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# NAVIGATING DIGITAL TRANSFORMATION IN HUMAN RESOURCE MANAGEMENT IN EDUCATION: A PILOT-STUDY OF PUBLIC AND PRIVATE SCHOOLS

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**Abstract:**
The digital transformation of education is significantly reshaping human resource management (HRM) practices in both public and private educational organizations. This paper examines how digital technologies are influencing HRM in the education sector, emphasizing the need for schools to align with evolving technological trends. Driven by the growing role of digitalization in education, the research offers a comparative analysis of public and private schools, exploring how each is navigating digital change and managing HR practices. It begins by outlining the theoretical foundations of HRM in education, then assesses how educational organisations are incorporating new technologies into recruitment, staff development, performance evaluation, and internal communication. The study highlights both the opportunities and challenges that digitalization presents for HRM, providing insight into the similarities and differences between 2 pilot schools (one public and one private) in their adaptation strategies. Through its in-depth analysis, the paper enhances the understanding of how digitalization is driving structural and organizational changes in HRM in the educational system.

**Keywords:** HRM, digitalization, public school, private school, pre-university education, digital transformation

**JEL:** J24, M12, and O3

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## INTRODUCTION

In the context of ongoing digitalization, the educational sector is undergoing substantial transformations, particularly in the management of human resources. Education is currently in the midst of a profound shift, and this process significantly impacts human resource management (HRM) practices within educational organizations. Digitalization not only alters teaching and learning methodologies but also introduces notable changes in the way human capital is administered in both public and private schools. The relevance of this study arises from the imperative to comprehend and effectively manage these shifts in order to foster an educational environment that is aligned with the demands of contemporary technological advancements.

The primary objective of this research is to examine the transformations in HRM triggered by the digitalization of pre-university education, with a particular emphasis on how public and private schools adapt to this evolution. This comprehensive investigation is guided by several specific objectives, including: identifying and evaluating the key changes in HRM practices; analyzing the distinct approaches adopted by public versus private institutions in response to digital transformation; investigating the integration process of digital technologies; and assessing the overall impact on human resource management.

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A central focus of this research is the analysis of how digital technologies are influencing the management of both teaching and non-teaching staff. This involves exploring the extent to which digitalization affects recruitment, training, communication, performance evaluation, and organizational culture within schools. Additionally, the paper seeks to identify both the challenges and opportunities associated with the digitalization of HRM in educational settings. This includes addressing the obstacles that institutions encounter in implementing digital tools, as well as the advantages they may gain in terms of increasing efficiency, transparency, and strategic HR alignment. Moreover, the research includes a comparative analysis between public and private schools regarding their approaches to digitalization in the HRM domain. This comparative perspective reveals the similarities and differences in how these two types of organizations navigate the complexities and potentials of digital transformation, ultimately offering a nuanced understanding of their respective adaptation strategies.

## 1. THEORETICAL BACKGROUND

### 1.1 HUMAN RESOURCE MANAGEMENT IN EDUCATION

The digitalization of education has led to significant changes in the way schools manage human resources. These changes include the adoption of educational technologies, the use of online platforms for teaching and assessment, and the growing need to develop digital competencies among teaching staff (Profiroiu & Popescu, 2024). A comparative study between public and private schools should examine how each type of institution has approached these changes, how they have integrated new technologies into the educational process, and how they have adapted HRM practices to meet the challenges and leverage the opportunities presented by digitalization in education.

According to Tureac (2021, p.132), leaders recognize that digital transformation is essential for the efficiency and effectiveness of information, services, and personal experiences that are vital to various stakeholders. The global pandemic has reshaped society, highlighting the advantages of agility enabled by digital technologies (Mina-Raiu & Mihoc, 2024, pp. 5-6). Within the good governance paradigm, educational leaders and policymakers are under increasing pressure to adopt a systematic approach to transformation driven by digital innovation (Raiu, 2015). Decision-makers across various sectors are seeking clarity regarding how digital transformation can be implemented within complex systems.

#### *1.1.1 THE IMPORTANCE OF HRM IN EDUCATIONAL ORGANIZATIONS*

From a technological perspective, HRM in education is rapidly adapting to digital advancements, utilizing digital tools to streamline recruitment, selection, and training processes. Technology plays a crucial role in transforming how educational organizations manage human capital, enabling access to real-time data and automating administrative tasks. HR strategies and policies in education have revolutionized the way educational organizations conduct their HR activities (Nica, 2013, p. 45).

The importance of HRM in educational organizations is evident through several essential dimensions. Effective human resource management directly contributes to improving the quality of education, as well-trained and motivated teachers are fundamental to delivering high-quality instruction and achieving strong academic outcomes. Institutions that invest in the continuous professional development of their staff foster dynamic and adaptive learning environments, promoting the integration of best pedagogical and technological practices and maintaining institutional competitiveness (Rughiniș & Toader, 2010, p. 179).

Furthermore, by cultivating a positive work environment and providing opportunities for career advancement, schools can reduce employee turnover. This stability enhances the continuity of the

educational process and supports the development of strong teacher-student relationships (Nica, 2013, p. 49).

Educational organizations frequently face challenges such as curriculum reforms and the integration of emerging technologies. Efficient HRM ensures institutional agility and responsiveness in addressing these changes. A skilled teaching workforce, supported by strategic HR practices, also enhances institutional prestige and reputation, attracting more students and securing additional funding and community support.

HRM in education comprises several key components. The recruitment and selection process is vital for identifying and attracting qualified candidates, ensuring a capable teaching and administrative staff. Equally important is continuous professional development, including participation in courses, workshops, conferences, and mentoring programs to enhance staff competencies.

Performance evaluation is conducted using structured systems and methods to assess both teaching and administrative staff, with the goal of identifying strengths and areas for improvement to uphold high educational standards. Motivation and staff retention involve strategies aimed at increasing job satisfaction and retaining valuable personnel through benefits, recognition, and a positive work environment (Profiroiu & Brișcariu, 2021, p. 146).

As highlighted by Lefter (2011, p. 48), efficient HRM contributes to maintaining an innovative and competitive institution by fostering staff development and institutional adaptability. Pandelică (2007, p. 102) similarly emphasizes that a stable educational team supports process continuity and fosters meaningful educational relationships. Moreover, adopting effective HRM practices allows institutions to deliver high-quality education that meets contemporary needs and challenges (Novac, 2007, p. 76).

### *1.1.2 SPECIFIC CHALLENGES IN HRM IN THE EDUCATIONAL SECTOR*

Adjusting to both curricular and technological developments is crucial. Human Resource Management (HRM) in education faces a range of specific challenges, many of which are shared across sectors. These include talent recruitment and retention, managing diversity and inclusion, continuous training and development, performance management, adaptation to change, and the integration of digital technologies.

