

THE IMPACT OF DIGITAL COMPETENCIES ON HUMAN RESOURCE MANAGEMENT PRACTICES

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ABSTRACT

This study explores the relationship between digital human resource management (HRM) practices and employees' digital competencies in Serbian organizations, from the perspective of students. Although digitalization has become a central priority in human resource management (HRM), there is still a limited understanding of the effectiveness of digital HRM practices. Data were collected through an online questionnaire from 158 students. A survey was conducted among student managers enrolled in programs at the University of Novi Sad and the ITS – Information Technology School in Belgrade. The results indicate that digital HRM practices have a positive, but modest, impact on employees' digital skills. The results highlight the need for organizations to adapt digital HRM strategies to their specific cultural context and not rely solely on technological solutions. This study contributes to the growing body of literature by demonstrating the interaction between technology and the development of employees' digital capabilities, and suggests that a balanced focus on both is necessary for successful digital transformation.

Keywords: Digital competencies, Human resource management, Digital skills, Digital tools, Integration of digital technologies

INTRODUCTION

The rapid digitalization of workplaces, particularly in the Western Balkans and the Serbian labor market, has created new challenges and opportunities for both employees and organizations. In Serbia, the adoption of digital tools for human resource management is progressing, but organizations still face significant obstacles, such as limited digital infrastructure and varying levels of digital competence among employees. These characteristics make the Serbian context an important case for studying the interaction between digital transformation and human resource management practices.

From a practical perspective, the findings provide useful insights for professionals and CAD designers, highlighting the need to tailor digital HRM strategies to each organization in order to maximize the development of digital skills (Vukić, Berković & Sajfert, 2026). The aim of this study is to examine the adoption and use of digital technologies in HRM, understand the benefits and challenges organizations face in implementing digital HRM practices, and provide insights and recommendations for the effective use of technology in workforce management and organizational success (Abdifatah & Abdifatah Ali, 2023).

LITERATURE REVIEW

The literature in this field is extensive and often complex, reflecting the major changes that digitalization brings to human resource management. This study examines the evolution of human resource management (HRM) strategies in the digital age, focusing on the integration of technology,

data-driven decision-making, and employee experience and engagement (Husen, Wahidah & Mustajab, 2023). The aim of this section is to clarify the theoretical background and identify key research gaps, highlighting the necessity of this study. Digital HR competencies refer to the integration of modern digital technologies into HR processes, building on basic digitalization and their application within organizations. E-learning enables continuous training and flexibility in digital HR management, contributing to the development of digital competencies. Digital performance management systems and HR portals further support employee engagement, satisfaction, and internal communication (Husen, Wahidah & Mustajab, 2023). Digital competence is defined as the ability to use digital technologies effectively and critically in various professional and personal contexts (Zervas & Triantari, 2025). This goes beyond basic technical skills and includes problem-solving, effective communication, creativity, collaboration, and critical thinking—dimensions highlighted in frameworks such as “21st-century digital skills” and DigComp (Van Laar et al., 2017). Innovation begins with people, making human capital within the workforce crucial. In a rapidly changing knowledge economy, 21st-century digital skills drive organizational competitiveness and innovation capacity. Although such skills are considered essential, the digital dimension integrated with 21st-century skills is still not sufficiently defined (Van Laar et al., 2017).

Following earlier studies aimed at gaining a deeper understanding of digital competence through a review of the literature and existing digital competence frameworks, this paper focuses on experts’ views on digital competence (Janssen et al., 2013). The study presents the results of a Delphi study that explored experts’ perspectives on what it means to be digitally competent today. The study included two online consultation rounds: one focused on gathering individual ideas, and the other on validating the aggregated mapping of digital competence, established through various stages of qualitative and quantitative data analysis (Janssen et al., 2013). The paper describes and discusses the final results of the Delphi study, which involved 95 experts from across Europe and beyond. The results indicate that digital competence is composed of knowledge, skills, and attitudes related to twelve different areas (Janssen et al., 2013). In addition, the findings reveal that several issues for debate can be identified when it comes to defining the boundaries of digital competence (Janssen et al., 2013).

In the digital domain, digital literacy is the broadest concept, as originally defined by Gilster (1997). It highlights the key thinking skills and competencies needed to navigate this new medium effectively, emphasizing the rapid changes and democratization brought by web technologies (Gilster, 1997). Digital literacy entails more than merely the ability to use software or operate a digital device; it encompasses a wide range of complex cognitive, motor, sociological, and emotional skills that users need to function effectively in digital environments (Eshet-Alkalai, 2004).

METHODOLOGICAL CONCEPT OF THE STUDY

To determine the extent to which Serbian managers are aware of the beneficial effects of digitalization and which competencies they develop, the authors conducted a survey from September to December 2025 among student managers enrolled in programs at the University of Novi Sad and the Information Technology School (ITS) in Belgrade, Serbia. The study employed a survey method targeting management students studying programs in IT, strategic management, strategic marketing, and human resource management (HRM).

