

The Future of HR: Exploring the Benefits and Challenges of Digital Transformation

Muhammad Saifullah Bhatti¹, Marwa Refat Faqirah², Muhammad Sami Ullah³

¹School of Business, Jiangnan University, Wuxi 214122, China

Email: Saifbhatti346@gmail.com

²School of Economics and Management, Xidian University, Xi'an, Shaanxi Province, P.R. China

³School of Economics and Management, Dalian Jiaotong University, Dalian, 116028, China

Received: 03 Feb 2025; Received in revised form: 07 Mar 2025; Accepted: 12 Mar 2025; Available online: 17 Mar 2025

©2025 The Author(s). Published by AI Publications. This is an open-access article under the CC BY license

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

Abstract— Digital transformation is revolutionizing human resources (HR) by leveraging advanced technologies to enhance efficiency, improve employee experiences, and facilitate data-driven decision-making. This review paper explores the benefits and challenges of digital transformation within HR, assessing its impact on organizational processes and employee engagement. The study highlights the complexities involved in implementing digital tools and strategies to improve HR effectiveness. It offers a comprehensive analysis of key aspects of HR digital transformation, such as automation, system integration, and data analytics. Drawing on case studies and recent research, the paper identifies successful strategies and best practices adopted by leading companies. Additionally, the review emphasizes the importance of adopting a proactive approach to managing the transition to digital HR, providing practitioners with insights to optimize HR services. While acknowledging the positive outcomes, the paper also discusses the challenges that organizations face, such as resistance to change, the difficulty of integrating new technologies with legacy systems, and concerns over data privacy and security. Addressing these challenges is crucial for organizations aiming to fully leverage digital HR solutions. In conclusion, HR's digital transformation offers both opportunities and obstacles. Organizations that effectively implement digital solutions can enhance employee satisfaction, operational efficiency, and foster a culture of continuous improvement. The review stresses the importance of innovation, agility, and strategic planning in navigating the digital shift, ensuring the long-term success of HR departments in an increasingly digital business environment.

Keywords— Automation, Data Analytics, Digital Transformation, Employee Engagement, Human Resources (HR).

I. INTRODUCTION

In today's corporate landscape, digital transformation has emerged as a critical driver altering how businesses run and compete. Among the numerous aspects of this change, the transformation of Human Resources (HR) through digital innovation is especially significant. HR, which was formerly focused on administrative operations and employee interactions, is developing into a strategic powerhouse propelled by data, technology, and automation. This evolution is a response to substantial changes in worker demographics, company structures, and

global economic forces, rather than simply an adaptation to technical advancements.

HR digital transformation includes a wide range of adjustments, from integrating data-driven decision-making platforms to automating payroll and hiring processes. It makes use of state-of-the-art technology like analytics, cloud computing, and artificial intelligence (AI) to improve employee experiences, expedite procedures, and match HR policies with corporate objectives. Agile, effective, and employee-focused HR solutions are more important than ever as businesses navigate a world that is ever more competitive and unpredictable. Many firms

accelerated their digital transformation activities, notably in HR, as a result of the COVID-19 outbreak. Businesses faced two problems as remote work became more common and economic uncertainty loomed: managing worker dynamics in the face of fast technological adoption and ensuring operational continuity. The HR digital transformation process is not without its difficulties, though. Organizations need to overcome several obstacles, including skill shortfalls in HR teams, data privacy issues, resistance to change, and integration of outdated systems. It takes a clear vision, careful planning, and an unshakable dedication to innovation to overcome these obstacles. Digital transformation in HR is important for reasons other than operational effectiveness. Redefining the employee experience is its main goal, to promote well-being, growth, and engagement in a way that meets the demands of the contemporary workforce. Real-time data, AI-powered learning platforms, and self-service portals enable HR departments to provide individualized solutions that meet the various demands of their workforce. By promoting talent strategies that are in line with more general company goals, this evolution turns HR into a proactive enabler of organizational success. Companies such as IBM, Unilever, and Amazon provide examples of how digital HR can revolutionize an industry. These businesses have seen notable increases in productivity, accuracy, and worker satisfaction through the automation of administrative duties, system consolidation, and AI utilization. These kinds of instances act as a guide for other businesses looking to navigate the challenges of digital HR while maximizing its advantages. HR digital transformation is a vital tool for company performance in the digital age. As businesses continue to embrace technology, HR's position as a strategic partner in fostering innovation, adaptation, and growth becomes clearer. This review delves into the relevance, and benefits of human resource digital transformation, as well as its essential components, problems, and future opportunities. Understanding and managing the complexities of this change allows firms to realise their full potential, resulting in a resilient and ready-to-ready workforce.

II. SIGNIFICANCE IN TODAY'S BUSINESS LANDSCAPE

HR digital transformation is a crucial part of modern business strategy, particularly when automation and system consolidation are considered. In a rapidly evolving corporate environment, companies are increasingly turning to digital solutions to increase efficiency, reduce costs, and enhance employee experiences [1]. This movement has been accompanied by significant changes in labour

dynamics, including the adoption of automation technology and the globalization of HR systems. These changes have had a big effect, especially considering the massive employee cutbacks that have been made worse by the global COVID-19 pandemic and financial hardships.

2.1 Automation in HR

Automation in HR refers to the use of technology to perform tasks traditionally carried out by humans. This includes everything from payroll processing and benefits administration to recruitment and performance management. By automating these processes, organizations can streamline operations, reduce errors, and free up HR professionals to focus on more strategic tasks. The adoption of automation technologies has been driven by the need to increase productivity and respond more effectively to changing business needs. A notable example of HR automation is Amazon [2]. The company has implemented automation in its warehouses and HR departments to improve efficiency. During the COVID-19 pandemic, Amazon accelerated its automation efforts, utilizing AI-powered systems to manage employee schedules and productivity. For instance, Amazon's AI-driven systems can monitor warehouse operations in real time, optimizing workflows and ensuring that resources are allocated efficiently. This move allowed Amazon to maintain operations with fewer human resources, reflecting a broader trend toward automation in response to external pressures. IBM also uses AI to assist with recruitment, employee engagement, and even predicting employee turnover. The company's AI tool, Watson, helps analyze employee sentiment and performance data, allowing HR to make data-driven decisions [3]. By automating these processes, IBM has been able to enhance productivity and employee satisfaction while reducing operational costs. This approach highlights the potential of AI in transforming HR functions, making them more agile and responsive to organizational needs.

