

PROFESSIONAL DEVELOPMENT MANAGEMENT IN PUBLIC ADMINISTRATION - THE ROLE OF INFORMATION COMMUNICATION TECHNOLOGY

Eda Ribarić Aidone, M.Sc.

Polytechnic of Rijeka
eribaric@veleri.hr

Ivan Pogarčić, M.Sc.

Polytechnic of Rijeka
pogarcic@veleri.hr

Maja Gligora Marković

Polytechnic of Rijeka
mgligoram@veleri.hr

Abstract – Development of science and technology, supported by informatization in every segment of human activity, highlights the importance of Knowledge Management by giving it a central place in considering business. Therefore, the Knowledge Management becomes an imperative. Information, as an ultimate business resource in this new economy, becomes a basis for gathering knowledge that is required for performing business activities and making business decisions. Thereby, making investments in knowledge assumes investing in human factor – a developmental potential and a basic resource of contemporary business systems of which managers consider about the future. In accordance with that, Professional Development Management becomes a basic guideline for a successful business and a determinant of business subsistence. Sluggishness and inefficiency of business administration are in large scale caused by obsolete technology and procedures, as well as by unmotivated employees. Professional Development Management is a precondition for increasing employees' satisfaction and improving their working efficiency and thus improving business success in general. The question is: how can contemporary Information Communication Technologies (ICT) improve Human Resources Management? This paper represents basic assumptions regarding the importance of human resources Professional Development Management in public administration. It also points out the importance of implementing ICT, perceived as a strategic factor in education and training process and in process of acquiring skills and competencies. Contemporary ICT ensure rationality in Human Resources Management and, further on, introduce new education and training methods and modes, impacting that way directly on a Human Resources Professional Development.

1. – Introduction

Science and technology development, supported by informatization in each field of human activities has put knowledge management in focus. Information that is ultimate business resource in a new economy is a basis for acquiring knowledge needed for performing business activities and making business decisions. Those who has information, upgrades it and develops knowledge, becomes a leader in contemporary conditions and new economy – knowledge economy. Therefore, investing in knowledge requires investing in human factor as a developmental potential and basic resource of contemporary firm focused on a future. At the same time, professional development management becomes one of basic conditions for business success and a factor of its survival. Professional development management is a

precondition for increasing employee's satisfaction and their working efficiency, as well as business efficiency in general and acquiring and preserving competitive advantages. Contemporary perception of competitive advantages is based on company's dynamic capabilities where the focus is on company's capabilities for regrouping and developing its own *soft resources*. Basic company's capital today is a human who is, at the same time also the only resource that decides whether he would use his potential or not. That is, company's success is based on potentials of its own employees and their capabilities for realization their potential or produce, apply and upgrade their knowledge. One of basic business success factors is effectively and timely usage of knowledge and innovativeness of own employees. Company's competitive factors hides in a way that company collects information and knowledge, processes and stores them, and motivates own employees to share those knowledge and use it in a business for creating new one. Acquiring knowledge will enable professional development of employee, and that is the basis for the organizational development, as well. Due to constant changes, duration of acquired knowledge is shortening faster, and the volume of necessary knowledge is increasing. This necessary knowledge can be acquired by learning. Thereby, education is considered as a continuous learning process that is spreading on every field and extended through the lifetime of an individual. It is necessary to continuously conduct professional and informatics education and trainings, as well as to conduct education program efficiency analysis, improve working efficiency evaluating system, adjust human potentials with business strategy, mission and vision and to improve the system of human resource selection – in a company, and on the labor market. It is also necessary to formulate strategy and policy for training and developing employees, and to implement transparent career planning system.

Usage of contemporary technologies (primarily Internet, intranet, etc.) will implicate the development of communication skills, knowledge increase, working independence and initiative increase. This is in accordance with conclusion that knowledge accessibility is higher through the access to a net and that it is a better communication connection. Besides, usage of computers has rationalized business in a great manner and enabled larger independence. Intelligent systems, databases and similar, facilitate and accelerate executing a task, in large scale. They also enables to employees to focus on the core business and important problems.