Research Problem and Subject

The primary aim of this research was to gain insight into the potential influential relationships between factors affecting human resource management (HRM), business performance, and the competitiveness of domestic firms in the area of computer competencies. The study presented in this paper is based on evidence derived from the analysis of the latest theoretical insights and practical achievements in the field of computer competencies applied to HRM practices.

Research Objectives

The main objective of this research is to enable human resource managers to use the obtained results in assessing creative capabilities—specifically, to determine whether employees possess the necessary qualities to meet the requirements of a position within a company seeking to hire them. This research also pursues a societal goal: to provide scientific insights that support social measures aimed at enhancing and improving computer competencies.

Expected Results and Hypotheses

The research aims to determine the extent to which digital competencies influence human resource management practices and their impact on the functional characteristics of new digital competencies.

- **Null Hypothesis (H0):** There are assumed to be connections between the impact of digital competencies and human resource management practices.
- **Alternative Hypothesis (H1):** There are significant relationships between the correlation of digital competency dimensions and human resource management practices.

Research Methods

The research framework was established using methodological pluralism, which includes content analysis of relevant literature and documents, as well as a survey method conducted through a structured questionnaire. Empirical data were processed using IBM SPSS Statistics 23, employing statistical procedures that ensure a high level of reliability and validity of the obtained scientific findings.

RESEARCH RESULTS

Information technology is characterized by extremely dynamic development. Entire concepts change every few years, and increasingly, this period is becoming shorter. Therefore, institutions involved in educating IT professionals are expected to continuously improve and align their training programs with the advancement of information technologies and provide a concise overview of IT developments. In designing IT curricula, globally recognized standards in computer science education have been adopted, the highest-quality programs have been implemented, and the founders' own experiences from years of work in the field of IT education have been incorporated.

Based on the results obtained through Google Forms, the surveyed student population consisted of 158 respondents, with female students accounting for 44.5% of the sample and male students for 55.5%. Among the surveyed students, 17.7% were younger than 20 years, 63.3% belonged to the 20–25 age group, and 19.0% were between 26 and 30 years old.

Figure 1. illustrates the number of students by study programs – undergraduate studies: A total of 28.4% of respondents enrolled in Information Technology, 22.2% enrolled in IT – Software Engineering, 12.6% enrolled in Management of Information Technologies, 18.9% enrolled in IT – Data Science and Artificial Intelligence, 17.7% enrolled in IT – Digital Multimedia, and 5% of students enrolled in IT – Digital Business.

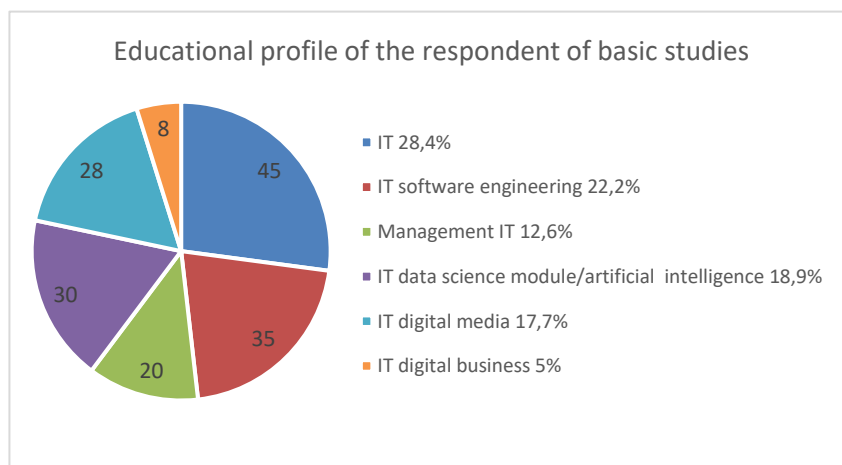


Figure 1: Enrolled educational profile of respondents for digital competencies of basic studies

Figure 2. illustrates the number of students by study programs – master's studies: A total of 50.4% enrolled in Information Technology, 18.4% enrolled in Informatics, Engineering, and Technology in Education, 22.2% enrolled in Information Technology Management, and 9% enrolled in IT – Digital Multimedia.

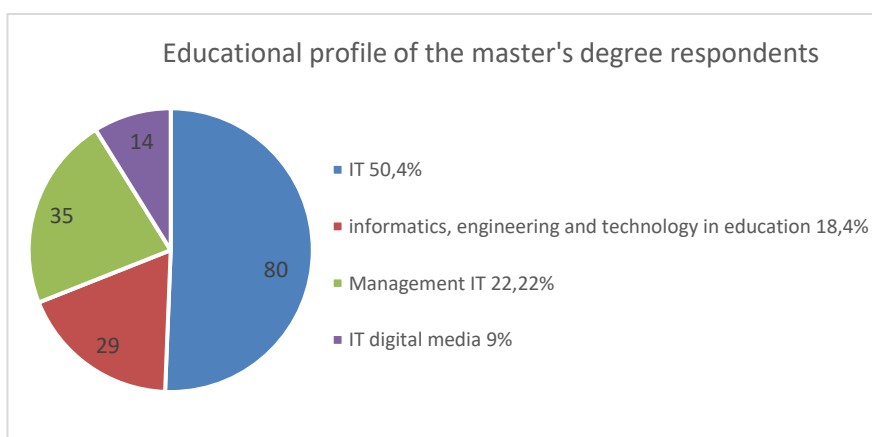


Figure 2: Enrolled educational profile of respondents for digital competencies – master's studies

Figure 3. It should be noted that only 6% perceive the situation as excellent, while 38% consider it good. Meanwhile, 28% believe that the actual use of digital technologies in their companies is satisfactory or even unsatisfactory (28%).