2.2 System Consolidation Globally

System consolidation in Human Resources (HR) is combining multiple HR systems and processes into a single, integrated platform. This method simplifies processes, improves data accuracy, and improves decision-making—all of which are becoming increasingly important in today's global business environment, as firms manage diverse and frequently distant workforces [4]. Businesses can increase regional consistency in HR procedures and ultimately increase overall efficiency by combining their HR systems. Unilever is a noteworthy illustration of successful system consolidation, having consolidated its human resources operations to better manage its workers around the globe. Due to this consolidation, HR

procedures have become more uniform across different areas, which has decreased complexity and enhanced data visibility [5]. To better address global concerns, Unilever has improved its efforts at employee engagement and talent management.

Coca-Cola has also identified system consolidation as a critical component of its HR transformation strategy. Coca-Cola increased data quality and streamlined its human resources procedures by combining numerous HR platforms into a single system. This integration is especially important as the organization navigates the complexities of a global workforce while providing a consistent employee experience across regions (Mercer 2020). Coca-Cola has increased its strategic HR capabilities by adopting a unified approach, which aligns them with business goals and improves overall organizational performance. To summarize, system consolidation in HR is critical for firms seeking to improve efficiency and consistency in their HR activities. Companies such as Unilever and Coca-Cola benefit from a unified approach to managing their worldwide workforces and responding effectively to evolving issues.

2.3 Massive Employee Layoffs and Digital Transformation

In recent years, many firms have confronted the dual challenges of adopting digital transformation and managing major personnel layoffs. The COVID-19 pandemic prompted businesses to rethink their processes and expedite digital initiatives. Although these reforms typically resulted in staff losses, they also created new opportunities for innovation and growth. For example, in 2020, Microsoft announced layoffs as part of a larger restructuring initiative. At the same time, the firm made significant investments in digital transformation programs, with an emphasis on cloud computing and artificial intelligence to improve operational efficiency and promote future growth (Mercer 2020). This dual strategy exemplifies a trend among businesses that use digital transformation to react to shifting market conditions while managing worker migrations. Similarly, General Electric (GE) has adopted digital transformation to streamline operations during times of staff reduction. By prioritizing automation and digital solutions, GE has increased efficiency and lowered costs, allowing the corporation to efficiently manage difficult economic conditions. Despite the layoffs, GE's commitment to digital innovation positioned the company for long-term success in a changing business environment. These examples demonstrate how digital transformation can help organizations become more resilient and adaptable in the face of large workforce shifts. Businesses that embrace

innovative technologies can not only handle transitions but also lay the groundwork for future growth and success.

2.4 The Significance of HR Digital Transformation

The significance of HR digital transformation in today's business landscape cannot be overstated. Automation and system consolidation enable companies to operate more efficiently, reduce costs, and enhance employee experiences. However, these changes also come with challenges, including the need to manage workforce transitions and address the impact of layoffs. As companies continue to embrace digital transformation, HR departments play a crucial role in navigating these changes (Sanchez & Oliva, 2022). By leveraging technology to automate processes and consolidate systems, HR can drive organizational success and support employees through periods of transition. This involves not only adopting new technologies but also fostering a culture of innovation and resilience.

2.5 Benefits of HR Digital Transformation

HR digital transformation is significantly reshaping how organizations manage their human resources, offering numerous benefits across various dimensions of HR functions [6]. This transformation leverages technology to streamline administrative tasks, enhance the employee experience, facilitate data-driven decision-making, and improve profitability through efficiency gains.

2.6 Streamlining administrative tasks

One of the most immediate benefits of HR digital transformation is the streamlining of administrative tasks. Traditionally, HR departments have been bogged down by time-consuming and repetitive activities, such as processing forms, managing paperwork, and maintaining employee records (Sutanto & Valentine, 2022). Digital transformation automates many of these processes, freeing up valuable time and resources.

2.6.1 Automation of forms and paperwork

Automation technologies are revolutionizing human resources (HR) by effectively handling processes including payroll processing, leave requests, and onboarding, which reduces manual labour and improves accuracy [7]. The time spent on paperwork is greatly decreased by well-known platforms like SAP SuccessFactors, which automate administrative tasks and manage employee lifecycle events. This frees up HR staff to concentrate on strategic projects that promote organizational growth and employee engagement. In a similar vein, Workday streamlines intricate HR procedures, such as hiring and talent management, guaranteeing a smooth experience for both employees and HR experts while reducing operational bottlenecks. ADP, a pioneer in cloud-based

HR solutions, has embraced digital transformation to streamline its HR procedures by cutting down on errors and manual data entry, freeing up more time for strategic tasks like talent management coordination. Additionally, in today's quickly evolving environment, ADP ensures conformity to regulatory standards with minimal effort by automating payroll processing and compliance tracking. By using cutting-edge safeguards to prevent breaches of critical employee data, this automation not only reduces the possibility of human error but also improves data security. Overall, by increasing productivity, accuracy, and strategic focus, systems like SAP SuccessFactors, Workday, and ADP are transforming HR operations and enabling HR professionals to efficiently contribute to organizational goals while maintaining compliance and protecting data security.

Table 1: Time Savings from Automating Administrative Tasks

Task	Traditional Time (hours/month)	Automated Time (hours/month)	Time Saved (hours/month)
Onboarding new employees	40	10	30
Processing leave requests	20	5	15
Payroll processing	50	15	35
Performance reviews	30	10	20
Total	140	40	100

Source: <https://investors.adp.com/financial-information/annual-reports-and-proxies/default.aspx>

From the Table 1, automating HR tasks can save an organization approximately 100 hours per month. This significant reduction in time spent on routine tasks allows HR professionals to focus on more strategic activities that contribute to the organization's growth.

2.6.2 Benefits of automation in administrative tasks

Beyond time savings and increased productivity, automating administrative duties has many advantages. One major benefit is the lessened administrative load on HR specialists, which can boost morale and job satisfaction in HR departments. When workers are relieved of monotonous duties, they are more likely to feel motivated and engaged, which frees them up to focus on higher-value jobs that help the company succeed.

Additionally, automation improves HR procedures' precision and uniformity. Errors can occur during manual data entry and documentation, leading to costly mistakes and compliance difficulties [8]. Automation reduces these risks and guarantees correct data processing for all HR operations. This enhances the organization's credibility and dependability in addition to raising the calibre of HR services. The capacity of automation to allow HR departments to efficiently scale their operations is another important advantage. The amount of administrative work rises dramatically as businesses expand. HR departments can handle increased workloads without having to make significant staffing additions by automating certain tasks. For businesses looking to grow and penetrate new markets, this scalability is crucial. Automation also lessens the possibility of human error. Employee discontent and compliance problems may result from errors in payroll or personnel records. By putting digital solutions into practice, businesses can guarantee reliable and consistent data processing.

2.7 Enhancing Employee Experience

In the modern business landscape, a positive employee experience is paramount for attracting and retaining top talent. As organizations recognise the importance of employee satisfaction, HR digital transformation emerges as a key strategy to enhance the employee experience. By leveraging advanced tools and platforms, companies can create an environment that fosters better communication, engagement, and development opportunities [5]. This not only improves employee morale but also boosts productivity and loyalty, leading to long-term organizational success.

