

Model for quantifying the Efficiency of Investment in Human Resource

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Abstract

The present paper is an argument for realizing the investment in human resource, because they are the essential factor in the development of economic entities and represents one of the fundamental problems of the economic-social progress of any country. Development and progress are the fruit of investments, and investments are made through people. The central role of investment in human resources is given to the educational system, whose efficiency in economic growth can be measured.

Key words: human resource, investment, efficiency, educational system, progress

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Introduction. Literature review.

The evolution of society depends on high scale on the efficiency of using human, natural and financial resources it disposes of. Concomitantly with the evolution of civilization, people faced resource allocation problems, so by combining the resources they possess, they would ensure a higher increase of the volume and quality of production, obtain greater amounts of goods and services, which constitutes the premise of economic growth, the creation of an advanced economy and, implicitly, the conditions to increase the quality of life.

Generally, when we refer the investments activity, we consider that we allocate resources to acquire production factors (equipment, tools, civil and industrial buildings etc.) in order to achieve some objectives in the sphere of material or non-manufacturing production (tangible or material investments), which will realize income-generating goods and/or services. Investments materialize also in allocations of financial resources for mobile placement assets (shares and bonds) or bank deposits which offer dividends or various forms of profit. Out of those presented, it results that investments constitute the essential condition for the development of technical capital, with direct effect on the production, on the increase of occupation degree for the labor force and on incomes, favoring their development in the next stages. Investments represent a factor of effort, an expense which enters directly into the equation of economic efficiency. Cucu (2017) approaches, both theoretically and practically, the investment decision.

Thus, out of each economic activity, it is pursued the achievement of tangible goods and services, which are to lead to the realization of profit and, not in the last row, to the remuneration of shareholders' capital. Any activity from the economic and social sphere creates professions for people, models characters. Professor Sultan Kermally, in its book „Masters of human resource management”, citing the writer and commentator Charles Handy stated: „Employees should be considered more likely a valuable asset than a cost. Most organizations do not share this vision. Employees are our most priced fortune” (Kermally, 2009). Eicher & Kalaitzidakis (1997) develop on the human capital-associated dimension in the context of foreign direct investments.

Until three to four years ago, the interest of shareholders, entrepreneurs and managers was focused on remunerating shares, gaining emerging markets, restructuring companies, introducing new technologies. Within organizations, the pecuniary interest has surpassed the human aspect so that, currently, most economic entities face an acute lack of labor force, determined by a series of factors: decrease of birth rate, migration, the salary level, comparative low against the Europe countries, the lack of solutions to replace the labor market, the incapacity of the

educational system to prepare youth for the current economic requirements, the lack of career orientation and counseling, insufficient resources allocated for life-long learning etc. Presently, we cannot talk about economic growth without considering the human resource, which has become extremely important.

From managerial theory, the following types of organizational cultures are known:

- Domination culture, characterized by the autocratic leadership style, specific to the small enterprises, in which the leader takes most of the decisions;
- The role culture represented by bureaucratic leadership, through the involvement of subordinates in decision-making;
- The task culture, which is oriented on project, emphasizes the job done and answers to the requirements of the market;
- The person culture, whose accent falls on the professionalism of employees.

Starting from the latest, it results the necessity to secure organization with valuable employees, that would contribute to the achievement of the objectives of the entities in which they work.

All economic entities, regardless the nature of their capital, public, private or mixed, are entrusted with the task to give to the society people who are competitive from the viewpoint of professional training, with an attitude towards assuming responsibilities, with acquired theoretical and practical abilities, who are aware of their social contribution. In the opposite case, in the society, there will be more and more people with less professional training, stressed, unaccomplished on the professional, social and familial areas, with psychic problems, who will find disputable compensations, which, in most cases, lead to the degradation of human being.

Due to this reason, the role of organizations is to participate actively to the creation of an equilibrated internal environment, to an organizational culture that puts accent on the person, having as first objective the employee, his/her professional training, which will lead, undoubtedly, to the growth of the economic entity and, respectively, to the achievement of profit.

