

**EXPLORING THE EFFECTIVENESS OF ELECTRONIC HUMAN RESOURCE
MANAGEMENT SYSTEMS ACROSS INDUSTRIAL AND SERVICE SECTORS**

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Abstract:

The rapid digital transformation in organizations has propelled the adoption of Electronic Human Resource Management (E-HRM) tools across sectors. This study investigates the adoption and impact of E-HRM tools in both manufacturing and service organizations, emphasizing differences in implementation, user satisfaction, and organizational outcomes. A quantitative research approach was employed, with a sample of 86 employees drawn from five manufacturing and five service organizations using stratified random sampling. Data were collected through structured questionnaires assessing E-HRM adoption levels, perceived effectiveness, user satisfaction, and performance outcomes. Statistical analyses, including ANOVA, Chi-square, regression, and T-test, were applied to examine sectoral differences and relationships among variables. Findings reveal that service sector organizations exhibit higher adoption rates and user satisfaction levels, whereas manufacturing organizations face moderate challenges due to workflow integration and training limitations. Regression analysis highlights a significant positive relationship between E-HRM adoption and employee performance across both sectors. The study underscores the role of E-HRM tools in enhancing efficiency, communication, and employee engagement, while also identifying sector-specific implementation challenges. These insights offer valuable guidance for organizational policymakers, HR professionals, and technology providers to optimize E-HRM deployment strategies tailored to sectoral needs, ensuring sustainable performance improvements and employee satisfaction.

Introduction

The proliferation of digital technologies has reshaped human resource management, enabling organizations to leverage Electronic Human Resource Management (E-HRM) tools for enhanced efficiency, data management, and employee engagement. The rapid advancement of digital technologies has significantly transformed human resource management, giving rise to Electronic Human Resource Management (E-HRM) systems. E-HRM systems integrate technology into HR functions such as recruitment, training, performance appraisal, payroll,

and employee engagement, enabling organizations to streamline processes, enhance data management, and improve decision-making efficiency. Both industrial and service sectors are increasingly adopting E-HRM systems to manage workforce-related activities and achieve strategic HR objectives. However, the adoption, utilization, and effectiveness of these systems may vary across sectors due to differences in operational workflows, workforce characteristics, and organizational culture. Industrial organizations often encounter challenges related to workforce heterogeneity, resistance to technological change, and integration with production systems, which can limit the effectiveness of E-HRM. Conversely, service organizations, characterized by knowledge-intensive tasks and higher interaction levels, tend to adopt E-HRM tools more seamlessly, yielding improvements in efficiency, communication, and employee satisfaction. Empirical studies suggest that effective E-HRM implementation positively influences HR service quality, employee engagement, and overall organizational performance. Despite these benefits, limited research exists that systematically compares the adoption and effectiveness of E-HRM systems across industrial and service sectors. This study aims to address this gap by examining sectoral differences in adoption rates, user satisfaction, and performance outcomes, providing insights for HR practitioners and organizational leaders to optimize E-HRM strategies tailored to sector-specific needs. E-HRM encompasses the integration of technology in HR functions such as recruitment, training, performance appraisal, payroll, and employee communication. Both manufacturing and service organizations are increasingly adopting these tools to streamline HR processes and improve decision-making. However, the adoption and impact of E-HRM may vary across sectors due to differences in operational workflows, workforce demographics, and organizational culture. In manufacturing organizations, E-HRM implementation often faces challenges related to workforce diversity, shop-floor communication, and technology adaptability. Conversely, service sector organizations, characterized by knowledge-intensive work and higher employee interaction, tend to adopt E-HRM tools more seamlessly, enhancing process efficiency and employee engagement. Prior studies suggest that successful E-HRM adoption leads to improved HR service quality, faster information processing, better employee satisfaction, and higher organizational performance. Despite these benefits, empirical research comparing adoption patterns and outcomes between manufacturing and service sectors remains limited. This study addresses this gap by examining the adoption and impact of E-HRM tools across manufacturing and service organizations. It explores sectoral differences in adoption rates, perceived effectiveness, user satisfaction, and performance outcomes. Additionally, it investigates the relationship between E-HRM adoption and employee performance through robust statistical analyses, including ANOVA, Chi-square, regression, and T-test. By providing insights into sector-specific adoption patterns and challenges, the study offers practical recommendations for HR professionals and policymakers to enhance E-HRM implementation strategies tailored to organizational context, ultimately improving HR service delivery and workforce performance.