2.7.1 Improved Communication and Engagement

HR digital transformation greatly improves the employee experience by boosting communication and engagement via digital platforms that allow for seamless interactions between employees and HR departments. Self-service portals enable employees to access key information—such as benefits, leave balances, and performance reviews—without requiring direct contact with HR personnel, saving time and promoting openness and accountability [9]. This autonomy builds trust because employees can simply update personal information, request time off, and track performance goals, which aligns with the current workforce's expectations for flexibility and ease. Furthermore, communication tools like intranets and collaborative platforms facilitate real-time engagement, allowing employees to connect and collaborate regardless of their location [10]. Microsoft's use of Teams is a famous example of effective digital transformation, since it improves communication and

collaboration among distant workers, resulting in improved job satisfaction and better work-life balance [11]. Organizations can develop a more connected and empowered workforce by implementing digital tools such as self-service portals and collaboration platforms. Finally, HR digital transformation increases communication, stimulates engagement, and offers individualized growth possibilities, resulting in a more contented and productive workforce.

2.7.2 Enhanced Development Opportunities

HR digital transformation significantly improves the employee experience by providing better development opportunities. Digital learning platforms and e-learning modules empower employees to upskill and reskill at their own pace, fostering a culture of continuous learning and professional growth. Organizations can offer access to a vast library of online courses, webinars, and training sessions, enabling employees to acquire new skills and remain competitive in an ever-evolving job market. For example, companies like Unilever have successfully embraced digital learning platforms to enhance employee development [12]. Unilever's initiatives provide a wide range of courses and training modules that allow employees to develop new skills and competencies. This personalized approach not only boosts employee satisfaction but also contributes to a more agile and skilled workforce. By investing in digital tools that facilitate communication, engagement, and development, organizations can create a positive employee experience that attracts and retains top talent. Real-world examples, such as Microsoft, further illustrate the transformative power of HR digital transformation, showcasing its potential for innovation and success in today's dynamic business environment [13]. As organizations continue to navigate the complexities of the digital age, enhancing the employee experience through digital transformation will remain a critical driver of long-term success and competitiveness.

2.8 Facilitating Data-Driven Decision-Making

In today's rapidly evolving business landscape, the ability to make informed, data-driven decisions is a critical advantage for any organization. HR digital transformation empowers organizations to harness the power of real-time data and analytics, enabling more strategic decision-making and optimizing HR strategies to align with broader business objectives [14]. This data-centric approach enhances various aspects of HR management, from workforce planning to talent development, ultimately contributing to organizational success.

2.8.1 Real-Time Data and Analytics

Digital HR solutions enable real-time access to a variety of workforce indicators, including employee performance, departure rates, and engagement levels, allowing HR professionals to spot trends that drive strategic decisions. This plethora of data helps HR professionals address difficulties and boost workforce happiness by regularly evaluating engagement levels [15]. For instance, can assess employee input to determine morale, enabling HR to promptly execute actions that promote a happy work environment. Furthermore, by employing predictive analytics and historical data to foresee staffing requirements and pinpoint skill gaps, real-time analytics help ensure precise workforce planning. IBM is a perfect example of how data analytics may revolutionize HR procedures [16]. By integrating AI and machine learning, IBM analyzes vast amounts of employee data to predict turnover and identify high-potential employees with remarkable accuracy. The use of predictive analytics allows IBM to forecast employee attrition and implement targeted retention strategies, such as personalized career development plans [17]. Additionally, IBM creates growth plans for high-potential workers according to feedback and performance indicators, guaranteeing a strong pipeline of future leaders [18]. To sum up, informed decision-making enabled by digital HR systems with real-time information enables firms to improve worker performance. To effectively manage personnel and create a healthy work environment, HR departments can take a proactive approach, as IBM has shown.

2.8.2 Enhanced Talent Management

Data-driven insights significantly enhance talent management by enabling organizations to identify and nurture high-potential employees effectively. Through the analysis of performance data, engagement scores, and other key metrics, HR professionals can develop targeted development plans that align with employees' career goals and the organization's strategic objectives. For example, organizations can use data analytics to identify skill gaps within the workforce and design training programs that address these deficiencies. By offering personalized learning opportunities, companies can empower employees to acquire new skills and advance their careers [8]. This approach not only enhances employee satisfaction and retention but also ensures that the organization has the capabilities needed to thrive in a dynamic business environment. Moreover, data-driven talent management allows organizations to create a culture of continuous feedback and improvement. By regularly assessing employee performance and engagement levels, HR can provide timely feedback and support to employees, fostering a culture of growth and development. This

approach encourages employees to take ownership of their professional development and contributes to a more motivated and productive workforce.

2.9 Profitability analysis

HR digital transformation significantly impacts an organization's profitability by streamlining processes, improving efficiency, and reducing costs [15]. To assess the financial benefits of adopting digital HR solutions, it's essential to conduct a comprehensive profitability analysis. This analysis evaluates the costs associated with implementing digital systems against the potential savings in time and resources.

2.9.1 Initial Costs of HR Digital Transformation

Implementing digital HR solutions involves several upfront costs, including software purchases, hardware installation, training, and ongoing maintenance [6]. These initial expenses must be considered when assessing the financial implications of HR digital transformation.

Table 2: Initial Costs of HR Digital Transformation

Cost Component	Estimated Cost
Software and Licensing	\$70,000
Hardware and Infrastructure	\$25,000
Implementation and Setup	\$40,000
Training and Change Management	\$15,000
Total Initial Investment	\$150,000

Source: <https://boardroomadvisors.co/outsourcing-hr-is-it-a-cost-effective-solution/>

As shown in Table 2, the total initial investment for digital HR transformation is approximately \$150,000. This investment covers all necessary components to ensure a successful transition to digital HR systems.

2.9.2 Cost Savings from Automation

One of the primary advantages of HR digital transformation is the automation of routine tasks, leading to significant cost savings (Sebastian et al., 2023). Automating processes such as payroll, recruitment, and performance management reduces the need for manual labour and improves operational efficiency.

