

Methodologies of Applying the Business Model of Technological Entrepreneurship in Bulgaria

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Abstract – The authors are proposed to do impact of sustainability through separate business model elements focusing on managing human resources in the enterprise. The great significance of human resources in the enterprise is determined by the need for continuous changes that directly affect people - a source of ideas and a core resource. Here are offered two methodologies- to increase the level of creativity and to increase adaptivity for changes which are two elements from technology entrepreneurship business model proposed for Bulgarian technology-based entrepreneurial firms.

Keywords – Technological Entrepreneurship, Technological Change, Adaptivity, Creative Thinking, Business Model.

1. Introduction

Globalization and intensive changes do not allow to technology-based companies to provide them sustainability with a particular business model. The paper presents methodology related to the application of two of the elements in the fifth pillar of the business model of technological entrepreneurship, namely: degree of adaptivity and creative thinking. In all technological entrepreneurship business models are included more than four pillars which contribute

closely to the business models of a number of researchers [1],[2],[3],[4]. The other four pillars include management, finance, customer relationship and products that interact differently among them. In each organization, these pillars are involved to varying degrees and thus provide it as a competitive advantage. The thesis of the authors of this paper detaches human resources relationships in an organization as a separate pillar. That is produced by their great importance for the success of the organization because they are the basis of all other pillars. In technology-based organizations, innovation and technology are the most important elements but the real element which can create them is the man. That's why organizations have to work towards work force professional development. Here are presented two methodologies linked with human resources in organization. Its help to evaluate and develop them in a workplace in two important elements: the degree of adaptivity to technological changes and the need to stimulate the creative thinking of human resources and their generation of new ideas in the enterprise depending on the intensity of technological innovation.

2. Methodology for increasing the degree of adaptivity to technological changes

The paper presents a methodology for increasing the degree of adaptivity of human resources to the technological changes in technology-based entrepreneurial firms.

In literature often is used the term “adaptivity” but in different ways. Several authors discuss adaptivity in enterprises in Bulgaria. Penchev [14] considers the adaptivity in the organization at the production enterprise level and affects indirectly the techniques, skills and abilities of the human resources in the organization. The author also suggests a methodology for assessing the overall adaptivity of the organization as a whole, referring to Zhang and Sharifi [16]. On this basis he presents a conceptual model for adaptivity in production. Unfortunately, the author does not affect the degree of adaptivity of

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human resources in the production enterprise, but examines it at the organization level.

The methodology that is presented in his paper includes three main stages:

1. Determining the need for adaptivity of the organization and its current level of adaptivity;
2. Identifying the opportunities that are necessary for the organization become adaptable;
3. Identification of necessary business practices and tools to increase adaptivity[14].

Petar Ivanov in his paper "*Manufacturing agility assessment model in Bulgarian companies. Basic characteristics of an agile manufacturer*" comments adaptivity in different ways. On one hand, at an organization level he speaks about "adaptable organization." On the other hand, Ivanov defines human resources as "an environment in which collaborators are empowered to exchange their roles like a necessity to meet customer needs." And on the third hand, it focuses strongly on the different types of human resources trainings for realizing a competitive advantage[15].

In foreign literature, adaptivity primarily affects IT technologies as a tool for achieving competitiveness and not focusing on other tools [7],[8],[9],[17].

A small part of researchers made a partial connection with human resources in the organization – about their IT skills and abilities[13].

Overall, a majority of foreign researchers focuses on "Adaptive software development" to achieve competitive advantage and improve the effectiveness of organizations through adaptivity [10],[11],[12].

Interesting is the concept of Kouvaritakis et al. which constitutes a methodology for adaptive expectations models with learning by doing and learning by searching in the energy sector. Unfortunately, the research is too narrow and could not serve as a basis for the methodology presented in this paper[18].