Talent recruitment and retention represent some of the most pressing challenges for HRM. In an increasingly competitive labour market, attracting and securing top candidates is critical. Once hired, retaining staff becomes essential to avoid the high costs associated with staff turnover and to ensure operational continuity. Annette Braun and her colleagues emphasize that the use of digital tools can significantly enhance the efficiency and accuracy of recruitment processes (Braun et al., 2020, p. 45).

Managing diversity and inclusion is another major concern. This includes combating discrimination, ensuring equal opportunities, and fostering an organizational culture that values and supports diversity at all levels.

Continuous training and professional development are fundamental for maintaining institutional competitiveness. Training programs must be effective and tailored to employees' needs, supporting the ongoing enhancement of their skills. Garrison and Anderson stress the importance of a strategic approach to employee development in order to meet the evolving demands of the labour market (Garrison & Anderson, 2003, p. 82).

Technology and digitalization introduce substantial challenges in implementing and effectively using new HR technologies. These challenges involve adopting human resource management software, automating administrative tasks, and leveraging analytics to inform HR decisions. David Parsons

and Kathryn MacCallum highlight the positive impact of digital technologies on educational management and the need for their integration to optimize HR processes (Parsons & MacCallum, 2019, p. 101).

Ongoing teacher training is vital for maintaining high educational standards. Training programs must be relevant and aligned with the specific needs of educators, focusing on innovative methodologies, educational technologies, and curriculum updates (Popescu, Sabie & Trușcă, 2023). Garrison and Anderson once again emphasize the importance of continuous, adaptive training in response to emerging educational demands (Garrison & Anderson, 2003, p. 95).

Educational organizations must remain agile in responding to new curricular requirements and technological advances. The successful implementation of new programs and digital tools requires appropriate support for teachers, as well as the necessary infrastructure to ensure a smooth transition. Braun and colleagues underline the importance of adopting digital technologies in the educational process as a means to effectively respond to changes and enhance the quality of learning (Braun et al., p. 68).

### *1.1.3 THE IMPACT OF DIGITAL TRANSFORMATION ON EDUCATION HRM*

Digitalization has significantly transformed the management of human resources across various organizations, including educational organizations. These changes have had a profound effect on the efficiency, transparency, and flexibility of HR processes, ultimately enhancing overall institutional performance. One of the most notable impacts is the streamlining of administrative functions, such as payroll processing, employee file management, and leave planning. As Pandelică (2007, p. 108) notes, digitalization has improved transparency and efficiency, reducing errors and saving time. Integrated information systems centralize employee data, ensuring easy and rapid access to relevant information.

Recruitment and selection processes have also been revolutionized. Online recruitment platforms and applicant tracking systems support end-to-end hiring workflows, from posting job ads to final candidate selection. Oprescu (2010, p. 80) highlights that these tools enable faster identification of suitable candidates while reducing recruitment costs and timelines.

Digital technologies further facilitate training and professional development, particularly through e-learning platforms and online resources. These tools allow staff to engage in continuous learning without geographic constraints. According to Popescu (2010, p. 62), digitalization enables personalized training programs tailored to individual needs, thereby improving both individual and organizational performance.

In the area of performance management, digital systems offer advanced tools for setting goals, tracking progress, and providing real-time feedback. Pânișoară (2016, p. 52) emphasizes that these tools foster more objective and transparent evaluations, helping to identify both areas for improvement and development opportunities.

Lastly, digitalization has improved communication and collaboration within HR teams and across the workforce. Platforms such as Microsoft Teams and Slack facilitate real-time information exchange and remote teamwork. Pașa (2013, p. 68) points out that these platforms have fostered a more integrated and collaborative work environment, enhancing efficiency and productivity.

### *1.1.4 DIGITALIZATION STRATEGIES IN PRIVATE AND PUBLIC SCHOOLS: A COMPARATIVE ANALYSIS*

Digitalization has become a strategic priority in education systems worldwide, affecting both public and private institutions. However, the approaches to digital transformation differ considerably due to structural, financial, and cultural differences between the two types of institutions.

Private schools often enjoy greater flexibility and autonomy, allowing them to adopt new technologies swiftly. Their financial independence enables investment in innovation without the constraints of governmental regulations. As Andrei (2020, p. 48) observes, the flexibility of private schools has facilitated advanced HR digitalization strategies.

Private organizations frequently emphasize personalized learning, using adaptive technologies to tailor educational content to individual students' learning styles and pace. Barbu (2021, p. 62) notes that such personalization enhances academic performance. Additionally, private schools are more likely to invest in cutting-edge technologies such as augmented reality (AR), virtual reality (VR), and artificial intelligence (AI), thereby offering immersive and engaging learning experiences. For instance, the International Informatics High School in Bucharest uses VR in science and history classes, which, as Bădescu (2022, p. 55) highlights, boosts student interest and motivation.

In contrast, public schools often face budgetary limitations and bureaucratic constraints, which can slow the adoption of new technologies. However, as Constantinescu (2022, p. 72) points out, many public schools have implemented digital solutions through government-funded and EU-supported projects.

A key focus in public education is ensuring equitable access to digital resources, especially for students from disadvantaged backgrounds. This requires standardizing devices and platforms to minimize educational inequalities and promote equal opportunities (Dumitrescu, 2021, p. 85).

Both public and private schools have demonstrated the positive impact of digitalization on educational outcomes. However, the effectiveness of implementation largely depends on institutional context. Private schools tend to adapt technologies to specific student needs more rapidly and provide continuous support to educators. As Iliescu (2021, p. 89) emphasizes, the success of digital transformation depends not only on technology but also on the skills, attitudes, and support systems available to teaching staff.

In public schools, large-scale implementation of digital strategies requires careful planning and resource management. State-funded programs, such as “Școala de la distanță” (The Remote School), have shown that with proper support, public organizations can achieve comparable performance. Georgescu (2021, p. 92) argues that public-private partnerships are essential for overcoming financial constraints and ensuring the effective integration of digital technologies in education.

## 2. RESEARCH METHODOLOGY

### 2.1 PURPOSE, OBJECTIVES, HYPOTHESES, AND RESEARCH QUESTIONS

The aim of this research is to identify and evaluate the changes in HRM within the context of the digitalization of education, by analyzing how both public and private educational environments adapt to digitalization, including the integration of technologies and the adjustment of HRM practices. In order to reach this aim, four research objectives were formulated: (1) identify and evaluate the specific transformations in HRM resulting from digitalization in pre-university education; (2) analyze how public and private schools address the changes in HR management generated by digitalization; (3) investigate the process of integrating new technologies in the educational context and assess the impact on HRM; (4) analyze how HRM practices have been adapted to respond to the challenges and opportunities of digitalization in education.

