



Human Resources Analytics: A Systematization of Research Topics and Research Agenda

Dr. P Radha¹ | Dr. Muralidhar L B²

¹Professor, School of Commerce
JAIN (Deemed-to-be University), Bengaluru, India

²Assistant Professor, School of Commerce
JAIN (Deemed-to-be University), Bengaluru, India
E-Mail: lb.muralidhar@jainuniversity.com,

Corresponding Author

Dr. P Radha

E-Mail: pradha1020@gmail.com

To Cite this article: Radha, P., & L B, M. (2026). Human resources analytics: A systematization of research topics and research agenda. *International Research Journal of MMC*, 7(1), 429-437. <https://doi.org/10.3126/irjmmc.v7i1.93193>

Submitted: 16 January 2025

Accepted: 18 February 2026

Published: 1 March 2026

Abstract

The growing availability of workforce-related data and advances in analytical technologies have significantly transformed the field of Human Resource Management (HRM), giving rise to Human Resources Analytics (HR Analytics) as a strategic domain. HR Analytics refers to the systematic use of data, statistical analysis, and predictive models to improve human resource decision-making and organizational performance. Despite increasing academic and practitioner interest, the HR analytics literature remains fragmented, with diverse definitions, methodologies, and application areas. This study aims to systematize existing research on HR analytics by identifying key themes, methodological approaches, and emerging research gaps, while proposing a comprehensive future research agenda. Using a structured review of peer-reviewed journal articles indexed in Scopus, this study categorizes HR analytics research into core thematic areas, including talent acquisition, employee performance management, retention and turnover, learning and development, workforce planning, and employee well-being. The review highlights that early research predominantly focused on descriptive and diagnostic analytics, while recent studies increasingly emphasize predictive and prescriptive analytics to support strategic HR decisions. Advanced analytical techniques such as machine learning, artificial intelligence, and big data analytics are gaining prominence, enabling organizations to forecast employee behaviour and optimize human capital investments. Methodologically, the review reveals a dominance of quantitative approaches, particularly regression analysis, structural equation modelling, and data mining techniques, often using large organizational datasets. However, qualitative and mixed-methods studies remain limited, suggesting a need for deeper contextual understanding of how HR analytics is implemented and interpreted by decision-makers. Furthermore, most studies adopt a firm-level perspective, with limited attention to ethical concerns, data privacy, employee perceptions, and the potential unintended consequences of algorithm-driven HR decisions. The findings also indicate that while HR analytics is frequently linked to improved organizational performance and

competitive advantage, empirical evidence remains inconsistent across industries and regions. This inconsistency underscores the importance of contextual factors such as organizational culture, analytical capability, leadership support, and HR professionals' data literacy. The review identifies a significant gap between academic research and practical implementation, as many organizations struggle to translate analytical insights into actionable HR strategies. Based on the systematization of existing literature, this study proposes a future research agenda that emphasizes longitudinal research designs, cross-cultural studies, ethical and legal considerations, and the integration of employee-centric perspectives. Additionally, future studies should explore the role of HR analytics in promoting sustainable HRM, diversity and inclusion, and employee well-being. By providing a structured overview of the HR analytics research landscape, this study contributes to theory development and offers practical guidance for scholars and practitioners seeking to leverage analytics for strategic human resource management.

Keywords: human resource analytics, people analytics, strategic human resource management, data-driven decision making, workforce analytics, organizational performance

1. Introduction

In today's knowledge-driven and highly competitive business environment, human capital has emerged as a critical source of sustainable competitive advantage for organizations. As organizations increasingly rely on data-driven strategies, the role of Human Resource Management (HRM) has evolved from a traditional administrative function to a strategic partner in organizational decision-making. This transformation has been accelerated by advancements in digital technologies, big data, and analytical tools, leading to the emergence of Human Resources Analytics (HR Analytics), also referred to as People Analytics or Workforce Analytics.

Human Resources Analytics involves the systematic collection, analysis, and interpretation of employee-related data to enhance HR decisions and improve organizational outcomes. By applying statistical techniques, predictive modeling, and machine learning algorithms, HR analytics enables organizations to understand workforce patterns, predict employee behavior, and design evidence-based HR interventions. Areas such as talent acquisition, employee performance, retention, engagement, learning and development, and workforce planning have increasingly benefited from analytical insights, positioning HR analytics as a key driver of strategic HRM.

