A Review of Some Basic Prerequisites for Human Resource Management Information System Implementation at the Universities

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Abstract. *Considering that people are the most valued asset of an organization and therefore of a university in this paper we deal with necessary prerequisites for efficient human resource management at universities. Therefore, an appropriate information technologies support for HRM should be suggested and managed. Since MIT90s framework conceptually describes understanding the effect of evolutionary and revolutionary changes through the development of the use of information technology in educational organizations, we focus on its five factors: strategies (for technology use), organizational structures, individuals and roles, management processes and technologies. Using these factors we examine current state of HRIS implementation readiness at both University of Zilina in Slovakia and University of Zagreb in Croatia and list perceived positive and those missing prerequisites for HRIS implementation. We also recommend next step that includes better preparation of missing prerequisites and involvement of all stakeholders in HRM.*

Keywords. human resources, management, information system, HRIS, MIT90s framework, university, system approach, three-partial system

1 Introduction

The understanding of the connection between human resource management (HRM) and organizational performance at the universities is still limited and not explored issue, despite of the broadly accepted fact that people are the most valued asset of an organization and therefore of a university. While little is said about human resource process at university, many contributions deal with information technology impacts on performance improvement. Despite many available technologies, results are not charming, work is not efficiently done, universities employees are overloaded and under pressure.

One root cause for the lack of impact of IT on the improved organization performance is an organization's unwillingness to invest enough in human resources. Changing the way people work can be extremely threatening and therefore takes a great deal of investment in new knowledge and skills and also psychological readiness and safety feelings [9].

In general, two core functions of a university are education and research. There are several supporting processes like international relations, quality systems, public relations, social welfare, business and regional support and human resources. At our both Universities University of Zagreb in Croatia and University of Zilina in Slovakia HRM process is hardly recognized and not adequately managed and eventually not ICT supported.

Need for quality HRM is documented by many authors [1][6] and both considering their contributions and current state at our universities we have perceived necessity for HRM process improvement. According to [9] it can be achieved by implementing new and available information and communication technologies integrated into one human resource information system (HRIS).

Since we still have not found any adequate model of HRIS for university our intention is to develop one. For that goal in our previous work we have dealt with existing HRM models and their applicability in university [2]. In that

contribution we have used well-known HRM models to describe all perspectives on human resources at our universities in order to shed some light on still not defined HRM process. Our result was presented in a list of numerous indicators that can show applicability of existing HRM models in universities.

In this paper we have based on MIT90s framework to define and examine relationships between HRM elements in university. The framework has been chosen because it simply but completely describes all interrelated elements of an organization so according to it we will rethink HRM at university.

Further, using three-partial system as a method of system approach for solving different types of problems we will describe our proposal of solution of university HRIS implementation. Explaining system's phases we will list important prerequisites for our universities.

2 MIT90s framework

The framework was developed at the Massachusetts Institute of Technology (MIT) in the 1990s for planning and monitoring strategic change in relation to e-learning. An organization is represented by five elements, all in interaction with each other – its strategies (for technology use), its organizational structures, individuals and roles, management processes and technologies (Fig 1).
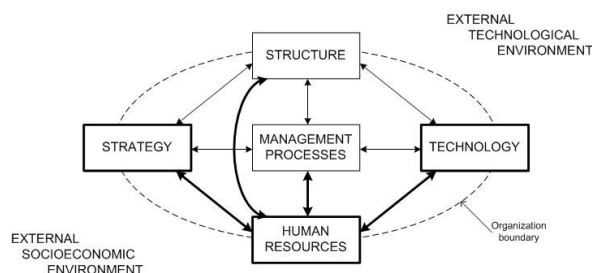

Figure 1: MIT90s framework [9]

MIT90s framework conceptually describes understanding the effect of evolutionary and revolutionary changes through the development of the use of information technology in educational organizations in order to increase potential benefits [3]. In other words, the MITs 90 Research Group modelled the extent of IT integration within organizations in relation to its effects and benefits. Therefore, using this framework we will consider five university

components and their interrelations in order to achieve organizational changes.

