CONTRIBUTION OF HUMAN RESOURCES TO THE SUSTAINABILITY OF THE KNOWLEDGE-BASED ORGANIZATIONS

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ABSTRACT: Sustainability is a new concept, developed during the second half of the 20th century, which started out from scientists' and politicians' awareness regarding the vulnerability of the resources necessary in order to survive as well as the need to ensure the resources for the survival of the present and future generations. The development of this concept became particularly widespread, being tackled, studied and developed by all scientific fields; thereby no scientific process can be conceived today without taking into account the characteristics of sustainable development. Identifying the paths to ensure sustainability for all types of capital is no longer a challenge, but a necessity. Human capital represents the most important form of capital of the modern organizations. Identifying this form of capital at the level of the organization and harnessing it are the preliminary stages in the process of identifying how this type of capital can be preserved, regenerated, or totally or partially replaced.
KEYWORDS:human capital, sustainability, sustainable development, knowledge, knowledge-based organization,

1. INTRODUCTION

Sustainability represents a modern concept of the 20th and 21st centuries, defined by scientists and politicians in their common steps to identify and develop feasible solutions with the declared purpose of diminishing irrational consumption of Earth's vital resources and preserve them in order to ensure future generations' existence. The primordial need to ensure the perpetuation of the human species has determined the rapid development of the concept of sustainability, its approach being carried out from various standpoints: economical, ecological, cultural, social or political. Multidisciplinary approach of this concept was determined by the fact that developing solutions mandatorily implied researchers' participation as well as specialists from all main fields of the society.

In this context of multi-disciplinarity, the concept of sustainability receives a new interpretation, namely that sustainability represents the sum of all the processes through which total or partial replacement as well as the reduction of the consumption for all types of non-renewable resources (capitals) can be ensured in parallel with the processes of regeneration for the renewable resources (capitals).

The concept of sustainability came out strongly during the second half of the 20th century following the scientists' efforts in order to raise awareness at the level of the human society regarding the severe nature of the environment issues born as a consequence of strong economic development, exponential growth of the World's population, but especially uncontrolled use of its resources. Although this concept was introduced in the scientific literature at the end of the 70's by Wes Jackson in his work "Building a Sustainable Society" and by Lester Brown in his paper "World Conservation Strategy", the most used definition for sustainability was phrased by the UN World Commission on Environment and Development in 1987, led by Norwegian prime-minister Gro Harlem Bruntdland. In its report, titled "Our Common Future", sustainable development was defined as follows: "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [2].

2. THEORETICAL CONSIDERATIONS

The concept of sustainability has become one of the most dynamic at the end of the millennium in particular due to efforts undertaken by scientists, politicians, and all those who felt responsible in this field to give answers to a series of questions regarding how mankind, through its decisions and actions, can secure the perpetuation in good conditions of all species on Earth:

- What direction must follow the development of mankind from an ecological perspective?
- What is the optimum level of consumption for Earth's natural resources to provide their protection and regeneration?
- What measures must be taken at a global level in order to stop the degradation of the environment?
- How can access of all people to a minimum of resources be ensured in order to provide a decent standard of living?
- What are the limits up to which economic development must take place in order to secure the development of future generations?
- …and for the present generation?

Searching for answers to these questions has taken on different roles and interpretations according to the fields involved in the endeavour, sustainability thereby becoming an ***ecologic*** concept when analysed from the perspective of environmental science, ***economic*** if the answers are determined by an assessment from the perspective of the economic sciences, ***cultural*** when the approach implies accepting multi-culturality and ethnic and religious diversity, ***social*** when answers follow the influences of the processes over the development of human society, but especially ***political*** when they refer to decisions, norms and regulations which determine the long term development of the human society. Sustainable society represents a society where the undertaken decisions regarding economic and social development have determined the existence of a state of ecological, economical, cultural, social, and political balance (figure no. 1).