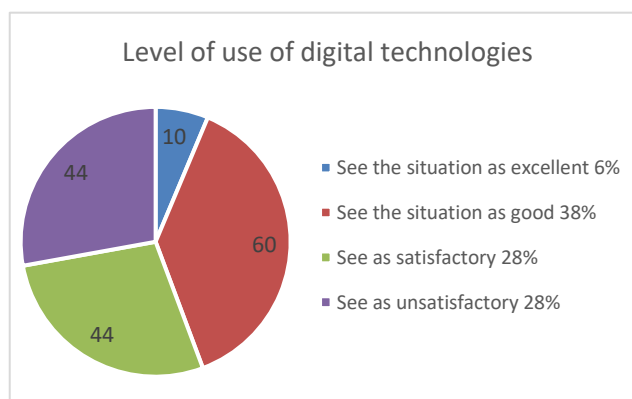


Figure 3: Assessment of the level of digital technology usage by organizational managers

Websites (37%) and CRM systems used for customer relationship management (31%) represent the most commonly adopted digital tools among the surveyed organizations. Lower levels of usage were reported for applications supporting internal processes (14%) and logistics management (18%). The distribution of responses is presented in Figure 4.

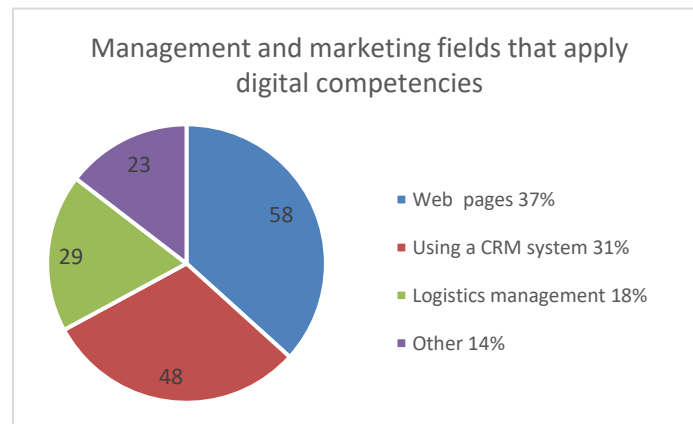


Figure 4: In which areas of management and marketing has your organization implemented digital technologies in the past three years?

The findings indicate that the majority of respondents believe that the implementation of digital technologies in management and marketing has met organizational expectations (57%). At the same time, a considerable proportion of respondents remain uncertain about the achieved effects (20%), while only a relatively small share reported results that exceeded expectations (7%). A detailed distribution of responses is presented in Figure 5.

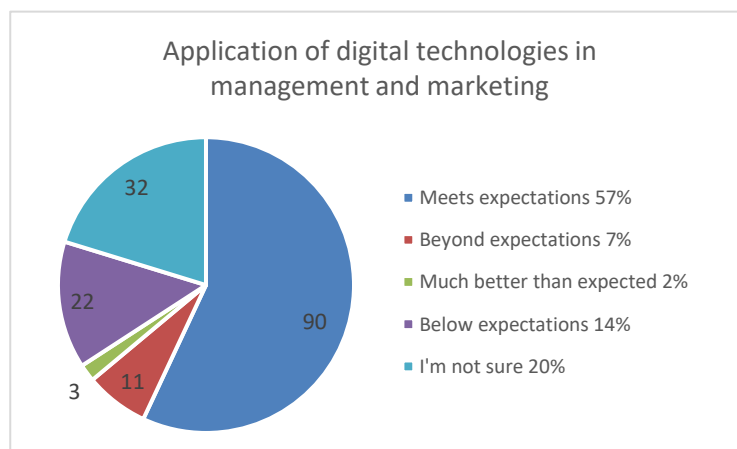


Figure 5: Application of digital technologies in management and marketing: efficiency assessment

DISCUSSION

This research has highlighted certain challenges associated with introducing digital technologies into human resource management practices. This concern is not limited to the previously mentioned process of integrating and combining information and knowledge, but also extends to resistance to change within human resource management practices. The existence of such resistance is confirmed by many global business experts.

CONCLUSION

The study aims to identify, select, and analyze current frameworks for developing digital competence. Its goal is to understand how digital competence is currently perceived and applied in educational

programs, to initiate implementation efforts, and to contribute to the writing of new academic works. It also develops a proposal for a shared understanding of digital competence and identifies human resource management practices.

It is recommended that future research include a larger number of respondents and organizations. Additionally, studies should investigate the barriers that hinder collaboration among individuals, teams, and organizations. The limitations of this research are related to the types of organizations studied and their human resources.

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