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ICT-Based HRM Practices in Public and Private Manufacturing Organizations: An Empirical Study of Chhattisgarh

Sumedha Pandey [1*], Dr. Abhishek Kumar Pathak [2]
[1] Research Scholar, Dr. C.V. Raman University, Kargi Road, Kota, Bilaspur, Chhattisgarh, India
[2] Professor, Dr. C.V. Raman University, Kargi Road, Kota, Bilaspur, Chhattisgarh, India

Corresponding Author: *Sumedha Pandey

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Abstract

Human Resource Management (HRM) practices in manufacturing organizations are increasingly influenced by Information and Communications Technology (ICT), particularly through the adoption of Human Resource Information Systems, e-recruitment platforms, digital performance management systems, and employee self-service tools. This study examines ICT-based factors associated with HRM practices in public and private manufacturing organizations in Chhattisgarh, India. The study used a cross-sectional quantitative research design and collected data from 285 employees, comprising 143 respondents from public sector manufacturing organizations and 142 respondents from private sector manufacturing organizations. The data were analyzed using descriptive statistics, independent-samples *t*-tests, Pearson correlation, multiple regression, and ANOVA through SPSS. The findings indicate that private sector organizations reported significantly higher levels of ICT infrastructure, e-recruitment effectiveness, and digital performance management effectiveness than public sector organizations. ICT infrastructure, organizational support, employee digital literacy, and change management communication showed positive associations with overall HRM effectiveness. Regression results further indicated that organizational support was the strongest predictor of HRM effectiveness, followed by ICT infrastructure and change management communication. The study concludes that ICT-enabled HRM effectiveness depends not only on technology availability but also on organizational support, employee readiness, digital literacy, and sector-specific implementation conditions. The findings provide practical implications for HR managers, policymakers, and manufacturing organizations seeking to improve HRM efficiency through ICT adoption.

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KEYWORDS: ICT, HRM practices, e-HRM, digital HRM, manufacturing organizations, public sector, private sector, Chhattisgarh

1. INTRODUCTION

1.1 Background of the Study

The manufacturing sector has undergone major transformation due to technological advancement, automation, digital communication, and data-driven organizational systems. In this changing environment, Human Resource Management (HRM) is no longer limited to routine administrative activities such as recruitment records, attendance monitoring, payroll processing, and employee documentation. HRM has increasingly become a strategic function supported by Information and Communications Technology (ICT), Human Resource Information Systems (HRIS), e-recruitment platforms, digital performance management systems, online training systems, and employee self-service portals.

In manufacturing organizations, the role of ICT in HRM is particularly important because these organizations usually involve large workforces, multiple departments, shift-based work arrangements, technical and non-technical employees, and complex coordination between operational, supervisory, and managerial levels. Effective use of ICT can improve recruitment efficiency, employee record management, performance appraisal, training delivery, communication, workforce planning, and HR decision-making. However, the successful implementation of ICT-based HRM practices depends not only on the availability of technology but also on employee digital literacy, organizational support, infrastructure quality, change management, and sector-specific administrative conditions.

Chhattisgarh is an important industrial state in India, with a strong manufacturing base in sectors such as steel, cement, aluminium, mining-related industries, and power generation. Public and private manufacturing organizations in the state operate under different structural, regulatory, and managerial conditions. Public sector organizations are often characterized by formal procedures, hierarchical decision-making, regulatory control, and relatively slower administrative flexibility. Private sector organizations, in contrast, generally emphasize competitiveness, operational efficiency, faster decision-making, and performance-oriented HR practices. These differences may influence the adoption, implementation, and effectiveness of ICT-based HRM practices.

The integration of ICT into HRM has created opportunities for improving transparency, efficiency, and data-based decision-making. E-recruitment systems can reduce hiring time and improve applicant tracking. Digital performance management systems can support timely feedback, objective appraisal, and performance monitoring. HRIS platforms can help organizations maintain accurate employee records and generate reports for strategic planning. However, these benefits may not be realized equally across all organizations. Differences in infrastructure, training, leadership support, employee readiness, and organizational culture can significantly affect ICT-HRM outcomes.