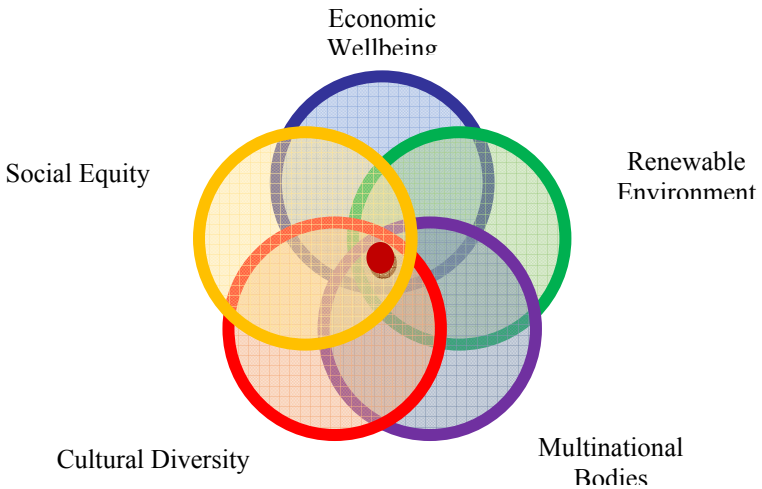

Figure 1. Sustainable Society
(adaptation after Deneș, C., Radu, S., *Managementul resurselor și al sustenabilității*, "Lucian Blaga" University from Sibiu, 2011)

The concept of sustainability tries to bring answers to a series of issues such as:

- Identifying planet's potential of natural resources depending on whether they are renewable or not. Contemporary society must identify and especially optimize the ratio between consumption of natural resources and its consumption needs but also measures through which regeneration of renewable resources is ensured and non-renewable resources are being replaced. Planetary resources are limited consequently their consumption must be correlated with mankind's need to survive, in particular with their regeneration speed starting from the idea that the consumption speed of the resources must not surpass the regeneration or their replacement speed. When talking about non-renewable resources, the task gets even more difficult because replacing such a type of resources involves supporting an innovative industrial development by allocation of funding for research and creation of a regulated framework for the production, use, and access to a new type of resources. A new type of world power is thus being developed determined by the monopole of holding the new resources hence a new issue:
- Creating the premises for ensuring equitable access to resources for all members of the human community. This can only be achieved to the extent that the new society is built democratically, respecting citizen's right, being able to ensure the just distribution of wealth between generations and within the same generation [2]. Sustainable development can only be considered through the principles of democracy, based on ensuring all members of the society equal opportunities for a decent life, the solidarity which must manifest at the level of social relations and especially on respecting fundamental human rights. In this context, the transition towards a sustainable development means developing some new approaches in education.
- Education plays an essential role in forming and modelling the new society and the transition towards a sustainable development implies educating all the generations (children, young and adults) about three huge topics: education about how the existing resources are being managed, education referring to the principles that govern a democratic society and last, but not least, education regarding the production and use of new resources. All social factors are morally obliged to undertake getting involved in the education and forming of a new culture based on supporting sustainable development. What should first take place is a new re-orientation of the entire educational system at all levels through which the new generations would be prepared to cope with a rational consumption of the resources, to acknowledge that the resources are not a personal commodity, but a global one therefore protecting and using them shall be done by respecting all people's rights to access them, but also education in acknowledging and developing new solutions that would protect Earth's riches. Secondly we need to have the social media involved in educating the population regarding what is meant to be a sustainable development in the purpose of forming a new culture. Finally education is being performed by drafting political and legal constraints which create the governance framework of a society but only with respect for the democratic principles of human rights.
- Innovation and the development of new technologies is also a complex issue taking many forms: societal, political, economic or technic. The prerequisite for solving it represents supporting and implementing the creative processes for research and learning. This means the members of the society must know and interpret their role in the society, identify and accept the constraints that guide its development and integrate them in their actions [2]. Consequently, the processes of learning and accepting innovative solutions and technologies are particularly important. The knowledge-based organization represents the organization which supports the learning process as a whole but also at an individual level, it is open in tackling new technologies through its policies for economic development and investments and has the most chances in approaching sustainable development.