Following the year 2007, the human capital in Romania entered in competition with the human resources from the developed economy. "A simple comparison of the salary earnings obtained in Romania, on one hand, and the European Union, on the other hand, reveal hard truth.

More precise, the national human capital offers a production much lower, compared to the occidental one. This situation, in tight correlation with others, places our country on the last place occupied for a nation pretending to be integrated in the west-European structures" (Mursa, 2006). In this context, the investment in human capital becomes an interesting problem, due to the fact that the Romanian labor force operates on a market on which competition is essential, and the process of integration on the European labor market has surpassed the national economy in its whole.

1. Research methodology and data

Education is an autonomous field of social life, through which the most important results are disseminated, and through teaching activity those are progressively transmitted and reproduced, both quantitatively and qualitatively in the physical and intellectual capacities of its beneficiaries.

More than anytime, at the global level, companies request people who are competent, trained, professionally prepared, but instructed by somebody else. I do consider that education can satisfy this requirement, being the primordial way towards economic growth.

The education system ensures professional mobility of the labor force, which involves: measurement of the economic process with the process of education and labor force training, the economic nature of the educational and labor force training process, measurement of the economic and social effects of education, comparison between effects and efforts and outlining the modality and opportunity of development for education, to ensure economic growth and, implicitly, the increase of the quality of life. Thus, the overall total of expenses made for the formation and development of human resources, for the growth and development of the individual, are constituted within the investment in human resources.

Quantification the total volume of human resource training expenses might be achieved by using several methods:

1) occupied population is structured on age groups, professions and qualification levels. For each group, there are determined the expenses made for its training, and the product between indicators measures the professional formation expenses.

2) Total professional formation expenses (Ch_{tot}) are determined as the sum between the initial professional formation expenses (C_{fp}) and the expenses for life-long learning (C_{iv}).

2. Results and discussions

Mathematic model for quantifying the efficiency of investment in human resources through the addition of Gross Domestic Product

It is started from the hypothesis that salary is paid depending on the level of professional training, it recovers gradually the professional formation expenses.

$$C_{fp} = s_1 L_1 + s_2 L_2 + \dots + s_n L_n \quad (1)$$

$$\text{Or synthetically, } C_{fp} = \sum_{i=1}^n s_i L_i \quad (2)$$

where the following notations were used:

C_{fp} - volume of expenses with initial professional formation of labor force;

s_1, s_2, \dots, s_n - salary for the complexity of work 1, 2, ..., n;

L_1, L_2, \dots, L_n - quantity of work of complexity 1, 2, ..., n

$$C_{iv} = c_{iv1} L_1 + c_{iv2} L_2 + \dots + c_{ivn} L_n \quad (3)$$

$$\text{or, } C_{iv} = \sum_{i=1}^n c_{ivi} L_i \quad (4)$$

from which:

$$Ch_{tot} = C_{fp} + C_{iv} = L_1(s_1 + c_{iv1}) + L_2(s_2 + c_{iv2}) + \dots + L_n(s_n + c_{ivn}), \text{ or}$$

$$Ch_{tot} = \sum_{i=1}^n L_i(s_i + c_{ivi}) \quad (5)$$

There is a problem related to the bringing up to date of costs for professional formation. The occupied population prepared during various time periods, at different costs, and the bringing up to date of costs for professional formation becomes an important problem. The results of professional formation are achieved following subsequent time periods. This assumes the existence of some general orientations, through national strategies, on 10-20 years, considering the periods of formation, active life of citizen and moral depreciation more accentuated than in the case of fixed assets.

To overcome these weak points, it is started from the hypothesis that the update ratio a is approximately equal to the composite interest ratio.

$$C_{tot}^a = \left[\frac{\overline{C_{med}}}{a} \left[1 - \left(\frac{1}{1+a} \right)^n \right] \right] L_i \quad (6)$$

where the following notations were used:

C_{tot}^a - total updated cost for labor force training during the current period from category i ;

$\overline{C_{med}}$ - average cost from the base period;

a - update ratio;

n - number of years for which update is made;

L_i - effective of labor force from category i .