Strategy: The university strategy is a basic standpoint of top management for the future organisation development. It is submissive to changes because of achievement of its objectives. Some common principles are recommended in the literature for organisation strategy creating:

- Organisation is considered as a socio-economic system in specific cultural, political and legal environment. Hence strategy has not only economical but also social mission.
- Strategy is a result of the teamwork of experts from many fields (management, economy, ICT, etc.)
- Decomposition of the general objectives to goals is needed for the lower units of the organisation.
- Key parts of organisation strategy are elaborated in 3-4 variants/versions.

Universities stand in need of using these principles too.

Structure: Structure is the arrangement of the organisation units that collaborate and contribute to serve one common aim. It determines the manner and extent to which roles, power, and responsibilities are delegated, controlled, and coordinated, and how information flows between levels of management.

University structure consists of constituent units like faculties, academies, institutes and other centres. This structure is mostly permanent.

Management process: Those processes plan and control the performance or execution of any type of activity in an organisation.

Universities specify two core processes, education, and research and development. Supporting processes are some as this: human resource management and social care, foreign affairs, public relations, quality management, business activities and region supporting, etc.

Process management, mainly in the form of the process reengineering, is popular trend in the last decades. Innovations in the division of labour, projection of the new activities and processes are created in accordance to reengineering.

HRM process is one of the new processes that has to be created at the universities.

Human resources: HR are the individuals who comprise the workforce of an organization. A university has a broad spectrum of different employees that should be managed in the best

manner, with personalized and adequate approach: (full/associate/assistant professors, (senior) lecturers, (senior) assistants, scientific novices, researchers, administrative personnel, (non)technical personnel and others. They are allocated to some organizational unit: university central office (rector, various offices and departments) or constituent units (faculties, academies, different centres).

Technology: Technology is the usage and knowledge of tools, techniques and crafts and also a set of systems or methods of an organization. Information technology deals with the use of electronic computers and computer software to convert, store, protect, process, transmit, and securely retrieve information. Since technological change is simply moving much faster than humans are changing, as a consequence the benefits of technological change are not what they should be.

In order to make an organizational change that is HRM process definition and implementation of HRIS at university, we will use system approach to our problem. For that reason next chapter deals with our proposed methodology of three-partial system.

3 System approach to HRIS creation/implementation

After positioning HRM in the MIT90s framework, it follows that if we would have the University HRM strategy it could lead to HRIS creation. So, an innovation or new process of HRM at university has to be done, beginning with strategy creation.

The system approach is one of the possible methodologies of this problem solving. According to the system methodology the specific method of the problem solution gives us the technique of work in progress.

"Three-partial" system (TPS) is one of general principles of the system methodology and we will use it as the basic methodology for HRIS creation. A following definition is quoted in [8]: „a three-partial system is based on a principle, which generalizes analysis, comparison and synthesis of a process in the way, that each its entity is seen in three components. According to the particular character of the solved problem the corresponding meritorious meaning and a

semantic sense are assigned to the three general components of the system:
Strategy
Tactics
Activation. "
The linking of all three components is shown as:

P : S(P) $\rightarrow$ T(P) $\rightarrow$ A(P)
P – problem
S(P) – strategy of the problem
T(P) – tactics of the problem
A(P) – activation of the problem

