Anticipation of Skills in the European Union in Romania

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The path which skills are to go is represented by Europeanization. Gradual evolution of skills from the national to the EU level depends on the awareness of national actors of the fact that in certain areas, corporate governance offers more efficiency for achieving economic objectives. For this purpose, it is necessary a qualitative evolution from the effort to maintain the balance of interests of the Romanian economy to a fusion and a merger of them in the pan-European common unitary economy, i.e. to a rediscovery of the original logic of the founders of the European Union: basically, the economic one. The desirable fusion is proclaimed around a model of society and civilization based on universal values as diversity, freedom and solidarity, in the context of concern for reconciling these values with the specific features related to the country (culture, education). Anticipation of skills is in the middle of the systemic transformations of European economic block and the skills have a deep cultural character.

The European model of knowledge-based organization will be the model to which the Romanian organization model shall also aspire. This is conditioned, in Romania and also worldwide, by the presence of intelligent organizations with efficient capacities of managing their collective skills. Romania will have to act firmly to assert most sectors with the highest added value and for increase of share of knowledge-based industries. Design and implementation of integrated, forecasting and sustainable systems involves transforming intervention on existing organizations or creation of new ones, dedicated to aimed purpose.

Keywords: anticipation, skills, key skills, integrated systems, knowledge-based organizations, European Union.
Introduction

In front of the new challenges, Romania, as part of Europe must intensify efforts for the transition to a smart knowledge-based economy. These ideas have been launched since 10 years ago, through Lisbon Strategy, but were reaffirmed by the new Europe 2020 Strategy. Central place in European and national strategies, in the context of the knowledge-based economy is occupied by human resources.

Human resources are the most important competitive advantage of organization: they are valuable, rare and quite irreplaceable. Therefore, investment in human capital is considered a determining factor for growth and productivity. In this context, of complex challenges in a dynamic environment, the task to design and implement strategies to capitalize human resources is incumbent on human resource management.

Currently, within organizations it is discussed about skills-skills, abilities, attitudes, behaviors, such as adaptability, effective communication skills in team work, autonomy, critical thinking, but also global and responsible upon work processes, creative resolution of problems, ability to learn, to self-improve, ambition, assertiveness, persuasion and decision-making capacity, anticipation, evaluation of activities. Human resources are much better qualified than in the past and knowledge is much more diverse. People are no longer employed in work definite jobs, but to be useful in a very wide variety of activities within one or more organizations, being able to handle varied work situations / challenges.

In this context, it is necessary more than ever, the development of human resources management in the sense of anticipation, improved skills training and increase of their management.

Skills of workforce and their anticipation

Due to globalization and expansion of communications technologies at the world level, we are witnessing today to the connection in a global network of economic life. Network as multi-dimensional communication system, makes connection between different levels of economic activity: micro-meso-macro economic, community and global. Evaluation of these network effects indicate that globalization is a phenomenon that accelerates competition, brings many benefits to people and organizations, but also
creates distortions in the overall level of employment, social cohesion and inclusion. Network (including virtual network) is selective and choose, in the value chain only those resources and skills that have access (to it) and may face new challenges (supply and demand). For large companies, network means a competitive advantage of keeping and use of labor resources, but also the possibility of maintaining a certain level of competitiveness in terms of labor costs as compared to other organizations, to other countries. For others, globalization and network effects mean unemployment and deep social unbalances. The crisis currently manifesting is a crucial moment, a moment of (re) thinking of organization and management systems of organizations, because any deep (economic and financial) crisis is preceded and accompanied by a management crisis. This fact shows a delayed and inadequate response and indicates weaknesses of planetary-scale management systems and each management system anticipating some negative developments, to identify the major causes of early stages of the crisis, to design and implement strategies, policies, actions and organizational behavior to prevent or reduce the spread of economic and social effects.

Ensuring individual mobility within Europe is a prerequisite for a better skill management, given that people are bearers of their own abilities. Under these conditions reducing skills shortages is a crucial strategy for the EU, effectively contributing to the formation of social and economic, as well as European cultural model.

Spectacular forms which the organization knows today - from multinational, transnational, to virtual organization and temporary organizational configurations, with increased capacity to assimilate change - demonstrates the high degree of interactivity between companies and the environment in which they operate and to which they report.

