

Article

# Efficacy of embedding IT in human resources (HR) practices in education management

Olympia Papaevangelou<sup>1</sup>, Dimitrios Syndoukas<sup>1</sup>, Stavros Kalogiannidis<sup>1,\*</sup>, Fotios Chatzitheodoridis<sup>2</sup><sup>1</sup> Department of Business Administration, University of Western Macedonia, 51100 Grevena, Greece<sup>2</sup> Department of Regional and Cross Border Development, University of Western Macedonia, 50100 Kozani, Greece\* **Corresponding author:** Stavros Kalogiannidis, [aff00056@uowm.gr](mailto:aff00056@uowm.gr)

## CITATION

Papaevangelou O, Syndoukas D, Kalogiannidis S, Chatzitheodoridis F. (2024). Efficacy of embedding IT in human resources (HR) practices in education management. *Journal of Infrastructure, Policy and Development*. 8(1): 2371. <https://doi.org/10.24294/jipd.v8i1.2371>

## ARTICLE INFO

Received: 7 July 2023

Accepted: 21 September 2023

Available online: 18 December 2023

## COPYRIGHT



Copyright © 2023 by author(s).

*Journal of Infrastructure, Policy and Development* is published by EnPress Publisher, LLC. This work is licensed under the Creative Commons Attribution (CC BY) license.

<https://creativecommons.org/licenses/by/4.0/>

**Abstract:** The ways that managers at various firms manage their human resources are significantly impacted by technology. This study investigated the efficacy of embedding IT in Human Resources (HR) practices in Education Management. More attention was also put on the effect of IT tools used in HR processes on education management, the relationship between IT embedded HR practices and education management, the effect of benefits of using IT in HR Processes on education management. The study used a cross-sectional survey design and data was collected from 320 HR professionals from the education sector of Greece and 10 officials from the ministry of education of Greece using a survey questionnaire and interview guide respectively. The study revealed that IT tools used in HR processes and IT embedded HR practices have a positive effect on education management. It was also confirmed that benefits of using IT in HR Processes positively influence the level of education management. The activities of the human resources department have changed as a result of technical developments like as software, devices, and the Internet of Things. In a larger sense, technology has changed how businesses conduct their operations throughout the world. The operation of human resource practices has seen a significant increase in communication within Greece's educational sector. It is important for different education institutions to focus on training HR managers on using different IT tools so as to enhance the quality of education management.

**Keywords:** information technology; human resources (HR) practices; education management

## 1. Introduction

### 1.1. Background to the study

The ways that managers at various firms manage their human resources are significantly impacted by technology. The activities of the human resource department have changed as a result of technical breakthroughs like as software, hardware, and the Internet of Things (IoT) (Ekwoaba et al., 2015). The use of information technology has been emphasised by Gardner et al. (2003) as being a crucial component of improving the effectiveness of public administration and management development. Johnson and Gueutal (2017) showed how technology has changed how human resource departments connect with employees, keep records, and evaluate employee performance. Effective use of technology at work improves both operational efficiency and effectiveness. In a larger sense, strategic information technology implementation is essential for attaining a nation's objectives (Al Qalhathi et al., 2020). On the other hand, improper use of different technology tools at work has a detrimental impact on how a business manages its human resources hence it is important for HR

managers to have the required training in using technology (Alami et al., 2016; Papapolychroniadis et al., 2017).

Omran and Anan (2018) found that improving organisational capacities in accomplishing its objectives would depend on how effectively human resources are used, developed, and integrated into the organization's movement and direction. They assert that organisational performance will be influenced by factors including human resource management. To better comprehend how human resource management is situated in an organisational environment, it is vital to grasp the concept of human resource management in order to locate the function of human resources planning in the dynamics of corporate movements (Florea, 2013). The core of the function of human resources in anticipated development is that they must be informed without being forced to participate in development (Bartlett and Bartlett, 2013; Taniser, 2016).

The human resources used in the educational process, including educators like instructors and educational staff like administrative staff, are one of the key areas in education administration. The general intensity of the world of education in relation to individuals is a key contrast between school academic institutions and other organisations (Gardner et al., 2003; Indjejikian, 1999). Managing human resources is a crucial part of implementing educational or learning processes in schools. To improve human resource performance, management must be systematic and targeted, allowing organisations to carry out their process performance objectives effectively and efficiently. This implies that human resource management is a crucial component of successful businesses of any size or sector (Kumar, 2022; Cameron and Grootenboer, 2018). Since every organisation is made up of people, relying on them for services, developing their skills, motivating them to work well, and ensuring that they continue to be committed to the organisation, human resources play a crucial role in helping businesses and organisations achieve their goals (Qutni et al., 2021; Skordoulis et al., 2015).

In a school, educators and instructors are a crucial source of human capital (Hashmi, 2014; Antonopoulou et al., 2018). This is due to the fact that they work directly with students and are thus responsible for their success or failure throughout the educational process. An essential component is the hiring and mentoring of instructors. Naturally, when hiring teachers, consideration is given to other factors as well, such as a candidate's personality, moral character, and ability to take responsibility for the load they are carrying. A successful company requires strong management as well. Therefore, it is crucial to have a solid grasp of management. Modern management uses three spiral-shaped management functions rather than linear ones. This enables the organisation to advance continually rather than stopping at a certain point (Stone et al., 2015).

In order for workers to be productive and successful, socialisation within the firm is crucial in both businesses and educational institutions. Employees should be subjected to training and development since placing people directly into the workforce does not ensure their success and because they often feel unsure of their duties and responsibilities. Through training, personnel are given the skills they need to perform their current duties, advance their careers overall, and develop their future responsibilities. If development is more focused on the future than training, which is more focused on the circumstances of the present (Florea, 2013; Tsakanikas et al.,

2014). Training and development help education institutions to acquire an educated workforce with competent and acceptable human resources. This is an endeavour to get the educated workforce ready for jobs that are thought to be beyond their level of mastery (Alami et al., 2016; Papapolychroniadis et al., 2017). Educational institutions in Greece are ones that are concerned with the quality of instruction (Blanas et al., 2014). In order to ensure that the quality of education in Greece really satisfies the needs of students, efforts are being made to preserve and enhance it (Maria and Vassilis, 2017). One such effort is the conducting of training sessions for educators or human resource managers most especially in areas if using technology tools to manage different education based operations. It based on the above background that this study seeks to establish the efficacy of embedding IT in Human Resources (HR) practices in Education Management (Chatzitheodoridis et. al., 2023; Kalogiannidis, Savvidou et al., 2022).

## **1.2. Objectives of the study**

In today's technologically advanced world, it is not only justified but also essential to investigate the effectiveness of integrating IT into HR practices in education management (Taniser, 2016). It is crucial for educational institutions to investigate and adopt IT solutions in their HR departments due to the advantages of greater productivity, data-driven decision-making, cost savings, and enhanced employee experience. Therefore, this study majorly investigated the efficacy of embedding IT in Human Resources (HR) practices in Education Management. The study also focused on specific objectives listed below:

- To find out the different IT tools used in HR processes and their effect on education management;
- To establish the relationship between IT embedded HR practices and education management;
- To explore the different benefits of using IT in HR Processes and their influence on education management.

## **1.3. Research questions of the study**

- 1) What is the effect of IT tools used in HR processes on education management?
- 2) What is the relationship between IT embedded HR practices and education management?
- 3) What are the different benefits of using IT in HR Processes and their influence on education management?

## **1.4. Research hypotheses**

Teachers and HR experts may assess IT systems in the context of education management based on how well they streamline HR operations including hiring, onboarding, performance monitoring, and payroll processing. Researchers may utilize surveys, interviews, or questionnaires to gauge how valuable they believe IT solutions are in enhancing HR procedures (Blanas et al., 2014). The adoption of IT systems is greatly influenced by how simple they are to use. Stakeholders may evaluate whether these systems are simple to use and require little effort to traverse in the context of

education management. Through usability testing and user input, research may examine the perceived usefulness of a system. TAM suggests that a positive attitude toward using IT systems leads to their greater acceptance and adoption (Taniser, 2016). In Education Management, this could involve assessing the attitudes of educators, HR personnel, and administrators toward the integration of IT in HR practices (Battacherjee, 2000). Relatedly the Resource-Based View (RBV) theory emphasizes identifying and understanding an organization's key resources (Lee and Yun, 2020). In the context of education management, this could include human resources, physical infrastructure, IT infrastructure, and data. Researchers can use RBV to pinpoint the specific IT resources that educational institutions possess or need to acquire to improve HR practices (Vasudevan 2021; Lee and Yun, 2020). Based on this background, the following hypotheses were developed in this study:

- H1: IT tools used in HR processes have a positive effect on education management.
- H2: There is a significant relationship between IT embedded HR practices and education management.
- H3: Benefits of using IT in HR Processes positively influence the level of education management.

### **1.5. Significance of the study**

The field of Education Management is continually evolving due to advancements in technology. Incorporating IT into HR practices is an emerging trend in this sector. Understanding the effectiveness of this integration is crucial as it can shape the future of education administration. The findings of the study are therefore a great addition to the field of human resource management most especially in education institutions. The findings will offer new knowledge on how education management is being influenced by different technologies used in human resource processes.

