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E-SKILLS FOR PUBLIC SECTOR EMPLOYEES

IN THE PROCESS OF E-GOVERNMENT DEVELOPMENT

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Abstract: *Public sector effectiveness depends largely on the skills of employees in public administration who face specific challenges due to the nature of their work. Modernization of public sector initiated by introduction of information and communication technologies (ICTs) has led to new demands regarding skills required for public sector employees emphasising the need for achieving digital literacy among them. This paper seeks to address a broad range of challenges faced by developing countries at the beginning of the process of e-government implementation, primarily referring to low level of ICT literacy and e-skills of public administration employees. The aim of the paper is to discover the variables with the highest influence on the process of e-government development in these counties, especially focusing on identifying the appropriate mix of specific skills (with particular emphasis on e-skills) required by public sector professionals (especially non-IT workers) involved in the process of e-government development and implementation. Conclusion of the paper is that a user-centric approach for acquiring e-skills in the public sector should be used in the process of e-government development and recommendations of various channels that may be used for acquiring of these skills are offered. This paper may present value to relevant bodies and institutions in developing countries intending to develop and implement the concept of e-government. The findings can also serve as guidelines for development of a possible curriculum for training and education of public administration employees in these countries.*

Keywords: *e-government, e-skills, human resources, public sector, public administration employees, leadership skills*

1. INTRODUCTION

Rapid transformation of society from industrial to informational, from bureaucratic to citizen-cantered, from service economy to knowledge-based one has influenced the development of human resources skills, making them much more pervasive and encompassing than ever before. The main initiator of these changes has been the introduction of information and communication technologies (ICTs).

Information age, associated with the digital revolution, has emphasized the need for digital literacy, or widespread use of basic IT skills (so-called electronic or e-skills) especially within the public sector. It has highlighted the critical role of e-skills for creation of effective and proactive policies aimed at sustaining investments in ICTs and protection of e-skills from becoming a bottleneck.

E-skills are becoming increasingly important in a knowledge-centric concept such as e-government. The main task of the public sector is to provide a substantial supply of high-quality services for the community in order to achieve efficiency and effectiveness in its performance (which is related to the purpose of citizen-cantered orientation). E-government refers to the achievement of this objective within the field of public administration through the use of ICTs (UN 2003).

2. THE CONCEPT OF E-GOVERNMENT

A commonly used narrow definition of e-government refers to service delivery on the Internet (West 2001). However, during the time definitions extended the scope of e-government from "the use of ICTs" towards "reforms in public administration", stating that e-government "is not just automation of existing processes...but creation of new processes and new relationships" (InfoDev and CDT 2002, p. 5) between administrative institutions and bodies. So, e-government "has become an indispensable tool in reforming state administration and the work of local government, it is increasing the satisfaction of citizens regarding services, and creating a more flexible, transparent, public administration" (Molnár, 2006, p. 5).

E-government users include citizens, businesses, governments and public administration employees. According to World Bank (2005) e-government may build one of three possible relationships with its users: government-to-citizen (G2C), government-to-business (G2B) or and government-to-government (G2G). The

fourth and final relationship is the one between the government and its employees (government-to-employees or G2E), where the government is expected to provide e-learning and facilitate knowledge sharing among its employees using Intranet.

Regarding the implementation of ICT concept in government OECD (2003) and UN (2005) point out that successful e-government requires two main categories of human resources: well-balanced human resources in the public sector comprised of professional engineers in charge of system development, management and maintenance on one hand, and users (clients and public sector employees) equipped with IT knowledge on the other hand. Similarly, López-Bassols (2002, p. 3) notes that ICTs "offer the promise of new business and employment opportunities along with higher productivity gains, but also make new demands on skills...and adequate training programmes for various categories of workers".

3. HUMAN RESOURCES AND THEIR SKILLS AS ONE OF THE MOST IMPORTANT FACTORS FOR E-GOVERNMENT DEVELOPMENT

Many studies attempted to identify the most important factors for development of successful e-government which lead to achievement of higher efficiency, effectiveness, transparency and accountability of government day-to-day administration. Numerous variables have been found to have impact on the implementation of e-government in developing countries, such as: changes in work processes, technical/human resources, organizational culture/values, vision/strategy/internal leadership, external/financial support, and laws/regulations/policies, with "technical/human resources" being one of the most important factors (Shin et al., 2008).