Industry is one of the most important economic areas of Europe. *Manufacturing industry is perhaps the most dynamic sector*, most subject to changes both in terms of capacity to absorb technological progress, organizational transformations, as well as those related to the changes in the qualifications and skills of human resources. Technology is a type of knowledge with a high opening to science bearing the stamp of social and historical context of organizations and communities. Technology is semantically related to the expression “being able to do”, being the closest meaning to the term “skill”. In fact, skill is making the connection between technology, environment and organization.
EU industrial policy was oriented, along with the programmatic document in 2005 towards compensation by skills shortages\(^1\) and penuries\(^2\) where they were observed (textile industry, automotive industry, IT industry). The next step meant emphasizing the need for qualifications and skills necessary for European structural adjustments, from the new industrial view, by accession of the former candidate countries.

Profound changes in the current society have put organizations and their management in front of unprecedented challenges. They are multiple and complex. It is obvious that the skills and knowledge acquired in education and training systems have become insufficient, in relation to the requirements of change and knowledge of society we live in. Moreover, the knowledge economy with its dynamism, permanent change and complexity of processes and phenomena transform organizations in places where knowledge, skills and attitudes acquired get a deep volatility accent. Therefore, at the present day, anticipation of skills and staff training on a continuous basis are of a fundamental importance in the strategy of organizations, primarily due to the need of coping with the competitiveness shown on the market.

Increasing interest for developing skills in general, key skills, in particular, was made in the context of recent decades, when technology has advanced more and more and a special relationship developed with science. By opening of organization to society, the significance of technological innovation is out of the legal framework of organization entity\(^3\). From this point of view, human resource management, with the function of anticipating skills as an integral part of skills management system within the organizations is in connection with the employment management system (given the labor market dynamics and organizational change), with the system of continuous education and professional training and with scientific research system. By anticipation, organizations, individuals, society can form or acquire the skills they need in terms of high efficiency and effectiveness, with low human capital losses and preserving a favorable and calm social climate.

Developing knowledge management progressed in the time when it was found that not all information and knowledge may produce economic

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1 Skills shortage is the offset between current skills held by individuals and levels required by enterprises and other organizations.

2 The shortage of skills refers to the quantitative insufficiency of individuals adequately qualified on the labor market.

value. In organizations, knowledge, information is located especially at the level of individuals. It was also noted that an important role have those individuals who are not just bearers of information and/or knowledge, but those who can make correlations with organizational needs, those who know how to use emotional intelligence in their private and corporate interest. It was also noted that the most popular ones and those having a significant contribution to labor productivity growth are those abilities considered key skills.

This logic of things requires a new kind of thinking and behavior, both at the workers level and especially the organization, human capital management. Systematic, anticipatory-prospective thinking take place of reactive and/or passive thinking. Assimilation of knowledge at the level of individuals and management is the prerogative of organizations that learn, creating the new. Such an organization is the organization that can build the future. In such an organization, the logic of skills expectations finds its necessity and justification.

Also, interest in key skills was becoming more alive in recent years because it represents those skills that contribute effectively to the increasing of workers mobility and business flexibility.

On the other hand, IT processes computerization, their automation, cibernetization and robotics have made that much of the routine or physical labor is passed to the machines, workers labor focusing ever more on the interface (screens, computers, cameras, air-conditioned cabins) between technological process and machines that perform such operations.

Results of the first Romanian study on the evolution of occupations for 2010 indicated that, along the entire national economy, in general and in industry, in particular, there have been many and significant changes in terms of progress on occupational categories. The study states that, in order to avoid the unfavorable position of the Romanian industry, it is absolutely necessary the orientation and development on strategic grounds, of investment in human capital. In fact, this is the way to combining the two economic action principles: the logic of competitiveness to the social one. Thus, a central place should be the interest to reveal skills, in general and the key skills, in particular, in order to endow the population with the best qualifications and skills, which

4 idem.

5 V. Ciucă, S. Pîrciog, E. Blaga. 2006, Evolution of jobs on the labor market in Romania for 2010, Ministry of Labour, Social Solidarity and Family
should mean more than a simple reduction of inadequacies and skill deficits.