Therefore, studying ICT-based factors relating to HRM practices in public and private manufacturing organizations of Chhattisgarh is important from both academic and practical perspectives. The present study attempts to examine how ICT infrastructure, digital literacy, organizational support, change management, e-recruitment, and digital performance management are associated with HRM effectiveness in manufacturing organizations.

1.2 Research Gap and Significance

Existing literature has examined electronic HRM, digital HRM, HRIS adoption, and ICT-enabled HR practices in different organizational contexts. Prior studies have shown that ICT can improve HR efficiency, enhance strategic HR involvement, and support organizational performance when implemented with adequate infrastructure and managerial support. However, much of the available research has focused on developed economies, service-sector organizations, IT-based firms, or broad organizational settings. Comparatively limited empirical attention has been given to ICT-based HRM practices in manufacturing organizations, especially in regional industrial contexts such as Chhattisgarh.

A further gap exists in the comparative examination of public and private manufacturing organizations. Public and private sector organizations differ in administrative structure, decision-making flexibility, workforce composition, technology investment, and HR policy implementation. These differences may influence how ICT is adopted and used in HRM practices. However, limited research has systematically compared ICT-HRM factors between public and private manufacturing organizations within the same regional context.

The present study addresses this gap by examining ICT-based factors associated with HRM practices in selected public and private manufacturing organizations of Chhattisgarh. The study focuses on ICT infrastructure, e-recruitment effectiveness, digital performance management, employee digital literacy, organizational support, and change management communication. By doing so, it contributes to the understanding of how technological, human, and organizational factors collectively influence HRM effectiveness in the manufacturing sector.

The study is significant for four reasons. First, it provides empirical evidence from the manufacturing sector, where ICT-HRM adoption may differ from service and IT-based organizations. Second, it compares public and private sector organizations, thereby offering sector-specific insights. Third, it identifies key organizational and human factors that support or restrict ICT-based HRM effectiveness. Fourth, it provides practical implications for HR managers, policymakers, and organizational leaders seeking to improve HRM systems through digital transformation.

1.3 RESEARCH OBJECTIVES

The main objective of the study is to examine ICT-based factors associated with HRM practices in public and private manufacturing organizations of Chhattisgarh.

The specific objectives are:

1. To identify the major ICT-based factors influencing HRM practices in manufacturing organizations.
2. To compare ICT-based HRM practices between public and private manufacturing organizations.

3. To examine the relationship between ICT infrastructure, e-recruitment, digital performance management, employee digital literacy, organizational support, change management communication, and HRM effectiveness.
4. To analyze the predictive role of ICT infrastructure, employee digital literacy, organizational support, and change management communication in HRM effectiveness.
5. To identify major barriers and facilitators affecting ICT-HRM implementation in manufacturing organizations.

1.4 Hypotheses

Based on the research objectives and literature review, the following hypotheses are proposed:

H1: There is a significant positive relationship between e-recruitment system quality and recruitment efficiency in manufacturing organizations.

H2: There is a significant positive relationship between digital performance management and HRM effectiveness in manufacturing organizations.

H3: Private sector manufacturing organizations report significantly higher ICT-based HRM effectiveness than public sector manufacturing organizations.

H4: Employee digital literacy has a significant positive relationship with overall HRM effectiveness.

H5: Organizational support, ICT infrastructure, employee digital literacy, and change management communication significantly predict overall HRM effectiveness.

1.5 Significance of the Study

This study is significant because it examines ICT-based HRM practices in public and private manufacturing organizations of Chhattisgarh. It contributes to HRM literature by focusing on the manufacturing sector, where limited empirical research is available. The study also provides practical guidance for HR managers to improve recruitment, performance management, employee communication, and digital HR systems. For policymakers, the study highlights the need for better ICT infrastructure, digital literacy training, and change management support, especially in public sector organizations.

