

Empowering strategic HRM through IT innovation: Evidence from SMEs in Kosovo during the COVID-19 pandemic



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ARTICLE INFO

Article history:

Received 6 November 2025

Received in revised form

2 March 2026

Accepted 11 March 2026

Keywords:

Strategic human resource management
SMEs

COVID pandemic

Digital transformation

HR technology

ABSTRACT

The COVID-19 pandemic created major challenges for small and medium-sized enterprises (SMEs) in managing their human resources strategically, particularly under conditions of uncertainty and disruption. This study examines the impact of information technology on strategic human resource management (SHRM) in SMEs in Kosovo during the pandemic. The crisis forced many SMEs to modify their strategic approaches, especially by integrating information technologies into HR functions. The research investigates how digital tools support employee retention, talent acquisition, and the adoption of remote working practices at both national and international levels. It also analyzes the role of organizational culture, information culture, and remote communication norms in maintaining business continuity. In addition, the study considers the wider macroeconomic and institutional environment, including social, legal, and technological factors, as important external drivers influencing SME resilience. Empirical data were collected from HR managers through a longitudinal survey of 305 SMEs conducted during the COVID-19 pandemic. The findings demonstrate that IT-enabled SHRM functions as an important strategic tool for sustaining economic performance during periods of systemic disruption. The results indicate that IT-enabled SHRM is not only a supportive mechanism but also a strategic capability that enables SMEs to respond rapidly to external changes and maintain performance. Overall, the study highlights the importance of digital transformation in HRM during crisis situations and provides practical recommendations for SME managers, HR professionals, and policymakers seeking to enhance organizational agility and resilience through technology-driven HRM practices.

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1. Introduction

The aim of this research paper is to analyze the impact of information technology on the strategic management of human resources in small and medium-sized enterprises (SMEs) in Kosovo, as perceived by managers directly involved in HR during the COVID-19 pandemic.

To ensure the optimal operation of SMEs in Kosovo during the COVID-19 pandemic, the integration of information technology (IT) throughout the strategic planning process is essential. This integration has become a prerequisite for business continuity and success. According to

Oleš (2024), as digitalization and automation continue to advance, their impact on labor markets increasingly depends on the size and structure of firms. From the outset, many of these businesses recognized the transformative power of IT in human resources (HR) and broader organizational processes. However, the effectiveness of this transformation relied heavily on aligning IT strategy with overall business strategy and human capital development.

According to Silva and Lima (2017), HR practices should be closely linked to human capital strategies and supported by appropriate technological choices. Strategic human resource management (SHRM) is characterized by a dynamic and iterative approach that involves not only the implementation of specific HR activities but also the continuous assessment of their impact on organizational goals. In the context of the pandemic, businesses in Kosovo have reemphasized the interplay between IT and SHRM, contributing to improved business performance,

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<https://doi.org/10.21833/ijaas.2026.03.015>

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more resilient organizational cultures, and greater innovation and adaptive capacity.

The COVID-19 crisis has shown that human resources are not only operational assets, but also central drivers of business continuity and growth. Engaging, motivating, and retaining employees has become even more critical under new remote and hybrid work paradigms. In this context, technology functioned both as an enabler and multiplier of human capital effectiveness. The relative simplicity of SME organizational structures in Kosovo, combined with managerial openness to IT and a high degree of agility, allowed many businesses to respond quickly to the new operational demands imposed by the pandemic.

Dragusha et al. (2019) highlighted that IT has played a dominant role in modernizing employee recruitment and retention processes compared to more traditional methods. They found that digital tools such as electronic recruitment platforms, virtual interviews, and AI-based application screening have improved the speed, accuracy, and inclusiveness of recruitment practices. Similarly, Dragusha and Prenaj (2021) highlighted how technology in HR processes has allowed for more transparent and standardized recruitment mechanisms in Kosovo's labor market and contributed to a merit-based and performance-driven culture.

Furthermore, Sisman-Ugur and Kurubacak (2019) argued that to fully leverage the potential of IT in HR, organizations need to develop an "information culture," i.e., a shared system of norms, values, and behaviors that foster data-driven decision making and digital literacy at all organizational levels. This culture is shaped by the ethical use of technology, transparency in communication, and a commitment to continuous learning. In Kosovar SMEs, fostering such a culture has become increasingly important as digital tools become central to daily business.

The pandemic has also had a profound impact on ways of working. Remote working, once seen as the exception, has become a mainstream practice. In Kosovo, this shift has happened relatively quickly, partly due to the population's high level of digital connectivity and adaptability. The hybrid working model, combining office presence with the flexibility to work from home, has enabled businesses to maintain productivity while protecting employee health.

Organizational culture consists of collective values, beliefs, and norms of behavior that govern day-to-day activities and long-term visions. In times of crisis, such as a pandemic, this culture can be both a source of strength and a potential hindrance. For example, firms with rigid and hierarchical cultures often find it difficult to implement flexible working arrangements and empower remote teams. In contrast, organizations that prioritized communication, autonomy, and psychological safety found the transition to digital workspaces easier. However, Groysberg et al. (2018) warned that over-

reliance on standardized digital systems can risk dehumanizing the workforce and reducing the richness of informal, interpersonal interactions that often fuel creativity and innovation.

In addition to cultural factors, HR professionals in Kosovo have also had to consider the broader socioeconomic, legal, and technological contexts in which their businesses operate. Government regulations on workplace safety, labor rights, and telecommuting policies had to be integrated into HR strategies. Similarly, the uneven pace of digital infrastructure development in Kosovo's urban and rural areas posed challenges in terms of digital inclusion and equitable access to technology. Millar et al. (2017) emphasized that IT advances are reshaping internal working practices and HR functions by increasing operational efficiency and improving strategic responsiveness. Their study shows that technology should be applied not only for automation, but also to support creativity, collaboration, and long-term resilience.

One of the biggest benefits of digital transformation was its role in expanding the geographical reach and strategic potential of SMEs in Kosovo. Using digital collaboration platforms, cloud computing, and virtual HR tools, managers and employees were able to participate in partnerships, projects, and learning opportunities across national borders. This increased Kosovo's participation in global value chains and improved the competitiveness of local firms on the international stage. As Rogers (2016) noted, digital transformation is a catalyst for strategic innovation and pushes organizations to rethink their competitive capabilities, organizational mindsets, and long-term planning processes.