In correlation with these research objectives several hypotheses and research questions were derived:
H1: The digitalization of education influences human resource management processes in both public and private schools;

H2: Private schools are more advanced in adopting digital technologies than public schools;
H3: The faster and more effectively digital technologies are integrated into the educational process in pre-university schools, the more significant the changes in HRM will be.
RQ1: What was the impact of the COVID-19 pandemic on the use of digital technologies in schools?
RQ2: What is the impact of integrating digital technologies on the educational process in general and on school management in particular?
RQ3: What is the current level of digitalization in educational organizations?
RQ4: Are there differences in the adoption of digital technologies between public and private schools?
RQ5: What is the impact of digitalization on specific aspects of human resource management?
RQ6: How much importance is placed on digital training and the promotion of digital values?
RQ7: What are the training needs in the field of digital competencies?
RQ8: What are the challenges in adopting digital technologies and digitalizing the institution?
RQ9: What are the main measures for improving digitalization in school management?
RQ10: What is the relationship between the speed of digital technology integration and the extent of changes in human resource management?
RQ11: What are the best practices in the use of digital technologies?
RQ12: What are the main challenges in using digital technologies?

## 2.2 RESEARCH METHODS AND TOOLS

A mixed-method approach was employed for this research, combining both qualitative and quantitative research methods. As a preliminary step to inform the themes to be explored in the quantitative study, a qualitative investigation was conducted using the interview method with principals of the two pilot (private and public) schools included in this study. Thus, in the exploratory phase, structured interviews were used, with the primary aim of revealing and understanding school leaders' experiences in managing the changes brought about by the digitalization of education.

The data collected through individual interviews contributed to a qualitative and contextual understanding of how technological changes are managed and their impact on school processes. These insights supported the design of a quantitative research instrument in the form of an online questionnaire. The quantitative research used the sociological survey method to study the perceptions of teaching and administrative staff regarding the impact of digitalization on human resource management. The research tool consisted of an online questionnaire distributed via Google Forms, with 14 items addressing the use of digital technologies, perceptions of changes in HR processes, and the level of adaptation.

The two research methods were integrated into a comparative analysis aimed at highlighting significant differences in the level of digital technology adoption between public and private schools. The analysis included data collection on digital infrastructure, training programs, and the use of technology in the educational process.

## 2.3 SAMPLING

The target group for the qualitative research consisted of principals and educational coordinators involved in digitalization-related changes, working in two educational organizations: a public school (Mihai Eminescu College from Suceava) and a private school (IDEES German Theoretical High School from Bucharest). These two schools were selected for the pilot study because their leadership proved to be very proactive in terms of digital transformation in general and in the field of HRM in particular. Moreover, the management of the two educational organizations was very willing, interested and available to be part of this research.

The quantitative research that was carried out in the second phase of our study focused on the human resources within several public and private Romanian schools and enabled us to perform a comparative analysis and identify differences in digital technology adoption.

A non-probability sampling method, specifically snowball sampling, was used. This method is appropriate for the current research as it allows for an easier identification of potential respondents. The method is analogous to the formation of a snowball, which grows in size as it rolls, thus the sample increases until it reaches the limit set by the researcher. The first respondent recommends other potential participants they know, who share similar interests and/or issues. Additionally, to obtain a higher number of respondents from private schools, collaboration was established with the Association of Private Schools from Romania (ASP), a non-governmental organization that helped us spread the questionnaire.

## 3. COMPARATIVE ANALYSIS OF THE IMPACT OF DIGITALIZATION ON HRM IN PUBLIC AND PRIVATE SCHOOLS

### 3.1 BRIEF DATA ANALYSIS OF QUALITATIVE INTERVIEWS

For the qualitative research, structured interviews were conducted with principals from both public and private schools. The goal was to identify principals' perceptions of changes in HRM brought about by digitalization in education and to gain deeper familiarity with the subject.

The interview guide consisted of 10 open-ended questions addressed to principals from both types of schools. Responses were collected from the principal and middle school coordinator at IDEES German Theoretical High School (a private school from Bucharest), as well as from the principal of Mihai Eminescu College (a public school from Suceava). The main findings from the interviews are comparatively summarized in Annex 1.

In summary, the analysis of the qualitative data collected through individual interviews highlight the following key aspects:

- The process of integrating digital technologies into education is well-established and continuously evolving. Institutions have made significant investments in digital infrastructure, including modern equipment and educational software.
- Digital technologies have brought numerous benefits to the educational process, such as *"more interactive and engaging teaching," "enhanced access to information,"* and *"more diversified and efficient assessment."* Communication with students and parents has also improved substantially, enabling *"more effective communication."*
- Institutions are well-equipped with *"interactive whiteboards, laptops, and tablets for students," "high-speed internet access,"* and *"digital libraries with online educational resources."* These resources contribute to a modern and efficient learning environment.
- A key strength mentioned is the *"continuous professional development of teaching staff,"* which includes *"training courses, practical workshops, mentorship, and self-training."* This ensures that teachers remain up to date with new technologies and pedagogical methods.
- The main challenges identified include *"inequality in access to technology,"* the high costs of equipment, and the ongoing need for teacher training. Additionally, *"occasional technical issues"* can disrupt teaching activities.
- Digital technologies have simplified the management of staff data and performance evaluations, allowing for quick access to relevant information. *"Each employee has a digital personnel file, which provides on-demand access to their data."*