1.6 Theoretical Framework

This study is based on the Technology Acceptance Model (TAM), the Technology–Organization–Environment (TOE) framework, and the socio-technical systems perspective. These theories explain how ICT-based HRM practices affect HRM effectiveness. TAM suggests that employees use digital systems when they find them useful and easy to use. This supports H1 (e-recruitment system quality improves recruitment efficiency) and H2 (digital performance management improves HRM effectiveness). The TOE framework explains technology adoption through technology, organizational support, and environmental factors. ICT infrastructure, organizational support, and sector differences are important in this study. This supports H3 (private organizations have higher ICT-based HRM effectiveness than public organizations) and H5 (ICT infrastructure, organizational support, digital literacy, and change management communication predict HRM effectiveness). The socio-technical systems perspective states that technology works best when combined with skilled employees and supportive work systems. This supports H4 (employee digital literacy positively affects HRM effectiveness) and strengthens H5. Overall, the framework suggests that HRM effectiveness depends on technology, employee capability, and organizational support working together.

2. LITERATURE REVIEW

2.1 ICT and Transformation of HRM

Information and Communication Technology (ICT) has fundamentally transformed Human Resource Management (HRM) by digitizing traditional HR functions and enabling strategic workforce management. Bondarouk and Brewster (2016) argued that the integration of ICT into HR processes has shifted HR departments from administrative roles to strategic business partners by improving efficiency, information accessibility, and decision-making capabilities. Their study highlighted that Human Resource Information Systems (HRIS) facilitate automation of routine HR activities such as payroll, attendance management, employee records, and recruitment. Marler and Parry (2016) examined the evolution of electronic Human Resource Management (e-HRM) and found that ICT adoption enhances organizational effectiveness through improved communication, employee self-service, and data-driven HR decisions. The authors emphasized that digital HR systems contribute to cost reduction and increased responsiveness to organizational needs. More recently, Strohmeier (2020) reported that digital transformation technologies, including cloud-based HR platforms, artificial intelligence (AI), and analytics tools, have significantly improved HR service delivery and workforce planning. The study concluded that organizations adopting advanced ICT solutions achieve greater operational efficiency and employee engagement compared to organizations relying on traditional HR practices.

2.2 E-HRM and Organizational Effectiveness

Electronic Human Resource Management (e-HRM) refers to the application of web-based technologies and digital platforms to execute HR functions. Bondarouk, Harms, and Lepak (2017) found that e-HRM positively influences organizational effectiveness by improving HR service quality, reducing administrative burdens, and enhancing employee access to HR information. Their research demonstrated that organizations implementing e-HRM systems experienced improved productivity and faster HR processes. Panayotopoulou, Galanaki, and Papalexandris (2019) investigated the relationship between e-HRM and organizational performance and reported that successful e-HRM implementation contributes to employee satisfaction, operational efficiency, and strategic HR alignment. However, the study emphasized that organizational support and employee acceptance are critical determinants of success. Similarly, Al-Harazneh and Sila (2021) examined e-HRM adoption in organizations and found that system quality, management commitment, and employee readiness significantly influence organizational outcomes. Their

findings suggested that organizations with strong technological infrastructure and training programs derive greater benefits from e-HRM implementation.

2.3 ICT-Based Recruitment and Performance Management

ICT has revolutionized recruitment and performance management by introducing digital platforms that streamline HR processes. Nikolaou (2021) observed that e-recruitment systems enable organizations to attract a larger pool of applicants, reduce hiring costs, and improve recruitment efficiency through automated screening and applicant tracking systems. The study highlighted that digital recruitment enhances transparency and speed in talent acquisition. Chapman and Webster (2018) found that online recruitment technologies improve candidate quality and organizational attractiveness by providing broader access to employment opportunities. Their research demonstrated that organizations using ICT-based recruitment systems achieve better recruitment outcomes than those relying on conventional methods. Regarding performance management, Aguinis and Burgi-Tian (2021) reported that digital performance management systems facilitate continuous feedback, real-time monitoring, and objective evaluation of employee performance. Their study concluded that technology-enabled performance management contributes to employee development, accountability, and organizational productivity. Furthermore, digital appraisal systems support evidence-based HR decisions and reduce evaluator bias.