Some authors speak for adaptive organizations[14],[15]. Other use the term for IT technologies [7],[8],[9],[17]. The third write about adaptive software developments in enterprises [10],[11],[12]. Here in this article adaptivity is considered from human resource's point of view, its competencies, adoption for technological change in organization and etc. The methodology is graphically represented in Fig. 1.

In the first stage, the extent of the need to increase the degree of staff adaptivity to technological changes is determined. It depends on a number of factors such as the intensity of development and the advent of new technologies in the sector, intensity of the advent of new technologies in the enterprise,

technological development of the competitors, level of competitiveness of the company, the current level of technological development of the enterprise and others. Depending on the results of the analysis of these factors, there are several possible outcomes:

- Technological changes in the enterprise are slow and minimal, and that is why there is no need to stimulate an increase in the degree of staff adaptivity;
- Technological changes are with an average intensity of entering the enterprise and it is necessary for the staff to have an average degree of adaptivity, to be able to respond adequately to the technological changes;
- Technological changes are with a high intensity of occurrence and there is a need to increase the degree of staff adaptivity;
- Technological changes are variable and turbulent; with this outcome, steps can be taken to increase the degree of staff adaptivity by taking control of the changes or the technology-based entrepreneurial firm might not undertake to do anything, and the risk is incurring great losses as a result of it.

With every outcome, organizations have two choices - to work for raising the degree of staff adaptivity or do nothing about it.

At the next stage, the current state regarding the degree of staff adaptivity to technological changes in the enterprise is determined. At this point the entrepreneur has to make the difference between the real and the desired degree of adaptivity. After that, they need to judge how big that difference is and as a result of the comparative analysis, the authors have several outcomes:

- The staff does not need to increase the degree of adaptivity, because there are minimal technological changes or no changes in the enterprise;
- The staff is adaptive enough and responds adequately to the introduction of technological changes;
- The staff is not adaptive enough and actions have to be taken to increase their degree of adaptivity to technological changes in the enterprise. The nature of the factors necessitating the technological changes has to be identified here: is it turbulent, changeable or there is a correlation. What is more, the current level of the degree of adaptivity of the human resources of the organization represents the real ability of the workers and the employees to deal with these factors. This can be done through an evaluation of the capability of the human resources and of the enterprise to deal successfully with these driving forces, on which the intensity of the advent of the

technological changes depends and which will indirectly influence the degree of adaptivity of the workers and the employees.

In the third stage, the possibilities for achieving the desired degree of staff adaptivity to technological changes in the enterprise are determined. At this stage it is necessary to classify the type and the pace of occurrence of the technological changes and to classify them by intensity, complexity, variety, in order to find a way to introduce them. It is important to analyse the quality of the human resources in terms of their education, age, experience and intellectual level and other criteria specific for the company activities, as well as to define the requirements to the human resources regarding the intensity of the advent of the technological changes.

In the last, fourth stage, the means for raising the degree of adaptivity of human resources are determined and they can include different types of training the purpose of which is to acquaint human resources with the way the new technology functions or to broaden the range of competences of staff needed for the new technology. An important element of this stage is information support of human resources through a company bulletin. It can include information related to the latest technologies in the field in which the organization is functioning, to competitors and their motivation, such as praise of certain people in the organization, who have contributed to its technological development; ideas for new technologies and/or innovations and others.

