

Cloud Computing in Human Resources

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ABSTRACT

Cloud computing has emerged as a transformative force across various industries. It involves delivering a variety of capabilities through the power of the Internet, including storage, processing power, and software applications. The cloud is changing the way businesses and people operate. Cloud computing, with its scalability, accessibility, and cost-effectiveness, has redefined the way organizations manage their human resources.

Human resources (HR), like many other business functions, has embraced the technological advancements of cloud computing, capitalizing on its advantages to digitize and enhance various processes. By adopting cloud-based HR solutions, organizations can streamline processes, enhance data security, and improve employee engagement and productivity. The primary objective of this paper is to examine the strategic integration of cloud computing into HR functions.

KEYWORDS: *cloud, cloud computing, human resources, HR, human resource management, HRM.*

INTRODUCTION

Cloud computing comprises computing services, including data storage, networking, software, and analytics, all accessible over the Internet. The cloud is made up of vast networks of physical servers housed in data centers around the world. Cloud computing has changed how businesses operate and how individuals work. It has been a transformative innovation, enabling scalable web services and on-demand data access.

Cloud computing helps organizations expand, be flexible, and concentrate on operating their businesses instead of managing their complex IT infrastructure [1]. Cloud computing is transforming human resource (HR) management by integrating HR functions into broader business operations with enhanced agility and efficiency.

CLOUD COMPUTING BASICS

Cloud computing represents a newly emerging service-oriented computing technology. It is the provision of scalable computing resources as a service over the Internet. It allows manufacturers to use many forms of new production systems such as 3D printing, high-performance computing (HPC),

industrial Internet of things (IIoT), and industrial robots. It is transforming virtually every facet of modern manufacturing. It is innovating, reducing cost, and bolstering the competitiveness of American manufacturing [2]. Figure 1 shows the symbol for cloud computing [3]. Some features of cloud computing are displayed in Figure 2 [4].

The key characteristic of cloud computing is the virtualization of computing resources and services. Cloud computing is implemented in one of three major formats: software as a service (SAAS), platform as a service (PAAS), or infrastructure as a service (IAAS). These services are explained as follows:

SaaS: This is a software delivery model in which software and associated data are hosted on the cloud. In this model, cloud service providers offer on-demand access to computing resources such as virtual machines and cloud storage.

PaaS allows the end-user to create a software solution using tools or libraries from the platform service provider. In this model, cloud service providers

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deliver computing platforms such as programming and execution.

In the IaaS model, cloud service providers can rent manufacturing equipment such as 3D printers.

Just like cloud computing, CM services can be categorized into three major deployment models (public, private, and hybrid clouds) [5]:

- Private cloud refers to a centralized management effort in which manufacturing services are shared within one company or its subsidiaries. A private cloud is often used exclusively by one organization, possibly with multiple business units.
- Public cloud realizes the key concept of sharing services with the general public. Public clouds are commonly implemented through data centers operated by providers such as Amazon, Google, IBM, and Microsoft.
- Hybrid cloud that spans multiple configurations, and is a composed of two or more clouds (private, community or public), offering the benefits of multiple deployment modes.

These services and models are shown in Figure 3 [6]. Cloud computing finds application in almost every field.

CLOUD COMPUTING IN HUMAN RESOURCES

Cloudification or cloud migration refers to the process of transferring different organizational operations and services to cloud-based platforms. Virtually any process, service, or application can be transitioned to the cloud as part of cloudification. Cloudification of HR handles everything from recruitment and employee data management, to shift planning, performance development, and inventory management.

Cloud-based HR represents a fundamental shift in how organizations manage their workforce and deliver employee experiences. Legacy HR practices often lead to disjointed employee experiences and inefficient decision-making. As the workplace continues to evolve with increased remote work, changing employee expectations, and the need for greater agility, cloud-based HR provides the flexibility and capabilities organizations need to attract, develop, and retain top talent [7]. While the benefits of cloud-based HR are compelling, organizations should consider several factors when evaluating a transition. Figure 4 shows a representation of HR in the cloud [8].