2.4 Employee Digital Literacy and ICT Adoption

Employee digital literacy is a crucial factor influencing the successful adoption of ICT-based HRM systems. Van Laar et al. (2017) emphasized that digital competencies, including information management, communication, and problem-solving skills, are essential for employees to effectively utilize digital technologies in the workplace. The study found a positive relationship between digital literacy and technology acceptance. Sánchez-Prieto, Olmos-Migueláñez, and García-Peñalvo (2019) investigated digital competence among employees and reported that individuals with higher digital literacy levels demonstrate greater willingness to adopt organizational technologies. Their findings indicated that training and continuous learning significantly improve technology utilization. More recently, Falloon (2020) highlighted that digital literacy extends beyond technical skills and includes critical thinking, adaptability, and confidence in using digital tools. The study concluded that organizations investing in employee digital skill development experience higher levels of ICT adoption and improved HR system effectiveness.

2.5 Organizational Support and Change Management

Organizational support is widely recognized as a key determinant of successful ICT-HRM implementation. Tarafdar, Cooper, and Stich (2019) found that management support, employee involvement, and adequate training significantly influence technology acceptance and utilization within organizations. Their study emphasized that leadership commitment reduces employee resistance to technological change. Parry and Battista (2019) examined digital transformation initiatives and reported that effective change management strategies are essential for successful implementation of HR technologies. The authors argued that communication, participation, and continuous support help employees adapt to new systems and processes. In another study, Vial (2021) highlighted that organizational readiness and change management capabilities directly affect digital transformation outcomes. The research concluded that organizations with strong leadership support and structured implementation plans achieve higher success rates in ICT adoption compared to organizations lacking strategic guidance.

2.6 Public and Private Sector Differences in ICT-HRM

The adoption and effectiveness of ICT-HRM practices vary significantly between public and private sector organizations. Madero-Gómez, Ortiz-Carrera, and Martínez-Serna (2018) found that private sector organizations generally adopt digital HR technologies more rapidly due to competitive pressures, innovation orientation, and performance-driven cultures. Their study reported higher levels of HR technology utilization in private organizations. Alshibly (2020) examined ICT adoption in public sector institutions and identified challenges such as bureaucratic procedures, limited flexibility, and resistance to change. The study concluded that these factors often slow the implementation of digital HR systems in public organizations. Similarly, Al-Harazneh and Sila (2021) compared public and private organizations and found that private firms demonstrate greater technological readiness and investment in HR technologies. However, public organizations benefit from ICT adoption through improved transparency, accountability, and service delivery when implementation is effectively managed.

2.7 ICT-HRM in Manufacturing Organizations

Manufacturing organizations increasingly rely on ICT-based HRM systems to manage complex workforce requirements. Tortorella and Fettermann (2018) reported that digital technologies improve workforce planning, employee monitoring, training management, and operational coordination in manufacturing environments. Their study highlighted the importance of integrating HR technologies with broader Industry 4.0 initiatives. Sony and Naik (2020) examined digital transformation in manufacturing industries and found that ICT-enabled HR practices contribute to productivity improvement, employee development, and organizational competitiveness. The study emphasized that digital HR systems support efficient management of large and diverse workforces. More recently, Ghobakhloo and Fathi (2021) investigated Industry 4.0 adoption in manufacturing firms and reported that HR digitalization plays a critical role in supporting technological transformation. Their findings indicated that employee training, digital competencies, and organizational support are essential for maximizing the benefits of ICT-HRM systems in manufacturing organizations.

The reviewed literature demonstrates that ICT has transformed HRM by improving efficiency, communication, decision-making, and strategic HR involvement. Studies by Bondarouk and Brewster (2016), Marler and Parry (2016), and Strohmeier (2020) confirm the growing importance of digital HR systems

in modern organizations. Research on e-HRM indicates positive effects on organizational effectiveness, provided that adequate organizational support, employee readiness, and technological infrastructure are available (Bondarouk et al., 2017; Al-Harazneh & Sila, 2021). The literature further reveals that ICT-based recruitment and performance management systems enhance HR outcomes, while employee digital literacy significantly influences technology adoption (Nikolaou, 2021; Van Laar et al., 2017). Organizational support and change management remain critical success factors for ICT implementation (Tarafdar et al., 2019; Vial, 2021). Additionally, differences exist between public and private sector organizations regarding ICT adoption and utilization. Although several studies have examined ICT-HRM practices across different sectors, limited research has focused specifically on public and private manufacturing organizations in Chhattisgarh. Therefore, the present study seeks to address this research gap by examining the impact of ICT-based HRM practices on HRM effectiveness in selected manufacturing organizations.