The study findings will further contribute to the academic field of HR management by providing empirical evidence and insights into how technology impacts HR processes in the context of education management. Consequently, this study's findings can lead to the development of theoretical frameworks that explain the dynamics of IT integration into HR in educational institutions. This can serve as a basis for further research and guide educational policy.

## **2. Literature review**

### **2.1. Theoretical review**

#### **2.1.1. Model of diffusion of innovations**

According to Muathe (2010), persons from a social context generally use the idea of innovation diffusion to explain how technical inventions spread through time. The three core components of the theory, according to Karshenas and Stoneman (1995), are diffusion phases and innovation characteristics that affect the rate of dispersion. According to Muathe (2010), there are five phases via which innovation is believed to advance, including comprehension of the innovation, persuasion from influential people, commitment to adopting, adoption, and confirmation of the decision. The five

characteristics of innovation are expected benefits, operational coherence with organisational values, system simplicity, system trial, and the ability to monitor, and they aim to determine the degree to which performance of the development and their key significance to the clients are established. To be more precise, Tung and Rieck (2005) identified the crucial elements that must be supported, showing the availability of resources, in order for an adoption process to be effective. He adds that there are four user types: trend-setters, early adopters, late adopters, and slackers, with the total number of users at any one moment forming an S-shaped implementation arch (Karshenas and Stoneman, 1995). The groups most likely to utilise and adapt new technology are trend-setters and early adopters.

According to Barney (2001), the ability of new technologies to be tested has an impact on their adoption and use since actual performance is often more important than discussions about the advantages and operational capabilities. Since the availability of network features affects the adoption of HRMIS, compatibility is crucial (Zacharoula, 2019). A new technology may be tested out before being put to use by using the trial capability. This is important to early adopters since they depend on readily accessible knowledge as opposed to laggards who discover new information after technology has already been entrenched. However, as observed by Tidd et al. (1997), the typical diffusion of new technologies model is mostly based on research on how people decide whether to adopt new technology, which restricts its application to the study of HRMIS deployment in business contexts. Barney (2001) noted that potential consumers of innovations assess the hypothetical value that the technical breakthrough brings to them, is in accordance with the diffusion of innovation model, however (Ankem, 2004). Value in this context is determined by the advantages and acquisition costs of the new technology. An institution's use of HRMIS software should be seen as a novel practise since it improves operational performance.

### **2.1.2. Resource based view (RBV theory)**

According to Barney's RBV theory of the company from 1991, "key sources of competitive advantage to an organisation are the firm's structure, human capital, which is the skills, judgement, and level of intelligence of the employees, and human resource management systems" (Vasudevan, 2021). According to RBV theory, HRMS may increase competitive advantage via staff development and motivational skills, create distinctive social ties, be firmly ingrained in a company's operational procedures, and contribute to organisational knowledge (Barney, 1991).

Eniola and Entebang (2015) noted that resource-based view theory of the firm is of the opinion that the competitive edge emanates from the wealth of assets owned by an organisation that are of key value in comparison to those of its competitors. This is relevant to their study on government policy and the efficacy of small and medium business management. Its progress has been significantly aided by further studies (Martin, 1994). According to the idea, any organization's remarkable efficiency and a competitive edge may be sustained over time thanks to resource accumulation and use, management decisions, market imperfections, and strategic industry variables (Zacharoula, 2019). According to Barney (2001), company heterogeneity is represented significantly as more critical aspects of performance and position in the marketplace of a commercial entity both in the domestic and global market space.

### **2.1.3. Technology acceptance model (TAM)**

According to Alami et al. (2016), Technology acceptance model (TAM) helps to explain why a person's behaviour is the result of purposeful behavioural intent, which is in turn influenced by attitude and social standards. The TAM hypothesis was first put out by Davis (1989), and although it was first intended to anticipate user adoption of computers, it has since been utilised negatively in ICT industries. Alami et al. (2016) also says that TAM has more to do with technology. To assess a person's attitude towards technology, the TAM model may be used to produce variables for employee commitment and management commitment. These factors include the technology's perceived utility and the incapacity to actually utilise it (Davis, 1989).

Panayotopoulou et al. (2007) criticised the model by noting that it tends to ignore other factors like age, sex, experience, and voluntariness that are crucial for ICT adoption. These factors include user beliefs in regard to technology adoption into two classes. Lengnick-Hall and Moritz (2003) criticism of TAM is seen as being less thorough than the diffusion method, which emphasizes issues like time as a crucial component of the theory. TAM was criticised for failing to take into account the influences of individual control elements on behaviour as well as external environmental factors including suppliers, consumers, and rivals (Manueli et al., 2007).

According to Battacherjee (2000), the TAM model may be included into TPB, with perceived utility and usability serving as the primary drivers of behavioral attitudes towards IT adoption. Interpersonal and environmental factors that impact behavior might be used to evaluate subjective standards. By applying the TAM framework to this study research, it was easy to systematically evaluate the efficacy of embedding IT in HR practices in Education Management and identify factors that contribute to or hinder successful implementation and acceptance among stakeholders (Kalogiannidis et. al., 2023; Papaevangelou et al. 2023)

## **2.2. Information technology and HR processes in educational sector**

In a larger sense, technology has changed how businesses conduct their operations throughout the world. Organizations have used technology principles to provide dependable solutions in an effort to favourably adapt to the constantly shifting client demand and preferences (Gardner et al., 2003; WHO, 2016). The transition of HR practices from the conventional administration of employees to a more strategic management of organisational workers has been made easier by technology (Taniser, 2016). Organizations have been able to achieve competitive pay, employee engagement, and successful talent retention strategies via the utilisation of current human resource management technology methods (Ngwenya et al., 2019; Skordoulis et al., 2015). Currently, a company uses the internet to carry out its hiring and training processes. Utilizing technology tools is also used for communication after the hiring of employees in various job positions and for performance evaluation (Hashmi, 2014; Taniser, 2016).

The educational industry has been impacted by the adoption and use of technology in HR operations. Decisions made after rigorous and extensive study may be implemented by HRM departments in various corporations (Beatriz et al., 2010). The change of professional practises in human resources has been greatly aided by

technology. Modern technology has changed how human resources professionals operate in the field of education and particularly in running different HR processes (Alami et al., 2016; Renuka Kumar, 2017). Reynolds (2020) revealed that some of the most important HR processes that have continued to run along with technology include onboarding, employee recruitment, learning and development of employees and workforce planning among many others as presented **Table 1**.

**Table 1.** Core processes of HR.

Core HR Processes		
Recruiting	Onboarding	Workforce; Planning
Talent; Management	Performance; Management	Learning and Training
Offboarding	Benefits; Administration	Employee; Relations

Source: Authors' elaboration.

### 2.3. Benefits of embedding IT in HR processes

#### 2.3.1. Facilitating easy communication

In an organisational context, communication is seen as a critical element that must be included into daily operations and promote efficient operation. Effective communication must be established in order to strengthen interpersonal relationships. With the present use of technology, the millennial age has assisted the transition from verbal to non-verbal communication. The operation of human resource practises has seen a significant increase in communication within Greece's educational sector. For instance, effective communication has enhanced the relationship between management and workers (Gardner et al., 2003; Omran and Anan, 2018).

Human resources in the educational sector are now able to connect with other workers working for the organisation thanks to the development of technological based mobile texts, emails, and other messaging tools. The HR manager has the ability to send information as well as attachments to a relatively large group of stakeholders at once without having to connect with each person separately (Costello, 2017; Hopkins et al., 2006). The process suggests that using technology reduces the time it takes to carry out organisational decisions using human resources as compared to not using technology. Additionally, a single email that is sent to the organization's hundreds of workers may be used to announce a planned meeting to a big number of staff members. Technology has made it possible HR processes in the educational sector to provide the organisation access to the most important information (Kafu-Quvane and Chikoko, 2019; Nurochim, 2018).

#### 2.3.2. Efficient organizational data handling

Organizations in the modern world greatly depend on information to carry out their everyday tasks. The capacity to depend on such data has made it easier to collect and analyse vast volumes of data (Martin, 1994; Zacharoula, 2019). In general, the company gathers a lot of data to improve the adoption of both operational and strategic choices. An organization's decision-making process will be based on the information the HR department provides on the efficacy of its human resources (Hashmi, 2014; Ritter, 2021).

Data on employee performance are gathered and evaluated by human resource

management. Depending on the requirements and expectations of an organisation about the data, there are many different ways to examine such data. To be more specific, the HR department in the educational sector can be interested in evaluating employee performance using analytical tools like analysis software (Haleem et al., 2022). The amount of data that can be gained and the best way to collect it should be determined by effective human resource procedures. The use of technology avoids a situation when the volume of data gathered exceeds the capacity of HR professionals. The firm may fulfil its long-term goals for human resources with proper handling of massive data (Susan, 2013).

### **2.3.3. Assessment of employee performance data**

The way that HR departments in Greece carry out their various tasks has been altered as a result of the usage of technology in HR operations. Using technical devices and software, it is possible to examine employee information such as names, incomes, ages, allowances, and job tasks effectively. The study findings of Qutni et al. (2021) indicated that the different operations in education institutions have been transformed by the use of technology principles in human resource management. By assessing several types of data, such as those that relate to employee ratings and job completion ratings of employees, the evaluation of aims and objectives of an organisation may be predicted (Omran and Anan, 2018; Stamouli et al., 2012).