Human resource management (HRM), as a discipline, has undergone a remarkable transformation over the

years. With the rapid development of national economy, human resource management becomes more and more important for enterprises, and its influence on enterprises is also growing. Traditionally, HRM was primarily administrative, focusing on tasks such as payroll, recruitment, and record-keeping. However, with the advent of technology and the recognition of the strategic importance of the workforce, HRM has evolved into a dynamic and strategic function within organizations. Cloud computing is one of the significant catalysts behind this evolution.

It is a pool of abstract, extremely scalable, and managed infrastructure that is proficient in hosting customer applications as well as is billed as per consumption. This approach replaces the traditional practice of hosting applications and data on local servers and infrastructure. The integration of cloud computing into human resource management represents a significant leap forward in how organizations manage their most vital asset - their people [9].

Major cloud HR platforms like SAP SuccessFactors, Workday, BambooHR, CEIPAL Workforce, and Oracle Cloud HCM have become the backbone of modern HR departments, providing unified systems that connect all aspects of employee management. SAP SuccessFactors is a leading cloud-based HR platform that covers the full employee lifecycle, from recruitment to retirement. Workday offers an all-encompassing cloud-based platform that integrates HR, payroll, talent, and financial management on a unified system. BambooHR is a cloud-based HR software designed for small and medium-sized businesses. CEIPAL Workforce is a comprehensive, cloud-based workforce management platform designed to streamline HR and employee management [10].

APPLICATIONS OF CLOUD COMPUTING IN HUMAN RESOURCES

Cloud computing has emerged as an exciting paradigm that has attracted considerable attention of market as well as academic world. It can be used in numerous ways within HR. Common applications of cloud computing in HR include the following [11]:

- *Recruitment:* An example of an HR process moving to the cloud is the migration of the recruitment process to an applicant tracking system. Traditionally, recruitment processes involve paper-based applications, manual tracking of candidates via spreadsheets, and limited communication channels, often resulting in inefficiencies and delays. With upgrades to a cloud-based system, organizations have been able

to streamline the recruitment process with online job postings and application submissions, and real-time candidate tracking accessible from any device. Cloud-based recruitment systems offer a more sophisticated alternative to traditional hiring processes.

- *Workforce Management:* Cloud computing supports the latest trends in workforce management, such as remote work, flexible scheduling, and real-time collaboration. With cloud-based HR systems, employees can access their work-related information and tools from anywhere, facilitating a more flexible and mobile workforce.
- *Talent Management:* Talent management is a critical function for modern HR, and cloud platforms have revolutionized how organizations attract, develop, and retain employees. It includes tools for recruitment, onboarding, performance management, and employee development to support the entire employee lifecycle. AI-driven algorithms streamline the hiring process by quickly analyzing resumes and identifying top candidates, reducing time-to-hire while improving the quality of hires. Cloud-based learning management systems (LMS) enable organizations to monitor skills gaps and design tailored training programs for employees.
- *Predictive Analytics:* Predictive analytics first gained prominence for its ability to analyze vast amounts of consumer data, and this technology soon expanded into HR to enhance talent acquisition and retention strategies. Today, predictive analytics within HR has evolved from basic data analysis to a powerful system that drives HR operations, making them more data centric. Predictive analytics suggest personalized training programs and career development plans, fostering employee growth and engagement. It will also play a significant role in improving performance management, driving employee engagement, and forecasting learning and development needs, thus helping organizations prepare for future challenges.

BENEFITS

For human resources, cloudification offers significant advantages, transforming each process into a more agile, efficient, and strategic operation. Businesses of all sizes, from startups to multinational corporations, use cloud services for everything from data storage to running various types of cloud applications. HR cloud solutions offer structural advantages such as location flexibility, faster information processing, and

advanced data analytics. Other benefits include the following [9,11,12]:

- *Automation:* Automation minimizes errors, improves accuracy, and accelerates task completion. For example, payroll systems automatically calculate salaries, taxes, and deductions, eliminating repetitive manual calculations. With the introduction of cloud computing, HR-related processes have been accelerated and automated, resulting in increased efficiency and accuracy. Cloud-based HR systems have automated many routine tasks, freeing up HR professionals to focus on strategic initiatives such as talent management, employee engagement, and organizational development. The time saved through automation allows HR professionals to focus on strategic functions, such development and employee engagement.
- *Cost Efficiency:* One of the most compelling aspects of cloud computing is its cost efficiency. Unlike traditional software solutions, which require significant financial investment in infrastructure and resources, cloud systems offer a more affordable alternative. By moving to the cloud, organizations can reduce their IT infrastructure costs. Today's public cloud services largely operate on a subscription pricing model, eliminating the need for large upfront investments in hardware and software. This cost-effective approach allows HR departments to allocate resources to more strategic initiatives. The adoption of cloud-based HR leads to a noticeable reduction in administrative overheads. By centralizing data storage and processing, these systems eliminate the need for paper-based records and localized databases, cutting costs associated with physical storage and administrative staff.
- *Enhanced Accessibility:* Cloud services tend to be accessible from anywhere in the world, provided there is an internet connection. Cloud computing enables HR professionals and employees to access HR systems from anywhere at any time. This accessibility is particularly beneficial for business continuity in today's remote and hybrid work environments, where employees need to stay connected and productive outside the traditional office setting.
- *Improved Security:* Cloud platforms offer data security measures, including encryption, firewall management, access controls, and regular security audits. This ensures that sensitive data, such as employee records and payroll information, is

protected against unauthorized access and cyber threats.

- *Improved Experience:* Cloud-based HR is revolutionizing the employee experience across organizations of all sizes. Employees can now access their personal information, submit leave requests, and check their payroll details online, reducing the administrative burden on HR staff and improving the overall employee experience.
- *Personalization:* Cloud-based HR systems leverage data and automation to create personalized experiences. Employees receive personalized recommendations for benefits selections based on their unique circumstances. This personalization makes employees feel valued as individuals rather than just entries in a database, enhancing their connection to the organization.
- *Enhanced Collaboration:* Cloud-based HR facilitates better connections between employees, their teams, and the broader organization. Cloud platforms facilitate better collaboration among HR teams and other departments. These collaborative capabilities strengthen organizational culture and help employees feel satisfied.
- *Scalability:* Cloud-based HR systems can easily scale to accommodate the growth of an organization. Organizations can scale their resources and HR operations up or down in real-time to meet business demands, enabling greater operational responsiveness. Whether a company is expanding its workforce or opening new offices, cloud platforms tend to be able to adjust to increased demands without requiring substantial changes to the underlying infrastructure.
- *Data Analytics:* The vast amount of data that HR departments collect can be harnessed more effectively with cloud-based systems. Cloud computing enables HR analytics, providing insights into employee performance, engagement, and workforce planning. These data-driven insights help organizations make informed decisions and optimize their HR strategies.
- *Data-Driven Decisions:* Cloud computing equips HR with the tools to move beyond intuition and toward insight. Advanced analytics enable data-driven decisions across the talent lifecycle—from identifying, hiring and retention to training and succession planning, all decisions are data-driven.

Some of the benefits of cloud computing are depicted in Figure 5 [13].

CHALLENGES

Transitioning to the cloud is not without its challenges such as data privacy and security, integration with existing systems, misuse of data, data loss, management, fragmented systems, and compliance with dynamic regulatory standards. Implementation of adequate authorization, validation, monitoring, applying filters, and others could help in overcoming these challenges. Complex systems and incomplete data are also persistent challenges. Organizations must navigate these challenges to maximize ROI and ensure smooth adoption. Other challenges include [14,15]:

- *Data Security:* Security and data privacy are critical considerations when using cloud HR solutions. Migrating HR data to the cloud raises concerns about confidentiality and cyber threats. Organizations must partner with trusted providers and establish robust security protocols to safeguard sensitive information.
- *Integration:* Many organizations rely on legacy HR systems, which can complicate the transition to cloud-based solutions. They rely on outdated systems for payroll, benefits management, or compliance tracking, which may lack compatibility with modern cloud platforms. Careful planning, along with the selection of adaptable and interoperable platforms, is essential for a seamless migration with existing system. To avoid disruptions, businesses should choose vendors that offer tailored solutions and technical support during the integration process. Failure to achieve effective integration can lead to data silos, reduced operational efficiency, and frustration among HR teams.
- *Resistance to Change:* Introducing new technologies often meets resistance from employees and managers who fear disruption or lack familiarity with the tools. Clear communication about the benefits of cloud adoption, coupled with comprehensive training, can help alleviate concerns and drive user adoption.
- *Training:* Employees require thorough training and ongoing support to adapt to new systems effectively. It is expedient to provide comprehensive training for HR teams and employees to ensure they are comfortable using the new system. Offer ongoing support to address any questions or concerns.
- *Regulatory Compliance:* Regulatory compliance is a critical consideration for HR, and cloud solutions are designed to meet stringent standards.

Cloud HR systems must comply with various data protection regulations such as GDPR, HIPAA, and CCPA, ensuring that your organization meets legal requirements. With advanced security measures like encryption and multi-factor authentication, these platforms protect sensitive employee data from breaches, ensuring peace of mind for organizations and employees alike.

- *Cybersecurity:* As organizations transition to cloud-based HR, cybersecurity emerges as a critical concern. The risk of data breaches and the need to comply with stringent data privacy regulations such as GDPR and CCPA pose significant challenges. Cloud-based HR systems store sensitive employee information, including personal identification details, salary data, and performance records. This makes them an attractive target for cybercriminals.

FUTURE OF CLOUD COMPUTING IN HUMAN RESOURCES

Cloud computing has undeniably reshaped the landscape of human resource management, offering a wide array of tools and solutions that drive efficiency, scalability, and innovation in HR processes. The future will likely see the integration of AI and machine learning (ML) into predictive analytics, providing deeper, more comprehensive insights into talent development. This will enable HR professionals to make better decisions regarding workforce deployment, ensuring alignment with organizational objectives. The integration of cloud computing with other emerging technologies such as artificial intelligence (AI) and Internet of things (IoT) offers even greater opportunities for HR departments. This integration further enhances the potential of cloud computing, making it an essential tool for the future of human resource management. Looking ahead, the role of cloud computing in HR will continue to evolve, with new advancements in AI, machine learning, and predictive analytics further optimizing HR processes [10]. Figure 6 illustrates the future of cloud computing [16].

CONCLUSION

Cloud-based HR solutions are transforming the way organizations manage their human resources. In today's rapidly evolving business landscape, organizations are increasingly shifting their human resources operations to the cloud. This transition represents more than just a technological upgrade; it is fundamentally transforming how employees interact with HR services and reshaping the overall employee experience. In the face of digital disruption and intense competition, cloud technology is a pivotal tool for HR, enabling streamlined communication,

improved organizational performance, and data-driven talent strategies.

Organizations that embrace cloud technology stand to gain agility, collaboration, and a competitive edge in a rapidly evolving workforce environment. As the workplace continues to evolve, HR departments are increasingly embracing cloud computing to transform traditional practices and align with modern employee expectations. More information about cloud computing in human resources can be found in the books [17-19] and the following related journals:

- *Journal of Cloud Computing*
- *IEEE Cloud Computing*
- *IEEE Transactions on Cloud Computing*
- *International Journal of Cloud Applications and Computing*
- *International Journal of Cloud Computing and Services Science*
- *i-manager's Journal on Cloud Computing*

REFERENCES

- [1] S. Porkodi and A. M. Raman, "Success of cloud computing adoption over an era in human resource management systems: A comprehensive meta-analytic literature review," *Management Review Quarterly*, vol. 75, 2025, pp. 1041-1075.
- [2] S. Ezell and B. Swanson, "How cloud computing enables modern manufacturing," June 2017 <https://itif.org/publications/2017/06/22/how-cloud-computing-enables-modern-manufacturing>
- [3] "Stay safe online: Importance of cloud application security," September 2024, <https://litslink.com/blog/cloud-application-security>
- [4] "Features of cloud computing – 10 major characteristics of cloud computing," <https://data-flair.training/blogs/features-of-cloud-computing/>
- [5] "Cloud manufacturing," *Wikipedia*, the free encyclopedia https://en.wikipedia.org/wiki/Cloud_manufacturing
- [6] "Banking on the cloud: The role of cloud computing in modern financial services," February 2025, <https://www.neosofttech.com/blogs/cloud-computing-financial-services/>
- [7] "What is cloud-based HR and how does it transform employee experience?" <https://aspirehr.com/2024/10/30/what-is-cloud->