The level of knowledge in the field theoretically points out, contradictions/discrepancies between theory and methodological and experimental base that generates difficulties in application, as well as extension of the theory related to management skills. At academic level, it was long discussed the subject to skills and their management, not only at the level of organizations, but also of scientific communities by specialists, practitioners, managers, policy-makers.

As I stated above, in order to determine the need for change in the light of knowledge economy, an important place is occupied by the development of key skills. In this new world context, the companies expect from the current and future employees to consider these skills of a great importance in the work environment. Designing and implementing an integrated system for forecasting of key skills in the manufacturing industry is a methodological and operational tool for revealing and highlighting the importance and contribution of skills to the evolution of occupations, of work contents. Implementation of the proposed system will have as an impact, in the downstream of processes to be triggered (on the chain of forecasts and skills development), the optimization of structural labor allocations, for the purposes of stimulating the movement of skills to productive sectors of the economy, thus contributing to systemic transformation of the Romanian industry, in general, of manufacturing industry, in particular. The proposed system is a flexible one and may be located on four levels: macroeconomic, meso-economic (sectoral and regional); company network and at organizational level (singular).

System design starts with the establishment of some hypotheses, derived from the fundamental idea that the knowledge economy creates new skills, but leads, on the other hand, to a series of failures in terms of employment and social development.

The approach of estimates on both short and medium term refers to the way of adjusting supply and demand. In this case, estimation of skills need is assimilated to the need of estimation of continuous training and will consider the following directions:

• continuous training intended for those skills located at the bottom of the Classification of Occupations in Romania (COR), which require a lower level of formalization of qualifications, in which case, this being done in a relatively short time;

• continuous training for the other occupational categories, evolution
of key skills requirements, for example, which can be regulated / adjusted by means of continuing education programs;

• continuous professional training for skills upgrade and specialization of knowledge, specialized skills for high qualifications, of tertiary education level.

Based on the general characteristics of a system, the integrated system for forecasting of key skills can be considered a process by which a set of inputs is transformed in a specific set of elements, called outputs. From this point of view, the integrated system for forecasting of key skills (Figure 1) consists of the following components:

• inputs, represented by human, material, financial, information and time resources; they usually are provided by the institutions and system management;

• outputs, performed by sets of indicators, structured information on the demand for skills (professional and key skills);

• transformation processes that occur in the system, using methodologies, strategies, methods and forms of development and organization, as well as evaluation of information collected, processed, analyzed and interpreted.

**Figure 1**: The system of forecasting demand for key skills

The integrated system for forecasting of key skills is proposed to be established at the sectoral level, as well as in the manufacturing industry sector. It develops on a broad institutional and regulatory framework, according to the current local and regional, economic and social structures. This institutional framework is provided by: structures belonging to local, regional, authorities, production structures, training providers (from public or private sector).

Integrated system for forecasting of key skills is built on existing
structures, system management being focused on articulating the operation of institutions and organizations, components of such system. System aims at enhancing the performance of existing structures related on improving the adjustment of supply and demand of key skills. The basic principle is to ensure simplification and streamlining the activities of the system to increase system management performance. In this regard, the integrated system for forecasting of key skills was built on existing institutional structures. Components of integrated system for forecasting of key skills are (Figure 2):

- **management subsystem**, provided by the system management, developed at the entire community level and management of network forming within the mutual partnership between companies of the integrated system for forecasting of key skills (network management is closely related to the management of entire system, it has certain common duties and responsibilities with system management, but also specific to network);
- **institutional subsystem**, consisting of bodies and institutions involved in skills training, from the institutions involved in assurance of training quality, company network, enterprise network (networks);
- **information subsystem**, consisting of economic and social entities, depending on the level on which the system is developed. The integrated system for forecasting of key skills is composed of: enterprises from manufacturing industry established within one or more enterprise networks, educational and training units providing supply of skills on local labor market.

Informational subsystem consists of:
- database component;
- model base component.

The database consists of a register / data collection defined under the form of work files loaded with data and information. These files contain
information about the working environment within the organizations that make up company network within a company, but also from their external environment. External data are derived from local and central administration system, non-governmental organizations, institutions with a role and duties in conceiving skill development and training policies, in implementation of policy measures issued by policy makers and education and training providers at regional level.