3. METHODOLOGY

This study used a cross-sectional quantitative research design to examine ICT-related factors influencing HRM practices in public and private manufacturing organizations in Chhattisgarh.

3.1 Population and Sampling

The study included 285 employees from public (143) and private (142) manufacturing organizations. Respondents were selected from managerial, supervisory, and operational levels using a stratified sampling approach to ensure balanced representation.

3.2 Research Instrument

Data were collected through a structured questionnaire developed from existing literature on ICT-based HRM. The questionnaire covered ICT infrastructure, e-recruitment, digital performance management, digital literacy, organizational support, change management communication, HRM effectiveness, and demographic details.

3.3 Measurement Scale

A four-point Likert scale was used: 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree.

3.4 Reliability of the Instrument

Reliability was assessed using Cronbach's alpha. A value of 0.70 or higher was considered acceptable for internal consistency.

3.5 Validity of the Instrument

Content validity was ensured through literature review and expert evaluation. Construct validity was assessed using factor analysis and related validity measures.

3.6 Data Collection Procedure

Data were collected from employees on a voluntary basis. Respondents were informed about the study purpose, and only complete questionnaires were included in the analysis.

3.7 Data Analysis Techniques

Data were analyzed using SPSS. Descriptive statistics, independent-samples *t*-tests, Pearson correlation, multiple regression, and one-way ANOVA were used to analyze the data.

3.8 Ethical Considerations

Participation was voluntary, and confidentiality and anonymity were maintained. Responses were used only for academic purposes, and data were analyzed in aggregate form.

4. RESULTS

The results of the study are presented using descriptive statistics, independent sample *t*-tests, correlation analysis, multiple regression analysis, and one-way ANOVA. A total of 285 valid responses were collected from employees working in public and private sector manufacturing organizations.

Table 4.1 Demographic Profile of Respondents (N = 285)

Variable	Category	Frequency	Percentage (%)
Sector	Public	143	50.2
	Private	142	49.8
Age	Below 30 Years	62	21.8
	31–40 Years	118	41.4
	41–50 Years	71	24.9
	Above 50 Years	34	11.9
Position	Managerial	68	23.9
	Supervisory	124	43.5
	Operational	93	32.6
Education	Diploma	54	18.9
	Graduate	137	48.1
	Postgraduate	94	33.0

Interpretation: The sample consisted of 285 employees, almost equally distributed between public and private sector organizations. The majority of respondents (41.4%) belonged to the 31–40 years age group. Supervisory-level employees represented the largest proportion of the sample (43.5%). Most respondents possessed graduate-level qualifications.

Table 4.2 Comparison of ICT-HRM Dimensions Between Public and Private Sector Organizations (Independent Sample t-Test)

Variable	Public Sector Mean	Private Sector Mean	t-value	p-value
ICT Infrastructure	3.42	4.01	-6.214	0.000*
E-Recruitment Effectiveness	3.38	3.95	-5.876	0.000*
Digital Performance Management	3.29	3.88	-5.421	0.000*
Employee Digital Literacy	3.51	3.97	-4.982	0.000*
Organizational Support	3.47	4.05	-6.103	0.000*

Significant at $p < 0.05$

Interpretation: The independent sample *t*-test results reveal statistically significant differences between public and private sector organizations across all ICT-HRM dimensions. Private sector organizations reported higher mean scores for ICT infrastructure, e-recruitment effectiveness, digital performance management, employee digital literacy, and organizational support. This indicates that private sector organizations have adopted ICT-enabled HRM practices more effectively than public sector organizations.