Further in this article are presented basic cognitions about the process of acquiring knowledge by applying ICT as a strategic determinant in a process of education and human resources professional development in public administration. This will bring to a business system development, in general. The basis for this approach is a Management Information System (MIS) as an integrated system aimed for shaping managerial information in order to support decision-making through usage of ICT, as well as its subsystem – Human Resource Management Information System.

2. – Information System Strategic Planning

Each business system determines realization of its goals through careful planning of all business activities. Planning is practiced at different level, starting from different criteria. If the criterion is time period, planning can be strategic, tactic and operative. If contemporary business systems are observed in a global web environment, planning on a more detailed transactional level is necessary. Business making in such environment requires special approaches, more flexible organization and moving the system's centre in dependence with business conditions. From this aspect i.e., there are B2B (business to business) and B2C (business to customer) operations [5]. The strategic plan itself as a basic business matrix can be prepared in different ways by using different methodologies. Chosen methodology, off

course, depends on business system's characteristics, respectively business processes as realization of that system. It is obvious all circumstances should be considered through the plan. Porter, i.e. [6] suggests competitive strategy outlined in so-called model of five forces: *supplier power, barriers to entry, buyer power, treat of substitutes* and *degree of rivalry*. Recent literature also mentions a more detailed level – level of *transactional planning*. In strategic planning there are two possible situations: starting position of realizing a completely new system or strategic planning of developing existing system – *in continuo*. In both situations, especially the second one, during the defining strategic plan it is necessary to complete the analysis of ICT influence, sketch and plan of information system development and the analysis of existing situation. It becomes obvious that planning and realization of Information System should occur parallel to business system planning. Recent literature indicates opinions about Information System as data picture of business system's process realized through models of data, processes and users. The relationship between these two phenomenon has primarily symbiotic characteristics. Accordingly, Information System could be defined as a higher projection of business system where information processes reflect information dimension of business systems. Strategic planning of IS development is a little bit more specific. Some authors define it as a process of defining application set which ensure competitiveness for a business system through a realization of business goals [1]. Others define it as a planning and business analysis process for the purpose of making informatics plan based on a plan of business system's organization [3]. Strategic planning of IS development is also defined as a construction of an informatics strategic plan which realization through optimal resources usage should lead to fulfillment of a business goals [2]. Synthesis of different definitions and approaches by the end of the last Century led to a unique definition of strategic planning of Information System as process of information system development that will provide realization of strategic business goals to the business system [4]. Regardless the sort, plan realization primarily depends on proper resources usage, where human resources are particularly important. Resources determine plan realization and they aren't static category. Competencies and professional level of human resources must follow business conditions adequately and answer possible challenges in time. Professional level of system as whole depends upon professional level of each individual. Therefore, quality strategic plan implies plan of continuant professional development of employees. The literature mentions several terms within this context, such as: *human resources professional development, staff development, professional learning, in service, continuing learning* and TPD. Professional development as sub-function of the Human Resources Management more specifically refers to process of increasing the professional capabilities of staff by providing or providing access to training and educational opportunities. This can include on the job training and outside training or learning by doing and observation of the work of others.

3. – The Significance and the Role of ICT

Development and implementation of Information Communication Technology (ICT) in the last couple of decades has initiated society transformation from industrial to information and from information to the knowledge based society. This process requires a capability of quality information management respectively management of knowledge bearer of which is a human. A process of acquiring knowledge is ensured through the education process. However, traditional education approach can not satisfy company's demands in permanently changing surroundings. Implementation of ICT facilitates business processes execution but it also represents strategic guideline in education process and thereby development process as well. Quality ICT implementation which results with good business achievement is conditioned by organizational goals and strategy and determinate by organization itself and its needs, as well as by organizational culture. ICT users ought to understand its concept which requires

understanding of each information component, goals that should be acquired by applying specific technology, possible impact of a new technology etc.