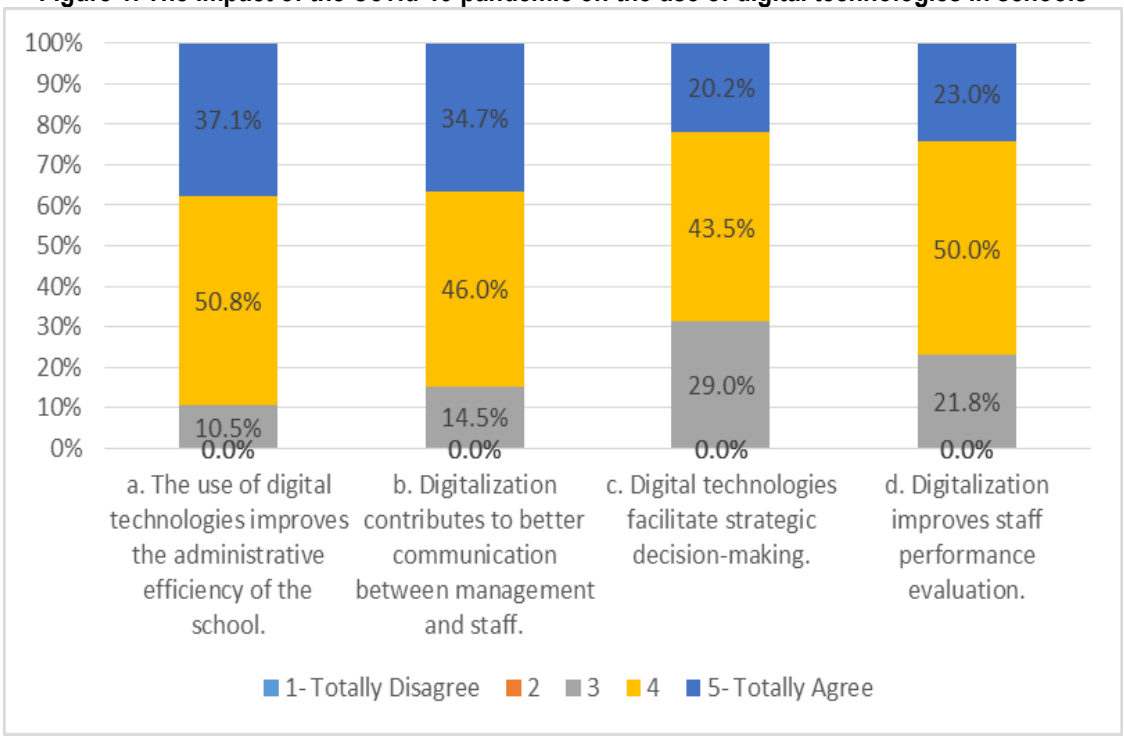
- Digital tools have also facilitated *"enhanced collaboration"* among teachers, students, and parents, improving transparency and feedback within the educational process. The *"electronic gradebook"* is cited as a successful example of improved communication with parents and tracking student progress.

These common points underscore the importance and positive impact of digital technologies in education, highlighting both the benefits and the challenges associated with this transformative process. No significant differences in perspectives were identified between public and private schools regarding the adoption of digital technologies in education and their impact on human resource management.

### 3.2 BRIEF DATA ANALYSIS OF SURVEY RESULTS

The quantitative research was conducted online using the Google Forms platform and consisted of 14 main items, each divided into multiple questions. The number of respondents included 124 school principals (91.1%) and vice principals (8.9%) from across the country, with the highest representation from Cluj-Napoca, Suceava, and Bucharest. As such, the survey covered 1.93% of the total number of educational organizations (6,293) at the national level, comprising 75.6% public schools and 24.4% private schools. The total number of teaching staff per institution ranged between 8 and 180 employees, while the total number of students per institution ranged between 30 and 1,978.

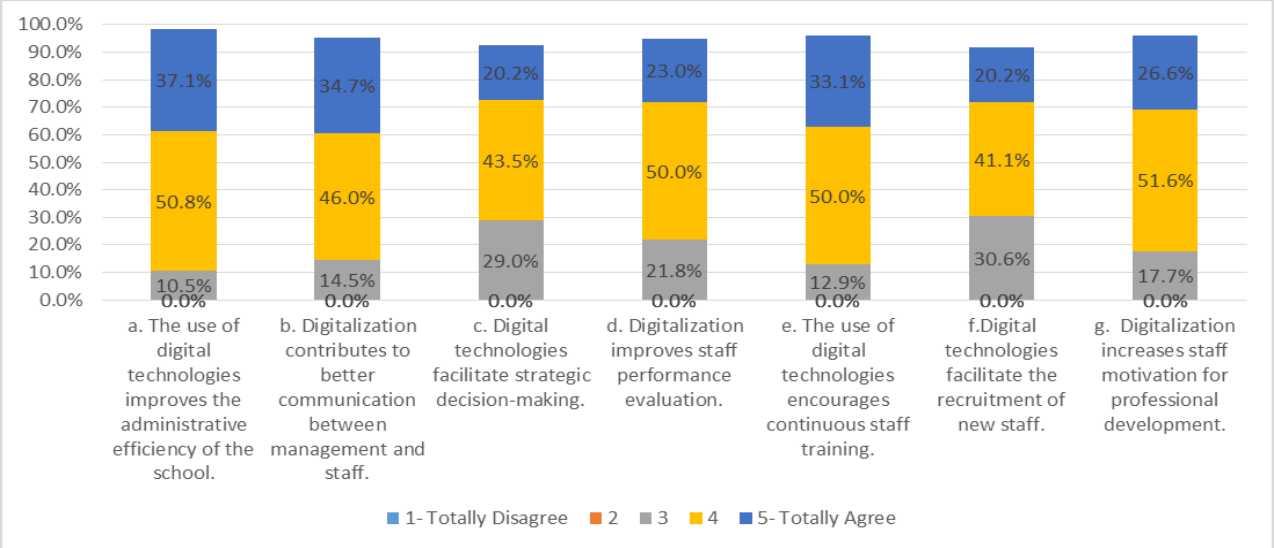
**Figure 1. The impact of the Covid-19 pandemic on the use of digital technologies in schools**




*Source*: Processed data collected through the questionnaire, 2024

Given the context of the COVID-19 pandemic, the use of digital technologies in schools was significantly impacted. **42.2% of respondents indicated that the use of digital platforms for human resource management (HRM) was strongly affected,** while **36.3% reported adaptation to online technologies**. Furthermore, aspects such as **staff training and communication through dedicated platforms were perceived as being heavily impacted**, with values ranging between **40.3% and 46%** (Figure 1).