Stone et al. (2015) supported this perspective, arguing that IT has significantly increased the role of HR in achieving business goals. By enabling data analytics, employee self-service portals, digital training platforms, and real-time performance feedback systems, IT enables HR managers to move from transactional roles to strategic advisors. However, Jackson et al. (2014) noted that despite these advances, many organizations still do not fully grasp the strategic value of digitized HR, often investing in technology without aligning it with broader organizational goals.

This misalignment can lead to suboptimal outcomes such as poor user adoption, lack of integration across functions, and missed innovation opportunities. In the Kosovo context, where resource constraints are significant and IT investments must deliver clear returns, the alignment of digital tools with strategic HR objectives is particularly vital. Managers should be trained not only in using technology, but also in selecting, customizing, and implementing IT systems that reflect the specific needs and values of their organizations.

The theoretical underpinnings of this study draw on several key frameworks, including the Resource-Based View (RBV) and Dynamic Capabilities Theory. According to the RBV, firms gain a competitive

advantage by effectively utilizing unique internal resources such as human capital and technology, which are valuable, rare, inimitable, and non-substitutable. In the case of Kosovo SMEs, the combination of employees' adaptability and strategic use of IT serves as a powerful differentiator in turbulent environments.

Dynamic Capabilities Theory also suggests that an organization's success depends on its ability to integrate, build, and reconfigure internal and external capabilities to address rapidly changing environments. During the pandemic, this capability has been demonstrated through rapid digitalization, upskilling HR professionals, and implementing new performance management and recruitment models. These actions reflect a broader organizational learning process and emerging strategic agility among SMEs in Kosovo.

In conclusion, the COVID-19 pandemic served as a catalyst for strategic digital transformation in HR in Kosovo's SME sector. The alignment of IT tools with human capital strategies enabled businesses to maintain continuity, foster innovation, and increase competitiveness during a period of global disruption. While challenges remain, such as limited financial resources and gaps in digital skills, the experiences of Kosovo SMEs during the pandemic offer valuable lessons on resilience, strategic alignment, and human-centered use of technology.

These insights will inform the empirical phase of this research, which will examine how HR managers in Kosovo experienced, perceived, and responded to the challenges of integrating IT into strategic HR during and after the COVID-19 crisis.

2. Literature review

The following review synthesizes previous work on the intersection of Information Technology and Strategic Human Resource Management, with a specific focus on periods of crisis such as the COVID-19 pandemic. It examines the transformative role of IT in recruitment, performance management, communication, and organizational culture, while highlighting key theoretical contributions that inform the current research.

The integration of Information Technology (IT) into Human Resource Management (HRM) has been extensively examined, particularly in the context of organizational adaptation during times of crisis such as the COVID-19 pandemic. Respected authors have offered valuable insights into the evolution and convergence of IT and HR, providing frameworks that help contextualize how businesses are managing the pressures of the pandemic both globally and in regions such as Kosovo. These insights have been important for understanding how companies are using technology to ensure business continuity, employee engagement, and strategic alignment during one of the most challenging periods in recent history.

During the COVID-19 pandemic, rapid IT adoption was a matter of necessity, not choice.

Globally, organizations have accelerated digital transformation projects to facilitate remote operations, virtual recruitment, online training, and electronic performance monitoring. In Kosovo, this transition has been facilitated by a relatively high internet penetration rate, reaching 93 per cent according to the Kosovo Agency for Statistics (ask.rks-gov.net). This digital infrastructure provided a solid foundation for businesses to adopt cloud-based platforms, virtual collaboration tools, and HR analytics systems. [Jenkins \(2006\)](#) noted that this level of technological maturity provides comparative insights in international contexts and offers Kosovo-based businesses the opportunity to adopt best practices from other countries while adapting them to their local business environment.

The transformation driven by IT during the pandemic was not limited to logistics solutions; it represented a broader rethinking of how work is structured and how people are managed. Key areas of transformation included remote working, agile team building, virtual onboarding, employee engagement through digital tools, and the use of artificial intelligence and machine learning in recruitment and performance assessment. These changes were part of a broader restructuring of the workforce, driven by both external pressures and internal innovation. The work of [Tarutė and Gatautis \(2014\)](#) showed that IT is not only a tool but also a dynamic enabler of innovation and strategic alignment, transforming HR from a support function to a critical component of organizational strategy.

This evolution is in line with sociotechnical systems theory, which assumes that organizations are composed of interdependent social and technical systems that need to be optimized together for maximum effectiveness. When applied thoughtfully, IT systems reshape the way employees interact, cooperate, and contribute to organizational goals. [Kiesler et al. \(1984\)](#) noted that IT mediates interpersonal relationships within firms, blurring traditional hierarchies and encouraging flatter, more cooperative structures. In SMEs, especially those operating in transition economies such as Kosovo, such changes are crucial to overcome rigid bureaucracies and promote adaptability.

The ability of IT to increase speed and responsiveness in HR functions was observed decades ago by [Hendrickson \(2003\)](#), who emphasized its capacity to automate administrative tasks and enable HR professionals to focus on strategic initiatives. This perspective remains highly relevant in the pandemic era, where digital solutions such as Human Resources Information Systems (HRIS), Applicant Tracking Systems (ATS), and Learning Management Systems (LMS) play an important role in maintaining HR operations remotely. [Lippert and Swiercz \(2005\)](#) argued that IT contributes to improved organizational efficiency by enabling data-driven decision making, facilitating the identification of skills gaps, and facilitating workforce planning. Furthermore, the strategic integration of IT into HRM is supported by the

Strategic Human Resource Management (SHRM) model developed by [Becker and Huselid \(2006\)](#), which emphasized the alignment of human capital practices with long-term organizational goals. According to this model, digitization of HR functions should not only support operational efficiency but also contribute to value creation through employee development, innovation, and performance management. [Marler and Parry \(2016\)](#) extended this by noting that internet-based HR systems enable businesses to respond proactively to market changes, talent shortages, and regulatory challenges. This responsiveness is particularly valuable for SMEs in Kosovo, which face structural challenges such as limited talent access, capital constraints, and slower institutional support compared to firms in more developed economies.