The business system's IS should automate business processes including the categorization, binding, personalization and preservation of information, which is significantly longer process in manual data processing. Besides, it should also ensure in time accessibility of information required for business decision-making. Since human brain can absorb and at the same time process only a limited quantity of information, there is a need for IS that will rationally support the processes of managing the information and knowledge in organization. In accordance with recent business environment and permanent changes, IS should provide in time information based on a dynamic, instead of deterministic categories. These information are provided by early alert systems which signalize possible threats and opportunities, evaluate possible consequences and diagnose causes. Information System should unite all signals in order to undertake all necessary analyses by diagnosing causes and offer possible solutions. These processes imply its prognostic features.

Management Information System as a part of an Information System stands for an integrated system which purpose is to form managerial information in order to support business operations and make the managerial decisions and it is supported by information technology. MIS enables performing analyses, planning and control by using different software tools, models and already formed data warehouses. It include IS for controlling, informing and managing business in general. Such an IS enable accessibility of structured data but, primarily, their purpose is to support decision making: DSS – *Decision Support System*, EIS – *Executive Information System*, DW – *Data Warehouse*, and ad-hoc decision-making support. Databases have become basic mode of saving data, primary to other storing models, primarily due to possibilities of efficient managing permanent data as well as fast and successful approach to huge data quantities. They enable application and combination of different software tools for approaching data from the same base as well as different insights into the same base in conformity with user's and applicative needs in order to present solely those information authorized to a certain user [10]. MIS connects all organization levels by insuring to management adequate information regarding the execution system, organization environment and also all management sub-functions such as planning, controlling, organizing and managing the human potentials.

4. – Basic Characteristics of Human Resources Information System

Since contemporary business is inconceivable without a usage of computers in the field of processing and transferring data, therefore quality Human Resources Information System is based on the achievements of ICT. Application of ICT allows making business in real time, better connections between companies and partners, networking and creation of virtual company, as well as fast access to needed information. Information technology progress has brought significant changes in a manner of performing basic tasks, working methods and techniques, organization of human resources management, as well as changes in a form and content of document, reports and evidences in general. This resulted with significant time savings which has leave space for other, more creative activities focused on creating quality employee base. This base should contribute to acquiring and keeping competitive advantages with its own professional development. Particular emphasis is on the importance of ICT for creation of employees' portfolio.

Information System has to be harmonized with management needs on a strategic level, but also on operative and tactic level. Data sources of human resources IS [14] can be divided in internal sources (accounting register, personal register, organizational units register, etc.) and

external sources (labor market, employment office, chamber of commerce, crafter associations, statistic agencies, scientific and educational institution etc.). Information that have to be encompassed by Information System in order to maintain company strategy are certainly the same information required to define a plan of human resources development that includes: information about work places structure and description of tasks based on internal allocation of work, information about current and future qualification structure of employees, their knowledge and skills in conformity with requirements of future work places and information required to define modes and resources needed for creating new knowledge according to needs of new employees' structure and new work places. Information of condition and movement of employees demand managing comprehensive and rational human resources register. This includes information of recruiting, using and developing employees, their wages, human resources costs, working time, pension assurance, training and specialization, innovation and technical improvement propositions, etc. [13]. Human resources IS can be divided in five basic information subsystems, as follows: *personal register, collective agreement system, personal costs system, employees' knowledge innovation system and system of human resources management in other fields* [14]. Above mentioned subsystems include specific records (evidences) (Figure 1).