Review of Literature:

E-HRM adoption has gained significant attention in both academic and organizational

research, highlighting its potential to transform HR functions and organizational performance. Strohmeier (2017) defines E-HRM as the application of web-based technologies and digital systems to manage HR processes, enabling real-time data access, automated workflows, and enhanced employee communication. Prior studies indicate that E-HRM adoption positively influences HR service quality, decision-making speed, and operational efficiency. In manufacturing organizations, E-HRM tools face implementation challenges such as integration with existing production systems, workforce training limitations, and employee resistance due to low technology familiarity (Bondarouk & Ruël, 2013). These factors may limit the effectiveness of E-HRM, affecting employee satisfaction and performance outcomes. Conversely, service organizations, often characterized by knowledge-intensive work, demonstrate higher adoption rates and better integration of E-HRM tools into daily HR practices, resulting in enhanced employee engagement and communication efficiency (Marler & Parry, 2016). Empirical research underscores the relationship between E-HRM adoption and employee performance. Regression analyses from multiple studies suggest a positive correlation between the level of E-HRM utilization and productivity, engagement, and retention (Panayotopoulou et al., 2016). Additionally, sectoral differences are evident, with service sector employees reporting higher satisfaction due to more flexible, user-friendly digital HR systems, whereas manufacturing employees experience moderate improvements influenced by organizational constraints and workflow complexities. The literature also emphasizes the role of user training, change management, and top management support in successful E-HRM implementation. Systematic reviews highlight that organizations integrating E-HRM with strategic HR practices achieve better alignment with organizational goals, enhanced decision-making, and higher performance outcomes (Bondarouk & Ruël, 2013; Strohmeier, 2015). Nevertheless, gaps remain in comparative studies across sectors, warranting research to evaluate adoption levels, effectiveness, and challenges in manufacturing versus service organizations. This study addresses these gaps, providing a comprehensive comparative assessment and evidence-based insights to guide sector-specific E-HRM strategies.

Objectives of the Study:

1. To assess the adoption levels of E-HRM tools in manufacturing and service organizations.
2. To evaluate the impact of E-HRM tools on employee satisfaction and engagement.
3. To analyze differences in adoption and effectiveness between manufacturing and service sectors.
4. To examine the relationship between E-HRM adoption and employee performance.
5. To provide recommendations for optimizing E-HRM implementation across sectors.

Research and Methodology:

A quantitative research design was adopted. The study involved 86 employees sampled from five manufacturing and five service organizations using stratified random sampling. Data were collected via structured questionnaires measuring E-HRM adoption, user satisfaction, perceived effectiveness, and employee performance. Statistical analyses included ANOVA to assess differences between sectors, Chi-square tests for categorical associations, regression analysis to determine the effect of adoption on performance, and T-tests for mean comparisons. Four tables summarize demographic data, adoption levels, sector comparisons, and statistical results.

Table 1: ANOVA Results

Group	Mean Adoption	F-Value	p-value
Manufacturing	3.2	6.54	0.013
Service	3.8	0	-
Combined	3.5	0	-
Total	3.5	0	-

Interpretation: ANOVA results show significant differences in E-HRM adoption between manufacturing and service sectors, with service organizations exhibiting higher mean adoption scores, indicating sectoral variation in technology integration.

Table 2: Chi-Square Results

Variable	Chi-Square	df	p-value
Department	12.45	3	0.006
Tenure	9.36	3	0.025
Training Received	14.21	3	0.003
Tech Familiarity	8.74	3	0.033

Interpretation: Chi-square analysis indicates significant associations between employee characteristics (department, tenure, training, technology familiarity) and E-HRM adoption levels, highlighting demographic influences.

Table 3: Regression Results

Predictor	Coefficient	t-Value	p-value
Adoption Level	0.45	3.56	0.001
Sector	0.32	2.87	0.005
Experience	0.28	2.14	0.035
Tech Support	0.36	2.95	0.004

Interpretation: Regression results reveal that higher E-HRM adoption levels, sector, experience, and technical support positively influence employee performance, with all predictors statistically significant.

Table 4: T-Test Results

Comparison	t-Value	df	p-value
Manufacturing vs Service	2.98	84	0.004
Pre vs Post Adoption	4.12	85	0.001
Low vs High Tech Users	3.45	83	0.002
Male vs Female	1.87	84	0.065

Interpretation: T-Test results show significant differences in adoption and performance between sectors, pre- and post-adoption, and between technology proficiency groups. Gender differences were not statistically significant.

Findings

The analysis revealed that service sector organizations demonstrate higher adoption levels of E-HRM tools compared to manufacturing organizations. ANOVA results indicated significant differences in adoption rates and perceived effectiveness between sectors. Chi-square analysis highlighted strong associations between employee department, tenure, and

frequency of E-HRM usage. Regression analysis confirmed a positive and significant relationship between E-HRM adoption and employee performance, suggesting that greater utilization of digital HR tools leads to enhanced engagement and productivity. T-test comparisons of pre- and post-adoption satisfaction scores showed marked improvement across both sectors, with service organizations exhibiting slightly higher gains. The findings suggest that sector-specific factors, including workflow complexity and training opportunities, influence the degree of adoption and the impact on performance outcomes. Overall, E-HRM tools enhance HR process efficiency, facilitate communication, and improve user satisfaction, with evidence indicating measurable benefits in employee performance metrics. Challenges such as technological adaptation and workflow integration remain pertinent in manufacturing settings, requiring targeted strategies for effective implementation. These insights provide a foundation for organizational decision-makers to develop tailored E-HRM policies and training initiatives.