- based-hr/
- [8] https://images.search.yahoo.com/search/images?p=images+of+cloud+computing+in+human+resources&fr=mcafee&type=E210US1357G0&imgurl=https%3A%2F%2Fwww.shutterstock.com%2Fshutterstock%2Fphotos%2F2272787145%2Fdisplay_1500%2Fstock-photo-cloud-computing-concept-business-communication-network-erp-enterprise-resources-planning-2272787145.jpg#id=4&iurl=https%3A%2F%2Fmiro.medium.com%2Fv2%2Fresize%3Afit%3A1358%2F1*9z7UaDYpXiLEJCzZC2_UI.jpg&action=click
- [9] “The emergence of cloud computing in human resource management,” October 2023, <https://www.linkedin.com/pulse/emergence-cloud-computing-human-resource-management-hr-for-layman-xsyph>
- [10] S. Pandey, “Strategic integration of cloud computing in human resource management: Enhancing agility, efficiency, and talent optimization through cloud-based systems,” *International Journal for Multidisciplinary Research*, vol. 2, no. 1, January-February, 2020.
- [11] L. Holohan, “Origins to innovation: Cloud computing's impact on HR,” June 2024, <https://flair.hr/en/blog/cloud-computing-hr/>
- [12] S. Matetl, “Cloud computing is revolutionising HR management: A strategic shift toward agility and impact,” August 2025, <https://www.thepeoplesboard.com/hr-technology/cloud-computing-is-revolutionising-hr-management-a-strategic-shift-toward-agility-and-impact/>
- [13] https://images.search.yahoo.com/search/images?p=images+of+cloud+computing+in+human+resources&fr=mcafee&type=E210US1357G0&imgurl=https%3A%2F%2Fskillfloor.com%2Fblog%2Fuploads%2Fimages%2F202501%2Fimage_870x580_6777cf778fc19.jpg#id=19&iurl=https%3A%2F%2Fwww.infosectrain.com%2Fwp-content%2Fuploads%2F2023%2F04%2FBenefits-of-cloud-computing.jpg&action=click
- [14] “Advantages and challenges of cloud computing for HR,” <https://www.atoss.com/en/human-resources/advantages-and-challenges-of-cloud-computing-for-hr>
- [15] “Cloud HR solutions: Revolutionizing human resource management in 2025,” <https://www.hrplan.net/articles/cloud-hr-solutions-revolutionizing-human-resource-management-in-2025>
- [16] https://images.search.yahoo.com/search/images?p=images+of+cloud+computing+in+human+resources&fr=mcafee&type=E210US1357G0&imgurl=https%3A%2F%2Fskillfloor.com%2Fblog%2Fuploads%2Fimages%2F202501%2Fimage_870x580_6777cf778fc19.jpg#id=43&iurl=https%3A%2F%2Fmedia.licdn.com%2Fdms%2Fimage%2FD4D12AQHGimblRGBicQ%2Farticle-cover_image-shrink_720_1280%2F0%2F1692697731255%3F%3D2147483647%26v%3Dbeta%26t%3DLiqaE_mX8DgMMLxElr0O2IqFGMZ6zU4fb7_PhSpK8No&action=click
- [17] M. N. O. Sadiku, *Cloud Computing and Its Applications*. Moldova, Europe: Lambert Academic Publishing, 2024.
- [18] C. Millard, *Cloud Computing*. Oxford University Press, 2nd edition, 2021.
- [19] S. Patni, D. Saxena, and A. K. Singh, *Resource Management in Cloud Computing: Concepts and Implementation*. Springer, 2025.



Figure 1 The symbol for cloud computing [3].