**Figure 2. The impact of digitalization on HRM**

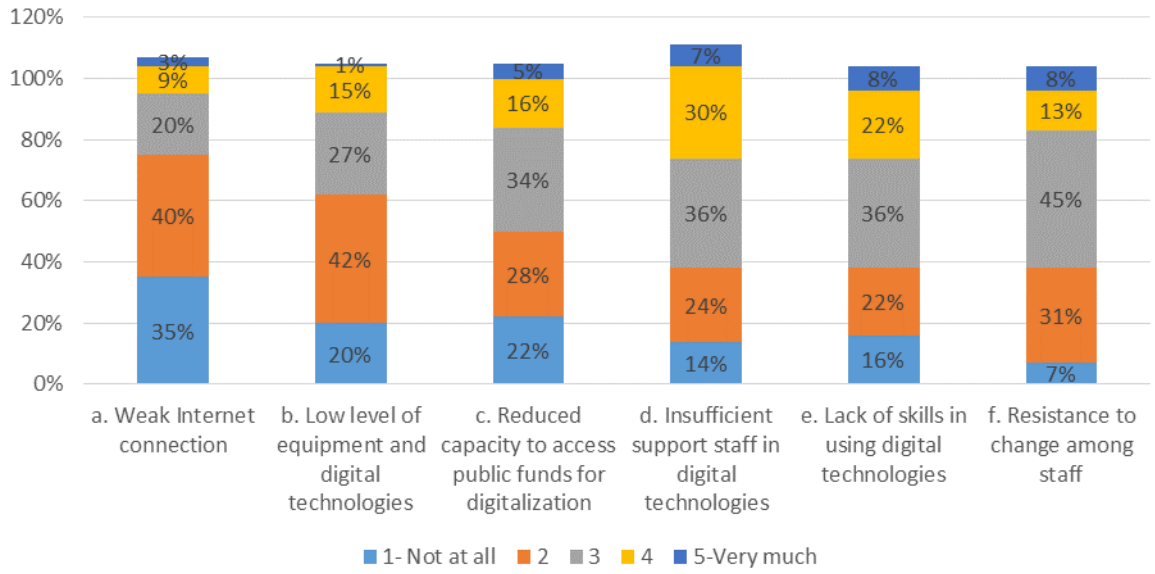



*Source*: Processed data collected through the questionnaire, 2024

Digitalization contributes to improved communication between management and staff, with 34.7% of respondents strongly agreeing and 46.0% partially agreeing. Additionally, 51.6% believe that digitalization increases staff motivation for professional development, while 43.5% consider that digital technologies facilitate strategic decision-making (Figure 2). Moreover, responses to the open-ended question regarding how teaching staff are encouraged to use digital technologies and platforms in teaching and learning, schools reported a variety of measures. These include equipping classrooms with digital whiteboards and other IT tools, organizing training and professional development courses, and creating digital platforms and communities of practice for teachers. Furthermore, examples of best practices are provided, and the use of digital technologies is rewarded through evaluation scoring systems.

It can be observed that, at the level of educational organizations, there are no significant difficulties encountered in the integration of digital technologies, as schools are equipped with digital devices. A higher percentage, over 33%, is recorded regarding the support staff being insufficient or the lack of competencies among existing staff in using technologies. Additionally, a common difficulty in schools is staff resistance to change, which may affect the effectiveness of digitalization within the institution (Figure 3).

**Figure 3. Difficulties encountered in the integration of digital technologies in institutional management**




*Source*: Processed data collected through the questionnaire, 2024

The main measures indicated by respondents as important for the integration of digital technologies into educational and managerial activities to produce positive results are:(1) participation in courses for the development/update of digital skills (64%);(2) acquisition of equipment and software for management (62%);(3) stimulation of staff motivation to use digital technologies;(4) ensuring the availability of support staff (58%); (5) meetings with staff to promote the integration of digital technologies in the educational process (51%).

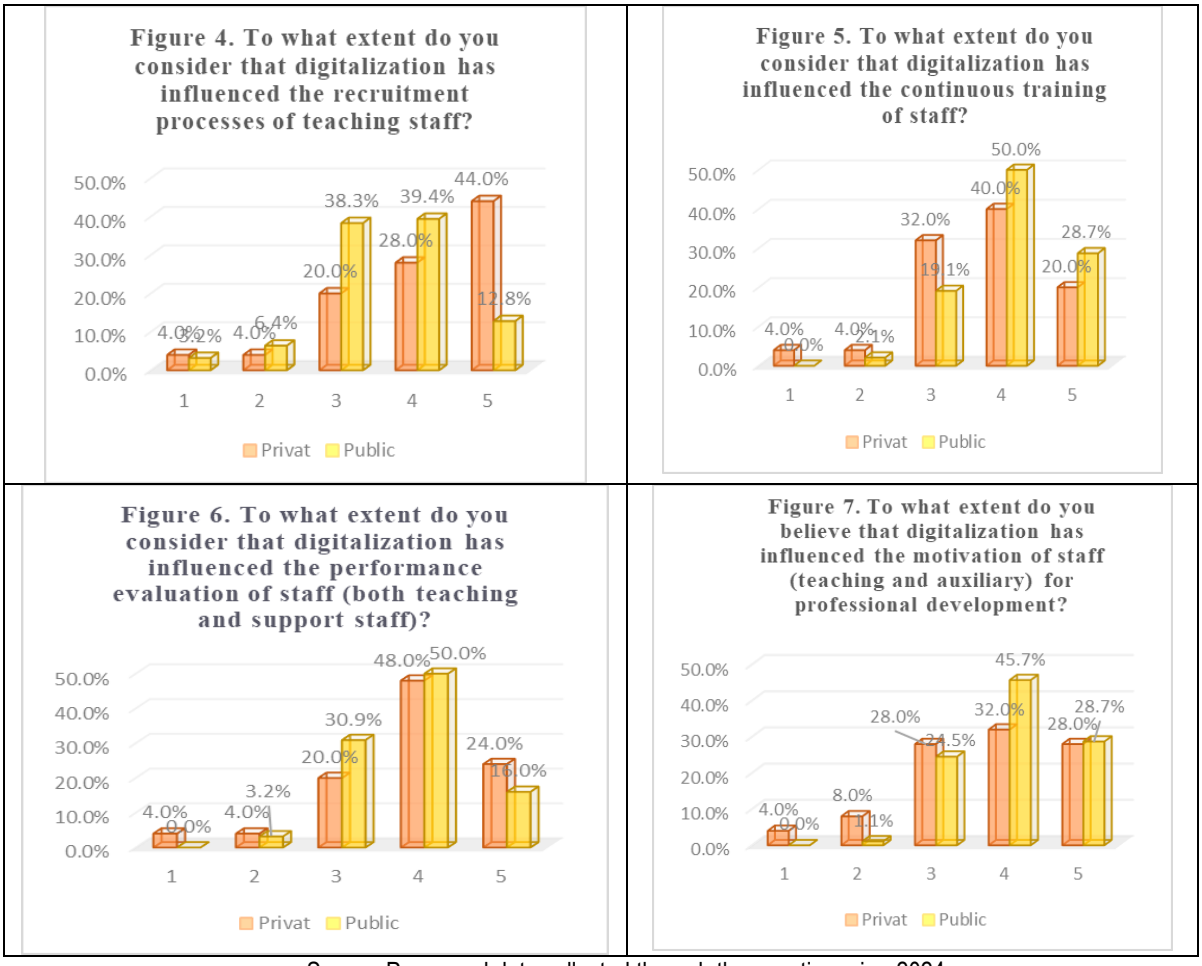
The main best practices in the use of digital technologies, as highlighted by respondents, include: use of educational platforms; equipping classrooms with digital devices; organizing digital training courses for teaching staff; use of the electronic gradebook; use of digital resources; dissemination and exchange of best practices; integration of digital content into teaching activities; existence of a digitalization department within the institution.