1. PERSONELL STRUCTURE RECORDS	6. INNOVATION RECORDS
<ul style="list-style-type: none"> - gender, maternal and working age - nationality - operation array and interests (occupation) - qualifications, ... 	<ul style="list-style-type: none"> - number of innovation and their characteristics - number of technical and other suggestions and solutions - amount of singular innovation, technical and other improvement rewards
2. SALARIES AND PAYMENTS RECORDS	7. PERSONNEL INSURANCE RECORDS
<ul style="list-style-type: none"> - personal salaries and payments - total gross and net working costs 	<ul style="list-style-type: none"> - insurances' type - amount of premium and payment rights
3. HUMAN POTENTIALS COST AND OTHER EXPENCES RECORDS	8. EDUCATION, TRAINNING AND SPECIALIZATION RECORDS
<ul style="list-style-type: none"> - salaries and other earnings' costs - retirement insurance costs - total human potentials costs - cost per employee based on co-ownership 	<ul style="list-style-type: none"> - number of courses - participants structure - types of stipendiums for professional specialization - evaluation of knowledge innovation
4. WORKING-TIME RECORDS	9. PERSONNEL DEVELOPMENT AND PROMOTION RECORDS
<ul style="list-style-type: none"> - effective working hours - working hours' losses and its reasons - overtime working - shift work, ... 	<ul style="list-style-type: none"> - data of workplace changes - acknowledgements and awards data - knowledge innovation data
5. RECORDS ABOUT ACCIDENTS ON WORK	
<ul style="list-style-type: none"> - accidents on work - gravity of accidents and their frequency - causes of accidents 	

Figure 1: Important information contents of certain records

Contemporary human resources management more firmly involves employees into company's strategy and emphasizes creativity development and knowledge management. An ICT development has its contribution to that, as well. Goals and assignments of IS development can be summarized as follows [13]:

- establishing unique human resources IS for a company in general, as a part of an integrated company's IS;
- providing freely information flow;

- informing employees and management about things that are important to them;
- ensuring employees' rights and obligations and
- creating possibilities for employees' specialization and promotion.

4.1 – The Role of ICT in Human Resources Education

Knowledge and skills usage improvement, as well as acquiring new one, is a component of individual's professional development process. Duration of acquired knowledge becomes shorter because of usage of new technologies (such as ICT), thus lifelong learning and continuous education became an imperative. New modes of adopting knowledge are developing. Education according to system *learning by doing* and *learning by working* has special place in education of adults, both in formal and informal form of education. Increased productivity can be accomplished through an experience and innovation. *Learning by doing* or experiential form of learning refers to learning according to capability of employees to improve their productivity by repeating the same activities. Many think that this method is the best way for learning, although in those systems where classic manner of teaching is dominated, it isn't yet accepted in a significant scale. This education method should be stimulated by managers and, according to that, should take part in MIS. *Learning by working* represents a bridge that binds institutions which practice formal and informal modes of teaching with real business systems. Those in favor of this educational system believe that teaching is the most efficient when being practiced in situations most alike to those of real business system. Education executed by principle of combining the time spent at work place and in educational institution (few days in each surrounding) is very appropriate for engaging the prospective employees in phase of their formal education – what management should certainly have in mind. *Observational learning* (also known as: *vicarious learning*, *social learning or modeling*, or *monkey see - monkey do* learning) processes through observing and imitating others behavior. Observational learning is a part of *social learning theory*. This method is particularly adequate when there is a need for simpler competencies [16].

Changes in company's environment reflected in development of a society and technology have enforced new way of comprehending the competitive advantages based upon knowledge. Answer to newly developed situation enforced by economy of knowledge is reflected in forming "*a learning organization*". Learning organizations represents a concept in which all company's members permanently, individually and collectively increase own capacities due to acquiring their own goals aligned with goals and vision of a company. Learning organization is a part of an organization development process and it arises as a necessary consequence of continuant environmental changes. Organizational development represents an activity mix of continuant improvement of all organizational levels, supported by modern technology and interdisciplinary approaches. Organizational development theory represent thesis that organizations are changing tending to increase their efficiency, which requires open communication, stronger team work, that is, cooperation. Summarized individual learning in organization creates synergic effect that leads to organizational learning. It is perceived that learning has great impact on organization's flexibility and adaptability in conditions of stochastic environment; therefore organizational learning became the focus of many observations [15]. Learning can be defined as a process of collecting information and acquiring knowledge and skills that result in experience. This leads to behavior and acting changes, in the end (Figure 2). Acquired knowledge sublimates all stored and processed information which are basis for developing new skills and attitudes required for efficient goals fulfillment.