Strategy is a basic act of a design which determinates the aim of a specific problem solution. The problems may come either from an external environment or from internal needs. Based on external environment the strategy with the general meaning is created. The internal needs create the strategy on a lower level of the system.
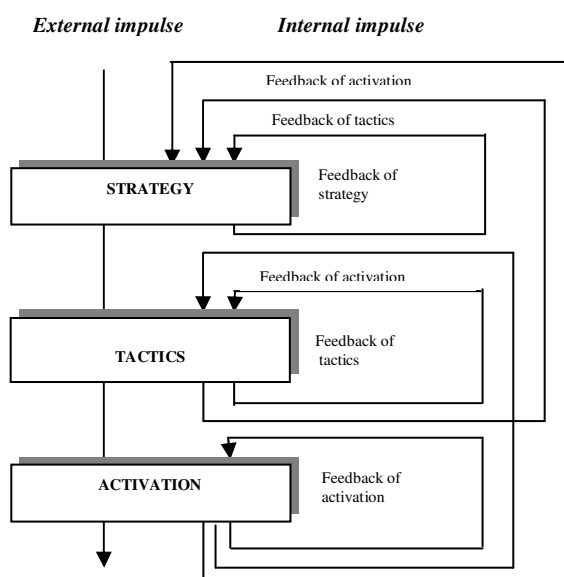

Figure 2: Three-partial system principle [8]

Tactics is the second part in which according to the strategy the internal conditions of the system are prepared. We can say that the tactics is the preparation of conditions for the defined objectives realization. Effective identification is necessary there and gives us the information that there will not be negative impacts on the actions leading to the realization. The tactics defines the tasks according to the limitation of the system conditions. Finally, it is the feasibility of conditions for the defined aims realization.

Activation is a realization of the solved problem. The process of the realisation has to be

defined. Each realization is a verification of the aims accuracy and a next point for improvements or additions of the defined strategy and tactics.

These components of the three-partial system have no only time but also a content interweaving. All three components binding are shown in Fig. 2.

There are two ways to interpret the three-partial system principle:

1. If the strategy (objectives) of the required system behavior is created, then it is possible to develop corresponding tactics (preparation for the conditions of the realization) to this strategy and afterwards the activation performs (objectives performance according to the instant situation of the system).

2. If the objectives (activation) are to be performed, it is necessary, that first, they are prepared for the conditions where they will be performed (tactics). The preparation has to follow the overall objectives of the higher system, where the objectives will be performed (strategy).

By means of the three-partial system, it is possible to originate the accurate progress of each phase of the problem solving.

The importance of the three-partial system consists mainly of being able to proceed logically and without missing the necessary solution phases during a new unsolved problem. The common use of the three-partial modelling is in its possible application for all generally organized activity solving. Using the three-partial system enables us to create a model representing the general view of solving a particular problem and it is suitable for all solutions, which deal with the development of any kind of changes. Due to this fact, in next chapter we will use the three-partial system to describe steps of HRIS creation.

4 Prerequisites for HRIS creation

In introduced MIT90s framework we have found some relationships between elements especially important for us so we put them in bold (Fig. 1). We emphasized strategy and technology in relation to human resources because our intention is to develop HRIS based on information and communication technologies in order to accomplish HRM strategy that is tailored for HR aims and needs of a university.

Furthermore, according to [9], none of the potentially beneficial enabling aspects of IT can take place without clarity of business purpose and a vision of what the organization should become. A clear mission of HRM visible to, and understood by, the university is a well-known prerequisite for any major organization change.

Using previously described three-partial system our problem P is to effectively and efficiently manage human resources at university to successfully achieve organizational, social and individual goals. To succeed that, university HRIS need to be built, an integrated computerized system that will be in charge of: setting up and actualizing different talent layouts, bringing in and out talent, educating and training teachers and employees, organizing to assess all kinds of professional and technical positions, setting of the faculty organizations, planning and managing of labour payment, social insurance and welfare work, managing HR files and so on [7].

4.1 Strategy

Our strategy of the problem S(P) includes, firstly, definition of comprehensive HRM strategy for university which will consists of HRM mission, vision, strategic and immediate objectives and also benchmarks of HRM activities that will provide the basis for evaluating the success of HRM performed at university. Secondly, HRM strategy should be translated into a clear set of work programs and the responsibility for implementing HRM policies should be given to all professors, assistants, technical, non-technical personnel and other employees. HRM bodies (office, managers) should be established which should be involved in formation and implementation of university strategies (education, research, e-learning, HRM etc.). Also, HRM representatives should actively participate in the University Management.