The evaluation of employee performance through the use of different technology tools has an influence on the bottom line since human capital serves as the foundation and success of the educational sectors (Allui and Sahni, 2016). Employees in the educational industry often see assessment as a process that will boost their overall productivity and skill set. Technological tools will assess worker morale in situations when staff are dissatisfied with clients, therefore uncovering such flaws. Since technology creates a high-working culture and rewards top performers in the educational sector, it is more effective for evaluating employee performance. The evaluation of employees in the educational sector helps the company to identify different knowledge gaps, design learning and development programmes, sustain staff, and create a successful organisational strategy (Getz, 2016).

Gkorogias et al. (2021) revealed that an important step that opens the door for the adoption of technology techniques is the eradication of antiquated HR procedures relating to employee performance. Since the Greek educational sector employs a large number of people, implementing modern HR practises would record employees' actual job activities, offering a more sophisticated response to any obstacles or issues that may arise. According to Sukawati et al. (2020) HR managers experience flexible operations when they use technology principles in their work.

### **2.3.4. Technology in employee recruitment**

Khrais et al. (2021) revealed that prior to the advent of the internet, the human resources department mostly used face-to-face methods to attract new personnel. The 21st century's technical advancements have made it possible for businesses to post job openings online. Additionally, those firms have undertaken online hiring using various technical modes of contact, including the phone, the internet, and emails. More time has been saved in the modern world, particularly with the removal of lengthy in-person interviews. Since the birth and growth of social media sites like Facebook, Twitter,



LinkedIn, and Snapchat, hiring, recruiting, and employee retention have all been done online (Al Qalhati et al., 2020; Chugunova and Danilov, 2022). One of the most important functions of the human resources department is recruitment. The usage of internet portals in Greece's educational industry has advanced the hiring procedure by allowing human resource managers to target certain subject-matter specialists in their respective educational fields (Florea, 2013; Qutni et al., 2021).

According to research by Tigere (2020) the use of cloud-based recruiting software has improved the use of technology in the Greek educational sector's hiring process. However, in order to provide a seamless hiring procedure, the HR department established Application Tracking System (ATS) (Taniser, 2016). The application has provided pertinent elements that are essential to conquering obstacles and achieving substantial recruiting goals. Additionally, most HR managers in the education sector are utilising Skype and video interviewing tools to hire staff members (Taniser, 2016; Papaevangelou et al., 2023).

### **2.3.5. Increasing the security of information related to employees**

In the beginning, protecting employee data and documents included little more than keeping them in secure cabinets. The general security of employee information has reached a new level as a result of the technological advancement. The safety of employee data, which is a crucial component of personal privacy, must be one of the most effective human resource policies. For clarification, a solid firewall is seen to be important in an effort to minimise potential information loss to hackers and other parties (Butcher, 2007).

Taniser (2016) revealed that different effective policies that can control the administration of human-related data kept in internal servers and the cloud must be part of human resource management practises in the educational sector. Without the use of technology, HR departments cannot maintain data confidentiality (Blanas et al., 2014; Shaw, 2004). Cloud computing has been used in Greece's educational sector to promote data decentralisation and storage. The old physical server storage methods, which are seen as inefficient, have been replaced by technology. HR managers now have access to company data through a decentralised cloud computing system thanks to technology (Renuka Kumar, 2017; Kalogiannidis, Kontsas et al., 2022; Chatzitheodoridis et al 2013). Additionally, several Greek educational institutions have started using web-based content management systems and these have helped in improving the quality of management in most schools (Kalfas et al., 2023; Kafu-Quvane and Chikoko, 2019; MSH, 2005).

## **2.4. Trends in IT tools in HR processes**

### **2.4.1. SaaS and cloud technology use**

SaaS applications are regarded as being essential in the activities of the human resource department in the contemporary technologically developing globe. Cloud-based apps are an unavoidable part of doing business due to the nature and speed of the business environment's evolution (Renuka Kumar, 2017). Up before the advent of cloud computing, collecting and storing data was made simpler. It is simpler to evaluate information on employment, operations, and information on employee remuneration. Greece's educational system will use cloud computing and SaaS app

principles to arrange data more securely (Taniser, 2016).

Skordoulis et al. (2015) indicated that the Greek education sector must evaluate its internal organisational structure and establish if the goals line up with the department's existing requirements before embracing cloud computing completely. A successful evaluation requires the HR manager to weigh the drawbacks of different human resource management strategies against the advantages brought about by the use of cloud computing tools. The HR manager can also assess if all Greek educational practises can change with technology and apps. When data from the whole educational sector is decentralised on the cloud, employees will develop a feeling of community (Panayotopoulou et al., 2007).

#### **2.4.2. Big data and moving toward wearable technology**

One of the main goals of HR departments is to encourage compliance and protect the company from any risk related to human resources. The creation of HR digital platforms has made it possible for Greece's educational system to digitise data, encouraging efficient and effective processing of such data. The firm now has a thorough grasp of its employees because to its capacity to collect and analyse enormous volumes of data. The goal was accomplished by using employee evaluation tools at work (Tsakanikas et al., 2014).

Florea (2013) notes that when combined with other essential technologies, big data has given human resource departments' significant insight and expertise. Utilizing crucial organisational data allows for successful decision-making thanks to the knowledge obtained (Florea, 2013; Sukawati et al., 2020). Big data is a new trend that will help human resource departments in the educational sector get a detailed perspective of the present labour structure so they can spot any developing trends. Antonopoulou et al. (2018) revealed that big data helps the overall operations of a complete business, not only the human resources department.

According to Costello (2017), wearable technology is seen to be crucial for linking workers and reducing waiting times. Given that time management is a key component of human resource management, wearable technology will revolutionise Greece's educational system (Costello, 2017). Wearable technology makes it easier to provide staff incentives that will ultimately improve operational efficiency. In order to keep up with the rapidly evolving technology, the human resources department investigates further practical methods for translating wearable technology into practical human resource tools (Ngwenya et al., 2019).

#### **2.4.3. Social media as a tool for influence**

Social media's development has had a significant impact on today's human resources offices. Qutni et al. (2021) revealed that in the next ten years, hiring managers will conduct job interviews through social media platforms. Greek HR managers use Facebook and LinkedIn to find new hires in the educational sector. These techniques have been useful for the department in raising employee involvement in business.

The HR department may reach potential workers via the extensive social media network by including pertinent corporate profile information. The main channel via which businesses may reach their goals in terms of human resources is social media. Employees may post their resumes and personal information together with their job

applications on various social media networks (Blanas et al., 2014). The next step is to wait for human resources departments to contact them over the same media to set up an interview. Additionally, social media platforms have disseminated vital data on the perspectives of job searchers towards Greece's educational system. The data has nonetheless been important in developing efficient payment structures and processes that are in line with the demands of human resources (Maria and Vassilis, 2017).

The usage of social media tools can benefit human resource professionals in many ways, including appraising current events and technical breakthroughs. The improvement of relationships has been facilitated by the exchange of industry expertise between human resource experts and potential employees. This has led to the idea that technology social media platforms are essential engagement tools. Communication at work will be improved through improved interactions between the HR department and the employees.

Hopkins et al. (2006) revealed that while technology's introduction and advancement have played a significant role in changing the practises of human resource professionals in Greece's educational sector, HR managers have the obligation to make the most of this technology to serve the corporate community. With the emergence of educational online portals, technology is continuously reshaping the future of human resource management (Ritter, 2021). The HR department's primary responsibilities include finding potential employees, managing people, and putting in place the processes required to increase the output of human resources. Businesses will grow wiser as a result of the employment of skilled and informed human resources, while technological dynamics continue to remodel the human resources sector (Chugunova and Danilov, 2022).

#### **2.4.4. The future of mobile applications**

The world of human resources has been completely changed by the introduction of iPhones and smartphones. The HR managers are more concerned with creating a work environment where staff members like using mobile apps and software made for mobile devices. A personal working profile based on real-world work data has been created by the educational sector using specially built software. Since the world of technology is now undergoing rapid change, HR departments have adapted by integrating the usage of mobile apps into their daily operations (Haleem et al., 2022; Antonopoulou et al., 2018).

In order to provide services that are in line with the current technology trend, Greek educational institutions' HR practises will take into account building apps that are equipped with mobilisation systems and the kind of working interface that workers want (Alami et al., 2015; Sukawati et al., 2020). The development of HR basic functionality needs has driven the need to construct these apps. According to Omran and Anan (2018), the use of mobile apps for various websites and systems created by a business is now crucial in the modern world.