3. SUSTAINABILITY OF KNOWLEDGE-BASED CAPITALS

From the economic perspective, organizational wealth creating future benefits for its owner can be grouped into 4 capital categories as follows:

Produced capital comprises all tangible assets such as buildings, machinery, equipment, goods, including material infrastructure. This type of capital is extremely easily quantifiable and consequently offers the most relevant information regarding the development of the analysis on future benefits and sustainable development.

Natural capital is made up of the actives that generate flows of useful renewable or non-renewable goods, namely soil, forests, water, mineral, etc. This type of capital does not directly produce future benefits, but indirectly contributes to their production. However, they are assessed and benefits are easily quantifiable, which allows their use in in the economic analyses. It should also be mentioned that the use of natural capital is subject to some restrictions imposed by the principles of sustainable development and the vulnerability of this kind of capital.

Human capital defined as a complex made up of qualifications, skills and talents, competences and capabilities, education and level of health specific foe every individual. At the level of the organization, the investment in human capital, materialized in the investment in education, staff training and health, is part of its development strategy. Although the specialists consider it to be the most profitable investment, there are many difficulties in assessing it.

Knowledge capital represents the total amount of information existing at the level of an organization. Identifying, classifying and managing information from the capitals theory perspective represents a genuine challenge as solutions for two types of problems need to be found:

1. Defining explicit knowledge categories but especially implicit ones, ways of identifying and codifying it in order to ensure its transferability.
2. In order to be considered as a capital, knowledge must be assessed from the monetary perspective.

Social capital, also called relational, represents the totality of rules, habits, communication networks allowing the establishment of social, economic and organizational order. Social capital has a profoundly subjective character through its wanting to quantify how individuals manifest the sense of belonging to the organizational society from the perspectives of inclusion, of participation to the increase of economic productivity and stimulating creativity. Problems that arise in the case of social capital are similar to those mentioned in the case of human capital to which adds the problem of creating the reference system, especially through the development of strong organizational culture [1].

Organizations' sustainable development takes place by involving all types of capital alike, in different proportions, at different moments, in the process of medium and long term organizational change which can only occur by development of knowledge, creativity, innovations in the purpose of ensuring the improvement of life quality. Thus each type of capital has its undeniable importance in this process.

In the process of sustainable development the *individual* occupies the central position, a multi-facetted fact worth pondering about:

- The sustainable development process itself is destined to improve human existence by ensuring the survival of future generations and by ensuring some life conditions that are at least acceptable for the current generations.
- The sustainable development process occurs through individual involvement as a bearer of knowledge, spring of creativity and promoter of innovative solutions.

- The individual represents the basic element of human capital, the value bearer core with its capacity to regenerate biologically and intellectually, to permanently upgrade and adapt to societal changes.
- The individual is by nature a profoundly social being therefore manifesting in the process of sustainable development within the limits established by the normative framework meant to guide their behaviours.

We observe that in the process of sustainable development the individual represents simultaneously the purpose and the tool. The actions the individual undergoes are meant to change the society, the organization and oneself determined by the primordial instinct to survive. Consequently, the individual builds through his capabilities to change and change himself, the society of knowledge.

We can therefore state that the role of human capital is to drive the other types of capital in the process of sustainable development in a balanced way, to find variants of development, regeneration and/or replacing these and regenerating oneself.

4. HUMAN CAPITAL FROM THE PERSPECTIVE OF THE SUSTAINABILITY CONCEPT

The process of searching for viable solutions to allow sustainable development for human society has imposed the change of vision referring to the concept of sustainable development which cannot remain only at the level of a simplistic interpretation from an ecological perspective. Thus, from the economic perspective, sustainable development takes on new interpretations, namely it requires maintaining for future generations the volume and structure of all types of capital. Economic perspective of the concept of sustainable development starts from monetary balance which must be secured in reference to the total capital. Following this, depreciation of one type of capital can be compensated by substitution with another type of capital in order to ensure this balance. Thus the problem arises regarding the ratio between the types of capital and to which extent they are complementary or sustainable. That is why, "*thecondition for a sustainable development in an economy is that investments in the capital produces by people be equal with the economic depreciation of the ressources"* [4].