Suggestions

Organizations should prioritize sector-specific E-HRM implementation strategies, considering unique operational workflows and employee demographics. In manufacturing organizations, additional training programs and support mechanisms are essential to overcome adoption barriers and ensure effective use of E-HRM tools. Service sector organizations should focus on continuous improvement of digital platforms to sustain high engagement and satisfaction levels. Top management should actively promote E-HRM adoption through leadership support, clear communication, and performance incentives. Integration of E-HRM systems with existing business processes should be carefully planned to minimize disruption and enhance user experience. Organizations are encouraged to conduct regular audits and user feedback sessions to identify gaps and implement iterative improvements. Cross-sector collaborations can facilitate knowledge sharing and best practice dissemination. Investment in infrastructure, software customization, and technical support is critical to maintain system efficiency and reliability. Policy frameworks should be aligned with organizational goals to foster consistent and equitable adoption across departments. Emphasis on user-friendly interfaces and accessibility ensures inclusivity for employees with varying technical proficiency. Future research should explore long-term impacts of E-HRM adoption on organizational performance and employee retention. By addressing these recommendations, organizations can maximize the benefits of E-HRM tools, achieve higher employee satisfaction, and improve overall productivity.

Conclusion:

This study provides a comprehensive assessment of the adoption and impact of E-HRM tools in manufacturing and service organizations. Quantitative analyses revealed that service organizations have higher adoption rates, user satisfaction, and performance outcomes, while manufacturing organizations face moderate challenges due to workflow complexity and technology adaptation needs. ANOVA and Chi-square analyses identified significant

differences and associations between sector, employee characteristics, and E-HRM utilization patterns. Regression results confirmed a positive relationship between E-HRM adoption and employee performance, emphasizing the critical role of digital HR tools in enhancing engagement, productivity, and process efficiency. The findings underscore the importance of sector-specific strategies, highlighting that a one-size-fits-all approach to E-HRM implementation may not yield optimal results. Tailored training programs, integration strategies, and leadership support are essential to maximize adoption and impact. Recommendations emphasize infrastructure investment, system usability, continuous monitoring, and user feedback mechanisms as key drivers for sustained effectiveness. Furthermore, E-HRM tools contribute to improved HR service quality, faster decision-making, and enhanced communication across organizational levels, reinforcing their strategic value. Challenges such as employee resistance, technological limitations, and workflow disruptions must be proactively managed to ensure successful outcomes. By comparing manufacturing and service sectors, the study illuminates contextual factors that influence adoption, providing actionable insights for policymakers, HR managers, and technology providers. The research also highlights opportunities for future investigations, including longitudinal studies to evaluate long-term benefits, cross-industry comparisons, and the exploration of innovative E-HRM features that enhance employee engagement. In conclusion, the study affirms that E-HRM tools are transformative in modern HR practices, offering measurable improvements in efficiency, performance, and satisfaction. Strategic, well-supported implementation tailored to sectoral contexts enables organizations to leverage these digital tools fully, ensuring that both employees and the organization derive sustained value from technology-driven HR solutions. The study highlights the critical role of Electronic Human Resource Management (E-HRM) systems in enhancing organizational efficiency and employee engagement across industrial and service sectors. Findings indicate that service organizations demonstrate higher adoption rates, greater ease of integration, and stronger positive impacts on employee satisfaction and performance. Industrial organizations, while benefiting from E-HRM, encounter moderate challenges such as workforce resistance, technological adaptation, and integration with operational workflows, which can limit the overall effectiveness of these systems. The analysis underscores that successful implementation of E-HRM is contingent upon adequate training, management support, and alignment with organizational processes. Furthermore, sector-specific factors such as workforce composition, task complexity, and communication patterns significantly influence the adoption and outcomes of digital HR tools. Overall, the study confirms that E-HRM systems contribute to improved HR service quality, faster decision-making, and enhanced organizational performance when appropriately implemented. The comparative insights provide practical guidance for HR practitioners and organizational leaders to tailor E-HRM strategies according to sectoral contexts. By addressing adoption barriers and leveraging best practices, organizations can maximize the potential of E-HRM systems, ensuring sustainable improvements in employee engagement, productivity, and overall human resource effectiveness.

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