training programs that do not generate higher productivity will probably be phased out due to a negative cost-benefit calculation of the enterprise.

In this context, this study aims to assess the effect of human capital development on SME sector performance.

2. LITERATURE REVIEW

The theory of human capital supports the idea that knowledge provides individuals with an increase in their cognitive abilities and leads to more productive and more efficient activities (Davidsson & Honig, 2003). In a similar notion, Sturman, Walsh and Cheramie (2008) refer to human capital as personal intangible resources embedded in individuals [entrepreneurs] and developed through education, training and experience and are closely tied to know-how. Both works seem to align with a concept that associates human capital with the skills developed through education and experience. Sullivan and Sheffrin (2003) have defined human capital as the stock of skills, knowledge and personality attributes that are incorporated into the ability to achieve the workforce so as to produce economic value.

Human capital is a central element of the theory of economic growth. The growth of a firm is positively related to the quality of human capital and the firm's investment in it (Gossling and Rutten, 2007). Human capital is the embodiment of knowledge among better-educated and productive people. It is also a stimulating factor for innovation (Leiponen, 2005), and most company-level innovations are essential, indicating their role in generating, adapting and disseminating technical and organizational changes.

The important role of human capital development in the growth and development of SMEs cannot be undermined. Human capital is a source of development and, therefore, one of the factors generating competitiveness. Consequently, a competitive business is a business that incorporates or trains competitive people and continues to improve.

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In business, human capital consists of employees, acquired knowledge, skills, capacity and willingness to learn, placed at the service of the company they work in. An example is the personal satisfaction, skills and attitudes of individuals, leadership skills and teamwork (Navas and Ortiz, 2002).

In the process of forming and developing human capital we must always find together two main elements, learning and experience.

Measuring human capital

There is a great interest in the measurement of human capital, the difficulties encountered in this process being due to the difference between human capital as a physical asset and human capital as an intangible asset.

Becker (1993) distinguishes between general human capital (knowledge and skills that are easy to transfer) and specific human capital (knowledge and skills that are less transferable and have a narrower scope). It describes the traditional concept of capital investment as covering expenditure on education, training and medical care, generating human capital rather than financial or physical capital.

Lundvall and Johnson (1994) consider that higher education has a significant impact on innovation because graduates can invent and develop new technologies and exploit technological progress.

Hofheinz (2009) proposed the level of education as an effective means of assessing the level of skills in the workforce, if the higher skills indicate a tertiary or equivalent level of training and average skills indicate secondary or equivalent education. He found that employment, earnings potential and lifelong learning outlook are higher for employees with higher skills than those with lower skills.

For quantifying human capital at national level an agregate index was proposed by the World Economic Forum. The Human Capital Index measures four elements related to human capital when taking into account countries' capacities to improve the quality and quantity of human capital (Ederer, 2006). Figure 1 illustrates the connections between the four elements of the index, and each of its second level elements.