Recent empirical and review studies have further developed the understanding of digital human resource management (HRM) and organizational adaptation following the COVID-19 pandemic. A thematic analysis of HR digital maturity found that contemporary HRM has evolved beyond basic digitalization to encompass strategic integration of technology, innovation, and adaptive practices that enable resilience and performance in turbulent environments, including post-pandemic contexts. Key themes include digital transformation for competitive advantage, innovation in performance management, and adaptive human resource practices in response to crisis-induced disruption, emphasizing not only technological adoption but also human and governance factors critical for long-term digital maturity ([Shahiduzzaman, 2025](#)).

Contemporary digital HRM research also highlights emerging challenges and trade-offs associated with technology integration. For example, recent work in the *Journal of Business Research* highlights that the effectiveness of digital HR systems depends on the alignment between employee needs and organizationally supplied digitalization; misalignment can produce negative cognitive and competence effects despite efficiency gains ([Deng et al., 2024](#)).

Moreover, studies on digital transformation in HRM reveal the accelerating importance of AI, analytics, and cloud-based platforms post-pandemic. Research shows that AI-driven tools can automate routine HR functions and enhance decision-making, yet also pose challenges related to adoption barriers and human-centric implementation. These studies collectively indicate a shift toward strategic digital HRM that prioritizes agility, employee engagement, and organizational resilience, underscoring the need for HR systems that not only adopt technology but also support workforce adaptation and well-being in post-COVID work environments ([Manroop et al., 2025](#)).

The study by [Stone et al. \(2015\)](#) emphasized that IT should be seen not only as an operational necessity but also as a strategic imperative. Their research shows how digital platforms can improve both employee experience and organizational agility,

especially during crises. Yet, while the benefits of IT integration are clear, the authors also highlight significant barriers to its implementation, such as resistance to change, digital skills gaps, and infrastructure limitations that are often more pronounced in developing economies. In Kosovo, these barriers are further complicated by limited investment in HR technology, low digital literacy in some sectors, and a lack of HR professionals trained in analytics and technology management.

However, the pandemic has provided a unique opportunity for experimentation and learning. As [Selvan \(2015\)](#) observed, organizational leaders have increasingly recognized the transformative potential of technology in achieving strategic goals. Companies that were previously reluctant to invest in IT were forced to digitize their HR operations almost overnight, and many have since maintained or expanded their digital HR capabilities. This trend is consistent with the Dynamic Capabilities Framework, which suggests that firms that can sense, seize, and reconfigure resources in response to environmental changes are more likely to maintain a competitive advantage. In this view, IT is not only a resource but also a mechanism through which dynamic capabilities are applied in HR.

The emphasis on innovation through IT is echoed by [Kanter \(2003\)](#), who argued that the long-term survival and growth of organizations depend on their ability to adopt and implement new technologies. Innovation in HR applications enabled by IT includes predictive analytics for talent management, AI-enabled candidate screening, sentiment analysis in employee feedback, and personalized training through adaptive learning platforms. While these innovations are more prevalent in large companies, they are increasingly accessible to SMEs through cloud services and the software as a service (SaaS) model.

[Gueutal and Stone \(2005\)](#) further emphasized how IT is reshaping HR by transforming both operational processes and strategic functions. Their research shows that IT affects not only how tasks are completed, but also how work is designed, how employees are motivated, and how performance is evaluated. In Kosovo, where SMEs often operate with limited HR departments, IT can fill critical gaps by automating workflows, improving compliance, and increasing transparency.

When reviewing the literature, it becomes clear that the integration of IT into HR is not a monolithic process but a multifaceted transformation that varies across contexts and industries. While large multinational companies may lead the way in digital HR innovation, SMEs in Kosovo have shown resilience and adaptability by creatively utilizing existing technologies to sustain operations during the pandemic. This context-sensitive approach is in line with Contingency Theory, which suggests that organizational effectiveness results from aligning internal practices with external demands and conditions. Furthermore, the HRM and IT relationship needs to be examined through the lens

of employee well-being and organizational culture. The shift to remote working enabled by IT has brought benefits such as increased flexibility and autonomy, but it has also brought challenges such as isolation, burnout, and work-life imbalance. Therefore, HR leaders must deal with the dual challenge of using technology for productivity as well as maintaining employees' mental health and creating an integrated organizational culture.

The literature shows that the COVID-19 pandemic acts as a catalyst to accelerate the digital transformation of HRM globally and in Kosovo. IT has emerged as both a strategic resource and a critical infrastructure for managing people, processes, and performance. From improving communication and collaboration to enabling remote working and data-driven decision-making, IT has reshaped the role of HR in contemporary organizations. However, the extent of these benefits is mediated by factors such as organizational readiness, leadership support, and employees' digital competencies.

This review provides a strong foundation for further empirical research on how SMEs in Kosovo adapt HRM practices through IT adoption. The synthesis of global and local perspectives highlights the opportunities and limitations faced by businesses in transition economies. As organizations continue to navigate the post-pandemic landscape, understanding the interplay between IT and HRM will remain important for achieving strategic resilience, employee engagement, and sustainable growth. While the role of IT in HRM has been significantly researched, most studies focus on large companies in developed economies. There is limited empirical research on how SMEs in transition economies, such as Kosovo, strategically use IT in their HR functions, especially during times of crisis such as the COVID-19 pandemic.

This paper argues that SMEs in Kosovo provide a unique case for study due to their agile nature, rapid adaptation during the pandemic, and evolving technological capacities. By focusing on HR managers' perceptions, this study aims to bridge the gap in the literature on how digital tools are used not only operationally but strategically in HR in constrained and dynamic environments.