Table 3: Annual Cost Savings from Automation

Task	Pre-Automation Cost (Annual)	Post-Automation Cost (Annual)	Savings (Annual)
Payroll Processing	\$100,000	\$40,000	\$60,000
Recruitment	\$80,000	\$50,000	\$30,000

Performance Management	\$50,000	\$20,000	\$30,000
Total Annual Savings	\$230,000	\$110,000	\$120,000

Source: <https://boardroomadvisors.co/outsourcing-hr-is-it-a-cost-effective-solution/>

Before automation, organizations typically spend a substantial amount of money on payroll processing, recruitment, and performance management. Manual payroll processing can cost organizations around \$100,000 annually, including salaries for HR personnel, printing and distribution of paychecks, and error corrections. Recruitment costs, including advertising, screening, and interviewing, can amount to \$80,000 annually. Performance management, which involves employee evaluations and performance tracking, can cost approximately \$50,000 annually (Sebastian et al., 2023). With the implementation of digital HR systems, these costs can be significantly reduced. Automated payroll processing can cut expenses by up to 60%, bringing the annual cost down to \$40,000. Similarly, digital recruitment solutions can reduce costs by 40%, resulting in an annual cost of \$50,000. Performance management automation can also achieve savings of up to 60%, reducing the annual cost to \$20,000. In total, organizations can achieve annual savings of approximately \$120,000 by automating key HR tasks. These savings demonstrate the financial benefits of reducing manual processes and streamlining operations.

2.9.3 Time Savings and Productivity Gains

HR digital transformation boosts productivity by providing considerable time savings that go beyond immediate cost reductions. By reducing the amount of time spent on administrative activities, HR teams can focus on strategic initiatives that offer value to the firm. For example, traditional onboarding processes can take up to 2,000 hours per year due to considerable paperwork and human coordination; however, digital onboarding solutions can cut this to 800 hours, saving 1,200 hours per year [13]

Similarly, employee data management used to take roughly 1,500 hours a year to complete duties like processing leave requests and updating records, but with digital technology, this can be reduced to 500 hours, saving an extra 1,000 hours. Automation can also reduce the time required for labor-intensive compliance and reporting duties from 1,000 hours to just 300 hours [17]. If each hour is worth \$50, companies can save about 2,900 hours a year, which translates into a productivity gain of \$145,000. By deploying a digital HR platform that improves data analytics and automated procedures,

Unilever is a prime example of a successful digital transformation. Over 20,000 employee hours were saved annually, and operating costs were reduced by 40% as a result of this program [15][14]. In addition to increasing productivity, Unilever promoted a more engaged staff by rerouting this time into talent development and engagement initiatives. Accordingly, by saving a great deal of time and focusing strategically, HR digital transformation improves workforce engagement and streamlines operations.

III. KEY COMPONENTS OF HR DIGITAL TRANSFORMATION

HR digital transformation involves leveraging technology to enhance various HR functions, enabling organizations to manage their human resources more effectively. It fundamentally changes how HR departments operate, shifting from traditional, manual processes to automated, data-driven approaches. Three key components of this transformation are recruitment automation, training and development tools, and performance management systems. These components streamline processes, improve efficiency, and contribute to better employee experiences [19]. Below, we explore each of these components with real-world examples from companies that have successfully implemented them.

3.1 Enhancing Recruitment Efficiency Through Automation

Recruitment automation utilizes technology to streamline the hiring process, which includes sourcing candidates and onboarding new staff. This technique not only enhances hiring quality but also saves time and resources. HR teams can focus on strategic hiring by using automated technologies to manage repetitive tasks such as interview scheduling, resume screening, and candidate communication. The ability to quickly find and onboard excellent employees is crucial for organizational success in today's competitive job market [19]. Candidates receive regular updates throughout the hiring process, and automated systems decrease the time-to-fill positions by performing these tasks faster and more accurately than humans. Moreover, artificial intelligence algorithms and data-driven insights help identify candidates whose backgrounds and skills align closely with job requirements [20]. Recruitment automation also diminishes unconscious bias in hiring by utilizing objective criteria rather than subjective assessments, enhancing the efficiency and fairness of candidate evaluation. For example, Hilton Hotels has successfully implemented an AI-powered hiring platform that speeds up candidate screening and selection, reducing hiring time by 75% and enabling HR

professionals to focus on providing exceptional guest experiences [21]. Additionally, Unilever uses AI-powered chatbots to broaden its reach and ensure consistent evaluations based on set criteria for early candidate interactions and interviews. Through personalized and timely interactions, this innovative technology not only eases the burden on HR staff but also enhances the applicant experience, thus bolstering Unilever's employer brand [21].

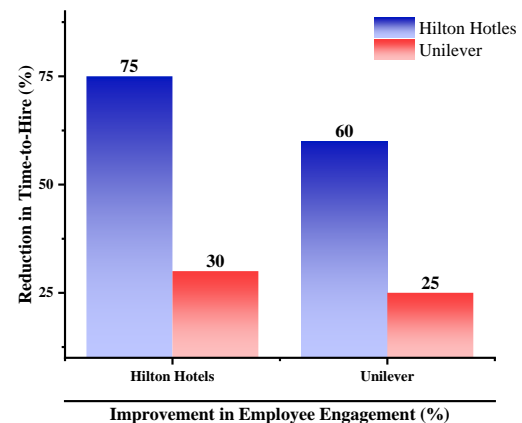


Fig.1: Improvement in the recruitment process through Automation

Source: <https://www.unilever.com/news/news-search/2022/unilever-international-enters-deal-to-make-hotel-stays-more-sustainable/>

3.2 Training and Development Tools

Training and development are critical for providing individuals with the skills they need to succeed in their professions and improve their careers. The digital transformation of training and development relies on online platforms and tools to conduct training programs, allowing for flexible employee growth. These digital solutions provide tailored learning experiences, allowing employees to access training materials at any time and from any location [22]. Continuous learning is essential for keeping a competitive edge in a company environment that is changing quickly. AI-powered systems may tailor educational programs to each learner's requirements, guaranteeing that staff members are exposed to pertinent information that supports their professional goals. Online training solutions help eliminate time and location barriers by allowing employees to learn at their own speed. Furthermore, digital tools offer instant feedback on tests and learning outcomes, assisting staff members in monitoring their progress and pinpointing areas in need of development (Regardless of location, organizations can effectively train a sizable workforce, making it easier to conduct company-wide learning programs. IBM, for

example, has revolutionized its training initiatives by implementing "Your Learning," an AI-powered platform that provides individualized learning pathways based on employees' responsibilities and career objectives. IBM's success in the fast-paced IT sector can be attributed to its dedication to ongoing learning, which has increased employee engagement and skill development. Like this, Amazon uses digital training resources by offering a variety of online courses and certifications via a learning management system (LMS). With the help of this intuitive interface, staff members may learn new skills, monitor their progress, and modify training programs to accommodate changing workforce demands (Jaiswal & Arun, 2022). Organizations like IBM and Amazon improve employee development and bolster their competitive edge in the market by investing in digital training solutions.