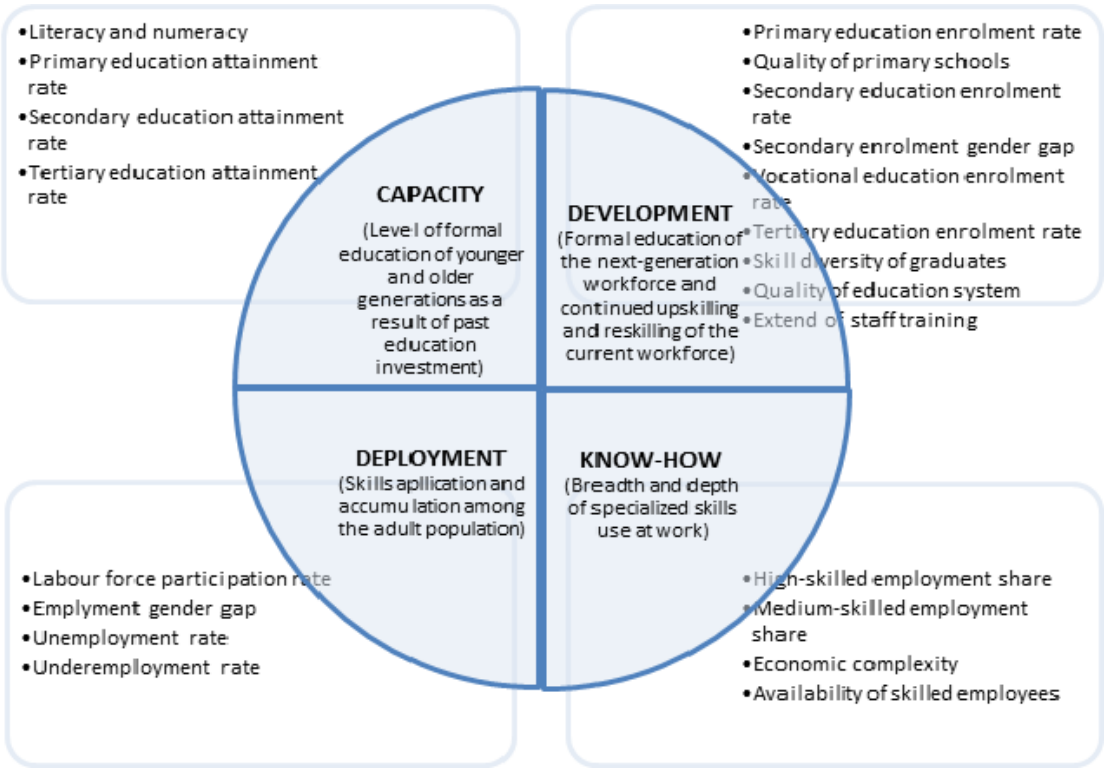

FIGURE 1 - THE STRUCTURE OF THE GLOBAL HUMAN CAPITAL INDEX (SOURCE: AUTHOR PROCESSING AFTER THE WORLD ECONOMIC FORUM REPORT AND EDERER, 2006)

The index does not take into account the specific individual elements of human capital that could influence the probability of innovation at a firm level. It is therefore necessary to introduce the concept of innovative human capital to estimate the effect on innovation of small firms, innovative human capital having the potential to generate a competitive advantage for the innovation of small firms.

Human capital and SME performance

Past studies on human capital show that sustained development of human capital leads to significant improvements in SME performance. Vocational training has been identified as the most important option for developing human capital and advanced SME performance. Hisrich and Drnovsek (2002) found that managerial skills measured through education, managerial experience, start-up experience and industry knowledge have a positive impact on the performance of new SMEs. Bosma et al. (2004) and Fatoki (2011) also examined the impact of human, social and financial capital on the performance of small and medium-sized enterprises, showing that there is a significant positive relationship between human capital and SME performance.

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However, there are other empirical studies, such as Shiu (2006), Appuhami (2007) and Chan (2009), which found an insignificant relationship between the development of human capital and the performance of SMEs.

The model of labor productivity and human capital

In order to test the correlation (and the possible impact) of human capital on the performance of the firm, a standard labor productivity model can be used. Productivity is defined as the added value of the enterprise divided by the number of full-time workers. Productivity is determined by the capital contribution, represented by the capital-labor ratio and the contribution of human capital. Two dimensions of human capital are used: the level of education of the workforce of the enterprise and if the enterprise provides formal training to its workers. The control variables are included according to the equation:

WL = c + β1K + β2H + β3S + β4A +, β5T + β6L + β7C + ε, where:

WL = labor productivity,

K = capital to labor ratio;

H = human capital (on-the-job training or in-service training);

S = enterprise size,

A = the age of the enterprise,

T = sector,

L = localization, and

C = country.

The constant term is c, the error term is ε, and the coefficients are βs, following the standard notation. You can run regular regressions with the smallest squares on three versions of the model. Model 1 includes the educational variable, model 2 includes the training variable, and model 3 includes both.

The model of SME performance and human capital

In this model, the performance of SMEs can be measured by turnover, profit or ability to meet planned production quantities, ability to meet product / service demand on the market, ability to provide customers with quality products / services, and the ability to meet the planned profit levels.

SME Performance = f (Human Capital Development)

Human Capital Development (HCD) = f (level of training at the workplace, formal education level, level of participation in seminars / conferences and workshops and level of participation in fairs and exhibitions).

Therefore, SME performance = F (X1, X2, X3, X4)

SME performance = β0 + β1 X1 + β1 X2 + β1 X3 + β1 X4 + Ui

where:

Waiting a priori is β1, ... β4> 0

X1 = Training Level at Work;

X2 = formal education level;

X3 = Level of attendance at seminars / conferences and workshop;

X4 = Level of participation in fairs and exhibitions.

Ui = term of disturbance

B = Intercept

β1- β4 = Coefficient of independent variables

3. RESEARCH METHODOLOGY

Literature review on human capital have shown that sustained development of human capital leads to significant improvements in SME performance.

This paper aims to examine the impact of human capital on the performance of small and medium enterprises, showing that there is a significant positive relationship between human capital and SME performance. In order to test the formulated hypotheses we formulated econometric linear regression models. Unifactorial and bifactorial regression analysis was used to describe and evaluate the possible causal relationship between two or more variables. More specifically, regression attempts to explain the changes in the values of a variable due to changes in the values of other variables that influence it. Testing of the econometric model was achieved through the Excel and SPSS software.

The econometric patterns embraced the general form:

Y = β0 + β1 X1 + β2 X2 + ε, where:

- X1 and X2 represent the influence factor (independent variable / influence / cause);

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- Y represents the resultant variable (dependent variable or effect);

- β0, β1, β2 represent coefficients / regression parameters;

- ε is the residual variable.