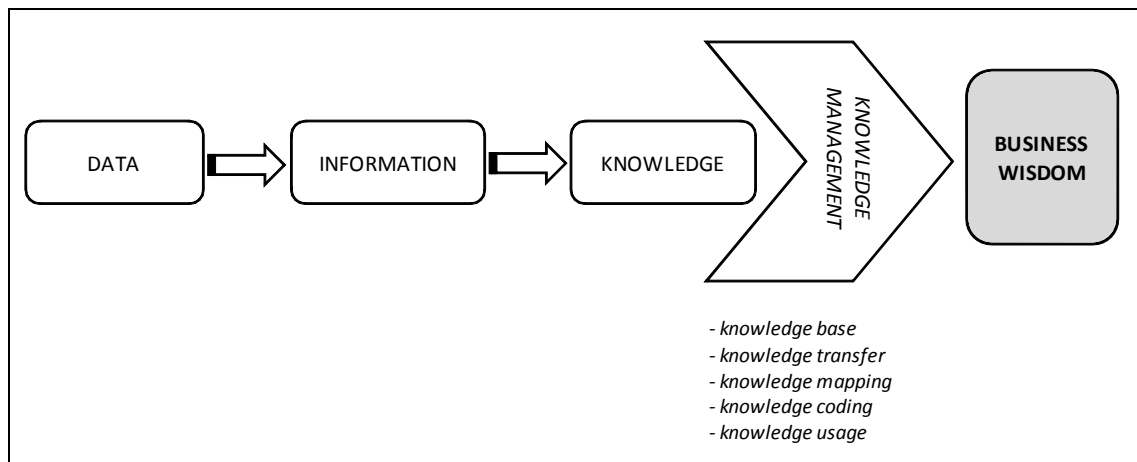


Figure 2: The process of acquiring business wisdom – knowledge management

Companies which apply a concept of learning organization are developed and transformed thanks to constant learning, respectively acquiring knowledge, capabilities and initiatives of each employee. All of these enable undertaking the appropriate actions within environment of constant and accelerated changes. Requirements of management in learning organizations [12] cause moves in requirements towards information, especially in comparison to intranet that is in this context observed as a tool in a process of organizational learning. In learning process quite often are used modalities of virtual learning and distance learning which is embraced by a term of “*e-learning*”. At the same time, e-learning considers an approach which facilitates and improves learning process by applying ICT and that requires usage of computers, telecommunications and Internet. It is possible to distinguish four basic levels of e-learning [8]:

- *Knowledge Databases* – they themselves do not imply a learning process and are usually equipped with software for their interactive search that enables their simple application in a process of acquiring knowledge;
- *Online Support* – provides knowledge exchange between participants of acquiring knowledge process; can be established as discussion forums, chat rooms (real time), e-mails and other modes of distributing messages;
- *Asynchronous Training* – group of tools that enable acquiring knowledge by itself through approaches to databases, discussion forums or direct approach to instructor, chat rooms and similar; can be based upon Internet/Intranet approach or usage of CD or DVD memories for approaching knowledge;
- *Synchronous Training* – performs in real time with direct participation of mentor who directs realization of individual activities and possibility of mutual communication between all participants; it is executed in scheduled terms and can be performed through longer period (few weeks or months); it is based upon Internet communication or audio-video conference.