### **3. Methodology**

#### **3.1. Research design**

The study utilized a mixed methods research design that utilizes both qualitative and quantitative methodologies to effectively study a research problem. This design allows the use of several methods to complete the research project. In this case both the questionnaire and interview methods were used in collecting data for this study. For the current research study, the mixed methods research approach offered a great opportunity to undertake a holistic and highly profound data collection process. The use of qualitative method enabled the researcher to gain deeper understanding of the research questions, and the context in which their responses and opinions were suitable in regard to the efficacy of embedding IT in Human Resources (HR) practices in Education Management. Interviews which are part of the qualitative method were a valuable method for studying the efficacy of embedding IT in HR practices in education management because they offer a qualitative lens through which to explore complex human experiences, perceptions, and organizational dynamics. When used in conjunction with other research methods, interviews can provide a comprehensive view of the challenges and opportunities in this domain, helping to drive informed decision-making and improvements in educational institutions. Furthermore, the quantitative method was used to triangulate the categorical responses from the different HR professionals using questionnaires.

### 3.2. Target population

The study targeted the different accessible HR professionals in the education sector in Greece as well as the top officials from ministry of education and religious affairs of Greece. The population was based on to establish the suitable sample for the study. The study targeted public limited companies of Greece since this would help to obtain a more representative sample of people with good knowledge on how embedding IT in Human Resources (HR) practices influences Education Management. The ministry of education and religious affairs of Greece is the one that handles the affairs of the education sector hence this justifies the reason to why officials from this ministry have been used.

### 3.3. Sample size

The study utilized a sample of 320 HR professionals from the education sector of Greece and 10 officials from the ministry of education and religious affairs of Greece. These 320 respondents were obtained using the purposive sampling technique and hence they formed a representative sample for the study. The researcher utilised the Krejcie and Morgan (1970) to determine the required sample size for this study as shown in **Table 2**, based on the target population of 1900.

$$n = \frac{\chi^2 NP(1 - P)}{d^2(N - 1) + \chi^2 P(1 - P)} \quad (1)$$

where:  $n$  = Sample size;  $N$  = Population size;  $X^2$  = Chi-square for specified confidence level at 1 degree of freedom;  $d^2$  = Desired Margin of Error (expressed as a portion);  $P$  = Population portion (0.05 in **Table 2**).

**Table 2.** Krejcie and Morgan (1970) Table for determining sample sizes.

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2800	338
60	52	340	181	3000	341
65	56	360	186	3500	346
70	59	380	191	4000	351
75	63	400	196	4500	354
80	66	420	201	5000	357
85	70	440	205	6000	361
90	73	460	210	7000	364
95	76	480	214	8000	367
100	80	500	217	9000	368
110	86	550	226	10,000	370
120	92	600	234	15,000	375
130	97	650	242	20,000	377
140	103	700	248	30,000	379
150	108	750	254	40,000	380
160	113	800	260	50,000	381
170	118	850	265	75,000	382
180	123	900	269	1,000,000	384

Source: Krejcie and Morgan (1970).

### 3.4. Sampling technique

The research used stratified and simple random sampling techniques. In this case, a stratified sampling technique was used to construct the target sample, and simple random sampling technique was used to extract the final sample from the strata. Stratified sampling in this study helps take into account the variety within the education sector, improves the accuracy of your results, makes comparative analysis easier, makes the best use of resource allocation, increases generalizability, and tackles ethical issues associated to representation. It may result in more solid and trustworthy study findings in this situation (Taherdoost, 2016). Relatedly, simple random sampling has the advantage of generating samples that are quite representative of the population (Noor et al., 2022). Working with big samples, however, could be time-consuming and difficult. Additionally, the purposive sampling technique was utilized to select the

secondary study participants who were the top officials from ministry of education of Greece.

### **3.5. Data collection**

**Questionnaire:** A well-structured questionnaire with categorical question was used to collect data from eth HR professionals in the education sector of Greece. The questionnaire comprised of close- ended question and categorical questions to ensure easy coding during data analysis. The questionnaire comprised of close ended and categorical questions about efficacy of embedding IT in HR practices in education management. The respondents were required to answer based on their knowledge and experience in the HR processes in education sector.

**Interviews:** Each of the chosen officials from ministry of education in Greece had in-depth interviews since they provide for the most thorough telling of a participant's narrative (Boyce and Neale, 2006). To provide simple communication between the interviewer and the subjects, interviews were done in English. Information from the participants was gathered using interviewing scripts. The study guide included open-ended questions since they allow participants to express their thoughts, opinions, and knowledge about the topic under study. This made it easier to comprehend the opinions of top officials from ministry of education of Greece about the efficacy of embedding IT in HR processes in regard to education management.

### **3.6. Data analysis**

**Quantitative analysis:** Following the collection of the given questionnaires, the data will be analyzed in accordance with the study's goals. To achieve a more statistical analysis of the research, all the data that was gathered from the respondents was then examined using the SPSS 20.0 version. The data used for the frequency distribution was taken from the first portion of the user profile questionnaire; it is explained using a frequency table, with mean and standard deviation calculated for some of the data. To find out the existing relationship between the study variables, the researcher also used the Chi-square test. The extent to which the embedding IT in human resource practices influences education management was also investigated using regression analysis. A multiple regression model was used in this instance to get the various predicted values.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \quad (2)$$

where  $Y$  = Education management;  $\beta_0$  = constant (coefficient of intercept);  $X_1$  = IT tools used in HR processes;  $X_2$  = IT embedded HR practices;  $X_3$  = Benefits of using IT in HR Processes;  $\varepsilon$  = Represents the model's error term.

The three hypotheses of this study were tested based on the obtained regression results at 0.05 level of significance.

**Qualitative analysis:** The researcher arranged the interview transcripts she had gathered to better understand the issue using qualitative data analysis. The data that was gathered was analysed using qualitative content analysis. By organising and eliciting meaning from the data gathered, content analysis aimed to reach practical findings. By using content analysis, the researcher was able to quickly and easily

capture the unknowable while enabling the constructed fields to develop into gathered data. This made it easier to get accurate findings that could be used to draw conclusions.

### 3.7. Ethical considerations

The researcher verified that informed permission was acquired from the HR professionals in the education sector to confirm their general willingness to participate in the study. This was in addition to preserving strict confidentiality and privacy while working with respondents' data. Finally, respondents were allowed to answer questions depending on their understanding of the various opinion questions. This aided in gaining wide responses to specific queries.

## 4. Results

This section presents the general interpretation of results that were obtained after analyzing data collected from the professionals in the education sector in Greece.

### 4.1. Demographic characteristics

Results about the demographic characteristics of the selected HR professionals in the Greece education sector that participated in the study are presented in **Table 3**.

**Table 3.** Showing demographic information of the study participants.

Characteristic	Frequency	Percentage (%)
Gender	-	-
Male	214	66.9
Female	106	33.1
Age	-	-
Below 25 years	17	5.3
25–35 years	96	30.1
36–45 years	121	37.8
Above 45 years	86	26.8
Education Qualification	-	-
Diploma	24	7.5
Bachelor's degree	97	30.3
Master's degree	156	48.8
PhD	43	13.4
Years spent in the education sector	-	-
Below 5 years	82	25.6
5–10 years	136	42.5
Above 10 years	102	24.0
Total	320	100

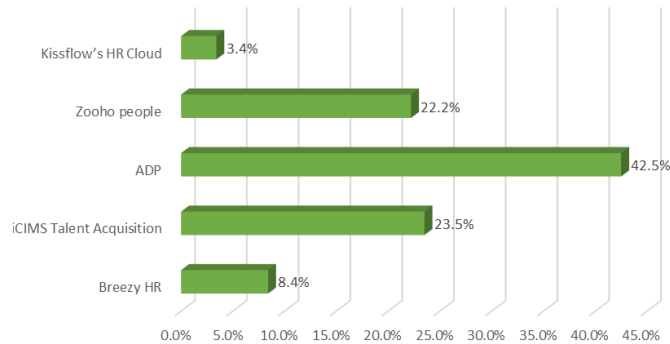
Source: Authors' elaboration.

From **Table 3**, the largest portion of respondents (66.9%) were male, and only 33.1% were female. The results show that the majority of the HR professionals that participated in this study were between 36 to 45 years (37.8%) followed by 30.1% that

were between 25 to 35 years and only 5.3% were below 25 years. In regard to the qualifications of respondents, majority (48.8%) had master's degree, followed by 30.3% with bachelor's degree and only 7.5% had diplomas.

#### 4.2. Descriptive analysis

The Common technology tools used in HR processes were established in this study and the results are presented in **Figure 1** below.



**Figure 1.** Common technology tools used in HR processes.

Source: Authors' elaboration.

The results in **Figure 1** show that the common technology tools used in HR processes is ADP as revealed by 42.5% of the respondents. ADP is basically a comprehensive solution that combines administration of tax and benefits, payroll, personnel, and time. This was followed by iCIMS Talent Acquisition (23.5%) and then Zoho people (22.2%) that is majorly used in managing employee data, Breezy HR (8.4%) that supports data automation and the least number of respondents (3.4%) identified Kissflow's HR Cloud. Interaction with the officials from the ministry of education and religious affairs of Greece further showed that there are IT tools that are compatible with the education based HR processes or practices. Two of the officials noted that:

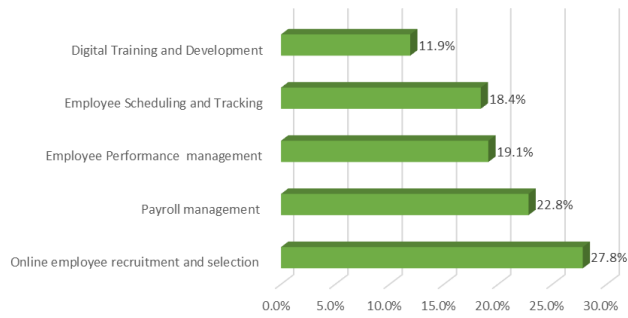
Kissflow is an integrated HR cloud that helps companies to efficiently design, alter, and manage their processes for human resources. A variety of HR management tools, including application tracking, employee onboarding, evaluations of performance, offboarding, and succession planning, are already included with Kissflow [Administrator Ministry of Education Greece].

