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Overview of the State of Influence of Information Technology on the Government Sector in Bosnia and Herzegovina

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ABSTRACT: In today's technology world, many businesses rely on information technology. This influence has its reflection also on government sectors. Services and work are based on using different information technology programs, internal and external apps, digital documents, signatures etc. Information technology requires the entire package of knowledge, skills, and competencies necessary for employees within a government organization to master and to achieve organizational goals. In first, digital competences are a basis that civil servants must have in order to master day-to-day business activities. These digital competences are not only learned, but through life-long learning they complement, perfect and create new ones.

As one of the new scientific approaches, this article uses one of the innovative explanations as well as indicators of adaptation to a changing work environment. In short, human capital is the subject analyzed with influences for continuous improvement of knowledge and learning as well as influences of information technology. This process of adaptation to change, transforms critical business capabilities into modern ones. Through desk and situation analysis with government officials, the study found that the impact of information technology on the work environment is evident, and that environment includes a range of digital skills, continuous learning, and modern skills that combines in one.

The conclusions of this paper are necessary for the continuous monitoring and professionalization of government employees in the areas of using information technology in their daily work.

KEYWORDS: government, public institutions, government policies, information technology, new competences, life-long learning, working environment, digital competences.

INTRODUCTION

Over the past few years, more and more attention has been paid to digital competences and the use of information technologies for various purposes. We're talking about the inclusion of information technologies in our lives, the participatory role in the lives of citizens, to keep up with time. Without IT, people could be excluded and isolated from the rest of the world.

As good as information technologies are for our work, there are so many negative influencers, both to work, to life and to human health.

The utilize of information and media innovation within the world is one of the components for effective everyday operations. Each company in the world including Bosnia and Herzegovina has its own website, and email to utilized as an indispensably portion of regular trade communication. This permits individuals to communicate in a basic and all-inclusive way all over the world.

The impact of data innovation and digital literacy is pervasive in various aspects of life, including social, political, economic, financial, and individual spheres. Recognizing the need for adaptation, the European Union has identified key competences that are essential for both personal and professional activities. These competences include information-communication and digital skills, which are increasingly important in the modern era. The influence of information technology is evident, and organizations must adapt to these changes. Over time, employees' competences are evolving to align with modern requirements, enabling social mobility, employment opportunities, active citizenship, and professional growth. Moreover, organizations benefit from having employees with up-to-date competences, contributing to their competitiveness in the long run. Many authors consider these competences as crucial for the future. To anticipate these "new" competences, organizations must attract and retain high-quality

individuals who are willing to adapt to changes. Despite this understanding, there has been limited research on the impact of information technology on the modern competences of workers, particularly in the government administration of Bosnia and Herzegovina.

The lack of proficiency among government employees in utilizing new IT applications can have significant repercussions for the civil service, other state institutions, and citizens. One consequence is the inability to effectively work with government programs, resulting in delays in receiving important documents and legal laws by the relevant services responsible for preparing them for the government or assembly. This delay can be frustrating for citizens who eagerly await these documents, as they may have to wait several months for them to be addressed in another meeting. Additionally, unskilled workers may struggle with network unavailability or technical issues when attempting to adapt documents to IT programs. Furthermore, there is a lack of international or domestic regulations governing information literacy in the public sector, which places additional demands on IT system maintenance investments. Bill Gates, in 2011, emphasized the importance of innovation through information technology in the business world, highlighting that it is now unthinkable to operate without IT. International educational standards, such as continuous professional development, information technology management processes, and lifelong learning, further underscore the significance of information literacy.

The quality of the use of the ability and knowledge to manage some IT programs as a parameter affects the productivity of a particular business organization.

There is a wide range of companies in the market that offer outsourcing services for maintaining specific software solutions. These companies employ skilled and knowledgeable personnel who are capable of managing various software systems. As a result, they have a competitive advantage in the market and control the availability of these software systems. However, there is a significant shortage of competent individuals in the IT sector within government services. This shortage leads to challenges in areas such as information security, business management, and effective management of information systems. To address this issue, it is crucial for employees in all sectors to engage in lifelong learning and training, particularly in the field of information technology. This will provide them with the necessary competences to effectively work with basic computer applications. But accept the basic competencies, the government needs to be familiar with new applications. For example, now it's out on a market the innovation called chat GPT. This artificial intelligence interacts in a conversational way and proposes solutions or provides data on the defined topic. In order to use it, employees need to possess the basic app knowledge, theoretical background and similar requirements.

It is important to recognize that conducting a thorough analysis of an organization's needs and implementing suitable technical and organizational solutions can lead to significant advancements in educating individuals in the civil service. However, it is crucial to acknowledge the limitations imposed by investment principles when it comes to ensuring the availability of qualified individuals for managing IT programs. Factors such as employees' willingness to undergo additional education and their ability to effectively apply IT knowledge in their work must be taken into account.