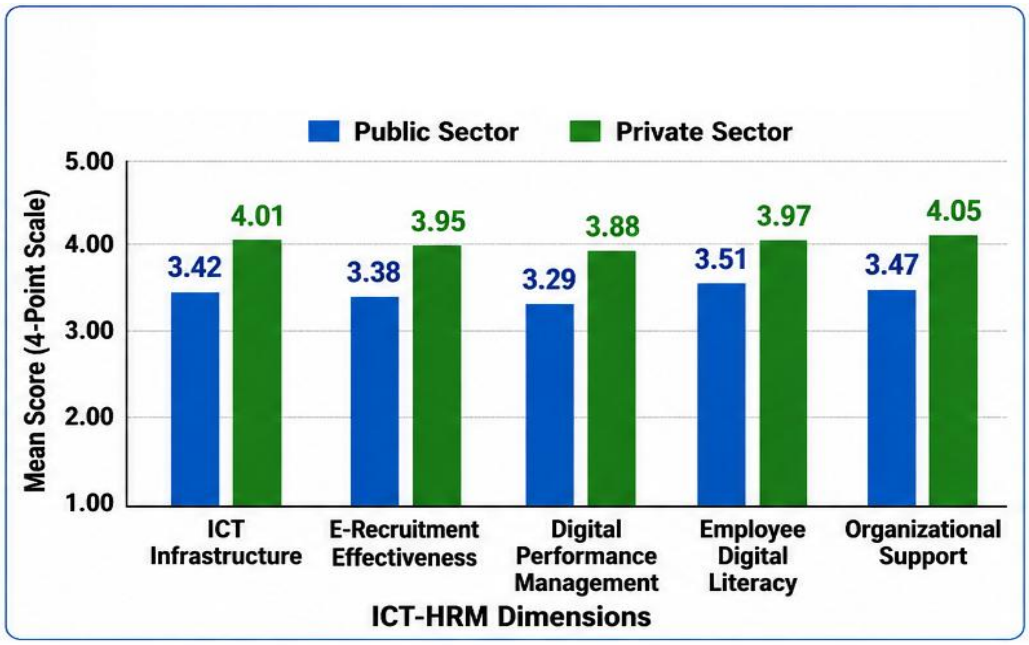

Figure 4.1 Mean Scores of ICT-HRM Dimensions in Public and Private Sector Organizations

Interpretation: The graphical representation clearly shows that private sector organizations achieved higher scores across all ICT-HRM dimensions compared to public sector organizations.

Table 4.3 Correlation Matrix of ICT-HRM Variables and HRM Effectiveness

Variables	HRM Effectiveness
ICT Infrastructure	0.712**
E-Recruitment Effectiveness	0.648**
Digital Performance Management	0.683**
Employee Digital Literacy	0.594**
Organizational Support	0.781**
Change Management Communication	0.705**

Correlation is significant at the 0.01 level (2-tailed).

Interpretation: The correlation analysis indicates strong positive relationships between ICT-HRM variables and overall HRM effectiveness. Organizational support exhibited the strongest correlation (r = 0.781), followed by ICT infrastructure (r = 0.712) and change management communication (r = 0.705). These findings suggest that improvements in ICT-related organisational practices contribute significantly to HRM effectiveness.