Therefore, at the school level, the use of digital technologies by teachers is supported through various best practices, such as equipping classrooms with modern digital equipment (interactive whiteboards, laptops, and internet), the use of educational platforms like the electronic gradebook and various digital applications (e.g., Kinderpedia, Classroom, SCIM, Mozabook). Participation in training and professional development courses in the field of digital technologies is frequent, and examples of best practices are shared among colleagues to encourage the adoption of new technologies in teaching and learning. Additionally, logistical and financial support for the acquisition of equipment and access to training are essential for making this process more efficient.

The major challenges faced by schools in the use of digital technologies by teachers include the lack of specialized personnel, resistance to change, insufficient digital skills among some teachers, and outdated or insufficient equipment. Other significant challenges are poor internet connectivity, lack of funds for updating and maintaining equipment, and difficulty in motivating staff to adopt and use new technologies. Moreover, the differences in digital competencies between younger and older teaching staff exacerbate these difficulties.

### 3.3 COMPARISON BETWEEN PUBLIC AND PRIVATE SCHOOLS

To compare the impact of educational digitalization on human resource management processes in public and private schools, we worked with two sub-samples: respondents from public schools and respondents from private schools.



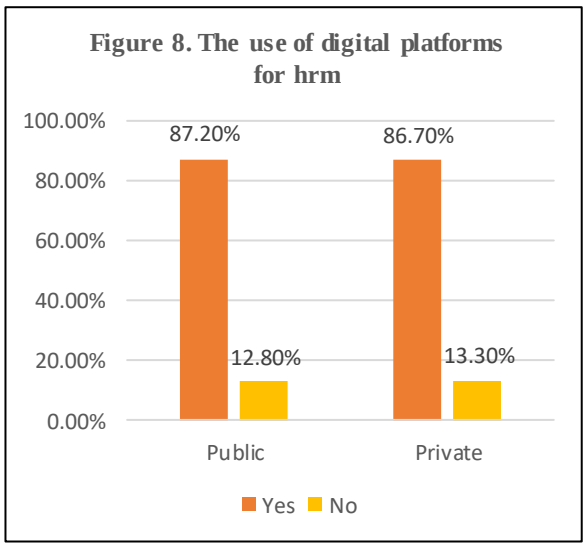

*Source*: Processed data collected through the questionnaire, 2024

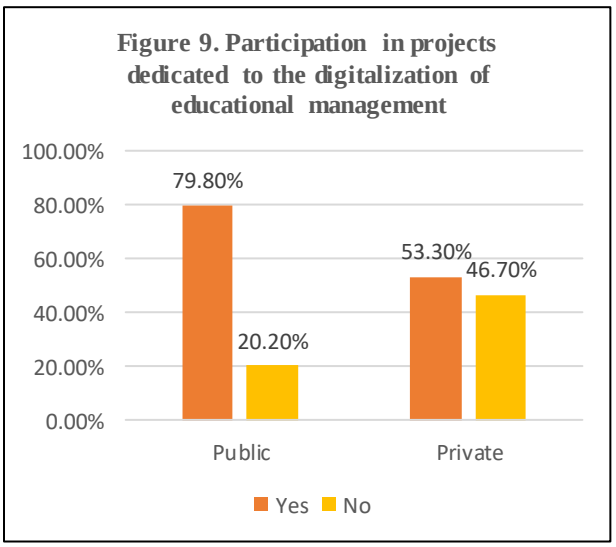
With regard to the impact of digitalization on human resource management processes, the following differences can be observed (Figures 4-7):

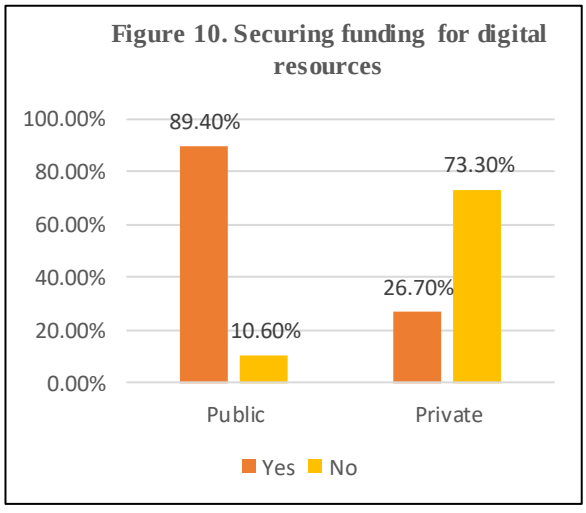
- In private schools, 72% of respondents consider that digitalization has greatly or very greatly influenced the recruitment process for teaching staff, compared to only 52.2% in public schools;
- The opinion that digitalization has significantly influenced continuous professional development is shared by 60% of respondents in private schools and 78.7% in public schools;
- 72% of private school respondents believe that digitalization has impacted the performance evaluation of teaching and auxiliary staff, compared to 66% in public schools;
- The motivation for professional development is perceived to be less influenced by digitalization in private schools (60%) compared to public schools, where 74.4% support this view;
- 68% of private school respondents consider the acquisition of digital competencies to be important in the current context, compared to 88.2% in public schools;

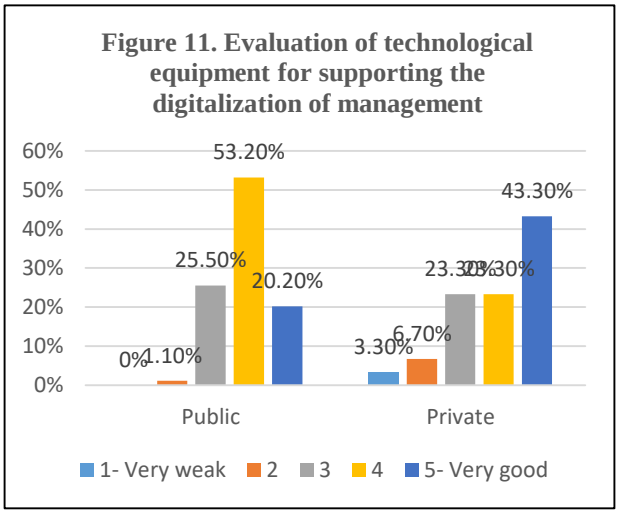
- Encouragement for teachers to use digital tools is strong in both types of schools: 72% in private schools and 90.4% in public schools.

Overall, we can conclude that the perception differences between public and private schools regarding the impact of digitalization on HR management processes are relatively small. However, some nuances can be highlighted: in private schools, human resource management processes appear to be slightly less influenced by digitalization, although the differences remain relatively minor.