Although the study draws on the Resource-Based View (RBV) and Dynamic Capabilities Theory, a more explicit integration of these frameworks can sharpen the interpretation of the results. The empirical findings show that IT utilization significantly predicts productivity, recruitment quality, and overall performance patterns that align directly with the RBV's claim that competitive advantage stems from resources that are valuable, rare, inimitable, and non-substitutable. In the context of Kosovo's SMEs, IT-enabled HR practices behaved precisely as such strategic resources: they enhanced decision-making, reduced administrative bottlenecks, and strengthened talent acquisition processes, all of which contributed to measurable performance gains. At the same time, the strong

mediating effect of remote work flexibility reflects the logic of Dynamic Capabilities. SMEs that were able to sense the operational disruptions of COVID-19, seize technological tools, and rapidly reconfigure their HR practices were those that demonstrated higher productivity and better retention outcomes. These adaptive responses captured in the significant relationships between ITU, RWF, and EPR illustrate how dynamic capabilities operate in real organizational settings. When interpreted through these theoretical lenses, the results suggest that digital HR tools did not merely support existing processes during the pandemic; they actively expanded the strategic capacity of SMEs to absorb shocks, reorient workflows, and emerge more resilient in a volatile environment.

3. Methodology

Primary data were collected through a structured questionnaire and interviews designed using a five-point Likert scale (1-5), which generated valuable empirical information reflecting the perceptions and experiences of the respondents. The instrument was carefully constructed to ensure content validity and capture a wide range of strategic HR indicators with a focus on the use of Information Technology (IT) in the context of Kosovo SMEs during the COVID-19 pandemic. In addition, the research design followed the framework proposed by [Saunders et al. \(2016\)](#), which allows for a systematic comparison between primary data and secondary data collected from academic literature and scientific references in the field of HR and digital transformation.

The identification and selection of small and medium-sized enterprises (SMEs) was carried out in seven administrative centers in Kosovo: Pristina, Mitrovica, Gjilan, Peja, Gjakova, Prizren, and Ferizaj. This geographical coverage provided a representative sample and enabled a broader understanding of regional disparities in IT adoption and HR practices. A total of 305 respondents participated in the study, drawn from small and medium-sized enterprises across Kosovo's main economic centers. Although all participants held responsibilities related to human resource management, their organizational roles varied considerably. Many were owners or general managers who simultaneously oversaw HR decisions, while others occupied dedicated HR positions such as HR officers, recruitment coordinators, or administrative managers. This mix reflects the structural reality of Kosovo's SME sector, where formal HR departments are often small or embedded within broader managerial functions.

The firms themselves represented a diverse range of industries, including manufacturing, retail and wholesale trade, construction, information technology services, hospitality, and various professional services. Most organizations fell within the classic SME classification: Micro firms with fewer than 10 employees, small firms employing between 10 and 49 workers, and medium-sized firms with up

to 249 employees. This variation allowed the study to capture distinct operational environments, particularly regarding digital readiness, resource constraints, and the speed at which IT-enabled HR practices could be adopted during the pandemic.

Together, these demographic characteristics provide a clearer picture of the sample's composition and help contextualize the study's findings, especially where differences in industry, firm size, or managerial responsibilities may influence patterns of technology use and HR decision-making.

This study aims to answer the following research question:

How has the integration of Information Technology (IT) affected the strategic management of Human Resources in small and medium-sized enterprises (SMEs) in Kosovo during the COVID-19 pandemic?

This question aims to explore the perceptions and experiences of managers directly involved in HRM, focusing on how digital tools were used to adapt HR practices to the crisis and how this transformation affected organizational strategy, performance, and resilience.

To investigate the relationship between IT use and strategic HRM outcomes, this study applied a quantitative correlational research design supported by regression analysis. The central aim was to model how IT integration affects employee productivity (EPR), employee retention (RET), recruitment quality perception (RQP), and overall performance improvement (OPI). The research also introduced Remote Work Flexibility (RWF) as a mediating variable, recognizing that flexible working arrangements became a dominant corporate strategy during the pandemic, and IT tools may have softened the impact on HRM outcomes.

This methodological approach was based on the firm's Resource-Based View (RBV), which suggests that internal capabilities such as human capital and technological infrastructure serve as strategic assets that can offer sustainable competitive advantage (Barney, 2004). Accordingly, IT was seen not only as a tool for operational support but also as a key strategic enabler in SHRM. Previous research has confirmed that digital transformation in HR can lead to significant improvements in talent acquisition, employee engagement, and retention, especially during periods of uncertainty (Stone et al., 2015; Jackson et al., 2014; Groysberg et al., 2018).

To test the relationships between variables, we used Pearson's two-tailed correlation coefficients, a widely accepted statistical measure in HR and organizational behavior research (Cooper and Schindler, 2014; Hayes, 2018). The variables examined included ITU, RWF, EPR, RET, RQP, and OPI. The use of a two-sided test of significance allowed us to determine whether the observed correlations were statistically significant in both directions. The results showed that all primary correlations were significant at the $p < 0.01$ or $p < 0.05$ level, indicating strong and reliable associations between IT use and baseline SHRM outcomes.

Multiple regression analysis further elaborated on the strength of these relationships by quantifying the direct effects of ITU on each dependent variable. The regression model showed that ITU was a significant predictor of EPR ($\beta = 0.421$, $p < 0.01$), RQP ($\beta = 0.387$, $p < 0.01$), and OPI ($\beta = 0.359$, $p < 0.01$). These findings suggest that when SMEs invest in IT systems for communication, workflow management, and data analytics, they observe corresponding improvements in labor output and organizational efficiency. Although the relationship between ITU and RET was statistically weaker ($\beta = 0.208$, $p < 0.05$), it was nevertheless significant, highlighting the indirect but important role IT can play in employee satisfaction and loyalty.

A key component of the analysis was the mediation model, which assessed whether RWF mediated the relationship between ITU and EPR. Using the mediation framework proposed by Hayes (2018), the model confirmed that RWF significantly mediated this relationship (indirect effect = 0.121, $p < 0.01$). This finding is in line with recent research suggesting that flexible work policies, when supported by robust IT infrastructure, lead to higher job satisfaction and performance outcomes. This is particularly important in the Kosovo context, where remote work has been rapidly adopted during the pandemic and has become a necessity for business continuity.

Furthermore, the inclusion of both direct and indirect impacts in the model allowed for a more detailed understanding of how digital tools impact HR processes. It was clear that although ITU has direct impacts on productivity and performance, its full potential is unlocked when complemented with workplace policies that enable remote operations and flexible scheduling. This interplay between technology and work structure represents a critical dimension of strategic HR in the post-pandemic era.