HCM is often automated in its simplest form using integrated software that combines personnel information from core HR and management of talent systems. Discrete subsystems for recruiting, performance, learning, and managing compensation, succession planning, and accountability may be included in HCM systems Kissflow [Official Ministry of Education Greece].

The results above clearly show that there are several IT tools that can be successfully embedded in the different HR processes or practices in the education management and that such tools can greatly help in influencing the overall process of management. The IT tools can streamline operations, improve communication, and contribute to overall efficiency and effectiveness.

The study also found out the different IT embedded HR practices and the results are presented in **Figure 2**.





**Figure 2.** IT embedded HR practices.

Source: Authors' elaboration.

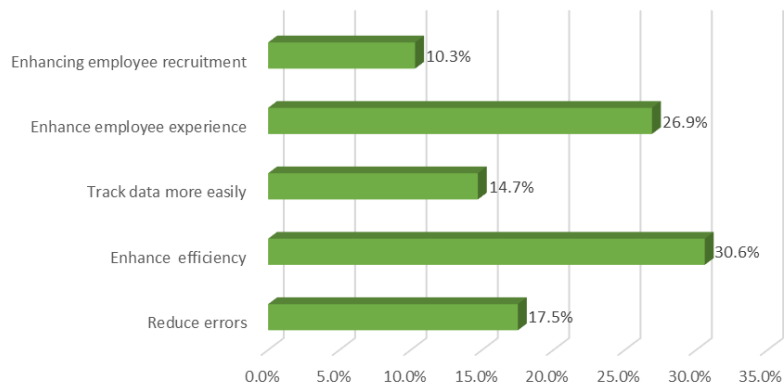
From **Figure 2**, majority of the participants (27.8%) noted online employee recruitment and selection as an IT embedded HR practices followed by payroll management (22.8%), Employee Performance management (19.1%), then employee scheduling and tracking (18.4%) and the least number (11.9%) identified Digital Training and Development as an IT embedded HR practice. These results were further supported by responses from the officials from ministry of education and religious affairs of Greece who explained how IT is greatly embedded in different HR practices to enhance education management. Notable responses include:

IT in the Human Resources practices in the education sector of Greece assists management in making important decisions like recruiting staff by scanning resumes on internet job boards, choosing individuals using an online psychometric exam, and announcing openings through email.

Relatedly, the officials explained how IT has the ability to alter how different departments in the education institutions relate or communicate, which to a greater extent influences the effectiveness of education management. He noted that:

I really think IT in education alters how education based human resources departments communicate with workers, keep records, and evaluate employee performance. Technology improves HR procedures when used properly. When misused, it might obstruct the management of the company's human resources. Effective HR procedures increase the advantages and reduce the issues.

The different benefits of using IT in HR Processes were established and the results are presented in **Figure 3**.



**Figure 3.** Benefits of using IT in HR Processes.

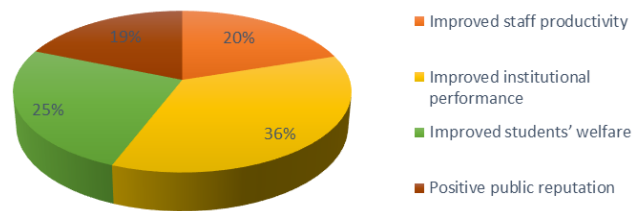
Source: Authors' elaboration.

From **Figure 3**, the most identified benefit of using IT in HR Processes (30.6%) was enhancing efficiency followed by enhancing employee experience (26.9%), and reducing errors (17.5%). Furthermore 14.7% of the respondents revealed that IT helps to Track data more easily and then 10.3% revealed that IT helps in enhancing employee recruitment. These results clearly show that IT is associated with several benefits when utilised in HR practices. This was further supported by the officials from eth ministry if education of Greece who majorly hinted in the role of It in enhancing security of data and making information accessible. Some notable responses include:

What I can say about the benefits if using IT in HR piceses is their ability to enhance security if data in the education sector. We have to know that safeguarding personnel data and other essential data is crucial in the era of the General Data Protection Regulation and tougher laws.

I have observed that IT helps greatly in essential education based information accessible to the general public. It is really simple to have instant access to crucial information using HR technology. Therefore, having all of this data accessible and up with the times is made simple by technology, anywhere you are when you require it.

The study also established the different aspects of education management and the results are presented in **Figure 4**.



**Figure 4.** Aspects of education management.

Source: Authors' elaboration.

From **Figure 4**, majority of the respondents (35.9%) revealed that improved institutional performance is the most common aspects of education management, followed by improved students' welfare (25.3%), improved productivity (20%) and then 18.8% identified Positive public reputation as the important aspect of education management. These results clearly show that management in the education sector relates much with improving the overall performance if the different departments or units under the education sector. This was also supported by the government officials in the ministry of education and religious affairs of Greece who noted that they measure the effectiveness of education management in Greece based in how the different education institutions perform in all units or departments of such institutions. He noted that:

I think we are able to know the extent of performance of our education managers based on how our different education institutions perform such as in Academics, securing education based data and maintaining a competent employee force at the workplace.

### 4.3. Chi-square analyse

The association between the various research variables was established using chi-square analysis, and the findings are shown in the other following **Tables 4** and **5** below.

**Table 4.** Cross-tabulation between technology tools used in HR processes and education management.

Education management	Technology tools used in HR processes					Total
	Breezy HR	iCIMS talent acquisition	ADP	Zooho people	Kissflow's HR Cloud	
Improved staff productivity	7	11	26	15	5	64
Improved institutional performance	13	34	47	19	2	115
Improved students' welfare	2	21	21	36	1	81
Positive public reputation	5	9	42	1	3	60
Total	27	75	136	71	11	320

$\chi^2 = 17.233$ ;  $df = 3$ ;  $p = 0.014$ ;  $\alpha=0.05$ .

Since the computed  $\chi_c^2 = 17.233$  is greater than the tabulated  $x^2 = 3.841$  and  $p = 0.014 < 0.05$ . This was an indication that technology tools used in HR processes have a positive effect on the level of education management.

**Table 5.** Cross-tabulation between the IT embedded HR practices and Education Management.

Education management	IT embedded HR practices					Total
	Online employee recruitment and selection	Payroll management	Employee performance management	Employee scheduling and tracking	Digital training and development	
Improved staff productivity	14	19	23	3	5	64
Improved institutional performance	41	31	4	18	21	115
Improved students' welfare	16	14	19	29	3	81
Positive public reputation	18	9	15	9	9	60
Total	89	73	61	59	38	320

$\chi^2 = 21.016$ ;  $df = 3$ ;  $p = 0.047$ ;  $\alpha=0.05$ . Source: Made by authors (2023).

Since the computed  $\chi_c^2 = 21.016$  is greater than the tabulated  $x^2=3.841$  and  $p = 0.047 < 0.05$ . This was an indication that IT embedded HR practices are significantly related to education management.

### 4.4. Diagnostic tests

#### 4.4.1. Test for heteroscedasticity

When determining whether the error components that exists in this study's cross-sectional data are correlated across observations, the heteroscedasticity test is crucial. The null hypothesis in this regard was that heteroscedasticity is not an issue with the data since the  $p$ -value is greater than 5%. As shown in **Table 6** the null hypothesis was not ruled out at the threshold  $p$ -value of 0.05 due to the reported result of  $0.7346 > 0.05$  and therefore the data for this study was not heteroscedastic.

**Table 6.** Breusch-Pagan test for heteroscedasticity.

<b>Ho: Constant variance</b>	
Variable: Fitted values of education management	
chi2(1) =	0.7226
Prob > chi2 =	0.7346
Predictors: (Constant), IT tools used in HR processes, IT embedded HR practices, Benefits of using IT in HR Processes.	

**4.4.1. Test for autocorrelation**

The Durbin-Watson (*d*) test, which states that  $d = 2$  implies that there is no autocorrelation, was used to determine if the dependent variable is independent. The findings of the investigation showed a value of 2.513, which implies that the study’s data and results are free from autocorrelation as shown in **Table 7**. The value of (*d*) always falls between 0 and 4, where 0 implies that there is autocorrelation and above 1 suggests the residuals are interdependent.

**Table 7.** Durbin Watson test.

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>	<b>Durbin-Watson</b>
-	0.893	0.708	0.692	0.196	2.513
Predictors: (Constant), IT tools used in HR processes, IT embedded HR practices, Benefits of using IT in HR Processes.					