Role of models within the system is to process information obtained, to structure and refine in order to get indicators, methods based on which to perform further analysis of skills needs, training needs, quantitative and qualitative structural analysis of occupations within the organizations and also similar analysis at sectoral-regional and national level. Design of models aims at assessing the impact of knowledge economy upon industries, upon the evolution of jobs, personnel, skills and occupations / trades / professions. The models are designed around well formulated objectives, such as: changing demand forecast for long-term key skills in top industries or analysis of key skills forecast through increase of continuous professional training needs and time allotted for it.

The proposed system is materialization of such systems existing across Europe, but also of the economies (industries and organizations) of EU member states which have taken a great extent since 2002. Proposed approach is part of the complex processes that E.U. knows, starting with harmonization, modernization and maturation of European education and training systems, continuing with the development of European labor markets (mobility of workers and quality of employment) and economic, as well as industrial development integrated after 2005 (flexibility of organizations). This system places the skills forecast in the regional-sectoral nature of this scientific approach (skills forecast features of the advanced countries of the EU) and enterprise in the company network (characteristics specific to organizations from knowledge economy).

Among the main results obtained by simulating a model within the integrated system for forecasting of key skills, using data provided by a previous research made by the author of the article. The simulation showed a series of results structured in the form of tables (arrays) of data, containing values of one of two created indicators, namely, the indicator “potential demand for key skills”. It is expressed as the average of conventional units of short and medium term key skills (from 1 to 3 years), according to different characteristics
of the company: organization age (year of incorporation), to its size (number of employees), property form, business segment (NACE code, Rev. 1). The measure unit created is the key conventional unit expressing “potential demand for key skills”, shortly called CUSK. Another type of structuring the data obtained by simulating a model within the integrated system for forecasting of key skills was that related to the development of key business skills in a sectoral-regional perspective. Within the integrated system for forecasting of key skills created, analysis of resource allocation is conditioned, however, by the geographical availability for a specific delimitation of the distribution of production factors. Region should be related to the existence of opportunities for specific exchanges between companies, between companies and institutional entities, they will have a certain configuration of technological innovation that will lead to a certain emergence of specific technological and / or production processes.

Using the calculation methods previous to the model from the model base of SIP, there have been determined average aggregate potential demands on different characteristics (business segment according to NACE code Rev. 1, enterprise size, company year of incorporation) and, using the number of economic units (TEMPO database created by the National Institute of Statistics) for 2008, with the same characteristics: NACE code Rev. 1 and company size it was initiated the weighting of these results to the number of economic units (from such region) of the average of CUKS conventional units. In this way, it was obtained the aggregate potential demand at NUTS-II level, respectively regional aggregate potential demand for different characteristics of companies (size, business segment, spectrum of the 15 key skills components). Such information could be structured in the form of skills map. Of these representations, we selected two:

• one of them is illustrating the potential demand of key skills at NUTS-II level, depending on the business segment of companies from the sample investigated in the form of maps (figure 3);

• the other under the form of a table where extremes are highlighted as regards the potential demands of regional aggregate key skills on the 15 components of the key skills (established at the institutional level). Thus, were created typologies of key skills required at the level of the eight development regions (Table 1).
Legenda= list of conventional signs
Unitati educationale ISCED 4-7= ISCED education units 4-7

| CUKS number on NACE Rev. 1 scope of activity, calculated as CUKS average on NACE sector weighted by the number of economic units existing in 2008 (number of CUKS units-key skills conventional units according to scope of activity |
|---|---|---|---|
| D | Manufacturing industry |
| E | Electrical and heat energy, water and gas |
| F | Constructions |
| G | Trade |
| H | Hotels and restaurants |
| I | Transport, storage and telecommunications |
| K | Real estate transactions and other services |