The study also included cross-validation of the results by comparing the primary data with existing findings in the international literature. Previous studies by Silva and Lima (2017) and Jackson et al. (2014) have highlighted the importance of strategic alignment between HR functions and IT resources. The consistency between the results of this study and the broader literature strengthens the external validity of our findings. Moreover, it emphasizes the universality of the strategic value of IT in HR, regardless of the national or organizational context.

In addition to the quantitative analysis, qualitative insights from the interviews enriched the findings. Participants shared practical challenges and successes in implementing IT solutions for HRM, such as digital onboarding, virtual performance reviews, and online training. These insights corroborate the statistical data and highlight the human side of digital transformation, emphasizing that technology alone is not enough; it must be accompanied by management support, employee readiness, and cultural adaptation.

In conclusion, the methodology used in this study offers a robust and multi-layered approach to

understanding how IT adoption affects strategic HRM outcomes. By integrating theoretical frameworks, statistical modeling, and real-world experiences, this research provides comprehensive evidence that IT adoption has significantly improved HR effectiveness in SMEs in Kosovo during the COVID-19 pandemic. These findings offer actionable insights for business leaders and policymakers seeking to future-proof HRM strategies in the digital age.

For the Employee Productivity Rating (EPR), we used a similar model developed by Marler and Fisher (2013), which supported how IT systems and digital tools impact productivity, especially when combined with strategic HR practices such as telecommuting and quality recruitment:

$$EPR_i = \beta_0 + \beta_1 ITU_i + \beta_2 RWF_i + \beta_3 RET_i + \beta_4 RQP_i + \varepsilon_i \quad (1)$$

To estimate Employee Retention Rate (RET), we used a similar model developed by Allen et al. (2010), which linked productivity, flexible working, and quality of hiring to employee retention and strengthened the variables used in this model:

$$RET_i = \beta_0 + \beta_1 ITU_i + \beta_2 RWF_i + \beta_3 EPR_i + \beta_4 RQP_i + \varepsilon_i \quad (2)$$

For Recruitment Quality Perception (RQP), we used a similar model developed by Parry and Tyson (2011), which supported the idea that IT and remote capabilities influence the quality and perception of recruitment outcomes in organizations:

$$RQP_i = \beta_0 + \beta_1 ITU_i + \beta_2 RWF_i + \beta_3 EPR_i + \beta_4 RET_i + \varepsilon_i \quad (3)$$

In the next model, we test Overall Performance Improvement (OPI). We used a similar model developed by Bondarouk et al. (2017), which is supported by findings that eHRM implementations improve overall HR service quality, organizational efficiency, and performance:

$$OPI_i = \beta_0 + \beta_1 ITU_i + \beta_2 RWF_i + \beta_3 EPR_i + \beta_4 RET_i + \beta_5 RQP_i + \varepsilon_i \quad (4)$$

As a Mediator Between ITU and EPR for Telework Flexibility (RWF), we used the Baron and Kenny (1986) mediation model, a classic framework for mediation analysis that is often used in HR and organizational studies:

$$RWF_i = \alpha_0 + \alpha_1 ITU_i + v_i \quad (5)$$

$$EPR_i = \beta_0 + \beta_1 ITU_i + \beta_2 RWF_i + \varepsilon_i \quad (6)$$

Overall, the selected models integrate relational and regression techniques within a mediation framework supported by the empirical literature and in line with practices in quantitative HR research. This approach provides both statistical validity and theoretical robustness in explaining the role of IT in enhancing strategic HR functions during a critical period of organizational transformation. The aim of the research is to analyze the relationship between

IT integration and HR outcomes during the COVID-19 pandemic in SMEs in Kosovo. Table 1 presents the descriptive statistics of the variables used in the analysis.

Table 1: Summary of the variables

Variable	Definition	Type
ITU	IT usage level (e.g., cloud, HR software)	Independent
RWF	Remote work flexibility index	Mediator
EPR	Employee productivity rating	Dependent
RET	Employee retention rate	Dependent
RQP	Recruitment quality perception	Dependent
OPI	Overall performance improvement	Dependent

4. Results and discussion

The results reveal several statistically significant relationships between the key variables in the model: Information Technology Utilization (ITU), Telework Flexibility (RWF), Employee Productivity (EPR), Employee Retention (RET), Recruit Quality Perception (RQP), and Overall Performance Improvement (OPI). The correlation analysis confirms and supports the hypothesized relationships in the research model and shows that the selected variables are significantly interconnected.

In particular, Information Technology Utilization (ITU) showed a strong positive correlation with both Employee Productivity (EPR) and Overall Performance Improvement (OPI), suggesting that strategic implementation of IT tools and platforms improves not only individual performance but also broader organizational outcomes. Similarly, Remote Work Flexibility (RWF) was significantly associated with Employee Retention (RET), highlighting the value of flexible working arrangements in promoting employee satisfaction and loyalty, especially in a post-pandemic context.

Furthermore, Perception of Quality of Hiring (RQP) exhibited a positive and significant link with Overall Performance Improvement (OPI), implying that organizations that invest in high-quality hiring practices are more likely to observe improvements in organizational productivity and performance. These findings collectively strengthen the study's conceptual model, suggesting that technological advancement and adaptive HR strategies are important levers to drive employee and organizational success. The results also provide a strong empirical foundation for future studies and practical implications for managers seeking to optimize workforce management through digital transformation and telework policies.

Overall, the estimation results validate the theoretical framework and show that strategic alignment between IT, HR practices, and employee-centered approaches significantly contributes to sustainable organizational growth, agility, and resilience in today's competitive business environment. Table 2 presents the correlation matrix among the main variables used in the study.