Human resources represent a set of individuals who make up the workforce of an organization, a company or an institution in any sector: private, public, NGO, etc. Human resources possess different skills, abilities, knowledge and qualifications needed for performing particular jobs. A skill may be defined as: (1) a learned ability to use one's knowledge, practice, and aptitude; (2) an ability to perform a task with pre-determined results within a provided amount of time and/or energy; (3) a special competence in performance. According to Skills Investment Strategy (2003) there are two types of skills- essential and occupational. Essential skills are enabling skills that help people perform the tasks required by their occupation as well as other activities of their everyday life. These skills provide a foundation for acquiring other skills and enhance individual's ability to adapt to changes in the workplace. Essential skills include reading, writing, analytical skills, verbal communication skills, computer skills and thinking skills, among others. Occupational skills refer to job-specific technical skills that are required in order to perform specific tasks for a particular job.

Skills may be acquired through a variety of channels (OECD, 2001; López-Bassols, 2002)- through natural abilities, formal education, work experience, training (on-the-job or external) and other (e.g. self-training, non-formal training). On-the-job learning is often considered as one of the most effective ways for gaining necessary knowledge and acquiring tacit skills (Barrett, 2001; Lucking, 2003; Ma, 2004; Tessema et al., 2007). Methods of skills development or training programs in organizations can be either formal or informal. The latter is done through on-the-job training and is less expensive, whereas the former is more structured and takes place in a classroom or e-learning setting and is more expensive. For example, an informal method can be used for acquiring basic IT skills, both in public and private sector. Experts suggest that formal training methods can be used for acquisition of Internet skills and technical e-skills either in classroom setting, e-learning, or by outsourcing to local and international institutes. Additionally, public sector may facilitate the process of acquiring IT skills through enhancing access of their employees to ICTs by providing low-cost PC programs (including the Internet).

3.1. SKILLS OF PUBLIC ADMINISTRATION EMPLOYEES

Well-balanced human resources in the public sector and provision of a variety of training programs aimed at developing users' knowledge and capacities are often considered as necessary prerequisite for maximizing the benefits of e-government (OECD, 2003; UN, 2005). Public sector effectiveness depends largely on the skills of employees in public administration who face specific challenges due to the nature of their work. However, it is not easy to fill the skills gaps in order to increase the ability to deliver excellent service to the community. Since skills cannot be easily measured, different proxies may be used for capturing observable employee characteristics, such as education (on the supply side) and occupations (on the demand side). These issues become even more challenging when ICTs are being introduced in work processes in public administration. Having this in mind it is necessary to identify the skills required for public sector employees in order to enable successful development and implementation of e-government.

In the past public administration employees were mainly required to possess only hard skills in order to be considered for a particular job-the emphasis was on technical competencies and functional expertise as

crucial determinants for successful performance. However, during the time the importance of soft skills has increased. Soft skills refer to the ability of an individual to communicate and interact with other employees in a positive manner. These skills are usually seen as a combination of communication and interpersonal skills, emotional intelligence, leadership qualities, negotiation skills and team skills (Deepa and Seth, 2013) as well as social skills - skills needed for working (collaborating) with people in order to achieve mutual goals (e.g. social perceptiveness, coordination and negotiation skills, persuasion and instruction skills, and team working skills) (Ben-ner and Urtasun, 2013).

Nalbandian and Nalbandian (2003) summarize skills necessary for public sector professionals as follows: administrative skills, political and policy skills, skills related to public service values education, and emotional and personal attributes. Administrative skills usually refer to achievement of collaboration and cooperation among departments, creation of opportunities for adoption of best practice as well as orientation of other employees toward accomplishment of organizational goals. Public sector employees need to possess political skills (Ferriset al., 2005; Ferris et al., 2007) which include networking ability, social astuteness, interpersonal influence and apparent sincerity (Ferris et al., 2005); they are expected to work on creating a climate which promotes and emphasizes issues related to loyalty, trust and commitment. They are also required to be committed to expressing public sector values, to educate others on those values, and to encourage the development of organizational values consistent with the values of the community (Nalbandian and Nalbandian, 2003). Another valuable skill for public sector employees refers to emotional intelligence- an understanding of feelings and emotions on one hand, and rational intelligence or reasoning on the other (Vigoda-Gadot and Meisler, 2010).These skills may lead to better performance in delivering service to customers, as well as higher work outcomes of public sector organizations (Rubin et al., 2005; Coté and Miners, 2006; Elfenbein et al., 2007; Vigoda-Gadot and Meisler, 2010). Special attention has to be paid to the significance of leadership skills for effectiveness of public service employees -public sector needs to identify and train employees in leadership skills in order to ensure responsibility. These skills mainly refer to the ability to communicate, motivate, coach, reward, involve and support others, as well as the ability to promote teamwork and collaboration among employees (Basheer and Sulphey, 2012).

Modernization of the public sector and introduction of new technologies has led to new demands regarding skills required for public sector employees. ICTs are affecting skills required and the nature and organization of work even for non-IT workers. Technological changes in the form of computer-based technologies entail an increase in skill content of jobs performed by skilled employees (Machin, 2001). By its nature IT work requires individuals to master codified and tacit knowledge as well as technical and abstract concepts, which are acquired through various formal (e.g. education) and non-formal channels (e.g. work experience).