In the developed models, the independent variable (X) is the composite index of the Human Capital, the number of persons participating in the training courses and the level of education associated with the number of tertiary cycle graduates (bachelor, master, doctorate and postgraduate studies - doctorate). Indicators on education and training were considered for this model because they are essential components of human capital, as evidenced by the analysis of the literature.

The dependent variable (Y) is one by one Productivity per person and Turnover in the SME sector.

The indicators were calculated on the basis of data extracted from Romania's Statistical Yearbook 2015 and from the following databases: TEMPO online, Eurostat and FRED

The composite index of human capital was calculated according to the methodology proposed by the World Economic Forum containing a number of relevant indicators grouped on 4 pillars: education, health and wellness, labor and employment and accessibility.

Estimation of regression model parameters was performed with SPSS. Depending on the values obtained, the following steps were taken:

1. Statistical parameters testing;
2. Interpretation of parameters from an economic point of view;
3. Verify the validity of the model using the ANOVA method.

4. EVALUATIONS OF THE ECONOMETRIC MODELS AND RESULTS

In order to test the extent to which the productivity of the work, respectively the turnover achieved in the SME sector, is influenced by the composite index of human capital, several models of regression are evaluated by its determinants.

MODEL 1

This first model explains the possible causal relationship between the dependent variable Labor productivity per person and the independent variable Human Capital Index per person:

PrMp = a + b * ICU + εi

where it εi is a normally distributed variable of zero and constant variance.

Figure 2 shows the "point cloud" indicating the type of link between the two variables.

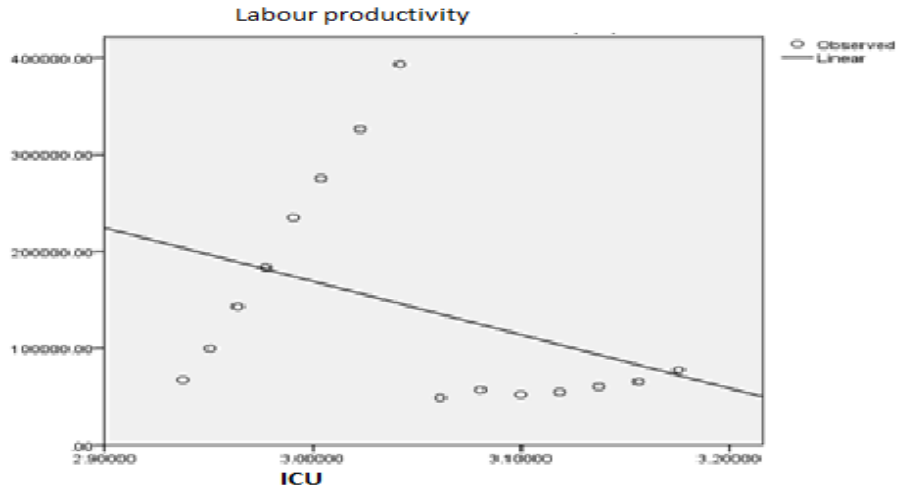

FIGURE 2 - ANALYSIS OF THE DEPENDENCE BETWEEN LABOR PRODUCTIVITY AND ICU
Source: author processing

Analyzing the figure above and the coefficients computed for this model we can assume that the proposed model is not a valid one and that there is no direct and linear link between the two variables. The coefficient Sig. = 0.165 exceeds the assumed rigor threshold of 0.05, which means that the model is not statistically relevant. An important element in determining the intensity of the link between the two variables is the determination coefficient (R2). This coefficient shows to what extent a dependent variable y is explained by an independent variable x. Thus, the higher the value of the coefficient of determination is to 1, the greater is the extent to which the variable x explains the variable y. In the case of our analysis, R2 = 0.142, a very small value, indicating that the y variable, the Productivity of labor per person, is explained only in a proportion of 14.2% by the variable x and the Human Capital Index.

MODEL 2

This model explains the possible causal relationship between the dependent variable Turnover in the SME sector and the independent variable Human Capital Index per Person:

CA_IMM = a + b * ICU + εi

where it is a normally distributed variable of zero and constant variance.