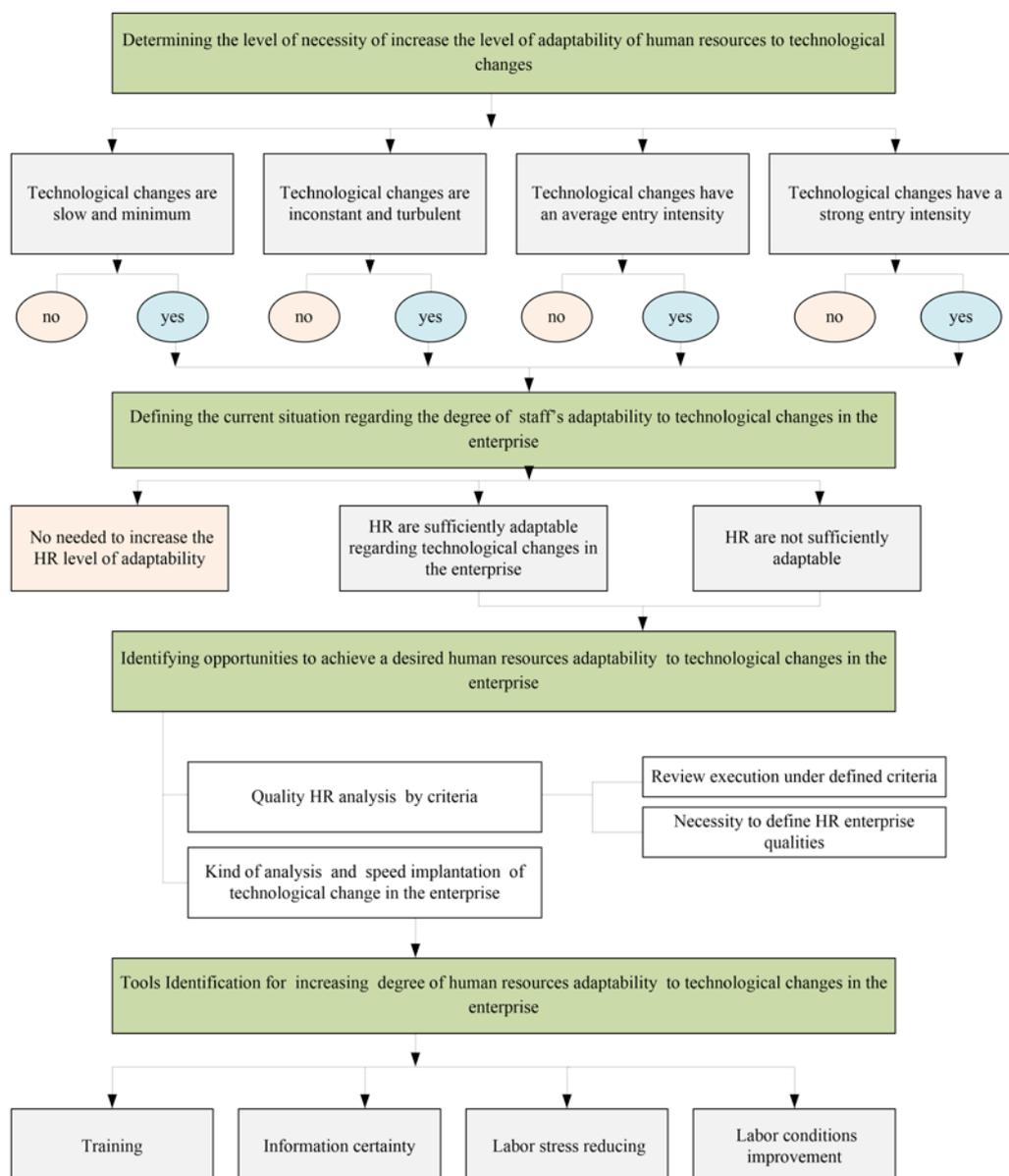


Figure 1. Methodology for determining the need to raise the degree of staff adaptivity in technology-based entrepreneurial firms

Another instrument of raising the degree of adaptivity of human resources to technological changes in the organization is reducing labor pressure. It can take the form of teambuilding events on various topics, having a room with various entertaining and relaxing elements where the employees can rest, a creativity day, etc. The last instrument – improvement of the working conditions can include various social elements such as additional medical care, improvement of the working conditions at the place of work, etc.

Figure 1. presents in a graphical form the algorithm of consecutive actions related to determining the degree of adaptivity of human resources.

