UNIVERSITY OF NOVI SAD
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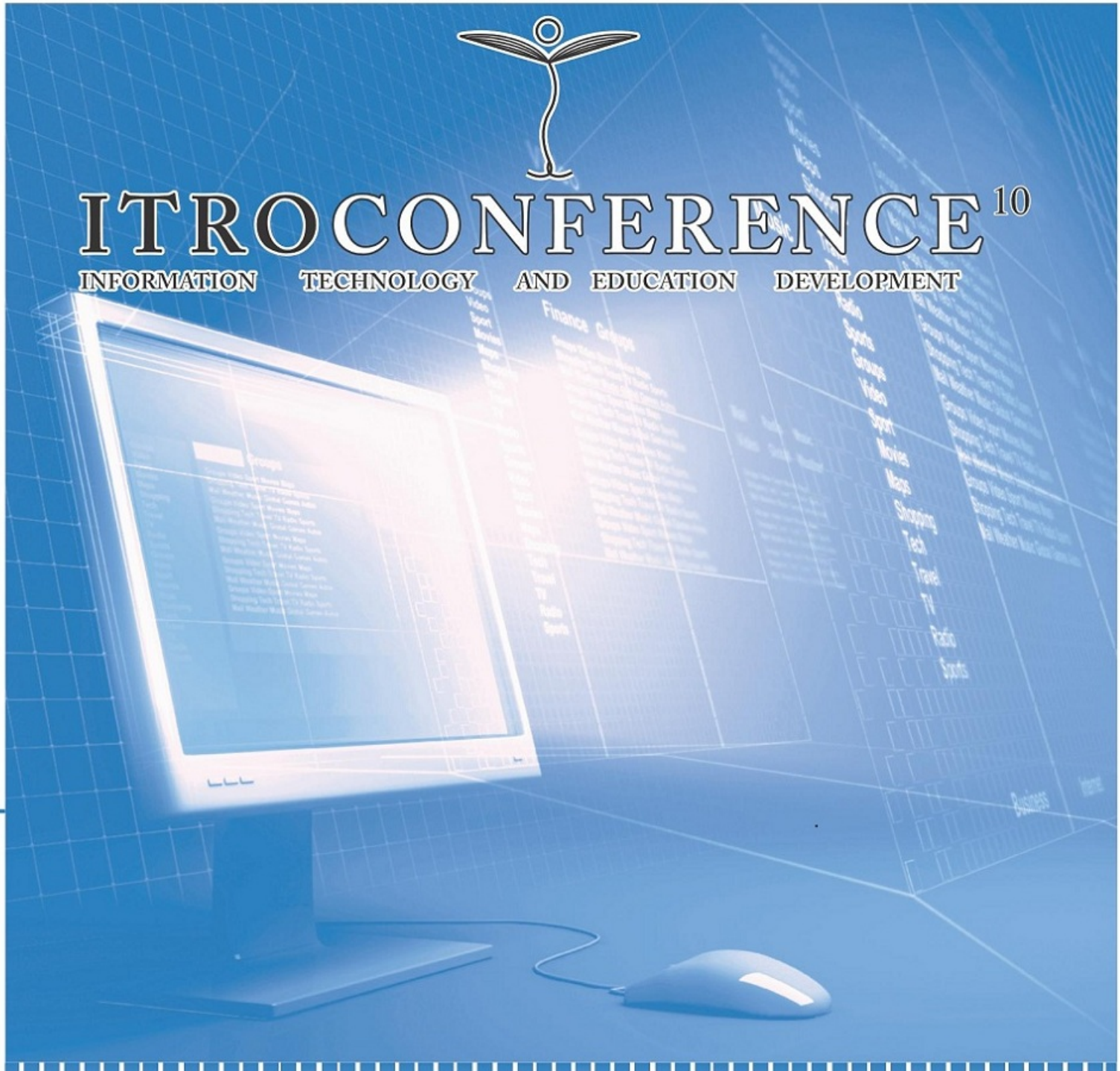
INFORMATION TECHNOLOGY AND EDUCATION DEVELOPMENT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PROCEEDINGS

ZRENJANIN, June 2019

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X INTERNATIONAL CONFERENCE OF

INFORMATION TECHNOLOGY AND DEVELOPMENT OF EDUCATION ITRO 2019

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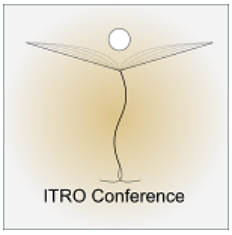

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With this publication, the CD with all papers from the International Conference on Information Technology and Development of Education, ITRO 2019 is also published.