The importance of this study is very high; educated civil employees can provide better service to their citizens and up to time innovative solutions. The gaps for now exist in not fully education of government sector and this study provides the theoretical background for it. On the other hand, this paper can be valuable to government sector, foreign investors and international organization whose aim is to build better government environment as a provider of better services to their citizens.

Hence, based on the overall presentation, this paper provides the current state of government institutions and IT influence on their employees. It will provide conclusions and recommendations that round the process of IT competences in government organizations in Bosnia and Herzegovina and remarks for improvement.

METHODOLOGY

Methods used in this research are qualitative. The research comprised approximately revision of 100 articles and research papers, however, in an absence of prior literature on the research topic in Bosnia and Herzegovina, this research study used a mixed-method approach and is relatively new in practice. Researchers use it to appoint the weaknesses and strengths of both. This research study used two methods of data analysis; the first model aims to analyze the impact of IT technology and digital skills of employees in government sector and another the state needs of employees to upgrade their skills in this area. The situation and desk research were used to comprise data findings with practical observation through the years.

THEORETICAL BACKGROUND

The definition of information technologies is already known, and differences are evident in terms of their impact, whether on the business, private or educational environment. According to Panian, information and Communication technologies (ICT) cover a wide range of modern technologies for electronic data processing and remote data transmission, such as electronic computers, the Internet and mobile telephony (Panian et al., 2005).

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The role of information technologies and the Internet gains importance every day, both in educational and business terms. Information and communication technologies have become one of the fundamental drivers of development in many countries and regions in a very short time, where there is an understanding of the possibility of using information and communication technologies (UN, 2002). They have become necessary in the operations of companies, and their use builds efficient public service infrastructure (Gupta et al., 2008). At the same time, through the impact of ICT on learning and on organization and management of educational institutions, there is an increase in quality of work (Weber et al., 2011).

In business organizations, adaptation to IT is inevitable. Such adaptation and change are mostly prescribed through the way organizations react, the environment in which they operate and employees who are willing/unwilling to adapt to the changes. The inevitable change and impact on business organizations today is information technology. Author McKean (2012) says it is necessary to set up work strategies in any business organization to make IT adaptation more successful. It defines it with the formula Strategy (n) – and the plan to achieve a long-term aim, and explains that – in order for organizations to be successful, it is necessary to map the best future for employees and companies. He also cites the main obstacle to meeting the company's goals, which is isolation from IT trends.

Information technologies have become necessary in the operations of organizations, and their use builds fixed structures for business management (Group et all, 2008). Here it is necessary to mention globalization and the consequent progress in information technology, which are two main associates of modern organizational and business structuring, and both relate to very complex communication activities, taking into account that they have become part of both internal and external work organizations. This reflects a paradigm shift from traditionally “closed” operational procedures to highly flexible and innovative organizations. The paradox is that organizations need an existing work analysis to sense the current problem situation and adapt to changes made by information technology. Through the influence of information technologies on the organization there is an increase in quality of work (Weber, 2008). Here it is important to take into account the space in which business organizations operate, i.e. the country in which they carry out their business activities, employees and their readiness to adapt and many other factors that make up the completeness of the business analysis of one organization. It should not be forgotten that the Internet and IT are the driving force of innovation, both in developed and developing countries (Jacobsson, 2011).

The fact is that information technology has a major impact not only on the world but also on business and its environment. Its comprehensiveness is such that today it is impossible to imagine everyday life without IT. This is evident especially in the use of computer systems in airplanes, ordering products over the Internet, etc., until the appearance of robots that do certain jobs for people.

It is inconceivable that business and information technology plays a great role today. Specific IT objectives are highlighted through: competitive advantage in the use of information technologies, readiness to adapt the company in order to fulfil obligations towards clients, continuous education of employees, etc. (McLeod & Schell, 2006). Constant pressure on employees and companies from the IT angle is present. To respond to these changes, business organizations apply more information technologies and try to design modern information architectures. This form of communication, i.e. business, was adopted by the state institutions in Bosnia and Herzegovina. Modernization of IT systems has affected our society, making it possible to solve problems quickly, reduce administrative costs and number of transactions, improve the productivity of a certain business organization, etc. But to what extent employees in the state sector are willing to adapt to these changes and whether they have certain IT and modern competencies to work in a changing working environment, this will be analyzed further, through this article.

GOVERNMENT SECTOR IN BOSNIA AND HERZEGOVINA

The state sector in Bosnia and Herzegovina represents a complex structure and includes all state units whose primary role is the exercise of state functions (executive, legislative and judicial). Good governance of the state administration provides incentives for all participants, and a better life for all citizens. This also means that employees in the state sector must master knowledge and especially in the IT field.