Despite its growing relevance, the academic literature on HR analytics remains dispersed across multiple disciplines, including management, information systems, organizational psychology, and data science. Studies vary widely in terms of conceptual definitions, analytical approaches, and research objectives, creating ambiguity regarding the scope and maturity of the field. While some research emphasizes technological and methodological aspects, others focus on strategic outcomes or organizational performance, resulting in a fragmented body of knowledge. This fragmentation poses challenges for both researchers seeking theoretical clarity and practitioners aiming to effectively implement HR analytics initiatives.

Moreover, although organizations invest heavily in HR analytics systems, many struggles to translate analytical outputs into actionable insights. Issues such as limited analytical capabilities among HR professionals, resistance to data-driven decision-making, ethical concerns related to employee data privacy, and lack of leadership support hinder effective adoption. Existing studies often overlook these contextual and human-centric dimensions, focusing predominantly on quantitative outcomes while neglecting employee perceptions and ethical implications.

Given these challenges, there is a clear need for a comprehensive systematization of HR analytics research. Such an effort can help identify dominant research themes, methodological trends, and existing gaps, while offering a structured agenda for future research. By consolidating fragmented findings, scholars can advance theory development, and practitioners can gain clearer guidance on leveraging analytics for strategic HR decision-making.

Therefore, the purpose of this study is to systematically review and categorize existing HR analytics literature, identify key research streams, and propose a future research agenda. By doing so, the study aims to contribute to the evolving discourse on HR analytics and support its effective integration into strategic human resource management practices.

1.1 Significance of the Study

The significance of this study lies in its comprehensive systematization of the rapidly growing yet fragmented body of research on Human Resources Analytics (HR Analytics). As organizations increasingly adopt data-driven approaches to manage human capital, there is a critical need for structured academic insights that integrate diverse perspectives, methodologies, and application areas within HR analytics. By organizing existing literature into coherent research themes, this study contributes to the consolidation and advancement of HR analytics as a distinct and mature field of inquiry.

From a theoretical perspective, this study enhances the conceptual clarity of HR analytics by identifying dominant research streams and underlying theoretical foundations. The systematization of research topics helps bridge gaps between strategic human resource management, data analytics, and organizational performance literature. Additionally, the study highlights underexplored areas such as ethical considerations, employee perceptions, and contextual influences, thereby extending existing HRM theories to better reflect the realities of analytics-driven decision-making.

1.2 Literature Review

Davenport, Harris, and Shapiro (2010) emphasized the strategic importance of analytics in human resource management by introducing the concept of competing on talent analytics. Their study highlighted how organizations use workforce data to improve talent acquisition, performance management, and retention. The authors argued that analytical maturity enables HR to shift from intuition-based decisions to evidence-based strategic planning, thereby enhancing organizational performance.

Marler and Boudreau (2017) examined the evolution of HR analytics and its implications for strategic HRM. They conceptualized HR analytics as a mechanism that links HR practices to business outcomes through data-driven insights. Their findings indicated that while organizations increasingly invest in HR analytics tools, the effective use of analytics depends heavily on HR professionals' analytical competencies and top management support. Angrave, Charlwood, Kirkpatrick, Lawrence, and Stuart (2016) critically analyzed the promises and limitations of HR analytics. The authors argued that despite its growing popularity, HR analytics often fails to deliver strategic value due to poor data quality, lack of contextual understanding, and limited integration with organizational decision-making processes. The study highlighted the need for a more critical and ethical approach to analytics in HR.

Rasmussen and Ulrich (2015) explored how HR analytics contributes to strategic workforce planning and organizational effectiveness. Their research demonstrated that HR analytics enables organizations to anticipate workforce trends, align talent strategies with business goals, and support leadership decision-making. The authors stressed the importance of building an analytics-driven culture within HR functions to fully realize its benefits.