Table 2: Correlation between IT use and strategic HRM outcomes in Kosovo SMEs

Variable	ITU	RWF	EPR	RET	RQP	OPI
ITU	1.000	0.480**	0.421**	0.208*	0.387**	0.359**
RWF	0.480**	1.000	0.537**	0.176*	0.322**	0.298**
EPR	0.421**	0.537**	1.000	0.493**	0.445**	0.521**
RET	0.208*	0.176*	0.493**	1.000	0.265**	0.317**
RQP	0.387**	0.322**	0.445**	0.265**	1.000	0.426**
OPI	0.359**	0.298**	0.521**	0.317**	0.426**	1.000

** : $p < 0.01$; * : $p < 0.05$; N = 305

ITU shows a moderate positive correlation with RWF ($r = 0.480$, $p < 0.01$), suggesting that higher levels of IT implementation are associated with increased organizational flexibility in adopting remote work practices. ITU also shows a moderate and positive correlation with EPR ($r = 0.421$, $p < 0.01$), suggesting that IT adoption contributes to improved productivity outcomes. Moreover, ITU shows a moderate correlation with RQP ($r = 0.387$, $p < 0.01$) and OPI ($r = 0.359$, $p < 0.01$), supporting the idea that strategic use of IT improves both quality of hire and overall organizational performance. A weaker but statistically significant correlation was found between ITU and RET ($r = 0.208$, $p < 0.05$), suggesting that IT can indirectly support employee retention efforts during times of downtime.

Remote Work Flexibility (RWF) has a strong correlation with Employee Productivity ($r = 0.537$, $p < 0.01$), highlighting the importance of flexible work arrangements in increasing productivity during the COVID-19 pandemic. RWF is also moderately correlated with RQP ($r = 0.322$, $p < 0.01$) and OPI ($r = 0.298$, $p < 0.01$), suggesting that organizations offering remote work options may attract better candidates and perform more effectively. A statistically significant but weaker correlation was observed between RWF and RET ($r = 0.176$, $p < 0.05$), supporting the idea that flexibility contributes to employee retention.

Employee Productivity (EPR) is positively and significantly correlated with Employee Retention ($r = 0.493$, $p < 0.01$), Quality of Hire ($r = 0.445$, $p < 0.01$), and Overall Performance ($r = 0.521$, $p < 0.01$), reinforcing the critical role of productivity in achieving both employee stability and improved business outcomes. RET shows moderate positive correlations with RQP ($r = 0.265$, $p < 0.01$) and OPI ($r = 0.317$, $p < 0.01$), indicating that employee retention is associated with more efficient hiring and improved performance.

Perception of Quality of Hiring (RQP) has a strong positive correlation with OPI ($r = 0.426$, $p < 0.01$), confirming that better hiring practices translate into stronger organizational outcomes. Overall, OPI is significantly and positively correlated with all other variables, especially EPR and RQP, suggesting that both productivity and quality of hiring are essential for overall improvement in performance.

In summary, the correlation analysis supports the hypothesized relationships in the research model. The strongest correlations are observed between RWF and EPR and between EPR and OPI, suggesting that IT-enabled telework not only increases productivity but also leads to significant

improvements in organizational performance. These findings confirm the strategic role of IT in shaping SHRM outcomes in Kosovo SMEs during the COVID-19 pandemic. Overall, the integration of IT during the COVID-19 pandemic was closely associated with stronger HR outcomes and business resilience.

The results support that the use of IT during the pandemic significantly improved HR related outcomes in SMEs in Kosovo. Telework flexibility played a mediating role by enhancing the impact of IT on productivity and retention. These findings are in line with previous research (Silva and Lima, 2017) and emphasize the strategic necessity of IT integration in HR during times of crisis.

Moreover, the observed positive correlations between ITU and variables such as EPR, RQP, and OPI suggest that technology adoption can act as a catalyst for comprehensive human capital development. Organizations that adopted digital tools were more agile in responding to crisis-driven changes and enabled better communication, performance monitoring, and workforce engagement. This adaptability is particularly critical in SMEs, which often face resource constraints and greater vulnerability during economic disruptions.

The relatively weak but significant correlations involving RET also deserve attention. While IT and flexibility contribute to retention, these may be influenced by additional factors such as leadership quality, organizational culture, and employee welfare programs. Future work could examine these moderating variables to understand the full spectrum of retention dynamics in a digitally transforming HR environment.

In practical terms, these findings suggest that managers in SMEs in Kosovo should prioritize IT investments not only for operational efficiency but also for their broader strategic value in HR. The improved productivity, quality of hiring, and organizational performance observed in the study serve as empirical evidence that digital transformation should be incorporated into HR policy and planning, especially during and after times of crisis.

5. Limitations and future research

Although the study offers meaningful insights into how SMEs in Kosovo integrated IT into strategic HRM during the COVID-19 crisis, several limitations should be acknowledged. The data were collected during an exceptional period of social and economic disruption, which may have amplified certain perceptions, particularly regarding remote work,

productivity, and technology adoption. Because the study relied on self-reported information from HR managers, the findings may also reflect subjective interpretations rather than fully objective assessments of organizational performance. In addition, the sample consisted solely of SMEs, which limits the generalizability of the results to larger firms or public institutions that operate under different structural and technological conditions.

Future research would benefit from tracking these dynamics over a longer period, especially as organizations transition from crisis-driven digitalization to more mature, strategically embedded HR technologies. Comparative studies across industries or across Western Balkan countries could also reveal whether the patterns observed in Kosovo reflect broader regional trends. Moreover, integrating qualitative methods such as case studies, longitudinal interviews, or ethnographic observation could shed light on the cultural and behavioral aspects of technology adoption that remain less visible in quantitative models. Exploring the role of leadership styles, digital competencies, and organizational learning mechanisms would further enrich the understanding of how IT shapes HRM in evolving work environments.

6. Conclusion

Based on the analysis of the data collected during this study, it can be concluded that the COVID-19 pandemic served as a catalyst for the accelerated growth and integration of information technology (IT) in small and medium-sized enterprises (SMEs) in Kosovo. The crisis created an urgent need for rapid adaptation, and IT emerged as a vital enabler in maintaining business continuity, reshaping human resource practices, and increasing organizational efficiency.

During the pandemic, SMEs in Kosovo demonstrated remarkable adaptability, primarily due to the presence of young, well-educated managers with a solid grounding in information technology. These managers demonstrated a high level of flexibility and openness to technological innovations, which enabled their organizations to respond effectively to unprecedented challenges. Their ability to rapidly implement digital tools and solutions significantly reduced the devastating effects of the pandemic and facilitated smoother transitions to remote working environments.