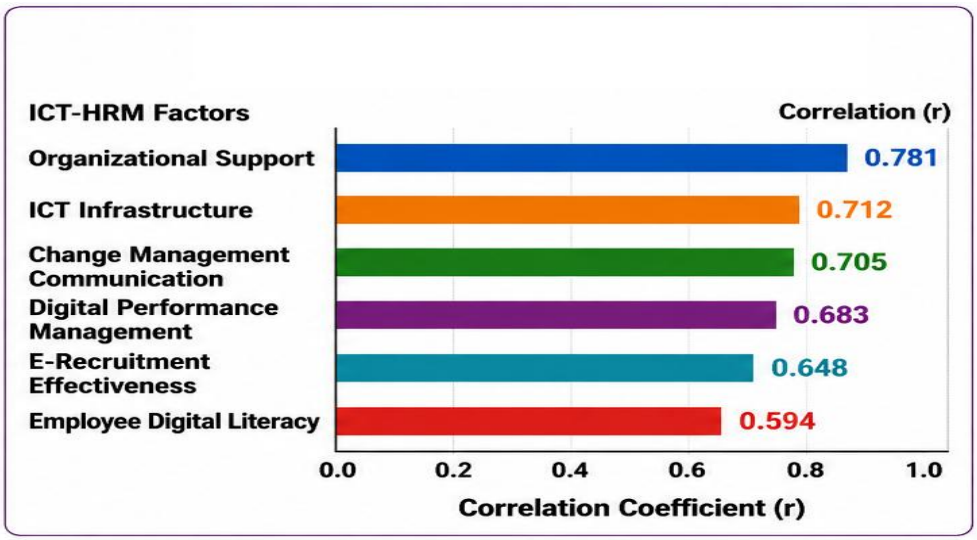

Figure 4.2 Correlation Strength with HRM Effectiveness

Interpretation: Organizational support emerged as the most influential factor associated with HRM effectiveness, highlighting the importance of management commitment and support for successful ICT-HRM implementation.

Table 4.4 Multiple Regression Analysis Predicting HRM Effectiveness

Predictor Variable	Beta (β)	t-value	p-value
ICT Infrastructure	0.284	4.912	0.000*
Employee Digital Literacy	0.173	3.284	0.001*
Organizational Support	0.356	6.127	0.000*
Change Management Communication	0.241	4.385	0.000*

Model Summary	Value
R	0.842
R^2	0.709
Adjusted R^2	0.703
F-value	113.624
Significance	0.000

Significant at $p < 0.05$

Interpretation: The regression model explains 70.9% of the variance in HRM effectiveness ($R^2 = 0.709$). Organizational support emerged as the strongest predictor ($\beta = 0.356$), followed by ICT infrastructure ($\beta = 0.284$), change management communication ($\beta = 0.241$), and employee digital literacy ($\beta = 0.173$). The model is statistically significant, indicating that these variables collectively contribute to enhanced HRM effectiveness.

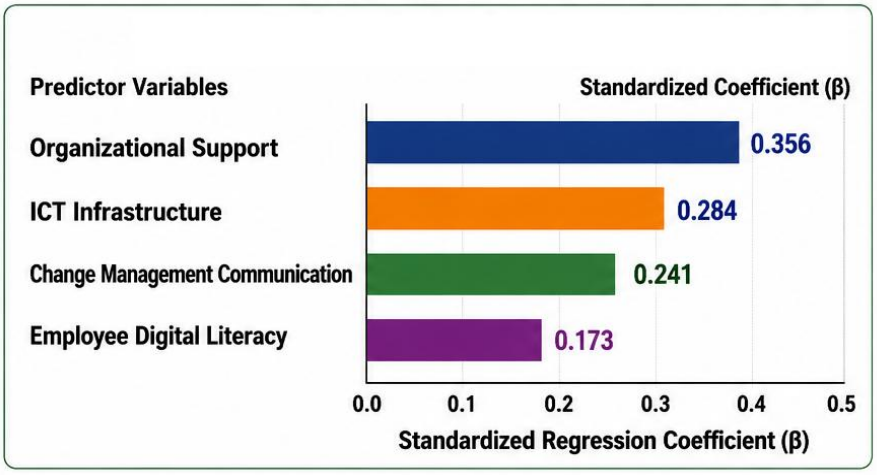

Figure 4.3 Standardised Regression Coefficients

Interpretation: Among all predictors, organizational support has the greatest impact on HRM effectiveness, emphasizing the importance of leadership commitment and organizational readiness for digital HR transformation.

Table 4.5 One-Way ANOVA: ICT-HRM Effectiveness Across Employee Levels

Employee Level	Mean Score
Managerial	4.12
Supervisory	3.84
Operational	3.51

ANOVA Statistics	Value
F-value	18.742
p-value	0.000*

Significant at $p < 0.05$

Interpretation: The ANOVA results indicate significant differences in ICT-HRM effectiveness among managerial, supervisory, and operational employees. Managerial employees reported the highest effectiveness scores, followed by supervisory employees, while operational employees reported the lowest scores.

Figure 4.4 ICT-HRM Effectiveness by Employee Level

Interpretation: The figure demonstrates that managerial employees perceive ICT-HRM practices more positively than supervisory and operational employees. This may be due to greater involvement in strategic decision-making and access to digital HR resources.