INTRODUCTION

International Conference on Information Technology and Education Development (ITRO 2019), was held the jubilee tenth time. Since the very beginning, the conference has been connecting science, profession and experiences in education. Information technologies influence educational processes and student achievements. Contemporary topics relate to Interactive EBooks and electronic Teachers logbooks. Thematic fields of the conference are alined with general, but olso with national trends in education:

- Theoretic and methodology questions of contemporary pedagogy
- Digital didactics of media
- Modern communication in teaching
- Curriculum of contemporary teaching
- E-learning
- Education management
- Methodic questions of natural and technical sciences subject teaching
- Information and communication technologies
- Dual education.

The conference work was contributed by plenary lectures covering various aspects of ICT in education development:

- *Digital transformation of educational system in Higher Education*, Branko Perišić, Faculty of Technical Sciences, University of Novi Sad;
- *Security issues of e-learning system*, Igor Franc, E-security, Belgrade;
- *From E to ES teacher logbooks*, Žarko Mušicki, primary school "Žarko Zrenjanin", Novi Sad;
- *Canvy, The Thrue Story of Mobile App*, Marius Marcu, Politechnica University of Timisoara, Romania.

The Proceedings containes 59 articles based on research and scientific work in the field of information technologies in education.

The conference was financially supported by the Provincial Secretariat for Higher Education and Scientific Research, Novi Sad. The Technical Faculty "Mihajlo Pupin" has provided the necessary technical support.

The ITRO Organizing Committee would like to thank to the authors of articles, reviewers and participants in the Conference who have contributed to its tradition and successful realization.

Regards until the next ITRO Conference,

Chairman of the Organizing Committee

Jelena Stojanov

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Human Resources Evidence and Management Software's

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Abstract - Human resource records include all the activities that managers undertake to attract and retain employees and ensure that they perform high-level work and contribute to the achievement of organizational goals. These activities shape the organization's human resources management system, a system that has five main components: management and selection, training and development, upgrading of work and feedback, salary and benefits and employee relations. Human resource record is the process by which managers design the components of the human resource management system that are mutually consistent, with other elements in the organizational architecture and with the organization's strategy and goals. The purpose of human resources records is to build a human resource management system that promotes the efficiency, quality and innovation of the organization and the needs of consumers - four carrier blocks of competitive advantage. The human resource record and management software is divided into several modules: systematization, management and selection, personal records freelance cooperation, records of employees' documents, career, absences, performance measurement and reviews.

I. INTRODUCTION

The term human resources are used to explain the individuals who constitute the workforce of an organization. In addition, this notion also applies to the economy of labor, for example, business sectors and even whole nations. HR is also the name for the function within the organization in charge of overall responsibility for implementing strategies and policies related to the management of individuals (i.e. human resources). The "HR" initials are often used as a shortcut to the notion. The word, human resources is a relatively modern concept in management, coined in the 1960s. The origins of the function appear in organizations that have placed practice in welfare management, and also in those that implement the principles of "scientific management". From these notions, a largely administrative management activity has been created, which coordinates a field of employee-related processes and is currently becoming known as "staff". Initially in the United States, as well as in multinational and international corporations, human resources are rapidly becoming the most common name for this area, affecting the implementation of a more quantitative and strategic approach in managing the workforce, the need for corporate governance in order to obtain a competitive advantage, using rarely skillful and highly skilled workers. Simply put, the organizational strategy for managing human resources should increase the return on investment in the human capital of the organization and reduce financial risk. Human Resource Managers see this as achieving the merging of skilled and skilled people and the skills of the current workforce with current and future business plans of the organization and the need to increase return on investment and ensure future success and survival. To ensure that such objectives are achieved, the objective of the human resources task is to effectively implement the human resources requirements of the organization, taking into account federal, state, and local laws and rules of work, ethical business practices and net cost, in a way that maximizes, as much as possible, the motivation, dedication and productivity of the employees.

II. MANAGEMENT OF HUMAN RESOURCES

Human Resource Management includes all the activities that managers undertake to attract and retain employees and ensure that they perform high-level work and contribute to the achievement of organizational goals. These activities shape the organization's human resources system, which consists of five main components: • recruitment and selection, • training and development, • upgrading of work and feedback, • salary and benefits, • relationships between employees.