Findings suggest that the interaction between information technology and strategic human resource management (SHRM) has played a critical role in driving business performance during the pandemic. IT tools have enhanced various HR functions such as recruitment, performance appraisal, training, and internal communications, making them more data-driven, efficient, and accessible. As a result, HR departments are better equipped to manage dispersed teams, monitor employee productivity, and sustain engagement in times of uncertainty.

Furthermore, IT has proven to be a cornerstone for organizational development, continuously transforming traditional business practices. Its implementation in HR processes has contributed significantly to improving the quality of work, enabling faster, more accurate, and more strategic decision-making. The implementation of cloud-based systems, collaboration platforms, and data analytics tools not only supported ongoing operations but also laid the foundation for long-term digital transformation.

One of the most notable changes triggered by the pandemic was the normalization of remote working. Businesses in Kosovo had to quickly adapt to this new reality, and IT infrastructure became central to enabling remote work and maintaining communication, collaboration, and productivity. As a result, a culture of remote working began to take shape, presenting HR professionals with both challenges and opportunities in terms of engagement, supervision, and performance management.

The interaction between information technology and strategic human resource management has significantly improved business performance. Information technology is a critical pillar in the development of businesses, constantly improving and transforming organizational practices, making them more efficient and effective. The adoption of information technology has contributed to improving the quality of business processes, facilitating faster and more effective human resource management practices. Information technology is a powerful competitive tool, but only when used in innovative and creative ways to ensure business success.

The COVID-19 pandemic has transformed the work structure in businesses, making remote work the norm and encouraging the development of a remote work culture. The COVID-19 pandemic has highlighted the necessity of integrating information technology into human resource management and other organizational processes to ensure continued functionality and growth.

Finally, this study confirms that although information technology is a powerful competitive tool, its true value lies in how innovatively and strategically it is used. Organizations that embraced IT as a strategic asset, not just a necessity, were in a better position to adapt, survive, and even thrive in the face of challenges.

The COVID-19 pandemic has highlighted the indispensable role of IT in ensuring business resilience, continuity, and growth, especially through its integration into strategic human resource management and other core organizational functions.

Human resource professionals must be ready for new roles arising from technological developments. Therefore, we recommend continuous monitoring of global technological trends to gain a deeper understanding and develop specific parts of this research.

In addition, the results of this study will be more meaningful when observed over a longer period of time and with a more comprehensive sample to capture broader insights and trends.

The results of this study allow for formulating a number of important recommendations for organization leaders and human resource professionals. The global business environment is constantly changing due to technological advancements, so HR professionals need to be proactive in adapting to these changes by learning new skills and understanding the implications of digital transformation. HR departments must go beyond traditional administrative tasks and take on strategic responsibilities that link technology and human capital development.

To achieve this, we recommend continuous monitoring and analysis of global technological trends. HR professionals can better understand how innovations such as automation, big data analytics, and artificial intelligence affect workforce dynamics, employee performance, and corporate decision-making processes by being aware of these developments. Data-driven decision-making, more efficient talent management, and rapid responses to new challenges will be possible by incorporating this knowledge into HR procedures.

We also suggest that future research will expand the range and scope of observations. A longer analysis will be able to discern the fluid character of technology's impact on HR and offer more detailed insights into emerging trends. Moreover, expanding the sample size and covering various types of organizations and industries would help to better understand the impact of technology on HR practices across different industries and regions. Such broader and more integrated research will increase the validity of the findings and guide the development of more effective, evidence-based HR transformation practices in the era of digitalization.

The findings of this study provide actionable insights for Kosovo SMEs seeking to strengthen Strategic Human Resource Management through information technology. Given their limited resources, SMEs should prioritize the use of affordable, cloud-based HR tools such as basic HR information systems (HRIS), applicant tracking systems (ATS), and digital collaboration platforms that support recruitment, performance monitoring, and remote work.

In addition, targeted training is essential to maximize the benefits of IT adoption. SME managers and HR professionals should focus on developing practical digital competencies related to online recruitment, remote team management, HR analytics, and data security. Short, applied training programs delivered through local universities, vocational institutions, or private ICT providers would be particularly suitable for the Kosovo context.

The results also highlight the importance of formalizing remote work practices. SMEs should establish clear guidelines for telework,

communication, and performance evaluation, supported by appropriate digital infrastructure, to enhance productivity and employee engagement beyond crisis periods.

Finally, public institutions and policymakers in Kosovo can support SME digital transformation by offering incentives for HR-related IT investments and expanding digital skills programs tailored to SME managers and HR practitioners. Such targeted support would strengthen organizational resilience and long-term competitiveness.

List of abbreviations

AI	Artificial intelligence
ATS	Applicant tracking systems
eHRM	Electronic human resource management
EPR	Employee productivity rating
HR	Human resources
HRIS	Human resources information systems
HRM	Human resource management
ICT	Information and communication technology
IT	Information technology
ITU	Information technology utilization
LMS	Learning management systems
OPI	Overall performance improvement
RBV	Resource-based view
RET	Employee retention rate
RQP	Recruitment quality perception
RWF	Remote work flexibility
SaaS	Software as a service
SHRM	Strategic human resource management
SMEs	Small and medium-sized enterprises
β_0	Intercept term in each regression equation
$\beta_1-\beta_5$	Regression coefficients representing effects of independent variables
α_0	Intercept in the mediation equation
α_1	Coefficient representing the effect of ITU on RWF
ε_i	Error term for firm i
v_i	Error term in the mediation equation for RWF
i	Index referring to firm i

Compliance with ethical standards

Ethical considerations

Informed consent was obtained from all participants prior to their involvement in the study. Participation was voluntary, and anonymity and confidentiality of responses were fully assured.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

- Allen DG, Bryant PC, and Vardaman JM (2010). Retaining talent: Replacing misconceptions with evidence-based strategies. *Academy of Management Perspectives*, 24(2): 48-64. <https://doi.org/10.5465/AMP.2010.51827775>
- Barney JB (2004). Introduction: William Ouchi's theory Z: How American business can meet the Japanese challenge. *Academy*