**4.5. Regression test**

**4.5.1. Test for autocorrelation**

Regression at multiple level was carried out between all the independent variable and the dependent variable (Education Management). The results presented in **Table 7** present the fitness of model that was used in regression and which help in explaining the predictability if the dependent variable by the three independent variables. The independent variables (IT tools used in HR processes, IT embedded HR practices and Benefits of using IT in HR Processes) were satisfactory in explaining the level of education management based on the by coefficient of determination (R-square) of 0.664 as presented in **Table 8**. This means that embedding IT in HR processes; explain 66.4% of the variations in the dependent variable that is Education Management.

**Table 8.** Model Fitness.

<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
0.728	0.664	0.621	0.196
Predictors: (Constant), IT tools used in HR processes, IT embedded HR practices, Benefits of using IT in HR Processes.			

**4.5.2. Regression coefficients**

**Table 9** shows the different coefficients of regression hat were obtained for each independent variable in the study.

**Table 9.** Coefficients of regression.

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.420	0.256	-	12.073	0.044
IT tools used in HR processes	0.161	0.062	0.108	4.661	0.026
IT embedded HR practices	0.259	0.194	0.372	7.412	0.008
Benefits of using IT in HR Processes	-	-	-	-	0.000

Dependent Variable: Education management; Predictors: IT tools used in HR processes, IT embedded HR practices, Benefits of using IT in HR Processes.

The different regression coefficients in Table 8 show the level to which IT tools used in HR processes, IT embedded HR practices, Benefits of using IT in HR Processes tools, predict relationship marketing. Regression coefficients show a positive effect of embedding IT in Human resources on Education Management.

Hypotheses testing was conducted as below:

- The *p*-value for IT tools used in HR processes was 0.026 and therefore the hypothesis (H1) was accepted since *p* value < 0.05 hence IT tools used in HR processes have a positive effect on education management.
- The *p*-value of IT embedded HR practices was 0.008 which is less 0.05 hence hypothesis H2 was accepted indicating a significant relationship between IT embedded HR practices and education management.
- The *p*-value of benefits of using IT in HR Processes was 0.000 and hypothesis H3 was accepted, hence benefits of using IT in HR processes positively influence the level of education management. For example, technology tools in HR can help in maintaining control and securing information access in education institutions which helps to improve the level of management in such education institutions.

## 5. Discussion

This study focused on establishing the efficacy of embedding IT in Human Resources (HR) practices in Education Management. It was established that that IT tools used in HR processes have a positive effect on education management. The study found is a significant relationship between IT embedded HR practices and education management. The study revealed that among the benefits of using IT tools in HR processes is their effectiveness in keeping the safety of employees’ data or information. It is important to note that each employee's account allows access to their personal information. Teachers may routinely access their job information using a specialised mobile application and their routine responsibilities, proxy courses, leave administration, salary information, and similar other work-related details may be included in this data (Kalogiannidis, Toska et al 2022; Antonopoulou et al., 2018; Liu et al., 2014; Papapolychroniadis et al., 2017).

This study revealed that benefits of using IT in HR Processes positively influence the level of education management. For example, an IT based system helps in updating the teacher's adjustments to the application so that the school administration may see them as well. The information is updated, for instance, if the instructor adds a proxy

for a replacement teacher, letting the concerned teacher and the school administration know. In addition, it specifies each teacher's daily responsibilities and their current workload so that both the administration and the instructor are aware of how much work has been done and how much is yet to be done. This tool is helpful in determining where each teacher's productivity needs to be boosted. Teachers and school administrators may manage their workloads more effectively thanks to the HRMS (Alami et al., 2016; WHO, 2016). Staff no longer need to submit a lengthy email to HR or the administration to request a leave of absence. Instead, they may just enter the information to the page for managing leaves, and the application will be sent to the administrator (Haleem et al., 2022).

The use of IT in HRM enables managers to efficiently manage budget of education institutions as well as planning or monitoring institutional projects. This enable helps to respond more quickly to HRM changes and needs (Chugunova and Danilov, 2022). Technology could improve the information that HR has access to, facilitating HR processes and making them quicker and more efficient (Cameron and Grootenboer, 2018; Tigere, 2020). The accuracy and efficiency of organisations are improved via the usage of HRIS, one of HRM's most crucial instruments. But we deal with a lot of challenges. In order to avoid being outsourced, HR professionals must be ready for new positions in the future. HR practitioners must incorporate an HRIS as a significant project and organisational transformation, taking on the roles of business partner, data analyst, and internal consultant, concentrating on the strategic HRM problems vital to the growth of individuals, companies, and organisations (Gardner et al., 2003; Gkorogias et al., 2021).

The HR managers in education sector may greatly benefit from the reports that the human resource management system routinely produces by using them to make important choices. This covers the staff's wage statistics, attendance data, and reports on their daily tasks and work, among other related measures (Papapolychroniadis et al., 2017; Skordoulis et al., 2015). Employees may learn where they are excelling and where they need to do better by using the information produced by the HR management system in the school ERP software. In a similar vein, they also enable the administrators to make wise future choices (Renuka Kumar, 2017). The majority of big businesses utilize e-HR to promote job opportunities and collect applications from job seekers. Employers may discover the best candidate for a position from a huge pool of applications through e-recruiting, which reduces expenses. User friendliness and system speed have an impact on applicant attractiveness (Nadarajah et al., 2012; Tsakanikas et al., 2014). The study also shows that the rise of social media led to the development of a brand-new recruitment strategy called social recruiting. The procedure is more relational, dynamic, and improves the employer brand when done via platforms like LinkedIn, Twitter, and Facebook (Renuka Kumar, 2017). Technology is having a significant impact on HRM. As technology develops, HRM will need to modify both its operations and its procedures (Kafu-Quvane and Chikoko, 2019; Skordoulis et al., 2015). HRIS was created in order to reengineer the HR function, increase accuracy, make information more accessible, increase competitiveness and efficiency, and ensure the success of this change. There are still a number of unanswered questions about the fundamental objectives of HRIS and the solutions they provide for the real needs of HRM. This concurs with Chugunova &

Danilov's findings from 2022, which indicated that IT is being utilised to raise the calibre of human resource management in various organisations (Kalogiannidis, Loizou et al., 2022, Ekwoaba et al., 2015; etc.).

## **6. Conclusion**

In this research, the effectiveness of embedding IT into HR practices in education management was the main goal. It has been shown that the employment of IT technologies in HR procedures benefits education management. The research discovered a substantial link between education management and IT-embedded HR practices. For example, utilizing IT to enhance safety of education data and controlling access to sensitive information greatly helps to achieve effective management in the education sector. Additionally, it was established that the level of education management is strongly impacted by the advantages of employing IT in HR processes. Continuous technological advancements are changing how HR job is carried out. It may help in creation of an interactive or real-time work environment which enhances the work of HR managers. IT can greatly help in addressing administrative difficulties in a standard HRIS, such as absence monitoring, pay structures, training data, recruiting, media reaction, and access to current information, medical data, and worldwide administration. Human resource managers are able to respond to changes and decision-making needs more quickly because to HRIS. HRIS enables people planning, succession planning, skills monitoring, skills analysis, and worldwide analysis in addition to budget management, monitoring and screening, talent matching, assessments, and feedback. The inability of HR professionals to manage technology, especially its e-HRM tools and data, influence outcomes, and adopt a strategic posture may be inferred. Institutions can increase their ability to attract and retain talent, raise employee happiness, and better allocate resources by incorporating these IT technologies into HR processes and practices in education management. This will ultimately lead to more efficient education management. But it's essential to make sure that these technologies are selected and used with careful consideration of data security and compliance with pertinent laws, especially when working with sensitive data in the education sector. The adoption of e-HRM is still rising despite the findings that are still being verified as favorable. Increasing the effectiveness of education managers' roles through technology will undoubtedly aid attempts to raise educational standards.

### **6.1. Implications of the study**

Practically, it should be noted that while the emergence and development of technology has played a crucial role in changing the practises of human resource professionals in Greece educational sector, HR managers have an opportunity to utilize the current study's findings and maximise the use of this technology in order to reap more benefits for the education sector. The findings also show an increase in educational based IT tools which offers an opportunity for education practitioners to understand how IT tools can be utilized in reshaping the future of human resource management especially in finding potential employees, managing people, and putting in place the processes required to increase the output of human resources. Education

institutions can then grow better as a result of using IT to recruit skilled and informed human resources.

In regard to policy implications, these study findings are very essential in connection to policy formulation in the education sector. The results have shown the emerging IT being used in the education sector and how these are influencing education management. Therefore, the government in Greece can base on such results to implement different technology based policies in education institutions as a way of improving HR practices and education management.

## **6.2. Recommendations**

The findings reveal that technology is changing the way different activities are conducted by HR professionals which therefore shows that IT tools can equally greatly influence the effectiveness of management in the education sector. It is therefore important for education institutions in Greece to focus on embedding different information systems are now HR based technologies as an effective strategy of improving the level of education management in the country's institutions of higher learning.

It is important for education institutions to focus on recruiting HR professionals that value the use of technology or IT in HR practices. This will help to ensure consistency between expectations and reality in the education sector. All instructors are encouraged by the administration to instil in their charges a love of learning, politeness, and moral integrity.