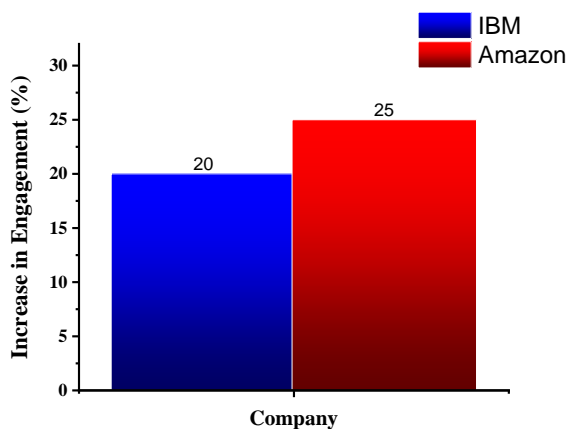


Fig.2: Improvement in Employee Engagement through Training Tools

Source: https://www.glassdoor.co.in/Compare/IBM-vs-Amazon-EI_IE354-E6036.htm

3.3 Performance Management Systems

Performance management systems are crucial digital tools that help businesses evaluate and improve worker performance. To increase employee engagement, productivity, and overall organizational success, these systems offer an organized framework for goal-setting, feedback-giving, and performance evaluation (Marler & Boudreau, 2021). Managers can make well-informed decisions that foster employee development by using performance management systems, which use data and analytics to provide insightful information about an employee's areas of strength and progress. Additionally, by facilitating constant contact and feedback between management and staff, these digital technologies promote a continuous improvement culture. One of the main

advantages of performance management systems is their capacity to match personal aspirations with corporate goals, guaranteeing that workers make significant contributions to the strategic aims of the business. By exposing performance trends and patterns, analytics in these systems facilitate data-driven decision-making and the identification of high-potential personnel (Stone & Deadrick, 2023). This performance data can be used to create tailored development programs that help employees advance in their careers and improve their skills.

General Electric (GE) shows how it successfully transformed its performance management system using digital techniques. The corporation replaced regular annual reviews with a continuous feedback system powered by the "PD@GE" app (Performance Development at GE). This tool enables managers and employees to provide real-time comments, set goals, and measure progress throughout the year. The transition to a continuous feedback model has increased employee engagement and better-aligned performance evaluations with the fast-paced nature of the business (Deloitte, 2023). GE's digital performance management system has promoted responsibility and continuous improvement, resulting in improved organizational performance. Similarly, Deloitte has adopted a digital performance management system called "Performance Experience," which prioritizes continuous feedback and development talks above traditional annual reviews. This software allows employees and managers to set goals, measure progress, and conduct regular check-ins, all while using data analytics to discover performance trends. Deloitte's adoption of this agile approach to performance evaluation has increased employee satisfaction and productivity (Deloitte, 2023), consistent with the company's aim to create a dynamic work environment. Thus, digital performance management systems are essential to contemporary businesses because they boost worker engagement, match individual efforts to strategic objectives, and promote a continuous improvement culture. By successfully putting these mechanisms into place, businesses may empower their employees to succeed in a more competitive environment while also promoting organizational success.

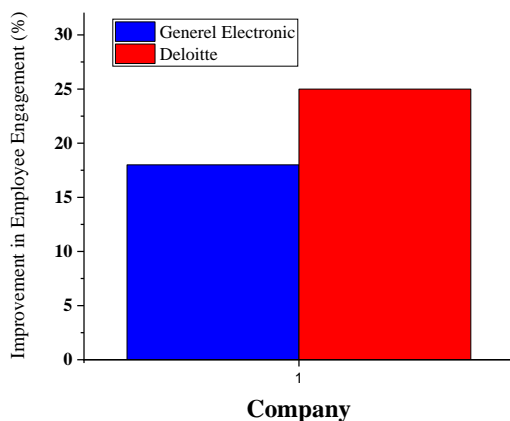


Fig.3: Improvement in engagement via performance management systems

Source: <https://www.glassdoor.co.in/Compare/GE-vs-Deloitte-EI IE277-E2763.htm>

IV. CHALLENGES AND ROADBLOCKS

The digital transformation of HR processes is a strategic imperative for organizations aiming to stay competitive in today's rapidly evolving business environment. While the benefits of HR digital transformation are significant, the journey is fraught with challenges and roadblocks (Mineva et al., 2020). Understanding these obstacles is crucial for organizations to successfully navigate their digital transformation journey and maximize the potential of technology-driven HR functions.

3.4 Navigating Resistance to Change in Digital Transformation

Resistance to change is a fundamental barrier that organizations face during digital transformation, affecting everyone from senior management to front-line workers. This resistance frequently stems from worry about novel technology and procedures, which can lead to uneasiness and reluctance to adapt (Ulrich, 2022). Employees may be concerned about job displacement as automation becomes more widespread, fearing that new technology may render their roles obsolete. Furthermore, a lack of awareness of the advantages of digital transformation might increase this resistance. [23]

Kodak is a prominent illustration of the results of resistance; even though it created the first digital camera in 1975, the company was hesitant to adopt digital photography out of concern that it would jeopardize its lucrative film industry. This unwillingness ultimately led to Kodak's downfall and its 2012 bankruptcy since it was unable to keep up with the quick changes in digital

technology (Sanchez & Oliva, 2022; Marler & Boudreau, 2021). For businesses today, Kodak's story serves as a cautionary tale, emphasizing how important it is to welcome change and adjust to new technology to stay competitive. Accordingly, To overcome resistance, organizations must effectively communicate the goals and benefits of digital transformation. Furthermore, employees must understand how the new technology will impact their jobs and contribute to the success of the organization. Engaging employees in the change process can help reduce anxiety and build support. Adequate training and assistance are critical to helping employees adapt to new technology (Schmid & Pscherer, 2021). Training programs should focus on building the skills needed to use digital tools effectively. Such as Strong leadership which is essential to achieving crucial for driving digital transformation; leaders must articulate a clear vision for the future and inspire employees to embrace change. By fostering a culture open to innovation and change, organizations can facilitate smoother transitions and enhance their ability to thrive in an increasingly digital landscape.

3.5 Streamlining Integration of Digital Technologies in HR Systems

Integrating new digital technologies with existing HR systems creates considerable hurdles, especially for firms that rely on legacy systems that may be incompatible with modern platforms. Effective integration is critical for avoiding data silos, inconsistencies, and inefficiencies that can impede digital transformation efforts. Legacy systems frequently lack the appropriate design for smooth integration, resulting in fragmented data that prevents access and analysis [24] It can be difficult and time-consuming to migrate data from these antiquated systems, and it calls for certain technical knowledge to guarantee correctness and consistency. However, many organizations struggle to develop these skills internally, making integration efforts both costly and labor-intensive [22].