Lifelong learning enables many people to acquire basic skills that grow into key competences for work at a higher educational level. The definition of key competences was presented by the European Union: Key competences represent a set of knowledge, skills and abilities that are necessary for people in their private or professional life.*They should be developed by the end of compulsory education or training and should act as a basis for further learning and as part of lifelong learning* (EU, 2010). Competence is also the ability to successfully cope with complex requirements in a specific context. Competency involves the mobilisation of knowledge, cognitive and practical skills, as well as social and behavioral components, such as attitudes, emotions, value systems and motivations. (Tinoca, Pereira, Oliveira, 2014).e can also say that key competences imply competence and willingness to act in certain spheres of life (OECD, 2011).

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There are eight key competences that are essential for the knowledge society, including digital competences that are closely linked to information technologies. „Digital competences represent a confidential and critical use of ICT for employment, learning, self-building and social participation. They include knowledge, skills and attitudes for work, life and learning in the knowledge society. Digital competences represent digital literacy and ability to access digital media and ICT, understand and critically evaluate different aspects of digital media as well as media content, as well as effective communication in different contexts„ (Muttka, Punnie & Redecker, 2008).

Information and communication technology has a major impact on society, business, work and learning. Information and communication technologies have become, in a very short time, one of the fundamental drivers of the development of many countries as well as in Bosni and Herzegovina and are a necessity in the operations of organisations, and in the provision of public services (Gupta et al., 2008). At the same time, through the impact of ICT on learning, organisation and employees with adequate competencies will be the driver of the quality and productivity of work.

NEW COMPETENCIES VERSUS OLD ONES

"*Through the influence by Information and communication technology and the adaptation of the business organization to the constantly changes, employees' digital competencies grow into modern skills, the so-called New skills for New jobs. Modern skills, i.e. competences, are key to social mobility, work, active citizenship and professional development*" (EU COM, 2008). This also stresses the competitiveness in the work place.

The notion of competitiveness refers to a rivalry or bidding process in order to achieve the best possible result (Obadic, 2004).

Popescu (2005) points out that the development of ICT affects the productivity of countries. The best prospect development industry in Bosnia and Herzegovina is exactly IT.

According to the last, UNDP states that **"***governments must "reinvent" themselves. Digital transformation is not just about new technologies, but requires an overhaul of organizational structures, work processes, skills, culture and mindset".* (UNDP BIH 2020).

The research document, titled: "Digital transformation in the public sector in Bosnia and Herzegovina 2020-2024" highlights that the full potential of digital government remains largely untapped in the country. The utilization of technology and digitalization in the public sectors of Bosnia and Herzegovina is currently low, hindering efforts to enhance the country's growth potential. However, Bosnia and Herzegovina have favorable communication and Internet infrastructure, a rapidly growing ICT sector, and high citizen accessibility to the Internet (approximately 80% of the population). This unique positioning presents an opportunity for the country to leverage digitalization in the public sector, private sector, and society as a whole. Regarding the policy and regulatory environment necessary for digital transformation in the public sector, there is currently no comprehensive strategic framework or country-wide policy vision in place. Additionally, a comprehensive regulatory framework to guide and facilitate digital transformation across the entire government system is lacking. However, there has been notable progress in recent years in terms of digital transformation regulations, such as laws on general administrative procedures, e-signatures, e-documents, e-commerce, and others. In terms of e-services and ICT infrastructure, Bosnia and Herzegovina faces limitations, as these services are currently limited in availability, scattered, and lack harmonization or compatibility across different government levels.

Bosnia and Herzegovina government sectors needs to adapt to new IT challenges and to upgrade HR skills in this area. European Union provides definition for digital literacy in IT field: digital competence involves the "confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. It is defined as a combination of knowledge, skills and attitudes (Schola Europea, 2020).

The framework identifies the key components of digital competence in 5 areas. The areas are summarised below:

1. Information and data literacy: To articulate information needs, to locate and retrieve digital data, information and content. To judge the relevance of the source and its content. To store, manage, and organise digital data, information and content.
2. Communication and collaboration: To interact, communicate and collaborate through digital technologies while being aware of cultural and generational diversity. To participate in society through public and private digital services and participatory citizenship. To manage one's digital presence, identity and reputation.
3. Digital content creation: To create and edit digital content To improve and integrate information and content into an existing body of knowledge while understanding how copyright and licences are to be applied. To know how to give understandable instructions for a computer system.
4. Safety: To protect devices, content, personal data and privacy in digital environments. To protect physical and psychological health, and to be aware of digital technologies for social well-being and social inclusion. To be aware of the environmental impact of digital technologies and their use.