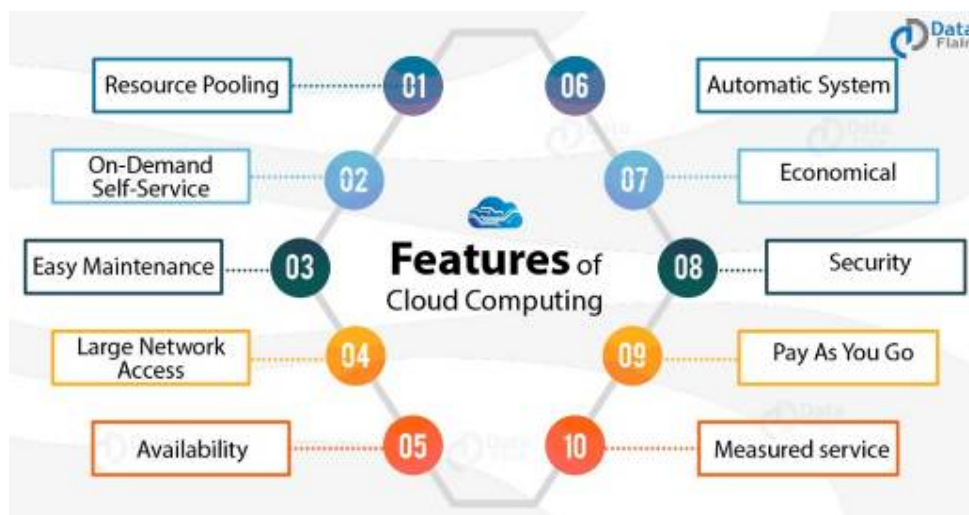


Figure 2 Some features of cloud computing [4].

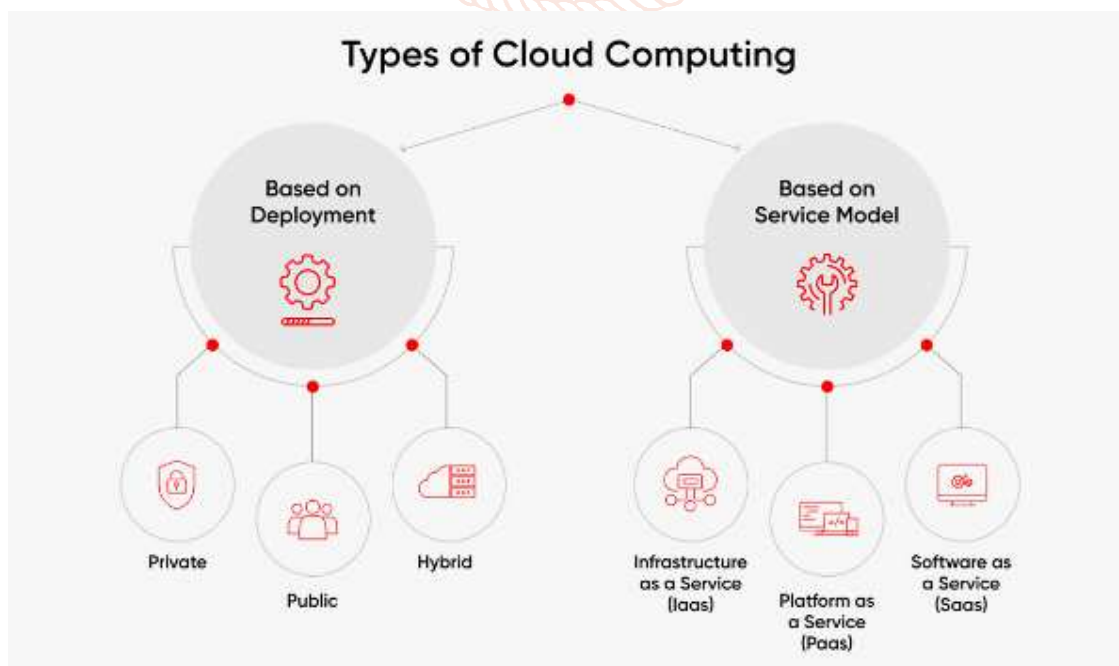


Figure 3 Cloud computing services and models [6].



Figure 4 A representation of HR in the cloud [8].



Figure 5 Some benefits of cloud computing [13].



Figure 6 The future of cloud computing [16].