The Research Strategy of the University of Zagreb [11] is designed to help organize and maintain the development of the University, its Faculties, departments, research teams and individual academics over a longer term. The University of Zagreb Vice-Rector for science and technology is entrusted with the implementation and monitoring of the strategy. Strategy defines education and research as primary goals of the University, and so does providing incentives to creativity and innovation for the purpose of exerting a more substantial effect on economic development. Although the research strategy of the University mentions HRM, it is on each constituent unit (faculty, academy, institute) to

define its own research strategy and supporting HRM strategy. However, there are none or only weak HRM strategies as a parts of some other strategies.

In University of Zilina Strategy [12] there are some objectives concerning HRM:

- To accomplish 40% share of professors and associated professors from the total number of teachers.
- To improve the conditions for young people (participation in the projects, social support etc.).
- To raise criteria for habilitation and inauguration procedure including outcomes in educational field and also research and development with emphasis on realized products, stay studies at the foreign workplaces etc.
- To support perspective graduate PhD students gaining their professional career at the university.
- To monitor and evaluate employees on their positions in organization structure in order to rationalize all activities and processes.
- To support administrative staff through its personal development in the frame of the Life Long Learning.

University of Zagreb has established Office for Human Relations with representative of the Office, senior advisor for standardization and employment relations and expert assistant for human resources. At constituent unit level, for example Faculty of Organization and Informatics does not have (trained) person charged for HRM activities so decisions about workforce governance, work organization, recruitment, education and training, career development, reward systems and other HRM activities makes Management of Faculty.

At University of Zilina existing personnel departments provide only some of services connected with HRM. For example recruitment, personal documents evidence and activities connected with reward administration. The Managements of Faculties work with additional HRM activities as career development, work organization and workforce governance without any system approach.

Since there is still no HRM strategies or any polices and guidelines for both universities, it is up to every constituent unit how it will solve this problem if it even realizes that it should be solved. Unfortunately, faculties do not have defined HRM strategies or policies at the moment. Hence, decisions about human resources are usually made according to arising situations and rarely proactively.

4.2 Tactics

Tactics of the problem T(P) includes preparation of HRM strategy and programs feasibility after they are defined and responsibility roles are assigned. However, that is the most demanding part of our system approach because when it will finally be completed activation part will be just a thing of technology implementation. Besides, technology is moving much faster than humans are changing so it is only a question of preparation for ICT implementation and using.

Therefore, tactics will be realized through another three-partial system. In the first part, that is strategy of tactics, current state of HRM conditions at university will be defined and checked. It could be done by survey method and interviews with university employees. Survey could examine current ways of communication with employees (through unions, work councils, suggestion box(es), attitude survey, quality circles, web portals, e-mail, instant messages, no formal methods), ways of recruitment (through recruitment agencies, from current employees, by advertising internally, by advertising externally, by word of mouth, through apprenticeship, by use of search and selection consultants), rewarding activities (compensation on the basis of total work experience or length of service, participation of personnel in international and domestic projects, publishing new scientific papers or books or other online/printed material, achieving good results in work with students and other employees, work experience, performance and skills) and also training and development ways (through assessment centres, annual career development interview, performance appraisal of employees, formal career plans, personal career plan, succession plans). After data collection, current HRM at university will be perceived, with all benefits and problems addressed.

Afterwards, in the tactics of the tactics part, perceived HRM process can be presented, old (existing) one or new one. However, it will depend on university objectives determined by HRM strategy but from our point of view we can assume that new one should be necessary.

Activation of the tactics will then include project development that will implement new HRM process at university.

4.3. Activation

At this moment both universities do not have any centralized system for HRM purposes so activation of problem A(P) will mean HRIS development using existing ICT technologies after prepared conditions in tactics part.