3. Methodology for determining the need to stimulate creative thinking and for generating new ideas in technology-based entrepreneurial firms

The current methodology is based on psychometric, experimental and contextual point of view about creativity evaluation and its improvement. The psychometric point of view includes different tests and questionnaires for evaluation. The second 'experimental' point of view aims to evaluate and improve participants' creativity through problems solving in controlled environment. And contextual point aims to detect different culture, social status and evolution of the participants. That combines quantity and quality methods for evaluation and improvement of participants' creative abilities. This is to a broader range of evaluation and development of creative abilities of individuals and directing them in the desired direction.

The first stage determines the level of the need to stimulate the creative thinking of human resources and their generation of new ideas in the enterprise depending on the intensity of technological innovation. At this stage, the technological entrepreneur needs to clarify what the specifics of the sector the enterprise is operating in are, and how intensive the introduction of new ideas about the products, the introduction of new technologies needs to be and, respectively, if is there a real need of human resources with high degree of creativity.

At the next stage, the current state of the level of creativity of the staff is determined. After the need of creative thinking of employees has been assessed and the entrepreneur has come to a decision whether such a need exists, we proceed to the second stage of the methodology. As a first step, using control cards prepared for that purpose, the intellectual level of the workers and employees is assessed regarding their education, experience, years of working. Next, using

questionnaires, their current knowledge, skills and particular abilities are assessed in order to determine the level of talent of each employee. After that, the employees can be assessed using creative tests, whose aim is to determine the current level of creativity [5],[6]. As the last step at this stage we make a generalizing evaluation to determine the real state of the degree of creativity of human resources in the organization.

The third stage of the methodology enables the entrepreneur to compare the desired state with the real state of the human resources in their organization in terms of creativity. We can distinguish between four possible variants, namely: lack of correspondence, low, average or high degree of correspondence. It is quite logical to assume that when there is full correspondence, there are active measures in the organization for stimulating the creativity of the workers and the employees, and that can be only part of the policy of stimulation.

In the fourth stage of the methodology, a policy for stimulating creativity and the generation of new ideas is developed in the enterprise. At this stage, there are several possibilities and the first thing to be done is to clarify the policy of the management in the organization regarding "listening to" new ideas generated by the employees; the policy of accepting them and their implementation and finally, the preparation of clear criteria for support and stimulation of new ideas in the technology-based entrepreneurial firm.

In the final stage of the methodology, it is necessary to select the means through which the creative thinking of the human resources and their generation of new ideas will be stimulated and sustained in the organization. We again have several variants such as the use of different methods and techniques for developing creative thinking. These include all possible methods and techniques of creative thinking such as: Brainstorming, Method of association and analogy, Method of the six thinking hats, Lateral thinking, Creating alternatives, Kipling method, Mind maps method and etc.

Trainings can be included for improvement of the technical knowledge and skills, awareness of the different procedures in the organization and increasing the intellectual capital as well as broadening the knowledge of the employees. And last but not least, various techniques related to the motivation of the human resources. They can be targeted at improving the working environment to create the proper working environment for stimulating creative thinking, as well as the use of a system of stimuli and praises to encourage the sharing of new ideas and boosting creative thinking.

Figure 2. presents in a graphical form the methodology of determining the need for creative thinking of the human resources in the organization.