3.2. E-SKILLS IN PUBLIC ADMINISTRATION

New information society and new concept of e-government require public administration employees to possess (beside essential and occupational skills) also cross-disciplinary, cognitive and problem-solving skills, understanding of the fundamentals of business and communication skills (including competence in foreign languages) as well as ICT-related skills (i.e. e-skills). Specific e-skills are needed for successful development of e-government which entails innovation of on-line services.

ICT skills (or computer technology skills) can be defined as:(a) the ability to learn, communicate effectively, collaborate, and solve problems regarding computer-technology-related tasks and projects; (b) the ability to use technology to support individual's work with people/things/data/information (e.g. use of technology in an engineering lab, design studio or research program; use of technology for development of print and on-line materials; or use of technology for organizing and presenting information or for creating and maintaining databases); and/or (c) the ability to support others in the use of technology (e.g. setting up computer work stations for people, teaching computer skills, troubleshooting technology-related issues, and maintaining and repairing computers and related equipment).

E-skills usually refer to a broad set of skills necessary in the modern workplace. Commission of the European Communities (2007) extended this definition stating that e-skills represent a set of skills, knowledge, and concepts that are needed for effective consumption in terms of access, locating, operating, managing, understanding, and evaluating e-services provided in different stages of e-government. There are five levels of e-skills necessary for public sector employees - non-IT workers (i.e. workers without formal ICT education, such as minimum bachelor degree in informatics as a background for occupational skills) (López-Bassols, 2002; European e-Skills Forum, 2004; OECD, 2005):

1. *Basic level of e-skills* which is close to ICT user skills. These skills generally refer to "digital literacy" and include skills required for confident and critical use of ICTs for work purposes, leisure, learning and

communication. Employees who possess these e-skills can use generic tools (such as Word, Excel, Outlook and PowerPoint) and have the ability to use ICTs for basic tasks and as a tool for working.

2. *Middle ("advanced") level of e-skills.* Employees who possess these e-skills are practitioners because these skills enable them to use advanced and sector-specific software tools. They have the ability to apply simple IT tools in general workplace settings and also have capabilities required for researching, developing, designing, strategic planning, managing, producing, consulting, marketing, selling, integrating, installing, administering, maintaining, supporting and servicing ICT systems.

3. *ICT specialist.* Employees with these e-skills possess professional skills in ICTs - they have the ability to use advanced IT tools to develop, operate, repair, maintain and create ICT systems.

4. *E-leadership skills.* Employees with these e-skills have the capabilities needed for exploiting opportunities provided by ICTs (notably the Internet). They are expected to ensure more efficient and effective performance of different types of organizations as well as to explore the possibilities for new ways of conducting administrative and organizational processes. They have T-shaped portfolio of skills, representing expertise both in using ICT and developing organizations, which means that a leader is expected to possess the following skills:
   ▪ Expertise or "deep knowledge" in a specific area (e.g. engineering) - a vertical set of skills;
   ▪ "Transversal skills" that enable collaboration across a variety of boundaries (e.g. negotiation skills; critical thinking; design and systems thinking, business and entrepreneurship etc.) - a horizontal set of skills;

Both vertical and horizontal sets of skills require a basic level of ICT user skills, as defined by the European e-Skills Forum (2004).

5. *ICT professionalism skills* represent the highest level of e-skills. Employees with these e-skills possess a comprehensive and up-to-date knowledge, accommodating a common ICT body of knowledge, as well as pertinent specialist knowledge and skills. They are able to demonstrate an on-going commitment to professional development via an appropriate combination of qualifications, certifications, work experience and non-formal/informal learning, as well as to deliver high-quality products and services and adhere to applicable regulatory practices and/or a code of ethics/conduct.

4. ACQUIRING E-SKILLS IN DEVELOPING COUNTRIES

Human resources in the public sector represent one of the fields which need a lot of investments within the process of e-government implementation. Developing countries are still at the nascent stage of e-government development. Even though they require sophisticated and up-to-date e-skills in the public sector, these countries are usually characterized by a low level of digital literacy. One of the reasons for this is inappropriate formal education system in these countries which is not adapted to existing needs for e-government development and does not provide programs aimed at acquiring of e-skills for non-IT workers in public administration. As a result, most employees in the public sector in developing countries with a lot of work experience possess high level of essential and occupational skills but lack e-skills. Beside this category of public sector employees, there is another category which consists of employees who possess basic e-skills (beside essential and occupation skills). These employees usually build up their e-skills through self-training or non-formal learning. Even though they are in better position comparing to the employees without e-skills, they still belong to the first ("basic") level of e-skills. Most of employees in the public sector belong to this category. These is only a small number of public sector employees in developing countries who possess "advanced" level of e-skills; they usually do not have formal education in ICT field but have acquired these skills through self-training, previous work experience and on-the-job training. Even less employees may be found at "ICT specialist" level; this level of e-skills is reserved for employees who acquired their professional skills in ICTs through the process of formal education and later upgraded through work experience and training programs (both on-the-job training as well as external trainings). The forth and the fifth level of e-skills is rarely found in the public administration of developing countries. It is a complex one and not so easily achieved especially at the beginning of e-government implementation process.