On constituent unit level, there are some already implemented ways of tracking HR activities like web-based system for teaching evidence, internal webpage listing current employee status/title, emerging e-portfolio system, accounting information system, employee time and attendance tracking system, external databases of published scientific papers and others. But since these systems, applications or web pages are not covering all HR activities that should be supported (training and development, evaluation, compensation, staff management, socialization, recruitment and selection, work design [6]) missing ones described in tactics part will be ICT supported and integrated into one system - HRIS.

Conclusion

Without adequate human resource management at universities it is not possible to successfully achieve organizational, social and individual effects. Since there is no existing solution of HRM system and especially not ICT supported in this paper we have determined some prerequisites that show us how to prepare the specific method of work in progress.

According to MIT90s framework, connection between strategy, human resource and information technology should be established if an organization wants to achieve effective and efficient results. Therefore, an appropriate information technologies support for HRM should be suggested and managed – human resource information system (HRIS). New HRM process management has to be established before information system implementation. Three-partial system is applied as a basic methodology in our proposal of solution.

References

[1] Armstrong, M.: A handbook of human resource management, Cambridge University Press, 2006.

[2] Bambir, D., Drozdova, M., Horvat, J.: Applicability of Existing HRM Models in Order to Develop HRIS Model for University, Academic Globalization, Florida, USA, 2010., paper in press.

[3] Budhwar, P. S., Khatri, N.: Applicability of HRM models in India, International Journal of Cross Cultural Management, Vol. 1(3), pp. 333-356, 2001.

[4] Filmore, P.: SECEE Working Groups and Change, available at http://www.tech.plym.ac.uk/dcee/staff/PaulFilmore/Manage/MITs90project.PDF, Accessed: March 7, 2010.

[5] Gratton, L., Hailey, V. H., Stiles, P., Truss C.: Strategic human resource management, Oxford University Press, 2003.

[6] Martín-Alcázar, F., Romero-Fernandez, P. M., Sanchez-Gardey, G.: Strategic human resource management: integrating the universalistic, contingent, configurational and contextual perspectives. International Journal of Human Resource Management, Vol. 16, No. 5, 2005, Pp 633-659, available at: http://molar.crb.ucp.pt/cursos/2%C2%BA%20Ciclo%20-%20Mestrados/Gest%C3%A3o/2007-09/DGRH/Papers/Alcaz%C3%A1r_revis%C3%A3o%20de%20literatura%20sobre%20GERH.pdf, Accessed: March 7, 2010.

[7] Ouyang, H., Lu, X.: On the construction of a human resources management information system based on CSCW for institution of higher education, International Conference on E-learning, E-business, Enterprise Information Systems, and E-Government, IEEE, 2009.

[8] Papeš, Z.: Research of structural formalisation of management system, VÚEPE, Prague, 1976.

[9] Scott Morton, M.S.: The Corporation of the 1990s – Information technology and organizational transformation, Oxford University Press, 1991.

[10] Tayeb, M. H.: International human resource management: a multinational company perspective, Oxford University Press, 2005.

[11] University of Zagreb Research Strategy 2008 – 2013, available at: http://www.unizg.hr/fileadmin/rektorat/dokumenti/statut/SVEZG03-02_Brosura_ENG-finale2.pdf, Accessed: May 6, 2010.

[12] University of Zilina Strategy, available at: http://www.uniza.sk/menu/inc.asp?ver=SK

[13] Wills, S.: Strategic planning for Blended eLearning. Proceedings of the 7th International

Conference on Information Technology Based Higher Education & Training, Sydney, 2006, available at: http://ro.uow.edu.au/cgi/viewcontent. cgi?article=1033&context=asdpapers, Accessed: March 8, 2010.

[14] Wills, S., Alexander, S.: Managing technological change and university teaching, Kogan Page, January, pp. 56-72, 2000.