Strategic human resource management is the process by which managers design the components of the human resources management system that are mutually consistent, with other elements of organizational architecture, and with the organization's strategy and goals. The objective of

strategic human resources management is to build a human resource management system that promotes the efficiency, quality and innovation of the organization and the needs of consumers - the four carrier blocks of competitive advantage.

III. COMPONENTS OF HUMAN RESOURCES RECORDS

Managers apply recruitment and selection to attract and hire new people who have the ability, skills and experience to help the organization achieve its goals. For example, Microsoft aims to remain the world's leading computer software company. When Microsoft employs new software designers, hundreds of highly qualified candidates with excellent recommendations are being interviewed and rigorously tested, but only the best are employed1.

After recruiting and selecting employees, managers apply the second component, training and development, for members of the organization to develop skills and abilities that will enable them to carry out their work effectively now and in the future. Training and development are a permanent process; changes in technology and the environment, as well as the goals and strategies of the organization, often require members of the organization to learn new techniques and ways of working. In Microsoft, newly-appointed program designers receive workplace training in small teams with experienced mentors or advisers. Newly-trained students learn from the members of the team according to the needs of consumer programming to develop a computer system. The third component, rewarding work and feedback, has two objectives in human resource management.

First, rewarding the work can give managers information to make good decisions on human resources - decisions on how to train, motivate, and reward members of the organization. Thus, the component for rewarding work and feedback is a kind of control system that can be used for management purposes2.

Secondly, the feedback from the work done by rewarding the job serves to improve the members of the organization. When managers regularly evaluate the work of their subordinates, they can provide valuable information to subordinates about their good and bad old and areas in which they need to concentrate.

IV. INFORMATION TECHNOLOGY FOR EVIDENCE

Information technology is one of the most tools used by managers to manage the changes. Computer Hardware is the physical equipment used for activities related to the input, processing and transfer of data into the information system. It consists of the following: computers of different size and form, different input devices, data transfer and storage, and telecommunication devices that connect computers together. Computer software consists of detailed, programmed instructions that control and coordinate the components of computer hardware in the information system. Data management technology consists of a computer that manages the organization of data on physical storage media. Network and telecommunications technology, which consists of both physical devices and hardware, connects various parts of hardware and transfers data from one physical location to another. The network connects two or more computing devices to share data or resources such as the printer. The Internet is a global network of networks that uses universal standards to connect millions of different networks with more than 1.4 billion users in more than 230 countries around the world. The Internet has created a new universal technology platform that builds on new products, services, strategies and business models.

A. HRIS and e-HRM

Human Resource Information Software (HRIS) is a software or on-line solution used for data entry, data tracking and information requirements for human resource management in the organization, payroll calculation, and bookkeeping. HRIS is usually offered as a database in the human resources sector.

HRIS is focused on increasing the capacity of human resource management by: • Absorb new and promising technologies, • Simplification of work, • Optimizes the precision, stability and reliability of labor force data, • Simplify the deployment and retrieval of data, • Administration of all employee data, • Reporting and evaluation of employee data, • Company-related information, including manuals, disaster recovery methods and safety recommendations, • Comprehensive payroll integration, in addition to other accounting systems and financial software, • Monitoring applicants and administering their biographies

An efficient HRIS helps the organization to follow: • Paid free time - Paid time off (PTO) and attendance, • History of pay scales, • Position and degree of payment, • Strategies for developing overall efficiency, • Training was conducted, • Disciplinary measures, • Personal data of employees, • Identification of potential employees, • Administration for job seekers, including the interview process and selection

An organization can choose and adapt HRIS so that it meets the requirements. An efficient HRIS provides the organization with information without looking for anything, monitoring and examining the data for the applicant. The customized HRIS helps the human resources department to perform administrative tasks, allowing them to focus on other strategic functions. In addition, the necessary information is provided for the development of knowledge and skills, equal treatment in human resource management and career advancement. Managers can also gain access to the information needed to effectively and legally contribute to the success of their direct reports. Electronic human resource management (e-HRM), as a new phenomenon, is defined in many aspects. There are more generally accepted views, views and definitions. Information technology alters the way in which human resources departments handle record keeping and information sharing. It significantly reduces documentation and provides easy access to bulk data. It is also possible to track the achievements of the employee without going through controversial procedures. Intranet or other channels of web technology are used and can be used to implement various human resource strategies. Authorizations for different human resource functions can be distributed through HRM. There is a fundamental difference between the human resources and e-HRM information systems. HRIS has an application in the human resources department, where users of this technology are largely human resources professionals who use the human resources improvement system to improve the service for the business. E-HRM, on the other hand, is aimed at employees and management. The authors identify the main difference between HRIS and e-HRM. HRIS refers to the automation of human resources services, and e-HRM provides technology support for information about human resources services. "Technically speaking, it can be said that e-HRM is the technical unlocking of HRIS for all employees in an organization." Therefore, e-HRM is defined as a process of integration between human resources management and information technology, using web-based technologies in human resource management.