Minbaeva (2018) focused on the role of HR analytics in improving organizational performance and knowledge-based decision-making. The study emphasized the mediating role of HR analytics capabilities between HR practices and firm performance. The author also highlighted challenges related to data governance, employee trust, and ethical use of employee data, suggesting the need for responsible analytics frameworks.

1.3 Objectives of the Study

- To systematically review and categorize existing literature on Human Resources Analytics in order to identify key research themes, application areas, and theoretical foundations.
- To examine the methodological approaches and analytical techniques employed in HR analytics research, highlighting prevailing trends, strengths, and limitations.
- To identify research gaps and propose a future research agenda that addresses emerging issues such as ethical considerations, contextual factors, and the strategic integration of HR analytics in organizations.

1.4 Research Gap

Despite the growing body of literature on Human Resources Analytics, existing research remains fragmented and predominantly focused on technological and quantitative outcomes. Limited attention has been given to qualitative insights, employee perceptions, and contextual factors influencing the effective adoption of HR analytics. Moreover, empirical evidence on the long-term impact of HR analytics across different industries and cultural contexts is insufficient. Ethical concerns related to data privacy, transparency, and algorithmic bias are also underexplored. Therefore, there is a need for systematic and integrative research that addresses these gaps and provides a comprehensive framework for strategic and responsible HR analytics implementation.

1.5 Statement of the Problem

Organizations are increasingly adopting Human Resources Analytics to enhance decision-making and improve workforce performance. However, despite significant investments in analytical tools and technologies, many organizations fail to derive strategic value from HR analytics initiatives. The existing research on HR analytics is fragmented, with limited integration of theoretical, methodological, and practical perspectives. Moreover, there is insufficient understanding of contextual factors, ethical challenges, and employee perceptions influencing HR analytics adoption and effectiveness. The lack of a comprehensive and systematized framework makes it difficult for organizations to translate analytical insights into actionable HR strategies. This study addresses these issues by systematically reviewing HR analytics research to identify gaps and propose a structured research agenda.

Sample size

Final sample size (N): 80 research articles were included in the systematic review after applying inclusion and exclusion criteria (peer-reviewed, HR analytics focus, accessible full text, relevant outcomes). This sample size is adequate for descriptive statistics (n, %), cross-tabulation, and trend analysis to map themes, methods, and gaps across the HR analytics literature.

2. Analysis

Table 1: *Distribution of studies by research theme*

Research theme	n	%
Talent acquisition / recruitment analytics	14	17.5
Performance & productivity analytics	16	20.0

Learning & development analytics	9	11.3
Retention / turnover analytics	15	18.8
Workforce planning / scheduling	6	7.5
Engagement / well-being analytics	8	10.0
Diversity, equity & inclusion analytics	5	6.3
Others	7	8.8
Total	80	100

Interpretation: Research is concentrated in performance (20%) and turnover/retention (18.8%), showing strong focus on measurable operational outcomes. DEI (6.3%) and workforce planning (7.5%) are relatively underexplored.

Table 2: *Application areas in HR analytics research*

Application area	n	%
Recruitment & selection	15	18.8
Training effectiveness	10	12.5
Performance management	16	20.0
Turnover/attrition management	14	17.5
Compensation analytics	6	7.5
Employee engagement	9	11.3
DEI / fairness	5	6.3
Strategic workforce planning	5	6.3
Total	80	100

Interpretation: Most applications target performance and hiring, indicating organizations use analytics where data is structured and outcomes are immediate. Strategic workforce planning and DEI remain limited (each 6.3%), suggesting scope for strategic and ethics-focused work.

Table 3: *Theoretical foundations*

Theory / lens	N	%
Resource-Based View (RBV)	10	12.5
Human Capital Theory	9	11.3
AMO Framework	8	10.0
Institutional theory	6	7.5
Social exchange theory	7	8.8
Technology acceptance / IS theories	12	15.0
No explicit theory	28	35.0
Total	80	100

Interpretation: A large share of studies are not explicitly theory-driven (35%), showing the field is still practice-heavy. Among theory-based work, IS/technology adoption lenses (15%) and RBV/Human Capital appear most common.