One prominent example is General Electric (GE), which encountered difficulties integrating new cloud-based solutions with its legacy infrastructure when putting its digital HR transformation strategy into practice. GE invested in a strong integration infrastructure that promoted data consistency and efficient communication between systems because it understood how important a good integration was to utilize real-time data (Stone & Deadrick, 2023). This strategic investment enabled GE to streamline HR operations and improve decision-making following business objectives. So, to overcome integration challenges, organizations should develop a comprehensive plan outlining objectives, timelines, and resource requirements while addressing potential obstacles and risk

mitigation strategies. Selecting compatible digital tools and fostering collaboration between IT and HR teams is crucial for success [25]. Implementing integration projects incrementally can help manage complexity and minimize disruptions, allowing organizations to start with small-scale integrations before gradually expanding to more comprehensive solutions [10]

3.6 Data Privacy and Security Concerns

As enterprises increasingly rely on digital platforms to manage employee data, protecting data privacy and security has become a top priority. The digital era has resulted in unprecedented levels of data generation, necessitating strong security measures to protect sensitive information from breaches and unauthorized use. Compliance with data protection rules, such as the General Data Protection Regulation (GDPR) in Europe and the California Consumer Privacy Act (CCPA) in the United States, is critical to protecting employee and consumer information. Navigating these complicated regulatory frameworks presents substantial problems, as noncompliance can result in hefty fines and reputational damage [24]. Furthermore, the rapid growth of digital platforms has increased cybersecurity risks such as hacking and phishing, necessitating businesses' proactive identification of vulnerabilities and implementation of effective security solutions. Protecting employee data is critical for retaining stakeholder trust, as is educating employees on the importance of data privacy [26]

Employees can reduce the risks of human error by participating in training programs that teach them best practices. Target's 2013 data breach, which revealed the personal information of millions of consumers and caused large financial losses, is a noteworthy example [27]. This incident emphasizes how important it is for businesses to have thorough security measures, like frequent audits and cutting-edge cybersecurity solutions (Ulrich, 2022). Organizations can successfully protect sensitive information while building trust with stakeholders and workers by giving data privacy and security priority.

3.7 Skill Gaps and Training Needs

Companies have the difficulty of filling skill gaps in their workforce as a result of digital transformation, which necessitates that worker acquire new abilities and adjust to developing technology. The speed at which technology is developing may surpass employees' capacity to learn new skills when digital HR tools and platforms are put into place [28]. To guarantee that workers stay competitive in the digital world, it is crucial for employers to regularly evaluate these skill gaps and offer specialized training. However, creating successful training programs may be expensive and resource-intensive, so it's important to strike

a balance between the demand for training and financial limitations. It is vital to cultivate a culture of ongoing learning and development since resistance to acquiring new abilities can also occur, especially among workers who are accustomed to current procedures. Furthermore, it can be difficult to quantify how training initiatives affect worker performance and organizational results [4], therefore companies must set up criteria and standards for evaluation. Walmart is a noteworthy example of a company that has effectively addressed skill gaps. In reaction to the digital transformation, Walmart established "Walmart Academy" to upskill its employees. With a focus on experiential learning and real-world application, this initiative offers a variety of training programs centered on digital skills and technology-driven retail operations [28]. Walmart has increased its competitive advantage and enhanced operational efficiency and customer service by investing in staff development. Thus, companies going through digital transformation must address skill shortages through continuous learning programs to give their employees the tools they need to succeed in an increasingly digital world.

3.8 Cultural and Organizational Barriers

Digital transformation often requires a shift in organizational culture and mindset. Traditional hierarchies and bureaucratic processes can hinder the adoption of agile, technology-driven HR practices. Fostering a culture of innovation and openness to change is crucial for overcoming these barriers. Organizations with deeply ingrained cultures may struggle to embrace change and innovation [16]. Cultural inertia can prevent organizations from adopting new technologies and processes that drive digital transformation. Rigid hierarchical structures can stifle creativity and impede collaboration. Organizations must foster a culture of inclusivity and empower employees to contribute ideas and solutions. Some organizations may be resistant to experimenting with new technologies and processes due to perceived risks and uncertainties. Encouraging a culture of experimentation and risk-taking is essential for driving innovation. Managing cultural and organizational change requires a strategic approach [16]. Organizations must engage employees at all levels and communicate the benefits of digital transformation clearly and consistently.

Blockbuster's failure to embrace digital transformation and adapt to changing consumer preferences serves as a stark reminder of the consequences of cultural inertia. Despite recognizing the potential of digital streaming, Blockbuster was unable to shift its organizational culture and business model in time to compete with agile digital competitors like Netflix [18]. The company eventually filed for bankruptcy in 2010.

Blockbuster's experience underscores the importance of fostering a culture of innovation and adaptability. Organizations must be willing to challenge the status quo and embrace new technologies and business models to remain competitive in a rapidly changing digital landscape (Sutanto & Valentine, 2022). By cultivating a culture of openness and experimentation, organizations can overcome cultural and organizational barriers and drive successful digital transformation initiatives.

3.9 Budget Constraints

Implementing digital HR transformation initiatives often requires substantial financial investment. Organizations must allocate funds for new technologies, employee training, and system integration, which can be particularly challenging for those with limited budgets. Budget constraints may limit an organization's ability to pursue comprehensive digital transformation, forcing it to prioritize certain initiatives over others [29]. The upfront costs of acquiring digital HR technologies can be prohibitive, especially for small and medium enterprises (SMEs) with limited financial resources. In addition to initial investments, organizations must budget for ongoing maintenance, upgrades, and support to ensure the longevity and effectiveness of digital tools. Organizations need to strategically allocate resources to balance investment in digital transformation with other business priorities [8]. Without careful planning, organizations may overspend on digital transformation initiatives, leading to financial strain and potential cutbacks in other areas.

Many SMEs face budget constraints that hinder their ability to invest in digital transformation. Unlike large corporations with substantial resources, SMEs often struggle to afford the latest technologies and training programs [25]. To overcome this challenge, SMEs can explore cost-effective solutions such as leveraging cloud-based platforms, which offer scalable and affordable options for digital transformation. Cloud-based platforms provide SMEs with access to advanced HR tools without the need for significant upfront investments in hardware or software [20]. Additionally, SMEs can seek government grants or incentives designed to support digital initiatives, helping to offset costs and facilitate the adoption of digital technologies.

3.10 Measuring ROI and Success

Measuring the return on investment (ROI) and success of digital transformation initiatives is critical for organizations to justify their investments and guide future strategies. However, this can be a complex process, requiring clear metrics and benchmarks to assess the impact of digital HR tools on efficiency, productivity, and employee engagement [30]. Organizations must define

clear and relevant metrics to measure the success of digital transformation initiatives. Collecting and analyzing data to assess the impact of digital tools requires robust data management and analytical capabilities. Isolating the impact of digital transformation initiatives from other factors that contribute to business outcomes can be challenging [31]. Organizations need to continuously monitor and adjust their digital strategies based on insights gained from ROI measurements.