*Source*: Processed data collected through the questionnaire, 2024

Regarding the level of digitalization in educational organizations, the following differences between public and private schools can be showcased (Figures 8-11):

- Educational platforms are used at very similar rates in both types of schools: 87.2% in public schools and 86.7% in private schools;
- Public schools participate more frequently in projects dedicated to the digitalization of educational management (79.8%) compared to private schools (53.3%);
- Public schools attract significantly more digital funding (89.4%) than private schools (26.7%);
- Technological infrastructure to support digitalized management is more robust in the private sector (over 40% rate it as strong), while in public schools the percentage is only 20%. However,

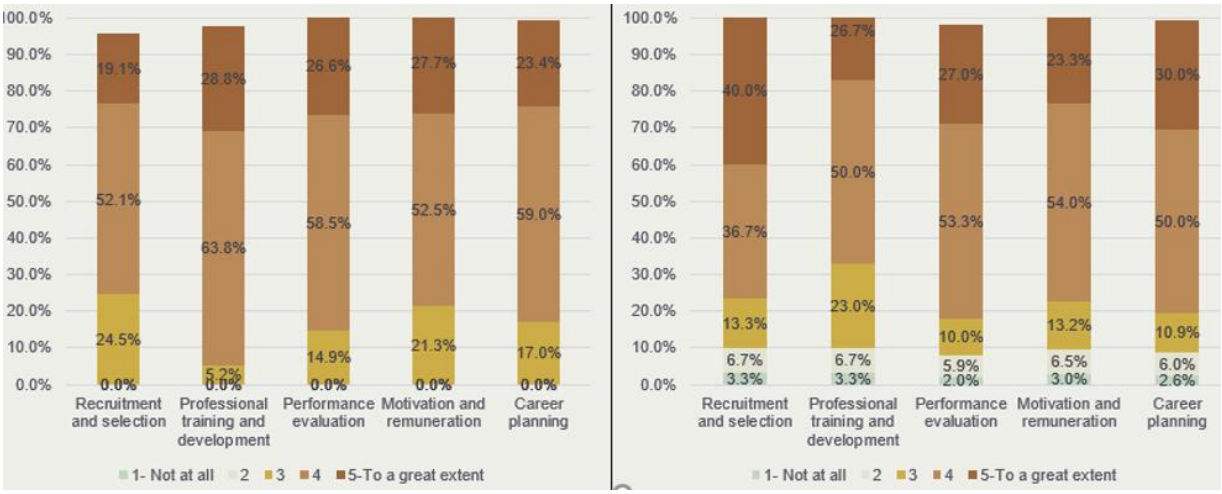
when combining the "good" and "very good" ratings, the results indicate 66% in private schools and 72% in public schools;

- In over 90% of all schools, there is an official website that is regularly updated, and schools are active on social media platforms.

The rapid and effective integration of digital technologies into the educational process has a significant impact on transforming activities and processes related to human resource management in schools. In the public school system, the most significant change is perceived in the area of professional development (93.6%), while in the private system, the most substantial change is seen in staff performance evaluation (80.5%).

In both types of schools, major changes are perceived in the area of career planning: 80% in private schools and 82.4% in public schools. Recruitment and selection processes are perceived as less affected, with 71% in the public system and 76.7% in the private sector.

**Figure 12. Impact of the Fast Integration of Digital Technologies on Activities and Processes Specific to HRM**




*Source*: Processed data collected through the questionnaire, 2024

## 3.4 VALIDATION OF RESEARCH HYPOTHESES

In this paper we started our quantitative research from three hypotheses, which were verified through the processing and analysis of the collected data.

The first hypothesis states that: Digitalization of education influences human resource management processes in public and private schools.

To verify this hypothesis, we analyzed respondents' answers regarding the impact of digitalization on HR management. 73% of respondents largely or very strongly believe that digitalization improves staff performance evaluation. Moreover, a significant proportion, 83.1%, consider that the use of digital technologies facilitates the recruitment of new personnel, and 78% believe that digitalization increases staff motivation for professional development.

Furthermore, in both public and private schools, the share of respondents who agreed or strongly agreed with the impact of digitalization on HR processes exceeds 60%.

Given these percentages, all significantly above 50%, it can be concluded that the first hypothesis is confirmed.

The second hypothesis states that: Private schools are more advanced in adopting digital technologies than public schools.

To verify this, we analyzed responses from the two sub-samples (respondents from private and public schools) regarding the degree of institutional digitalization. Of the six aspects of digitalization assessed, three showed similar levels of positive responses across both school types: use of digital platforms, having an updated institutional website, and presence on social media.

However, notable differences were observed in terms of attracting funding for digitalization and participating in digitalization projects, where public schools outperform private ones. Conversely, in the assessment of technological infrastructure as "very good," private schools scored higher (40% compared to 20% for public schools). Yet, when combining the ratings “good” and “very good,” the results are similar: 72% in public schools and 66% in private schools.

Therefore, the second hypothesis is not confirmed, as no notable differences were identified in the overall degree of digitalization between public and private educational organizations.

The third hypothesis states that: The faster and more effectively digital technologies are integrated into the educational process in pre-university schools, the more significant the changes in human resource management will be.

This hypothesis is confirmed, as the majority of respondents agree that the rapid and effective integration of digital technologies in education leads to significant changes in HR processes. For example:

- Recruitment and selection – 61% to a very large extent
- Professional training and development – 64% to a very large extent
- Performance evaluation – 62% to a very large extent
- Motivation and remuneration – 58% to a very large extent
- Career planning – 51% to a very large extent

## 4. CONCLUSIONS AND RESEARCH LIMITATIONS

The qualitative research revealed that the process of integrating digital technologies into both private and public education is already well established and continues to evolve. Investments in digital infrastructure (equipment and software) are substantial. Digital technologies have brought clear benefits to the educational process—including active and engaging teaching, diversified and efficient assessment, and improved communication among teachers, students, and parents—but also pose the challenge of ensuring continuous professional development for teachers.

The COVID-19 pandemic had a significant influence on the educational system’s perception of the effectiveness and efficiency of digital technologies in teaching and assessment (Mina-Raiu & Oprea, 2023; Nastacă & Ploae, 2023). Staff training and communication through digital platforms were considered the most affected areas.

Respondents overwhelmingly agreed that the integration of technologies is beneficial for: quality of education; students training for future careers; relationship between teaching staff and school management; development of digital skills and competencies among teachers.

Perceptions regarding the impact of digitalization on human resource management processes largely lean toward a significant influence, with responses in the “to a great extent” and “to a very great extent” categories ranging from 60% to 90%. Differences in perception between public and private schools are minimal, although private schools tend to take a more “moderate” view of digitalization's effects on HR management.