**Figure 3**: Distribution of aggregate potential demand for conventional units according to business segment

**Table 1**: Typology of key skills range on the eight development regions

<table>
<thead>
<tr>
<th>Key skills</th>
<th>Highest potential demand for key skills (CUSK) [region] (%)</th>
<th>ISCED 4-7 education units</th>
<th>Lowest potential demand for key skills (CUSK) [region] (%)</th>
<th>ISCED 4-7 education units</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. communication</td>
<td>South-East (15,3)</td>
<td>36-42</td>
<td>West (5,6)</td>
<td>21-27</td>
</tr>
<tr>
<td>Skill</td>
<td>Region</td>
<td>Lower Limit</td>
<td>Upper Limit</td>
<td></td>
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<td>--------------------------------------------</td>
<td>-------------------------------</td>
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<tr>
<td>b. problem solving</td>
<td>South (15,2)</td>
<td>21-27</td>
<td>South-West (3,8) 21-27</td>
<td></td>
</tr>
<tr>
<td>c. ability to work in a team</td>
<td>South-East (19,0)</td>
<td>36-42</td>
<td>North-East (11,0) 42-108</td>
<td></td>
</tr>
<tr>
<td>d. ICT skills</td>
<td>South-West (4,7)</td>
<td>21-27</td>
<td>South-East (1,3) 36-42</td>
<td></td>
</tr>
<tr>
<td>e. ability to work/operate with digits</td>
<td>South-West (11,1)</td>
<td>21-27</td>
<td>South-East (1,8) 36-42</td>
<td></td>
</tr>
<tr>
<td>f. ability to improve personal performances</td>
<td>South-East (17,3)</td>
<td>36-42</td>
<td>South-West (6,7) 21-27</td>
<td></td>
</tr>
<tr>
<td>g. foreign languages</td>
<td>Bucharest-Ilfov (3,5)</td>
<td>36-42</td>
<td>South (0,5) 21-27</td>
<td></td>
</tr>
<tr>
<td>h. decision-making</td>
<td>Center (4,9)</td>
<td>27-36</td>
<td>North-West (1,6) 27-36</td>
<td></td>
</tr>
<tr>
<td>i. initiative</td>
<td>Bucharest-Ilfov (20,7)</td>
<td>36-42</td>
<td>South-West (5,2) 21-27</td>
<td></td>
</tr>
<tr>
<td>j. creativity</td>
<td>West (6,7)</td>
<td>21-27</td>
<td>South-West (1,6) 21-27</td>
<td></td>
</tr>
<tr>
<td>k. ability to work under stressful conditions</td>
<td>West (14,1)</td>
<td>21-27</td>
<td>Bucharest-Iflov (5,3) 36-42</td>
<td></td>
</tr>
<tr>
<td>l. ability to work independently</td>
<td>West (10,8)</td>
<td>21-27</td>
<td>South (3,8) 21-27</td>
<td></td>
</tr>
<tr>
<td>m. planning of activity</td>
<td>South-West (8,5)</td>
<td>21-27</td>
<td>South (2,8) 21-27</td>
<td></td>
</tr>
<tr>
<td>n. management skills</td>
<td>Bucharest-Ilfov (2,0)</td>
<td>36-42</td>
<td>South-East (0,3) 36-42</td>
<td></td>
</tr>
<tr>
<td>o. driver’s license</td>
<td>South-West (4,7)</td>
<td>21-27</td>
<td>North-East (1,3) 42-108</td>
<td></td>
</tr>
</tbody>
</table>

**Other skills**

- **g. foreign languages**
- **h. decision-making**
- **i. initiative**
- **j. creativity**
- **k. ability to work under stressful conditions**
- **l. ability to work independently**
- **m. planning of activity**
- **n. management skills**
- **o. driver’s license**

**Similarities and also inter-regional differences** on certain regional characteristics such as aggregate potential demand for key skills, company size (which makes such demands), sector where such companies come from, create the possibility of developing joint strategies for medium and long-term skills training by means of industrial units networks, based on exploitation of inter-and intra-sectoral, as well as inter-regional resources and relations.

As I have previously asserted, in defining the need for change in terms of knowledge-based economy, an important place is occupied by key skills development. In the new global context, once with the appearance of digital economy and increase of importance of knowledge, the organization expects that current and potential employees enter with a set of new skills at work. The results obtained (potential demand for key skills expressed in conventional territorial units CUKST) and their visualization (using GIS- Geographic Information System\(^6\) technology) lead to the creation of a useful map, starting

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\(^6\) This system is used to create, store, analyze and process information spatially distributed
from the company level and reaching to regional perspective. This also gives new challenges on the regional economic development.

Regional perspective offers lots of valuable information to design key skills not only at macroeconomic strategies, but especially at the enterprise level to efficiently and effectively development of knowledge management in conjunction with strategic management of business needs.