V. THE MOST SPECIFIC SOFTWARE SOLUTIONS FOR RECORDING OF HUMAN RESOURCES

Business success is not only a factor in strategy, product, and technology but rather depends on how the company manages its workforce. This is why it is crucial for employers to effectively manage and manage the human resources department, to keep employees motivated. For companies to achieve maximum output, they need to use modern software technology to effectively manage the quality of human resources. Many software for human resources, and open source software and premium versions have been developed.

Below is a list of different open source and open source software for human resources: • Sentrifugo. This great software starts from the point that the adjustments should be pre-defined, which gives them all completely free. This human resource management system is easy to install and can easily be adapted to fit into any organizational structure. It is one solution for aligning human resources activities. Sentrifugo features include performance appraisal, employee self-service, good analytics, background checks, service requests, resource requisition, interview scheduling, perfect dashboard, time management module.

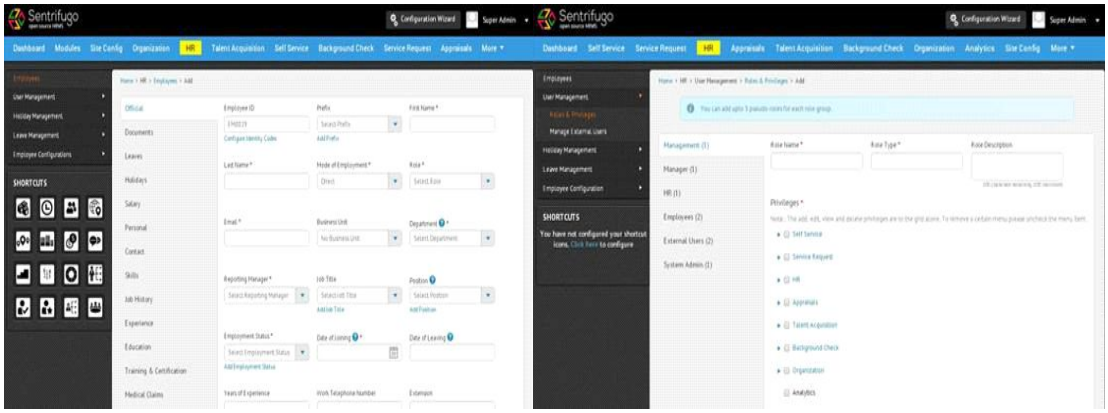

Figure 3: Data menu for the tasks and privileges of employees on the system's work screen - Sentrifugo

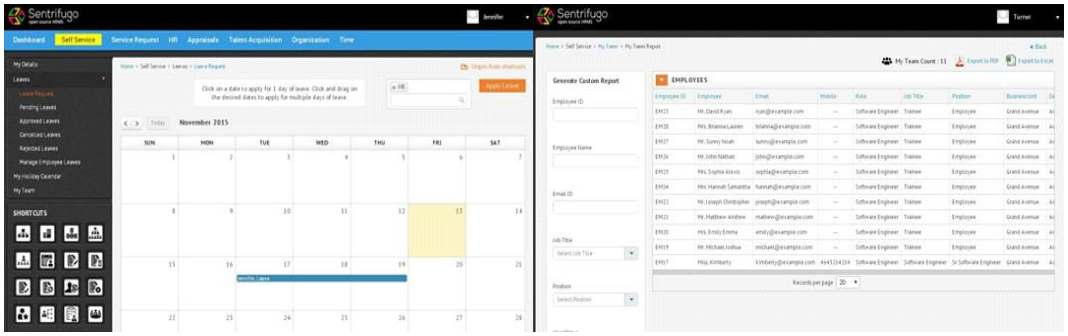

Figure 9: Menu for creating reports for employees by managers on the system's work screen - Sentrifugo

WebHR software runs as an "employment-to-retirement" strategy, which simplifies day-to-day organizational tasks, not just in the most important capital, human resources, but in the whole organization. Basically it bridges the gap between human resource management and information technology. WebHR includes a rich social HR function, a complete solution for hiring, self-service employees, extremely user-friendly, payroll, low cost biometrics, comprehensive reports and graphs, an on-line internship portal and a good broadband profile of employees. WebHR acts as a bridge between the records of human resources and information technology. It enables businesses to automate many aspects of human resource management, with the dual benefit of reducing the workload of the human resources department, and increasing the efficiency of the department by standardizing human resources processes.