There is no clear distinction between public and private organizations in terms of their overall level of digitalization. While there are some differences, they are relatively small. For example, technological equipment levels are comparable (66% in private schools and 72% in public schools), and the use of digital platforms is equally widespread in both. However, public schools show higher rates of success in securing funding for digitalization and participation in digitalization projects.

In private schools, the needs for acquiring and developing skills related to digital communication, interaction, and problem-solving are slightly higher. In the public system, there is a more pronounced need for competencies in creating digital content and ensuring the security of devices and digital materials.

Regarding the challenges encountered in the digitalization process, the main difficulties—shared by both public and private schools—include the lack of support staff, the ongoing need for professional training, and the low level of digital competence among some personnel. It is worth highlighting that private schools face greater difficulties in accessing funding for digitalization compared to those in the public sector.

Private schools show greater willingness to offer financial incentives for the acquisition and development of digital skills. Staff tend to have a more open and flexible attitude toward change, and digital resources are generally considered adequate and used efficiently.

Despite the presence of an effective infrastructure and the implementation of digitalization in both public and private organizations, challenges in HR management processes persist. These include lack of specialized staff, teacher resistance to change, minimal digital competencies, and, in some cases, the absence of training programs in certain schools. These issues underscore the urgent need for teacher and administrative staff training programs in order to optimize both teaching and learning processes, as well as human resource management activities.

The main limitation of this study is it's focus on collecting data solely from leadership personnel (principals) in pre-university educational organizations. For a more comprehensive research approach, it would be advisable to also analyze the perceptions of other stakeholder categories involved in the digitalization of education, such as teaching staff. The perspective of educators can help identify actual needs and, in turn, support the development of concrete solutions to ensure that the digitalization of education has a positive impact on HRM in the sector. An inherent and objective limitation of the research is the significant financial disparity between public and private schools. The notable differences in available financial resources (e.g., funding, equipment, IT support) may affect the comparability of the data and the generalizability of the conclusions.

Furthermore, to gain a complete understanding of the impact of digitalization on HRM at the national level, it would have been necessary to include representation from all regions of Romania in the sample. This should also reflect the proportion of private schools within each region and nationally, including rural areas.

## AUTHORS CONTRIBUTIONS

The author listed has made a substantial, direct and intellectual contribution to the work, and approved it for publication.

## CONFLICT OF INTEREST STATEMENT

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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## Annex 1

The impact of digital technologies on school management. Comparison between public and private schools

| Highlighted Aspects | Public School | Private School |
|---|---|---|
| Beneficial Changes | More interactive and engaging teaching (use of educational platforms, multimedia resources, interactive tools); Increased access to information (online articles, documentaries, video tutorials, e-books); Creation of online tests; Personalized teaching; More efficient communication (including online). | Adoption of digital technologies has significantly modernized teaching and assessment; All classrooms are equipped with laptops and interactive whiteboards; Use of online educational platforms for homework, tests, and digital textbooks/resources; The changes are largely beneficial, facilitating quick access to resources and feedback. |
| Negative Effects | Inequality of access (urban-rural divide, difficulty accessing online learning platforms); Decrease in academic performance; Increased dropout rates; Distraction; Excessive device use during class. | Dependence on technology; Occasional technical difficulties. |
| Use of Digital Technologies for Teaching | Online learning platforms: Google Classroom, Moodle, Edmodo; Multimedia resources: PowerPoint presentations, videos, animations, infographics; Interactive tools: Quizizz, Kahoot!, Padlet, Mentimeter; Online assessment platforms: Google Forms, Quizizz, Kahoot!; Interactive whiteboards, laptops, tablets for students; High-speed internet access; Digital library with online educational resources. | Digital technologies are integrated into approximately 40% of teaching activities; Online platforms are used for interactive lessons, assessments, and constant communication with students. |
| Level of Equipment and Digital Software | Classrooms equipped with interactive whiteboards, laptops, and tablets for students; Digital library with online educational resources; Acquisition of modern digital equipment and software; Investment in IT infrastructure. | Modern laboratories, interactive whiteboards, access to cutting-edge educational software; Every classroom is equipped with laptops and interactive whiteboards. |
| Digitalization Strategy | School leadership commitment; Continuous teacher training; Development of digital educational resources; Infrastructure investments; Student support. | Continuous training courses for teachers; Implementation of an integrated Learning Management System (LMS); Ensuring a smooth transition to digitalization and improving the efficiency of educational processes; Human resources: adapting roles to include essential digital skills; creation of positions dedicated to technical support. |
| Impact on Human Resource Management | Online recruitment and selection; Teacher development; Performance evaluation; Digital resource management. | Intention to use digital technologies to simplify staff data management and performance evaluation; Exploring the acquisition of software for time management and skill assessment; The ultimate goal is to reduce administrative tasks and allow staff to focus on educational activities. |
| Development of Teachers' Digital Competencies | Professional development courses; Practical workshops; Mentorship; Self-training; Online resources and professional communities. | Regular workshops and training courses; Access to online resources for self-learning; Internal digital mentoring program. |
| Observed Changes in Teaching Style and Community | Positive changes: More creative and innovative teaching; Increased collaboration among teachers; More efficient communication with students and | Teachers have become more confident in using technology and have begun implementing interactive teaching methods; Community relations have improved, as parents and students benefit from faster |

| Highlighted Aspects | Public School | Private School |
|---|---|---|
| Relations After Digital Training | parents (updates, feedback, discussions). | and more transparent communication via digital platforms. |
| Difficulties in the Integration of Digital Technologies | Costs for purchasing and maintaining digital equipment and software; Continuous need for teacher training; Technical issues. | Resistance to change from some teachers; Occasional technical problems (adapting to new platforms can be slow and requires constant technical support). |
| Motivational Sources for Teachers to Use Digital Technologies in Teaching | Desire to improve student outcomes; Professional development; Institutional support (training programs, digital resources, recognition of efforts to integrate digital technologies). | Motivation stems from the desire to provide quality education and facilitate the learning process; Our institution encourages the use of technology by recognizing and rewarding innovation and performance in digital teaching. |
| Strengths of Digital Technology Integration in the Institution | School leadership commitment to digital integration and resource allocation; Enthusiastic teachers open to new technologies; Availability of modern digital equipment and software; Development of digital educational resources; Student support; Regular evaluation of the impact of digital technologies. | Improved access to educational resources; Quick and personalized feedback; Increased interactivity in teaching. |
| Weaknesses of Digital Technology Integration in the Institution | Ongoing need for teacher training; Inequality in student access to technology; Dependence on technology. | Dependence on technology; Technical issues; Continuous training needed to keep up with technological advancements. |

*Source*: data processed from interviews, 2024