## **6.3. Areas for future research**

The current study majority focused on how embedding IT in HR process impacts education management. However, the study did not give any attention to the challenges facing the education sector in regard to adopting different technology tools in HR processes. Future research should hence focus on factors limiting the integration of IT in HR processes in the education sector.

**Author contributions:** Conceptualization, OP and SK; methodology, OP; validation, DS; formal analysis, FC; investigation, OP and DS; resources, SK and FC; writing—original manuscript, OP and SK; writing—reviewing and editing, DS, FC and OP. All authors have read and agreed to the published version of the manuscript.

**Conflict of interest:** The authors declare no conflict of interest.

## **References**

- Al Qalhati N, Karim AM, Al Mughairi B, et al. (2020). Technology and HR practices in educational sector in sharqiya governate of Oman. *International Journal of Academic Research in Business and Social Sciences* 10(10): 435–443. doi: 10.6007/ijarbss/v10-i10/7956
- Alami R, Hashemi Gorji O, Shokri Asrami M, et al. (2016). The role of information technology (IT) in development and increase of the efficiency of human resources. *Journal of Social Science Studies* 3(2): 188–197. doi: jsss88/v3y2016i2p188-197
- Alami R, Iran B, Sohaei R, et al. (2015). The effectiveness of human resource management on improving the performance of education staff. *International Journal of Business and Social Science* 6(5): 251–254.
- Allui A, Sahni J (2016). Strategic human resource management in higher education institutions: Empirical evidence from Saudi. *Procedia-Social and Behavioral Sciences* 235: 361–371. doi: 10.1016/j.sbspro.2016.11.044



- Ankem K (2005). Approaches to meta-analysis: A guide for LIS researchers. *Library & Information Science Research*, 27(2): 164–176. doi: 10.1016/j.lisr.2005.01.003
- Bartlett BJE, Bartlett ME (2013). Integrating a human resource information system: A module with case. Society for Human Resource Management. Available online: [https://www.shrm.org/academicinitiatives/universities/teachingresources/Documents/08-0882\\_Integrating\\_HR\\_Info\\_Sys.pdf](https://www.shrm.org/academicinitiatives/universities/teachingresources/Documents/08-0882_Integrating_HR_Info_Sys.pdf) (accessed on 10 May 2023)
- Barney J (1991). Firm resources and sustained competitive advantage. *Journal of Management* 17(1): 99–120.
- Barney JB (2001). Is the resource-based ‘view’ a useful perspective for strategic management research? Yes. *The Academy of Management Review* 26 (1): 41–56. doi: 10.5465/amr.2001.4011938
- Battacherjee A (2000). Acceptance of e-commerce services: The case of electronic brokerages *IEEE Transactions on Systems, Man, and Cybernetics - Part A: Systems and Humans* 30(4): 411–420. doi: 10.1109/3468.852435
- Beatriz P, Deborah N, Hunter M (2010). *Improving School Leadership, Volume 1 (Estonian version) Policy and Practice*. OECD Publishing.
- Blanas N, Grigoriou I, Kyriakou D, Belias D (2014). Development and utilization of human resource in the municipalities of Greece: The case of Trikala municipality. *Mediterranean Journal of Social Sciences* 5(27): 145–156. doi: 10.5901/mjss.2014.v5n27p145
- Boyce C, Neale P (2006). *Conducting in-depth interviews: A guide for designing and conducting in-depth interviews for evaluation input*. Watertown, MA: Pathfinder international.
- Butcher J, Kritsonis WA (2007). Human resource management: Managerial efficacy in recruiting and retaining teachers – National implications. *The Lamar University Electronic Journal of Student Research*. Available online: <https://files.eric.ed.gov/fulltext/ED497357.pdf> (accessed on 7 April 2023)
- Cameron V, Grootenboer P (2018). Human resource management in education: Recruitment and selection of teachers. *International Journal of Management and Applied Science* 4(2): 89–94.
- Chatzitheodoridis F, Melfou K, Kontogeorgos A, Kalogiannidis S (2023). Exploring key aspects of an integrated sustainable urban development strategy in Greece: The case of Thessaloniki city. *Smart Cities* 6(1): 19–39. doi: 10.3390/smartcities6010002
- Chatzitheodoridis F, Michailidis A, Theodosiou G, Loizou E (2013). Local cooperation: A dynamic force for endogenous rural development. In: Karasavoglou A, Polychronidou P (editors). *Balkan and Eastern European Countries in the Midst of the Global Economic Crisis*. Heidelberg: Physica-Verlag.
- Chugunova M, Danilov A (2022). Use of digital technologies for HR management in Germany: Survey evidence. *CESifo Economic Studies* 69(2): 69–90. doi: 10.1093/cesifo/ifad005
- Costello B (2017). *The Future of Us*. In: *The Plural of Us: Poetry and Community in Auden and Others*. Princeton University Press.
- Davis FD (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly* 13(3): 319–340. doi: 10.2307/249008
- Dhanaraj C, Beamish PW (2003). A resource-based approach to the study of export performance. *Journal of Small Business Management* 41(3): 242–261. doi: 10.1111/1540-627X.00080
- Ekwoaba JO, Ikeije UU, Ikeije, Ufoma N (2015). The impact of recruitment and selection criteria on organizational performance. *Global Journal of Human Resource Management* 3(2).
- Eniola AA, Entebang H (2015). SME firm performance-financial innovation and challenges. *Procedia-Social and Behavioral Sciences* 195: 334–342.
- Florea NV (2013). *Cost/Benefit Analysis – A tool to improve recruitment, selection and employment in organisations*. Management & Marketing.
- Panayotopoulou L, Vakola M, Galanaki E (2007). E-HR adoption and the role of HRM: Evidence from Greece. *Personnel Review* 36(2): 277–294. doi: 10.1108/00483480710726145
- Gardner SD, Lepak DP, Bartol KM (2003). Virtual HR: The impact of information technology on the human resource professional. *Journal of Vocational Behavior* 63(2): 159–179. doi: 10.1016/S0001-8791(03)00039-3
- Getz D, Goldberg I, Shein E, et al. (2016). *Best Practices and Lessons Learned in ICT Sector Innovation: A Case Study of Israel*. World Bank. Available online: <https://www.worldbank.org/en/publication/wdr2016/background-papers> (accessed on 5 June 2023)

- Gkorogias G, Zotos C, Mitroulia M, Armakolas S (2021). Distance education infrastructure policy in primary and secondary education in Greece. Available online: [https://otik.uk.zcu.cz/bitstream/11025/46518/1/Itev\\_2\\_2021-62-70.pdf](https://otik.uk.zcu.cz/bitstream/11025/46518/1/Itev_2_2021-62-70.pdf) (accessed on 22 May 2023).
- Haleem A, Javaid M, Qadri MA, Suman R (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers* 3: 275–285. doi: 10.1016/j.susoc.2022.05.004
- Hashmi K (2014). Human resource management strategies and teacher's efficiency within schools: A co-relational study. *IAFOR Journal of Education* 2(1): 65–87.
- Antonopoulou H., Mihalakea T, Karanikola Z, Panagiotopoulos G (2018). The role of information systems in the process of motivation. Case study: administrative services of the technological educational institute of western Greece. *International Journal of Management Technology* 5(3): 1–8.
- Hopkins PC, Cowell CE, Jordan D, et al. (2006). Technology's impact on human resource development across the life span: Pedagogy starts with Andragogy. Available online: <https://eric.ed.gov/?id=ED492743> (accessed on 30 April 2023)
- Indjejikian RJ (1999). Performance evaluation and compensation research: An agency perspective. *Accounting Horizons* 13(2): 147–157. doi: 10.2308/acch.1999.13.2.147
- Johnson RD, Gueutal HG (2017). Transforming HR Through Technology: The Use of E-HR and HRIS in Organizations Transforming HR Through Technology (SHRM Foundation's Effective Practice Guidelines Series). Available online: <https://www.shrm.org/hr-today/trends-and-forecasting/special-reports-and-expert-views/documents/hr-technology.pdf> (accessed on 3 June 2023)
- Kafu-Quvane B, Chikoko V (2019). Factors shaping teachers' experiences in managing teaching in the era of information and communication technology (Ict) integration across the curriculum. In: EDULEARN19 Proceedings, Proceedings of the 11th International Conference on Education and New Learning Technologies. Palma, Spain.
- Kalfas D, Kalogiannidis S, Chatzitheodoridis F, Toska E (2023). Urbanization and land use planning for achieving the sustainable development goals (SDGs): A case study of Greece. *Urban Science* 7(2):43. doi: 10.3390/urbansci7020043
- Kalogiannidis S, Kalfas D, Giannarakis G, Paschalidou M. (2023). Integration of water resources management strategies in land use planning towards environmental conservation. *Sustainability* 15(21): 15242. MDPI AG. doi: 10.3390/su152115242
- Kalogiannidis S, Loizou E, Melfou K, Papaevangelou O (2022). Assessing relationship between entrepreneurship education and business growth. In: Business Development and Economic Governance in Southeastern Europe, Proceedings of the 13th International Conference on the Economies of the Balkan and Eastern European Countries (EBEEC); Pafos, Cyprus. Springer.
- Kalogiannidis S, Savvidou S, Papaevangelou O, Pakaki F (2022). Role of management in optimising the quality of education in educational organisations. In: Advances in Quantitative Economic Research, Proceedings of the 2021 International Conference on Applied Economics (ICOAE); Heraklion Crete, Greece. Springer.
- Kalogiannidis S, Kotsas S, Konteos G, Chatzitheodoridis F (2022). Investigation of the redesigning process of the development identity of a local government regional unit (city): A case study of Kozani regional unit in Greece. In: Advances in Quantitative Economic Research, Proceedings of the 2021 International Conference on Applied Economics (ICOAE); Heraklion Crete, Greece. Springer.
- Kalogiannidis S, Toska E, Chatzitheodoridis F, Kalfas D (2022). Using school systems as a hub for risk and disaster management: A case study of greece. *Risks* 10(5): 89. doi: 10.3390/risks10050089
- Kalogiannidis S, Loizou E, Kalfas D, Chatzitheodoridis F (2022). Local and regional management approaches for the redesign of local development: A case study of Greece. *Administrative Sciences* 12: 69. doi: 10.3390/admsci12020069
- Karshenas M, Stoneman P (1995). Technological diffusion. In: Handbook of the Economics of Innovation and Technological Change. Blackwell.
- Khrais LT, Administration B, Studies A, Service C (2021). Studying the effects of human resource information system on corporate performance. *İlköğretim Online* 20(3): 316–325. doi: 10.17051/ilkonline.2021.03.31
- Krejcie RV, Morgan DW (1970). Determining sample size for research activities. *Educational and Psychological Measurement* 30(3): 607–610.
- Kumar VH, Varshene SKT, Arun Kumar M, Dass M (2022). A study on performance appraisal of information technology professionals. *19(3): 4289–4289*. doi: 10.17051/ilkonline.2020.03.735581
- Lee KJ, Yun YJ (2020). Reconciling resource-based view and competency-based view of start-up formation in universities. *IEEE Access* 8: 143274–143284. doi: 10.1109/ACCESS.2020.3014213