ICT rationalize activities of human resources management (personal register, evaluation, information about educational needs and modes, etc.). It also represents a tool that will help managers developing human resources and implementing innovation, as well as initializing changes, since the human factor is a crucial for successful business. Professional development of business system certainly has to follow professional development of an individual. Proper approach to development by using IT considers also proper methodology choice. Implementation of ITIL (*IT Infrastructure Library*) as methodological approach is necessary considering the synergic relationship between business system and belonging Information System. ITIL is a compilation of practical advices for implementation and improvement of IT environment management, and it encompasses instructions for IT services’ and information’

management (incidents, changes, capacity, determination and management of service levels, security management, users' backup etc.). Within "the best practice" model, ITIL explains mode, principles and approach to defining all phases of life cycle in Information Technology Management. According to The U. K. Office of Government Commerce, it has five volumes [17]: *Service Strategy*, *Service Design*, *Service Transition*, *Service Operation*, and *Continual Service Improvement*. ITIL provides a systematic and professional approach to IT services' management and provides a wide specter of advantages to its users, as follows:

- lower costs
- improved IT services by using proven the best business processes
- improved costumers' satisfaction through more professional services' approach
- standards and guidelines
- improved productivity
- improved using of skills and experiences
- improved third-part services delivery through ITIL or ISO 20000 as a standard for service supplying.

Acquiring new knowledge is a ground of a professional development and thereby new ICT provide also new modalities of learning.

4.2 – Professional Development Management in Public Administration – Research Results

Comparative analysis of professional development management between profit business subjects and public administration indicate the difference in many fields: in professional development leadership, average yearly investments in employees' education, in usage of different approaches for human resources development, in promotion, incitement of creativity and training towards professional development, in taking care for development, implementation and evaluation personal development program with the accent on specific services of public sector regarding business sector. Observed subjects are not diverse in their attitude toward educational dynamic and their educational focus on the skills needed for current or future work. That is, their approach is mostly traditional, meaning that the education of their employees is mostly focused on skills needed for current job, and they provide training when there is a need for it (especially public administration). It is affirm that training focus on skills that should be needed for future work or on those that are needed for current tasks depends on technological level of a company. Therefore, those companies in which are dominated higher technology, focus their education and training mostly on improvement skills that should be needed for future business.

Analysis indicates that in significant number of examined subjects, development, implementation and evaluation personal development program is not providing systematically. Incitements of creative individuals are insufficient, and the yearly budget for supporting learning is also insufficient. Although managers realizes the importance of the human potentials ant their knowledge, investments in education and training are unsystematic, sporadic and when there is a need for them. Besides, education system isn't transparent and incitements of long life education are very low. Education and development are not activities to which subjects give strategic importance.

It is obvious that the technology level significantly impacts on the attitude and the demand for education and training. At the same time, higher technology implicates strategic planning of business, therefore strategic planning of education focused on incoming changes.

5. – Conclusion

Contemporary business conditions have changed role of Information System by reshaping it from static data and information forwarding to a resource for communication among employees. Therefore, information becomes knowledge with dynamic characteristics, liable to changes during its usage. In this context information are, on one hand necessary for making business decisions, and on the other hand, they become organizational learning resource that help developing human potentials together with organizational capacities.

Transformation of society into information society imposes modernization of operations by applying modern ICT in all business segments. Networking of business subjects via Internet has led to forming virtual enterprises as highly flexible systems that provide enterprises with approach to global market by business operations' specialization and acquirement and knowledge exchange between communication networking actors. Duration of acquired knowledge becomes shorter with the time flow so continuant education and lifelong learning become necessity and the base for professional development of an individual. Contemporary ICT provide more rational human resources management, introduce new education and learning modalities impacting directly that way on their professional development as well.

In order to improve business and increase public administration efficiency, it is necessary and primary to invest in human potentials, their education and training and their development in general. Contemporary ICT ensure more rational human resources management; introduce new methods and modes of education and training, impacting that way directly on a human resources professional development. More significant ICT implementation, with accessible prices for required technical equipment, creates frames for more efficient acting in social and sociological plan. It opens the possibility of impacting on the education policy by individual, and also by the government as well. In mentioned circumstances, through the different incitements modules, such as taxes exemptions, and political and syndicate activities, there is a possibility for insisting on employer's obligation to take care of his employees' professional development and their capability to adopt to a new business in case of losing job. Paraphrasing Chinese adage about the fisherman: it is important to qualify individual for work. He can find the job on his own, without significant problem. That way it is possible to effectively contribute to creating employment policy in both local and national level.

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