It results:

$$C_{tot}^a = L_1 \left(\frac{S_1 + c_{iv1}}{(1+a)} \right) + L_2 \left(\frac{S_2 + c_{iv2}}{(1+a)^2} \right) + \dots + L_n \left(\frac{S_n + c_{ivn}}{(1+a)^n} \right) \quad (7)$$

or

$$C_{tot}^a = \sum_{i=1}^n L_i \left(\frac{S_i + c_{ivi}}{(1+a)^i} \right) \quad (8)$$

Because education constitutes the main component of professional formation and development of qualified human resources, it is possible to quantify the effort laid out by the society by appreciating the correlation between the dynamics of expenses associated to the educational process with the dynamics of the Gross Domestic Product or of the National Income and the weight of education-related expenses in the GDP, in budgetary expenses or in comparison with other macroeconomic indicators.

The total efficiency of forming and using qualified human resource is represented by a ratio between the economic effect of qualification, measured by the additional Gross Domestic Product (GDP) and the economic effort spent for education:

$$E_{PIB} = \frac{\Delta PIB}{\sum C_{tot}^a} 100 \quad (9)$$

where:

E_{PIB} - total efficiency of qualification, depending on the additional Gross Domestic Product;

C_{tot}^a - total up-to-date cost of preparing labor force during the current period, determined above.

More rigorous is the expression of the efficiency of labor force preparation through the additional Gross Domestic Product, created by complex labor, corrected with the consumption price index (or the GDP deflator):

The contribution of the investment in the complex professional preparation to the increase of the Gross Domestic Product can be written under the following form:

$$I_{inv/PIB} = \frac{1}{D} \sum_{i=1}^n \sum_{j=1}^m v_{ij} n_{ij} \alpha_{ij} \beta_{ij} \quad (10)$$

in which the following notations were used:

$I_{inv/PIB}$ - contribution of the investment in complex professional training to the growth of the Gross Domestic Product;

D – average duration of employees' activity;

v_{ij} - average value of an employee's from the group preparation i - n (in years) with the level of experience i - m (in years);

α_{ij} - coefficient of changing the value of employees' preparation (is calculated through a matrix, which takes into consideration the experience groups and groups based on training level);

β_{ij} - coefficient of dynamics for employees' (labor force) training.

From relation (9) and (10), it can be written the expression of efficiency of investment in labor force preparation through the additional Gross Intern Product, created by complex labor, corrected with the price index:

$$E_{PIB} = \frac{\Delta PIB}{\sum_{i=1}^n \sum_{j=1}^m v_{ij} n_{ij} \alpha_{ij} \beta_{ij}} \quad (11)$$

Of course, the increase of the Gross Domestic Product on the account of labor force qualification reflects, in a synthetic manner, the contribution of education to the development of national economy. Through this modality,

there can be determined the contribution that education brings to the growth of other macroeconomic indicators: National Income, Gross National Product, Total Social Product (for material production) etc.

Conclusions

The essence of any organization is capital and, as we have shown, human capital. The development of any organization depends not only in the strictly economic part, but also on the behavior of employees within the organization. Owners and managers should harmonize their objectives and interests in tight connection with the human capital by: motivation of employees, ensuring compatibility between the job description and the competence of the personnel, preoccupation for career management, evaluation of professional performances, application of the lifelong learning process through participation at courses and training programs, ensuring satisfaction on the professional plan and on the social importance of labor. Multiplication of these policies lead, undoubtedly, to the increase of the owners' fortune and, not in the last row, to the increase of GDP and, from this indicator, education is financed.

From the presented model, we can conclude that the dimensioning of investments, only on directly measurable efficiency criteria, has a limited character. The mathematical expression for the efficiency of investments in training the labor force demonstrates that, through the educational process, positive effects are achieved, and these effects propagate in the economy on a longer time period, having as well results on the social plan.

Education has the task to develop qualified human resources, which will answer to the present and future requirements of the economy, to ensure permanent training of citizens and to continuously adapt the professional structure of the population. Also, the new generations should be taken into account, as they have other expectations on the professional plan.

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