Essentially, the integrated system for forecasting key skills is a modernization tool for human resources management, built to enhance effective management of the organization human capital and beyond it. The way human resources are used within organizations contribute to the achievement of European objectives proposed as targets for knowledge society and economy. Moreover, major economic and social, as well as cultural impact pursued by designing this system consists in:

- canalization of resources and more accurate orientation of policies in the field, shifting focus from business development as the basic cell of economy, to the expansion of industrial networks, of regional production systems that will dominate the industrial landscape of Europe, implicitly of the Romanian manufacturing industry;
- valorization of information society and its huge communication possibilities within some large partnership whose policy, strategy and practice to converge to optimization of harmonization / adjustment of demand with the supply of skills.

Conducting research in the context of the methodology approached in the paper led to extraction of some conclusions and recommendations for experts, managers and all those interested in the topic.

**Conclusions**

The European model of knowledge-based organization will also be the model for the Romanian organization. This is conditioned, in Romania, as well as internationally, by the presence of intelligent organizations, with improved capabilities for managing their collective skills.

- Romania will have to act firmly to assert sectors with the highest added value and to increase the share of knowledge-based industries.
- Getting integrated, forecasting and sustainable systems supposes transforming intervention upon some existing organizations or creation of new organizations through a computerized process, uses spatial statistical tools
of new ones, intended for the purpose aimed. As shown in the analysis of Competitiveness Global Indicator, Romania is in the second stage of development of the competitiveness (efficiency driven), in which stage it needs to improve efficiency and effectiveness of the measures regarding investment in human capital, to improve the operation of institutions in general, of labor market, in particular to accumulate a critical mass of reforms and changes necessary to propel the Romanian economy in the third stage, specific for the evolution of overall level of competitiveness, usually allocated usually to advanced economies (driven innovation).

- Projects to achieve knowledge-based organizations strategic need strategic involvement and management ingenuity with organizational competence for assimilation and creation of an environment favorable for innovation, learning and a mature social dialogue.

- Knowledge-based organizations are those organizations that have achieved “the stage of full maturity, consistent with the essence of the information society to which they belong. In the operation of such organizations are determinant those processes designed generically by the 3 I phrase, as well as innovation (creating new knowledge), learning (assimilation of new knowledge) and partnership interactivity as regards knowledge.” What we proposed in this paper is just the stimulation of 31 type processes.

- Anticipation of key skills optimizes companies’ ability to make decisions, but equally it is a strategic tool for regional development; this system creates prerequisites for the development of industry as a regional production system.

- Often, emerging skills detected in forecasts made at European level are combinations of specialized skills with combination of key skills (as they are described through the NCAPD (National Council of Adult Professional Development) system, by governing law).

- The path which skills are to cover is Europeanization one. Gradual evolution of skills from the national to the EU level depends on the awareness of national actors of the fact that in certain areas, corporate governance offers more efficiency for achieving economic objectives. For this purpose, it is necessary a qualitative evolution from the effort to maintain the balance of interests of the Romanian economy to a fusion and a merger of them in the

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7 H. Dragomirescu, 2001, Thematic study prepared within the priority project “Information Society - knowledge Society” of the Romanian Academy, electronic article available at www.acad.ro/pro_pri/doc/st_g06.doc
pan-European common unitary economy, i.e. to a rediscovery of the original logic of the founders of the European Union: basically, the economic one. The desirable fusion is proclaimed around a model of society and civilization based on universal values as diversity, freedom and solidarity, in the context of concern for reconciling these values with the specific features related to the country (culture, education). In the same time, domains regarding employment and the social one should move towards community level. Anticipation of key skills is the approach which is closest to that goal. Skills are in the middle of the systemic transformations of European economic block that have a deep cultural character.

- In the knowledge society, early skill management is related to knowledge management and continuous training on the basis of new communication and information technologies. Skills management is a process which, in its entirety, refers to human capital management, issues related to knowledge management, performance management, career management, continuous training, management of recruitment and mobility in the organization.

- Anticipation of skills and forecasting skill management is more than a way of reducing the gap between needs and requirements, involves the impact of development of jobs, workplaces, technology development, upon organization; it also takes into account the rhythm and permeability of the organizations to the new, learning and changing ability.

References