Cisco, a global technology company, faced challenges in measuring the success of its digital transformation efforts. To address this, Cisco implemented a comprehensive framework for assessing the impact of digital initiatives on business outcomes. The company uses data analytics to track key performance indicators (KPIs), such as employee productivity, engagement, and satisfaction (Yuezhou, 2020). By continuously refining its digital strategies based on insights gained from these measurements, Cisco has been able to optimize its digital transformation initiatives and align them with business objectives. This data-driven approach enables Cisco to demonstrate the value of digital transformation to stakeholders and guide future investments.

3.11 Overcoming Legacy Mindsets

Legacy mindsets within leadership and management can hinder the progress of digital transformation. Decision-makers who are resistant to change may be reluctant to invest in new technologies or adopt innovative HR practices. Overcoming these mindsets is essential for driving digital transformation initiatives forward (Stone & Deadrick, 2023). Leaders with legacy mindsets may resist change due to fear of the unknown or concerns about the risks associated with new technologies. Without visionary leadership, organizations may struggle to see the long-term benefits of digital transformation and prioritize short-term gains over strategic innovation. Organizational cultures that prioritize traditional methods and hierarchical structures can impede the adoption of digital HR practices [20]. Developing leaders who embrace innovation and digital transformation is crucial for fostering a culture of continuous learning and experimentation.

IBM, a pioneer in digital transformation, recognized the need for leadership that embraces innovation. The company has undergone significant cultural and organizational changes to foster a mindset of continuous learning and experimentation. By encouraging leaders to embrace digital transformation, IBM has successfully adapted to the evolving technology landscape and maintained its competitive edge (IBM, 2021). IBM's approach involves investing in leadership development programs that equip leaders with the skills and mindset

needed to drive digital initiatives. The company emphasizes the importance of agile decision-making and encourages leaders to experiment with new technologies and processes to foster innovation.

3.12 Customization and Personalization

Digital HR tools often require customization to align with an organization's unique needs and processes. Balancing customization with the standardization offered by digital platforms can be challenging [32]. Organizations must strike a balance between tailoring solutions to their specific requirements and leveraging the scalability of digital tools. Customizing digital HR tools to meet specific organizational needs can be complex and time-consuming. Organizations must balance the benefits of standardized solutions with the need for flexibility to accommodate diverse business requirements. Customization can add to the cost of digital transformation initiatives, requiring careful budget planning and resource allocation [29]. Customization efforts must align with organizational goals to ensure that digital HR tools support business objectives.

SAP, a leading enterprise software company, offers customizable HR solutions that cater to diverse organizational needs. However, implementing these solutions requires careful planning and collaboration with stakeholders to ensure that the customization aligns with the organization's goals. SAP's approach emphasizes the importance of flexibility in digital transformation to accommodate varying business requirements. SAP works closely with clients to understand their unique needs and develop tailored solutions that enhance HR processes. This collaborative approach ensures that organizations can leverage the scalability of SAP's digital tools while customizing them to fit their specific requirements (Yuezhou, 2020). By balancing standardization and personalization, SAP helps organizations achieve their digital transformation objectives while supporting business goals.

V. CONCLUSION

In conclusion, the digitization of human resources (HR) offers numerous advantages, including improved employee engagement, enhanced operational efficiency, and a more adaptable workforce. By leveraging cutting-edge technologies, businesses can drive data-driven decision-making, streamline processes, and reduce operational costs. Automation and system consolidation, in particular, offer significant benefits, such as improved employee experiences and greater cost-efficiency. However, the transformation is not without its challenges. Key limitations include resistance to change, difficulties in integrating new technologies with existing systems, and

concerns around data privacy and security. Addressing these challenges proactively through effective communication, comprehensive training, and strong leadership can help mitigate these obstacles. The successful implementation of digital HR strategies, as demonstrated by industry leaders like IBM, Unilever, and Amazon, highlights the immense potential of technology to revolutionize HR practices. Moving forward, HR departments that prioritize innovation, real-time data utilization, and enhanced employee experiences will be well-positioned for long-term growth and success. Moreover, the transition of HR from traditional administrative roles to strategic business partners will be crucial in shaping its future. The potential applications of digital transformation in HR are vast, ranging from talent management to workforce analytics. Future developments may see more advanced uses of artificial intelligence, machine learning, and predictive analytics to further enhance HR processes. Ultimately, while the journey of digital transformation presents challenges, the benefits in terms of operational effectiveness, inclusivity, and future-readiness make it an essential investment for organizations aiming for long-term success.

5.1 Limitations

HR digital transformation offers many benefits, but several obstacles prevent it from being successfully implemented. One significant barrier is organizational resistance to change, where management and staff may be reluctant or delayed in accepting new technology (Yuezhou, 2020). Problems with integration frequently occur, especially when attempting to combine new digital systems with pre-existing legacy systems, which may cause interruptions and inefficiencies. Concerns about data security and privacy are also quite important, particularly considering the growing use of AI-driven technologies and cloud-based systems that manage sensitive employee data. Another significant barrier is that HR workers lack the necessary knowledge and training to use these new technologies efficiently. Language and cultural differences can also make the implementation process in global corporations more difficult [12]. Finally, the significant financial outlay needed for digital transformation initiatives can be a significant hurdle, especially for smaller organizations with limited resources.

5.2 Future Perspectives

Future developments and breakthroughs in HR digital transformation are anticipated to significantly revolutionize the HR environment. Organizations will probably see an even deeper integration of AI and machine learning as technology develops, allowing more predictive and tailored HR tasks. HR practitioners will be able to

foresee patterns and take proactive measures to solve concerns when decision-making processes are improved by the development of more advanced data analytics technologies. Furthermore, it is anticipated that employee experience will become increasingly important, with digital technologies being essential in fostering more stimulating and encouraging work environments. Organizations must place a high priority on ongoing learning and development to ensure that their HR staff have the knowledge and abilities to effectively use emerging technology in the workplace of the future. Additionally, as remote employment becomes more common, the importance of cloud-based HR solutions will likely increase, enabling seamless management of a distributed workforce. Organizations that can effectively address the current limitations and embrace these future trends will be better positioned to achieve sustainable success in an increasingly competitive business environment.

DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

ACKNOWLEDGEMENT

School of Business, Jiangnan University, Wuxi 214122, China

REFERENCES

- [1] D. E. P. Strohmeier and P. Stefan, "HRM in the digital age--digital changes and challenges of the HR profession," *Employee relations*, vol. 36, no. 4, 2014.
- [2] B. Harney, "The limits of HRM in a new era of work: Bezonomics and the Amazon Effect," *Protecting the Future of Work: New Institutional Arrangements for Safeguarding Labour Standards*, pp. 67–84, 2023.
- [3] M. Anuradha and K. J. Rani, "PREDICTIVE ANALYTICS IN HR: USING AI TO FORECAST EMPLOYEE TURNOVER AND IMPROVE SUCCESSION PLANNING," *Zibaldone Estudios italianos*, vol. 11, no. 2, pp. 157–173, 2024.
- [4] B. Schneider, "HRM--a service perspective: towards a customer-focused HRM," *International Journal of Service Industry Management*, vol. 5, no. 1, pp. 64–76, 1994.
- [5] D. D  meijer, "Making digital HRM work: A study in changes in perceived consequences of e-HRM in the past decade.," *University of Twente*, 2017.
- [6] P. C. Verhoef et al., "Digital transformation: A multidisciplinary reflection and research agenda," *J Bus Res*, vol. 122, pp. 889–901, 2021.
- [7] W. F. Cascio and J. W. Boudreau, "The search for global competence: From international HR to talent management," *Journal of World Business*, vol. 51, no. 1, pp. 103–114, 2016.
- [8] I. Jesemann, "Support of startup innovation towards development of new industries," *Procedia CIRP*, vol. 88, pp. 3–8, 2020.
- [9] A. DiRomualdo, D. El-Khoury, and F. Girimonte, "HR in the digital age: How digital technology will change HR's organization structure, processes and roles," *Strategic HR Review*, vol. 17, no. 5, pp. 234–242, 2018.
- [10] E. Fregnan, S. Ivaldi, and G. Scaratti, "HRM 4.0 and New Managerial Competences Profile: The COMAU Case," *Front Psychol*, vol. 11, p. 578251, 2020, doi: 10.3389/fpsyg.2020.578251.
- [11] Q. Zhu, J. Wang, F. Fu, B. Liu, and J. Guan, "Digital transformation: a reflection from HRM perspective," *Mental Health & Human Resilience International Journal*, vol. 6, no. 1, pp. 23–30, 2022.
- [12] A. Mohamed and S. Mogadishu, "HRM in the digital era: exploring the impact of technology and digital transformation on HRM practices and strategies in Somalia," *European Journal of Business and Management*. <https://doi.org/10.7176/EJBM/15-15-06>, 2023.
- [13] A. Febriana and M. Mujib, "Increasing productivity of gen z employees: the role of flexible work arrangements and participative style," *SA Journal of Human Resource Management*, vol. 22, p. 2489, 2024.
- [14] M. Thite, "Digital human resource development: where are we? Where should we go and how do we go there?," *Human Resource Development International*, vol. 25, no. 1, pp. 87–103, 2022.
- [15] M. Saram, O. J. Aburumman, and A. Hasan, "The impact of HRM practices and employee behavior on career success," *Problems and Perspectives in Management*, vol. 21, no. 1, pp. 326–335, 2023.
- [16] S. K. Kirilmaz, "Digital transformation in human resources management: investigation of digital hrm practices of businesses," *Research Journal of Business and Management (RJBM)*, vol. 7, no. 3, pp. 188–200, 2020.
- [17] K. Plis and E. Schislyaeva, "Digital transformation in business in the modern world-a new approach to the development of human capital," in *Proceedings of the International Scientific Conference-Digital Transformation on Manufacturing, Infrastructure and Service*, 2020, pp. 1–6.
- [18] C. Heavin and D. J. Power, "Challenges for digital transformation--towards a conceptual decision support guide for managers," *J Decis Syst*, vol. 27, no. sup1, pp. 38–45, 2018.
- [19] T. Fabbri, F. Mandreoli, R. Martoglia, and A. C. Scapolan, "Employee attitudes and (digital) collaboration data: A preliminary analysis in the HRM field," in *2019 28th International Conference on Computer Communication and Networks (ICCCN)*, 2019, pp. 1–6.
- [20] I. M. Sebastian, J. W. Ross, C. Beath, M. Mocker, K. G. Moloney, and N. O. Fonstad, "How big old companies navigate digital transformation," in *Strategic information management*, Routledge, 2020, pp. 133–150.

- [21] O. Evseeva, O. Kalchenko, S. Evseeva, and K. Plis, "Instruments of human resource management based on the digital technologies in Russia," in International Conference on Digital Technologies in Logistics and Infrastructure (ICDTLI 2019), 2019, pp. 148–154.
- [22] Y. Schmid and F. Pscherer, "Digital transformation affecting human resource activities: A mixed-methods approach," in Human Interaction, Emerging Technologies and Future Systems V: Proceedings of the 5th International Virtual Conference on Human Interaction and Emerging Technologies, IHET 2021, August 27-29, 2021 and the 6th IHET: Future Systems (IHET-FS 2021), Octobe, 2022, pp. 543–549.
- [23] A. Singh and T. Hess, "How chief digital officers promote the digital transformation of their companies," in Strategic information management, Routledge, 2020, pp. 202–220.
- [24] A. Komm, F. Pollner, B. Schaninger, and S. Sikka, "The new possible: How HR can help build the organization of the future," McKinsey Global *Publishing*, vol. 3, p. 12, 2021.
- [25] Y. Sotnikova, G. Nazarova, N. Nazarov, and H. Bilokonenko, "Digital technologies in HR management," Management theory and studies for rural business and infrastructure development, vol. 42, no. 4, pp. 527–535, 2020.
- [26] R. G. Fichman, B. L. Dos Santos, and Z. Zheng, "Digital innovation as a fundamental and powerful concept in the information systems curriculum," MIS quarterly, vol. 38, no. 2, pp. 329–A15, 2014.
- [27] A. M. Smirnova, I. M. Zaychenko, and I. V Bagaeva, "Formation of requirements for human resources in the conditions of digital transformation of business," in International Conference on Digital Technologies in Logistics and Infrastructure (ICDTLI 2019), 2019, pp. 280–285.
- [28] R. Y. Vakulenko, N. S. Tyumina, E. A. Potapova, and L. N. Proskulikova, "Analysis of organizational and technological environment of the existence of electronic services," Vestnik of Minin University, no. 1–1, p. 1, 2016.
- [29] T. Hooley and T. Staunton, "21 The Role of Digital Technology in Career Development," The Oxford handbook of career development, p. 297, 2021.
- [30] I. A. Indroputri and R. Sanjaya, "Digital Transformation in Human Resource Management and Its Role in Gen Z Career Development A Systematic Literature Review," Petra International Journal of Business Studies, vol. 7, no. 1, pp. 48–56, 2024.
- [31] S. Strohmeier, "Digital human resource management: A conceptual clarification," German Journal of Human Resource Management, vol. 34, no. 3, pp. 345–365, 2020.
- [32] Y.-T. Huang, "Internal marketing and internal customer: A review, reconceptualization, and extension," Journal of Relationship marketing, vol. 19, no. 3, pp. 165–181, 2020.