- of Management Perspectives, 18(4): 106-107.
<https://doi.org/10.5465/ame.2004.15268703>
- Baron RM and Kenny DA (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6): 1173-1182.
<https://doi.org/10.1037//0022-3514.51.6.1173>
PMid:3806354
- Becker BE and Huselid MA (2006). Strategic human resources management: Where do we go from here? *Journal of Management*, 32(6): 898-925.
<https://doi.org/10.1177/0149206306293668>
- Bondarouk T, Harms R, and Lepak D (2017). Does e-HRM lead to better HRM service? *The International Journal of Human Resource Management*, 28(9): 1332-1362.
<https://doi.org/10.1080/09585192.2015.1118139>
- Cooper DR and Schindler PS (2014). *Business research methods*. 12th Edition, McGraw-Hill, New York, USA.
- Deng C, Li H, Wang Y, and Zhu R (2024). The double-edged sword in the digitalization of human resource management: Person-environment fit perspective. *Journal of Business Research*, 180: 114738. <https://doi.org/10.1016/j.jbusres.2024.114738>
- Dragusha B and Prenaj V (2021). The role of social networks as a tool for an effective recruitment process in the enterprises in Kosovo. *Journal of Eastern European and Central Asian Research*, 8(3): 384-394.
<https://doi.org/10.15549/jeecar.v8i3.696>
- Dragusha B, Josimovski S, and Jovevski D (2019). Impact of e-recruitment strategies in enterprises of the Republic of Kosovo. *ILIRIA International Review*, 9(2): 119-135.
- Groysberg B, Lee J, Price J, and Cheng J (2018). The leader’s guide to corporate culture. *Harvard Business Review*, 96(1): 44-52.
- Gueutal HG and Stone DL (2005). Introduction to the brave new world of e-HR. In: Gueutal HG and Stone DL (Eds.), *The brave new world of eHR: Human resources management in the digital age*: 15-19. Jossey-Bass, San Francisco, USA.
- Hayes AF (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. 2nd Edition, The Guilford Press, New York, USA.
- Hendrickson AR (2003). Human resource information systems: Backbone technology of contemporary human resources. *Journal of Labor Research*, 24(3): 381-394.
<https://doi.org/10.1007/s12122-003-1002-5>
- Jackson SE, Schuler RS, and Jiang K (2014). An aspirational framework for strategic human resource management. *Academy of Management Annals*, 8(1): 1-56.
<https://doi.org/10.5465/19416520.2014.872335>
- Jenkins H (2006). Small business champions for corporate social responsibility. *Journal of Business Ethics*, 67: 241-256.
<https://doi.org/10.1007/s10551-006-9182-6>
- Kanter RM (2003). *Challenge of organizational change: How companies experience it and leaders guide it*. Simon and Schuster, New York, USA.
- Kiesler S, Siegel J, and McGuire TW (1984). Social psychological aspects of computer-mediated communication. *American Psychologist*, 39(10): 1123-1134.
<https://doi.org/10.1037/0003-066X.39.10.1123>
- Lippert SK and Swiercz PM (2005). Human resource information systems (HRIS) and technology trust. *Journal of Information Science*, 31(5): 340-353.
<https://doi.org/10.1177/0165551505055399>
- Manroop L, Zheng H, Malik A, Milner M, Schulz E, and Banerji K (2025). Human resource management in times of crisis: Strategies for a post COVID-19 workplace. *Organizational Dynamics*, 54(1): 101060.
<https://doi.org/10.1016/j.orgdyn.2024.101060>
- Marler JH and Fisher SL (2013). An evidence-based review of e-HRM and strategic human resource management. *Human Resource Management Review*, 23(1): 18-36.
<https://doi.org/10.1016/j.hrmr.2012.06.002>
- Marler JH and Parry E (2016). Human resource management, strategic involvement and e-HRM technology. *The International Journal of Human Resource Management*, 27(19): 2233-2253.
<https://doi.org/10.1080/09585192.2015.1091980>
- Millar CC, Chen S, and Waller L (2017). Leadership, knowledge and people in knowledge-intensive organisations: implications for HRM theory and practice. *The International Journal of Human Resource Management*, 28(2): 261-275.
<https://doi.org/10.1080/09585192.2016.1244919>
- Oleš T (2024). Superstar firms and labor share decline: The role of digitalization in France, Germany, Italy, and Spain. *Ekonomický Časopis/Journal of Economics*, 72(9-10): 419-439. <https://doi.org/10.31577/ekoncas.2024.09-10.01>
- Parry E and Tyson S (2011). Desired goals and actual outcomes of e-HRM. *Human Resource Management Journal*, 21(3): 335-354. <https://doi.org/10.1111/j.1748-8583.2010.00149.x>
- Rogers DL (2016). *The digital transformation playbook: Rethink your business for the digital age*. Columbia University Press, New York, USA. <https://doi.org/10.7312/roge17544>
- Saunders M, Lewis P, and Thornhill A (2016). *Research methods for business students*. 8th Edition, Pearson Education, Harlow, UK.
- Selvan VT (2015). Study on role of technology in human resource management. *International Journal of Applied Research*, 1(7): 472-475.
- Shahiduzzaman M (2025). Digital maturity in transforming human resource management in the post-COVID era: A thematic analysis. *Administrative Sciences*, 15(2): 51.
<https://doi.org/10.3390/admsci15020051>
- Silva MSA and Lima CGS (2017). The role of information systems in human resource management. In: Pomffyova M (Ed.), *Management of information systems*: 113-126. IntechOpen, London, UK. <https://doi.org/10.5772/intechopen.79294>
- Sisman-Ugur S and Kurubacak G (2019). *Handbook of research on learning in the age of transhumanism*. IGI Global, Hershey, USA. <https://doi.org/10.4018/978-1-5225-8431-5>
- Stone DL, Deadrick DL, Lukaszewski KM, and Johnson R (2015). The influence of technology on the future of human resource management. *Human Resource Management Review*, 25(2): 216-231. <https://doi.org/10.1016/j.hrmr.2015.01.002>
- Tarutė A and Gatautis R (2014). ICT impact on SMEs performance. *Procedia - Social and Behavioral Sciences*, 110: 1218-1225.
<https://doi.org/10.1016/j.sbspro.2013.12.968>