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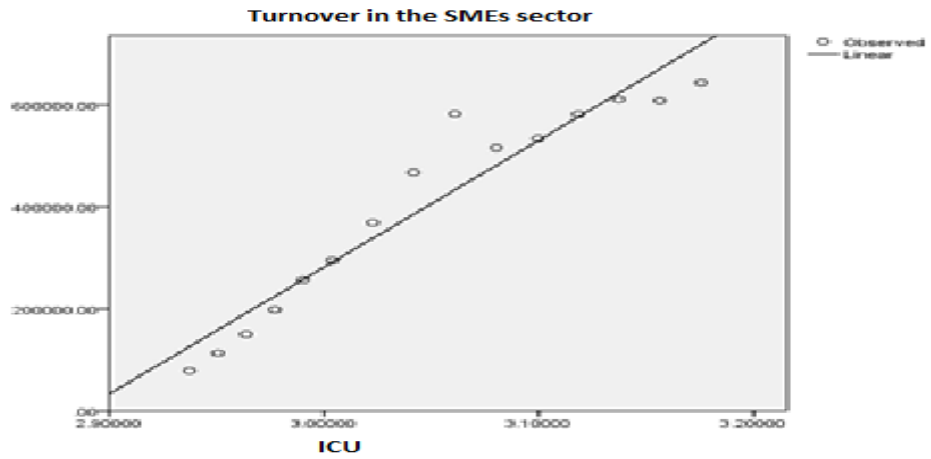

FIGURE 3 - ANALYSIS OF THE DEPENDENCE BETWEEN THE TURNOVER IN THE SME SECTOR AND THE ICU
Source: author processing

We note that the graphical representation of the two indicators in Figure 3 is a straight line. Thus, we can assume that there is a direct and linear connection between the two variables, corresponding to the simple linear regression y = a + bx + ε. Using the regression function described, we obtained the values for the a and b parameters (a = -7185459.315 and b = 2489070.55), both parameters being statistically relevant, with the statistical coefficient Sig = 0.

The linear regression function becomes:

y = -7185459.315 + 2489070,55 * x, or

CA_IMM = -7185459.315 + 2489070.55 * ICU

In the case of this analysis, R2 = 0.917, a value very close to 1, indicating that the y variable, the turnover in the SME sector, is explained by 91.7% of the x variable and the composite index of the human capital .

MODEL 3

This model explains the possible causal relationship between the dependent variable Turnover in the SME sector and the independent variables Number of persons participating in the training courses and the level of the elite education Number of tertiary cycle graduates:

CA_IMM = a + b * P_Form + c * A_IU + εi

where it is a normally distributed variable of zero and constant variance.

Analyzing the resulting coefficients, we note that of the two independent variables proposed, only one is statistically relevant (Sig = 0), the number of persons participating in the training courses, while the

number of higher education graduates was excluded from the model, considered to be not statistically relevant (Sig = 0.417).

Thus, we can assume that between the two remaining variables there is a direct and linear relation, corresponding to the simple linear regression. The estimated values of parameters a and b were: a = 789685.054 and b = -5.786.

The multiple linear regression function CA_IMM = a + b * P_Form + c * A_IU + εi

becomes: CA_IMM = 789685.054 -5.786 * P_Form

In the case of this analysis R2 = 0.651, indicating that the dependent variable, namely the turnover in the SME sector, is explained in a proportion of 65.1% by the independent variable or the number of participants in training courses.

The use of the last two regression models reflected the direct and linear relationship that exists between the chosen variables, and the values of the main coefficients close to 1 strengthened the correlations between them, showing that the chosen models are valid, the dependent variables (the capital index human and training participants) explaining the change in the independent variable (the turnover in the SME sector) in a significant proportion. The obtained results confirm the clarified aspects of the analysis of the literature on human capital and its impact on the performance and competitiveness of SMEs.

CONCLUSIONS

The conclusion that emerges from this analysis is that human capital development activities (ie knowledge, skills and competencies) have a positive impact on the performance of SMEs. SMEs need the benefits of participating in seminars, fairs, workshops and exhibitions as a means of developing their human capital by acquiring the current knowledge that will have a positive impact on their performance, thereby enhancing the capacity of SMEs to grow and the potential for survival.

With regard to poorly-performing SMEs, although they can be supported by various measures: finance, technology, tax exemptions, it is not enough to produce the changes demanded by the current economic environment if firms neglect human capital and workers, since they are critical to creating value at the company level.

The development of human capital aims at expanding, developing and improving the individual for professional growth in his / her career in the company or promoting efficiency and productivity in the

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workplace, thereby posting long-term goals, preparing the individual to take responsibility for the more complex actions required by the current environment.

The analysis also provides a number of very relevant policy implications. The efforts to increase human capital in the private sector can be an important strategy to increase the productivity and competitiveness of businesses of all sizes. The link between education and training, on the one hand, and the productivity of the enterprise, on the other hand, is important for SMEs and is not a factor that should be ignored in the effort to develop competitive, productive and sustainable enterprises. The focus on SMEs must be not only on access to finance but also on other factors that are important for small and medium-sized enterprises.

The state must build both a good educational system and businesses must be selective and employ educated people. In addition, the government can consider the possibility of supporting (through subsidies) the training made in enterprises, knowing that it has a positive effect on the development of SMEs' competitiveness and productivity growth in the economy.

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