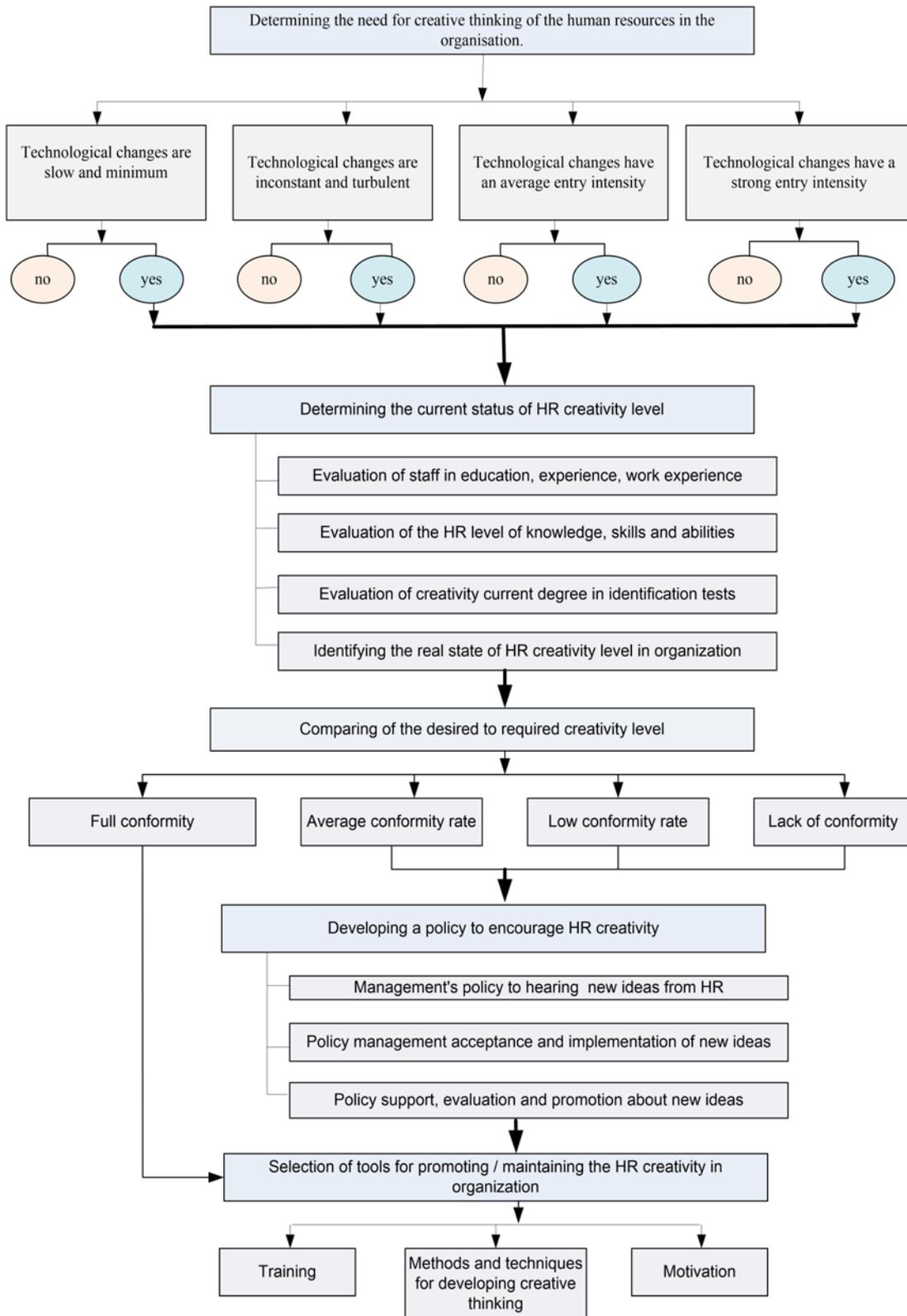


Figure 2. Methodology for determining the need for encouraging creative thinking and the generation of new ideas by the human resources in technology-based entrepreneurial firms

4. Conclusion

In the present paper are defined two methodologies: for raising the degree of adaptivity of human resources to technological changes in technology-based entrepreneurial firms and for determining the need of encouraging the creative thinking of human resources in technology-based entrepreneurial firms. The need from that effort for technology-based entrepreneurial enterprises is dictated by the necessity to increase their competitiveness in a high technological environment. These two methodologies are parts from business model which is proposed for technology-based entrepreneurial organizations in Bulgaria. At the heart of both methodologies remain human resources in the organization, their professional development and motivation for work.

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