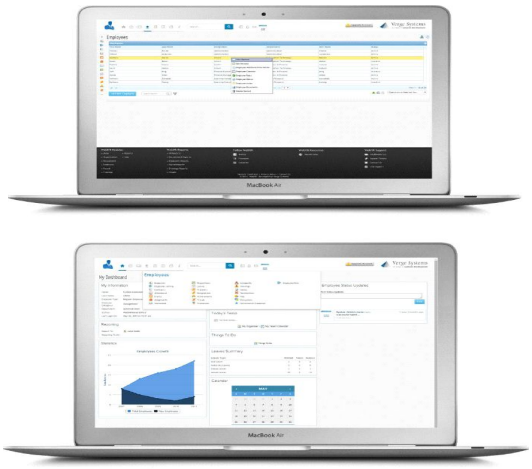

Figure 17: WebHR work window

Bitrix24 offers 35 plus free means of work in one place and is a perfect communication and collaborative platform. Freemium software is free for a limited number, up to a maximum of 12 users. Bitrix24 contains large modules such as Social Intranet, interactive flow of activities, a system that provides chat, badges, company announcements, photo gallery, work processes (holiday requests, business trip expenses and general requirements). In Bitrix24, people are in the spotlight. In the employee directory, you can easily get to the contact information or through a list filter to find the right person for a particular search. By clicking on an employee in the list, it comes to the profile page of that employee. All employee information is visible to the public and has options for instant messaging or comment on the person's blog or photo gallery.

OrangeHRM. The system provides a human resource management platform that provides access to a wide community of users. The modules include system administration, information management for employees, time management and attendance, employment, performance, self-service for employees, etc. OrangeHRM software is open source and is a free human resources management system that offers a wealth of modules that suit the needs of every business. This frequently used system is rich in features, intuitive and provides an important platform for human resource management, along with free documentation and access to a wide community of users.

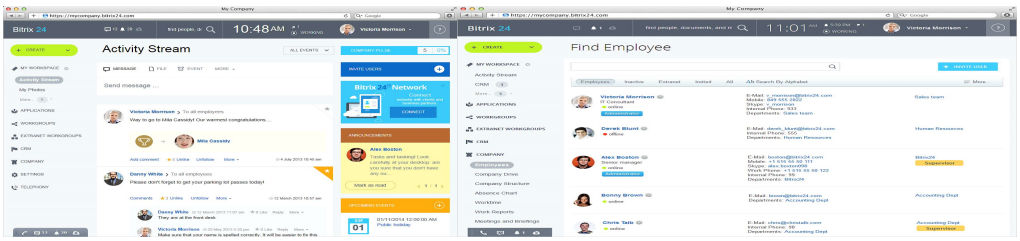

Figure 19: Directory for employee search and Course of activities

Figure 21: Employee Data Management Module and Global Absentee Management System

VI. CONCLUSION

Rapid development of new technologies is felt around us and constant innovations and changes are increasingly being applied in all areas on a daily basis. So our records did not remain untouched by this technological and Internet "fever". Software companies create and offer software solutions to facilitate certain record functions and activities. Changes in information technology are faster than any other processes in organizations. IT opportunities for human resource management are endless. Regarding the coverage of human resource management functions, the majority of them can be supported by IT, but not all that has been confirmed in our research. Of course, this is in the context of expectations and in terms of support the results and some similar research. It should also be noted that when introducing technological solutions, problems and errors in the database, errors of the server, etc. are possible, which the respondents in our research are aware of (especially emphasized by the older group). But, as a result, in our research, in general, researchers from the younger group with greater awareness of the everyday technological changes, accept them more boldly and are ready for risk, and sufficiently efficient in the direction of modernization, facilitation, and improvement of work. With the advent of new generations of leading positions in the records sector, IT use will increasingly be accepted, because every day, it is a fact that the numerous benefits of using specific tools, which include saving time, resources, and reducing administrative burdens on employees. Finally, based on all of the foregoing, we can fully conclude that our general assumption was: "The use of e-HRM systems and other HRIS tools in organizations in the Republic of Macedonia. Macedonia is already a developed practice that finds support from the employees.

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