5. DISCUSSION

The findings of the study indicate that ICT-based HRM practices are more effectively implemented in private sector manufacturing organizations than in public sector organizations. Private sector organizations reported higher mean scores in ICT infrastructure, e-recruitment effectiveness, digital performance management, employee digital literacy, and organizational support. This suggests that private sector firms may have better technological readiness, faster decision-making systems, and stronger management support for digital HR transformation.

The correlation results show that all ICT-HRM variables have a positive and significant relationship with HRM effectiveness. Organizational support emerged as the strongest factor associated with HRM effectiveness, followed by ICT infrastructure and change management communication. The regression analysis further confirms that organizational support, ICT infrastructure, change management communication, and employee digital literacy significantly predict HRM effectiveness. These findings show that ICT adoption alone is not sufficient; successful digital HRM also requires leadership support, employee readiness, proper training, and effective communication during change implementation.

The ANOVA results show significant differences in ICT-HRM effectiveness across employee levels. Managerial employees reported higher ICT-HRM effectiveness than supervisory and operational employees. This may be because managerial employees have better access to digital systems, greater involvement in decision-making, and higher digital exposure. Operational employees may require more training and support to use ICT-based HRM systems effectively.

Overall, the study confirms that ICT-based HRM effectiveness depends on the combined role of technology, organizational support, employee digital literacy, and change management. The findings support the view that manufacturing organizations must treat digital HRM as an organizational transformation process rather than only a technological upgrade.

6. CONCLUSION

The study concludes that ICT-based HRM practices play an important role in improving HRM effectiveness in manufacturing organizations. The findings show that private sector manufacturing organizations have better ICT infrastructure, e-recruitment systems, digital performance management practices, employee digital literacy, and organizational support compared to public sector organizations. The study also found that organizational support is the strongest predictor of HRM effectiveness, followed by ICT infrastructure, change management communication, and employee digital literacy.

The results indicate that successful ICT-HRM implementation depends not only on technology but also on management support, employee readiness, proper training, and effective change management. Manufacturing organizations should therefore focus on strengthening digital infrastructure, improving employee digital skills, and creating a supportive organizational environment for ICT-enabled HRM practices. Public sector organizations need special attention in terms of digital training, system accessibility, and leadership support to improve ICT-HRM effectiveness.

6.1 Implications of the Study

The study has important implications for HR managers, organizational leaders, and policymakers. Manufacturing organizations should strengthen ICT infrastructure, provide regular digital training, and ensure management support for successful ICT-based HRM implementation. HR departments should use digital systems for recruitment, performance management, employee records, communication, and decision-making. Public sector organizations should focus more on employee digital literacy, system accessibility, and change management to reduce the gap with private sector organizations.

6.2 Limitations of the Study

The study is limited to selected public and private manufacturing organizations in Chhattisgarh; therefore, the findings may not be generalized to all industries or regions. The study used cross-sectional survey data, so causal relationships cannot be strongly established. The responses were based on employee perceptions, which may involve response bias. The study also did not include detailed qualitative interviews or objective HR performance records such as recruitment cost, time-to-hire, absenteeism, or productivity data.

6.3 Future Scope of the Study

Future research may use longitudinal data to examine changes in ICT-HRM effectiveness over time. Comparative studies may be conducted across different states, industries, and organizational sizes. Future studies may also include qualitative interviews with HR managers and employees to understand implementation challenges in greater depth. Researchers may further examine advanced technologies such as artificial intelligence, HR analytics, cloud-based HRIS, and mobile HR applications in manufacturing organizations.

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About the author

Sumedha Pandey is a Research Scholar in the Department of Commerce and Management at Dr. C.V. Raman University, Bilaspur, Chhattisgarh. Her academic interests include business management. She is dedicated to advancing knowledge through scholarly research and contributes to academic discussions on emerging trends in commerce, management, and educational practices.

Dr. Abhishek Kumar Pathak is a Professor in the Department of Commerce and Management at Dr. C.V. Raman University. He has over 17 years of teaching experience and currently serves as the Director of CDOE. He has made significant academic contributions through numerous research papers published in various reputed national and international journals, including Scopus-indexed and Springer publications, as well as several book chapters. His areas of academic interest include commerce, management, distance education, and higher education development.