- Lengnick-Hall ML, Moritz S (2003). The impact of e-HR on the human resource management function. *Journal of Labor Research* 24(3): 365–379.
- Liu X, Toki EI, Pange J (2014). The use of ICT in preschool education in Greece and China: A comparative study. *Procedia-Social and Behavioral Sciences* 112: 1167–1176. doi: 10.1016/j.sbspro.2014.01.1281
- Manueli S, Koh D (2007) ICT adoption models. In: *Proceedings of the 20th Annual 129Conference of the National Advisory Committee on Computing Qualifications*; Nelson, New Zealand. pp. 175–181.
- Maria G, Vassilis K (2017). The use of information and communication technologies for inclusive education in Greece. In: *Research on e-Learning and ICT in Education: Technological, Pedagogical and Instructional Perspectives*. Springer.
- Martin P (1994). *The Use of Performance Appraisal and Compensation Systems in Total Quality Management* [Master's thesis]. The University of Montana.
- MSH (2005). HRM Rapid Assessment tool for Health Organizations. <https://msh.org/resources/hrm-rapid-assessment-tool-for-health-organizations-3rd-edition-2/> (accessed on 3 June 2023)
- Muathe SMA (2010). *The Determinants of Adoption of Information and Communication Technology by Small and Medium Enterprises within the Health Sector in Nairobi, Kenya* [PhD Thesis]. Kenyatta University.
- Nadarajah S, Kadiresan V, Kumar R, et al. (2012). The relationship of HR practices and job performance of academicians towards career development in Malaysian private higher institutions. *Procedia-Social and Behavioral Sciences* 57: 102–118. doi: 10.1016/j.sbspro.2012.09.1163
- Ngwenya L, Aigbavboa C, Thwala W (2019). Benefits of human resource information systems in a South African construction organisation. In: *IOP Conference Series: Materials Science and Engineering, Proceedings of the 1st International Conference on Sustainable Infrastructural Development*. IOP Publishing
- Noor S, Tajik O, Golzar J (2022). Simple random sampling. *International Journal of Education & Language Studies* 1(2): 78–82. doi: 10.22034/ijels.2022.162982
- Nurochim N (2018). The innovation of human resource management in education to improve school quality. In: *Proceedings of the International Conference on Education in Muslim Society (ICEMS 2017)*. pp. 11–15.
- Omran K, Anan N (2018). Studying the impact of using E-HRM on the effectiveness of HRM practices: An exploratory study for the internet service providers (ISP) in Egypt. *International Journal of Academic Research in Business and Social Sciences* 8(4): 454–486. doi: 10.6007/ijarbss/v8-i4/4026
- Panayotopoulou, L., Vakola, M., & Galanaki, E. (2007). E-HR adoption and the role of HRM: evidence from Greece. *Personnel Review*, 36(2): 277-294
- Papapolychroniadiis I, Rossidis I, Aspridis G (2017). Comparative analysis of recruitment systems in the public sector in Greece and Europe: Trends and outlook for staff selection systems in the Greek public sector. *Academic Journal of Interdisciplinary Studies* 6(1): 21–30. doi: 10.5901/ajis.2017.v6n1p21
- Papaevangelou O, Syndoukas D, Kalogiannidis S (2023). Information technology and human resource management in educational institutions. *Journal of System and Management Sciences* 13(2): 258–272.
- Qutni D, Kristiawan M, Fitriani Y (2021). Human resource management in improving the quality of education. *Edunesia : Jurnal Ilmiah Pendidikan* 2(2): 354–366. doi: 10.51276/edu.v2i2.132
- Renuka Kumar M (2017). Cloud technology and human resource management. *Annual Research Journal of SCMS, Pune* 5: 82–91.
- Reynolds C (2020). The advantages of using technology in human resource training and development. *Annual Research Journal of SCMS, Pune* 8: 46–62. doi: 10.13140/RG.2.2.23437.28647
- Ritter A (2021). *The Impact of Technological Era in Human Resource Management* [Master's thesis]. NOVA – School of Business and Economics.
- Shaw K (2004). The human resources revolution: Is it a productivity driver? *Innovation Policy and the Economy* 4: 69–114. doi: 10.1086/ipe.4.25056162
- Skordoulis M, Chalikias M, Drosos D, Koniordos M (2015). Staff recruitment process and methods: The case of the mobile telephony industry in Greece. In: *Communications in Computer and Information Science, Proceedings of the Creativity in Intelligent Technologies & Data Science Conference*; Volgograd, Russia.
- Stamouli MA, Balis C, Apostolakis I (2012). Integration of informatics and health informatics into health educational programs of higher education in Greece. *European Journal for Biomedical Informatics* 08(1): 8–15. doi: 10.24105/ejbi.2012.08.1.3

- Stone DL, Deadrick DL, Lukaszewski KM, Johnson R (2015). The influence of technology on the future of human resource management. *Human Resource Management Review* 25(2): 216–231. doi: 10.1016/j.hrmr.2015.01.002
- Sukawati NN, Gunawan I, Ubaidillah E, et al. (2020). Human resources management in basic education schools. In: *Proceedings of the 2nd Early Childhood and Primary Childhood Education (ECPE 2020)*. pp. 292-299.
- Susan W (2013). Teachers' Perceptions on the Use of Information Communication Technology in the Administration of Public the Catholic University of Eastern Africa. September. Available online: <http://ir.cuea.edu/jspui/bitstream/1/75/1/Alice%20Susan%20Wanjala.pdf> (accessed on 13 May 2023).
- Taherdoost H (2016). Sampling methods in research methodology; How to choose a sampling technique for research. Available online: <https://ssrn.com/abstract=3205035> (accessed on 9 May 2023).
- Taniser, N (2016). HRIS in the Cloud: A Comparative Approach to On-premise and In-cloud Human Resources Information Systems. Available online: <http://urn.fi/URN:NBN:fi:aalto-201609083658> (accessed on 15 June 2023).
- Tidd J, Trehella MJ (1997). Organizational and technological antecedents for knowledge acquisition and learning. *R&D Management* 27(4): 359–9375.
- Tigere M (2020). Perceptions of School Management Teams on Information and Communication Technology Integration in Township and Rural Secondary Schools in Kwazulu-Natal [PhD thesis]. University of South Africa.
- Tsakanikas A, Danchev S, Giotopoulos I, et al. (2014). ICT adoption and digital growth in Greece. *Foundation for Economic & Industrial Research* 13: 1–91.
- Tung LL, Rieck O (2005) Adoption of electronic government services among business organizations in Singapore. *Journal of Strategic Information Systems* 14: 417–440. doi: 10.1016/j.jsis.2005.06.001
- Vasudevan H (2021). Resource-based view theory application on the educational service quality. *International Journal of Engineering Applied Sciences and Technology* 6(6): 174–186.
- WHO (2016). Global strategy on human resources for health: Workforce 2030. Available online: <https://www.who.int/publications/i/item/9789241511131> (accessed on 11 March 2023).
- Zacharoula L (2019). Innovate practices in education management in Greece. *Economics and Management* 16(2): 141–156.