In as far as the human capital is concerned, we note that specialized literature makes a distinction between knowledge capital and social capital, the first one having, among others, the quality of bearer for the following two without which their manifestation (maybe even existence) is open to question. We can therefore discern a series of axioms:

- ❖ The existence of human capital is a necessary however insufficient premise for the existence of the knowledge capital and social capital.
- ❖ Lack of human capital is a sufficient premise for the lack of existence of knowledge capital and social capital.
- ❖ When lacking an appropriate human capital the existence of knowledge capital and social capital do not have a manifest character.
- ❖ So long as the human, knowledge and social capitals do not have a manifest character, their monetary value will never be a correct one. The manifestation level of the types of capital readjusts their monetary value.

From this perspective the substitution process of these types of capital can be interpreted as follows:

- ➢ Human capital cannot be integrally substituted by the two types of capital, knowledge and social.
- ➢ Human capital can be partially substituted by the two types of capital, knowledge and social. The problem arises to which extent can this substitution be carried out and what is the individual contribution of the substituent capitals.
- ➢ Knowledge capital can be integrally substituted by the human capital.
- ➢ Social capital can be integrally substituted by the human capital.

The substitution process of these types of capital is a short-term process mainly determined by the type of organization and manifested all the more acutely given the fact that society as a whole and organization as an individual tend to turn into a knowledge-based society, respectively organization, where these types of capital are appraised.

Regarding the process of sustainable development from the perspective of all types of capital, the issue of capitals substitution becomes an extremely complex one, which finds its solution only inside knowledge-based organizations. It is the reason why we consider that the premise for a sustainable development of any organization is represented by taking all necessary measures in order to transform it into a knowledge-based organization, able to make acceptable substitutions between the types of capital, to use recycling technologies that would allow regeneration of renewable resources but also processing technologies which would make more efficient the consumption of non-renewable resources with the purpose of prolonging their life. The process of sustainable development shall be a successful one to the extent that the resources consumption speed is compensated with the capacity to find substitution solutions.

5. CONCLUSIONS

In his work *Organizația și Managementul Bazate pe Cunoștințe* professor Ovidiu Nicolescu states that the sustainability of the knowledge-based organization represents "its capacity to – economically, socially and ecologically – function in an effective and efficient manner by maintaining and amplifying the dimensions and performances, following the systematic practice of adaptation processes and innovative change, corresponding to endogenous and contextual developments" [4].

Effective and efficient functioning on a long term of the modern organizations implies they unfold a series of processes aiming:

- a clear identification of the development directions on a medium and long term,
- identification of the types of capital necessary in order to ensure e organizational evolution in the established directions and inventorying the types of capital existing within the organization,
- harnessing all types of capital the organization possesses, mostly the ones specific for knowledge-based organizations, respectively human capital, knowledge capital, social and relational capitals,
- identifying the adaptation processes of the capitals and their innovative transformation in the purpose of amplifying organizational performance.

The issue of the substitution of the human capital within the organizational framework is a complex one with strong social implications. Let's not forget the main purpose of sustainable development and sustainability is ensuring the best conditions for the survival of the human being by maintaining earth's vital resources. Therefore, any step regarding sustainable development where the human capital should be totally substituted seems to be nonsense as in the modern world the man's main role is to ensure the means of his and his dependents' existence by unfolding gainful activities. Total substitution of the human capital within the organizational framework, perfectly possible in modern organizations considering computerized production technologies risks starting out deep social and psychological problems especially related to ensuring the sense of human usefulness, regardless of the efficiency level the social protection system work on. From this perspective it is preferable to have this type of substitution only in production fields which can affect human safety. Even in these fields there's a migration of human capital towards other areas of the organizational activity such as research areas, IT, marketing and research for the markets, etc.

Consequently human capital cannot be totally substituted, but only partially by capitals such as knowledge capital, social capital or technologic capital. The extent to which organizations decide to make the substitution of the human capital represents an internal decision, social

implications of these decisions being profound at the level of communities to which they belong.

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