5. Problem solving: To identify needs and problems, and to resolve conceptual problems and problem situations in digital environments. To use digital tools to innovate processes and products. To keep up-to-date with the digital evolution. (Schola Europea, 2020).

Some of the digital competencies are already present in the government sector in Bosnia and Herzegovina, but people need to be equipped more with these competencies, especially if we talk about last – problem solving competencies.

FINDINGS OF PUBLIC ADMINISTRATION REFORM COORDINATOR ORGANIZATION IN BOSNIA AND HERZEGOVINA

Public Administration Reform Coordinator is government organization that provides reforms, research, analysis and strategic approaches in many areas. One of it is the influence of Information technology on digital competencies in government sectors over the Bosnia and Herzegovina. The last strategic approach till 2022 states that there is the gap in overall competencies and in the period of 2017-2022 will be conducted: plan for professional development of government employees in areas that are under the gap, also it will be developed on the extern and intern influences of environment and on analysis of requirements of government departments. Unfortunately, there is no quantitative data about areas for development, conducted research on program implementations. For the 2023 in the plan of this Reform institution there is a program for implementation of information technology systems which will be helpful for government units in operating with e-meetings, e-documentations, e-laws. One of the activities is to develop the skills in IT segment of employees in order to operate with mention IT systems.

There are no official data on the gaps of IT skills in government employees and in which segment it needs the impact. In older research (2015) conducted by the authors Akagic and Djukic in the article *The influence of IT on the development of contemporary competences of public sector employees in BIH in a changing work environment*, states that among 300 sample of government employees, most of them possess good knowledge in digital skills, but gaps was shown in the area: lower level of knowledge in the field of using power point presentation, lower level of knowledge for usage of social networks. In the period of 2015-2022 there are no official data about some aspects of using digital skills by the government employees of Bosnia and Herzegovina or some documents and researches are maybe in the production phase.

DATA AND FINDINGS

Through the situation and desk analysis, this paper provided the insight into the IT and digital competencies in government employees and the state that needs to cover in the next period of time. Also, one of the goals that is presented through this paper is to the more information technology affects the organizations, the greater request of usage of IT will be on the tray.

In the future reconsideration, it needs to be researched the gap between what today's employees know and what they should know in the future in IT. In addition, there needs to be more data on this topic because no official quantitative data was found lately.

The findings through the data and situation analysis are summarized as it follows:

-there are no relevant data about the current issue – the influence of IT on government sectors in BiH that could present the real state

-the finding data are very poor

-through the situation analysis we came to the conclusion that is necessary to equip the employees in the government sector in BiH with new IT or digital skills

-the importance of IT on influence of the development of modern competencies of employees in the state sector, who work in a changing working environment is evident and needs to be upgraded

-and the researches needs to be done in the area that is mentioned above.

EU states that all citizens need to be equipped with the digital competencies as well as state employees. This can be beneficially not only to government units but also for the citizens. In the government plans there is an activity to implement many IT programs in the next period, but this requires the learning and building the new digital skills and adaptation to new thing periodically. Professional development and acquisition of digital and new competencies can be a win-win situation for state employees, their associates and citizens. The benefits of this can be different; from the productivity, efficiency and effectiveness in government sector, setting new standards, and planning for the future projects.

CONCLUSION

Bosnia and Herzegovina is a country that has the potential for progress but unfortunately does not yet exploit it. Large resources and potentials within the IT segment lie within it.

Bosnia and Herzegovina have not yet joined the European Union. One of the foundations of the EU is the improvement of the state sector and appliances that will probably still last longer. But there are capable people who might be open to continuous

promotion and lifelong learning to advance this segment. Special attention should be paid here to the development of digital competences in employees in the state sector. The development of these competencies is keeping pace with time and it is necessary to continuously upgrade and adapt them in accordance with new IT programs.

There has probably been a greater development of digital competencies and greater use and management of various IT programs during the COVID-19 epidemic. Self-learning has prevailed, which is perhaps a good thing - an example of how it should be continued in the future.

Well, digitalization of government sector in Bosnia and Herzegovina is inevitable. Job requirements are likely to be mainly knowledge-based, with the other components of IT. That more complex and sophisticated approaches that describe digital competencies and the requirements of business environment will be likely to be widely used in the future.

The use of more complex approaches that brings digitalization will be challenging in government sector because the current jobs requires too general competencies, which makes it difficult to determine profile competencies in accordance to IT.

Governments in Bosnia and Herzegovina need to apply the concept of modern organizations. Applying this concept, the new competencies of employees in government units in Bosnia and Herzegovina will be released and the human capital would be represented as a wealth of organizations and the country of whole.

I would substantiate the final consideration with the words that times change, we need to be adaptable to these changes because we trade today with human knowledge. And if want to compete on the world scene today, we need to master the innovative knowledge that is present in the area of digitalization.

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