Training programs aimed at acquiring of e-skills in the public sector in developing countries should not be defined universally for all public sector employees; they must be well defined and goal-directed in order to satisfy the needs of each particular job position. Khan et al. (2010) propose e-skills acquisition methods for public sector employees: formal training methods (e.g. on-the-job training); informal training methods; PC and Internet access in the offices; public private partnership (PPP - joint training programs by government and private sector which are supposed to enhance e-learning through a government extranet where public and private sector employees can share knowledge and experience); e-learning (short term and long term programs); outsourcing e-skills training and development or inviting foreign experts to provide trainings in e-

skills; defining minimum requirements regarding IT skills for each position (for instance, ECDL - European Computer Driving License and/or MOUS - Microsoft Office User Specialist certificate); ICT training through media (radio, television, newspapers); periodic internships in IT departments/organizations; providing ICT training in collaboration with universities or institutes; socialization and capacity building through FAQ, providing manual book/guidance, and through help desk centre; stimulating and motivating employees for acquiring IT skills; make IT skill acquisition as one of the requirements of promotion in the public service; encourage life-long learning programs in the public service etc.

So, there is a necessity for long-term strategy related to e-skills development at the national level in developing countries. A common objective of ICT policies in developing countries refers to providing a minimum level of ICT knowledge for individuals and organizations, offering help to understand information technology and its cross-disciplinary effects, as well as providing a possibility of access to citizens and offering trainings in ICTs. There is also a need for deep scanning of current situation and existing skills in public administration as well as determining which e-skills are required for each position related to e-government and on-line service delivery. Special attention has to be paid to positions which require e-leadership skills. The results of this analysis should be used as a foundation for creation of long-term strategy for building up e-skills in the public sector. From a long-term perspective, there is also a need for some of the e-skills to be embedded in the formal higher education process in developing countries, in order to enable future generation of public sector employees to enter the public administration/government with basic or even advanced level of e-skills developed.

5. CONCLUSION

Continuous and fast development of ICTs on one hand, and changes in e-skills requirements on the other hand, have provided a complex target for policy makers whose job is to create educational and professional training systems at the national level, facing the challenge of delivering the skills needed for e-government. Despite their efforts, they still find it difficult to cope with the existing situation, and lifelong learning is still far from being a reality (Commission of the European Communities, 2007).

E-government facilitates the process of transition from a consolidated model of centralized, hierarchical, bureaucratic and operating government, in which "silo" functioning is dominant, to a new model of "horizontally integrated systems...which facilitate customer orientation" and move towards "e-government solutions that are sustainable" (UN, 2012, p. 63). Introduction of computer-based technologies has led to changes in skills of human resources (Ben-ner and Urtasun, 2013). There are strong reasons to believe that basic IT skills are becoming a new category of "general" competencies, such as analytical or literacy skills. IT skills do not only increase earning potential of IT workers, but they are also becoming necessary for a broad range of activities in the public sector.

However, at the very beginning of introduction of ICTs in the public sector, public administration employees are expected to show readiness and willingness (as well as basic digital literacy) to understand and participate in implementation of new technologies necessary for innovation and advancement of services provided by this sector. The next phase (implementation of e-government concept) requires even more specific, additional skills (e-skills) from public administration employees, especially non-IT workers, in order to be able to engage in a wide variety of uses within e-government. Different forms of formal and non-formal channels of education may be used for solving this problem - a user-centric approach for acquiring e-skills in the public sector should be used in the process. E-skills framework system should be used as a diagnostic tool to assist employers in public administration in determining more precisely and systematically the skills content of current jobs and new skills requirements. IT skills and competencies must be considered as one of the requirements for recruitment of new staff or promotion of existing staff in civil and public service. Developing countries need to create strategies and policy frameworks aimed at strengthening educational systems and facilitating workforce up e-skills in order to set up efficient and effective e-government. Finally, IT skills should become integrated into the concept of lifelong learning of public sector employees as one of necessary conditions to maximize the benefits of e-government, which is expected to facilitate the rapid diffusion of basic IT skills in developing countries.

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