Table 4: *Methodological approaches*

Methodological approach	n	%
Quantitative (survey / archival)	46	57.5
Qualitative (interviews / case study)	18	22.5
Mixed methods	8	10.0
Conceptual / framework / review	8	10.0
Total	80	100

Interpretation: The literature is dominated by quantitative designs (57.5%), reflecting emphasis on measurement and prediction. Mixed-methods (10%) remain limited, indicating a gap in combining statistical results with rich organizational context.

Table 5: *Analytical techniques*

Technique	n	%
Descriptive / dashboards	9	11.3
Correlation / t-test / ANOVA	8	10.0
Regression (linear/logistic)	22	27.5
SEM / PLS-SEM	14	17.5
Time series	4	5.0
ML (RF, SVM, XGBoost etc.)	12	15.0
NLP / text analytics	6	7.5
Optimization / simulation	5	6.3
Total	80	100

Interpretation: Traditional inferential methods (regression + SEM) account for 45%, showing strong hypothesis-testing orientation. ML (15%) and NLP (7.5%) are emerging but still not dominant.

Table 6: *Data sources*

Data type/source	n	%
HRIS / organizational records	30	37.5
Surveys	26	32.5
Public datasets (job portals, social media etc.)	9	11.3
Multi-source (HRIS + surveys + performance etc.)	15	18.8
Total	80	100

Interpretation: Most studies depend on HRIS (37.5%) and surveys (32.5%). Multi-source designs (18.8%) are fewer, suggesting a limitation in triangulating decisions across behavioral, performance, and contextual data.

Table 7: *Coverage of emerging*

Emerging issue / gap area	Papers addressing (n)	%
Ethical use / privacy	14	17.5
Bias, fairness, discrimination	12	15.0
Transparency / explainability	8	10.0
Governance & accountability	7	8.8
Employee perceptions / trust	9	11.3
Contextual factors (country/industry/culture)	16	20.0
Strategic integration (link to strategy)	13	16.3
Change management / capability building	10	12.5

Interpretation: Ethics-related topics are still low-to-moderate (privacy 17.5%, bias 15%, explainability 10%), which is a key gap given increasing AI use in HR. Context (20%) appears more discussed than governance (8.8%), showing the need for stronger accountability frameworks.

3. Findings

Dominant research focus: The literature is primarily concentrated on performance management (20%), employee retention (18.8%), and recruitment analytics (17.5%). This indicates that HR analytics research largely emphasizes operational efficiency and measurable HR outcomes, rather than long-term strategic or ethical considerations.

Limited thematic diversity: Areas such as diversity, equity, and inclusion (6.3%) and strategic workforce planning (6.3%) receive relatively low attention. This suggests an imbalance in research priorities, with emerging people-centric challenges being underrepresented.

Weak theoretical grounding: A significant proportion of studies (35%) lack an explicit theoretical foundation. Among theory-driven studies, technology acceptance theories and Resource-Based View dominate, indicating that HR analytics research is still evolving from practice-driven applications toward theory-based maturity.

Methodological dominance of quantitative approaches: Most studies adopt quantitative methods (57.5%), while mixed-method research (10%) remains limited. This restricts deeper understanding of organizational, behavioral, and contextual dynamics influencing HR analytics adoption.

Preference for traditional analytical techniques: Analytical techniques such as regression analysis (27.5%) and SEM (17.5%) are widely used. Although machine learning (15%) and NLP (7.5%) are emerging, their adoption is still moderate, indicating cautious transition toward advanced analytics.

Data source limitations: Research largely relies on HRIS data (37.5%) and surveys (32.5%), with fewer studies using multi-source data (18.8%). This raises concerns regarding data bias, validity, and limited contextual richness.

Underrepresentation of ethical and governance issues: Ethical concerns such as privacy (17.5%), bias and fairness (15%), and explainability (10%) are insufficiently addressed, despite increasing use of AI-driven HR decision systems.

4. Suggestions

Expand research into ethical HR analytics: Future studies should focus more on privacy protection, algorithmic bias, transparency, and governance frameworks, especially in AI- and ML-driven HR systems.

Strengthen theoretical integration: Researchers should ground HR analytics studies in established HR and organizational theories (e.g., AMO, institutional theory, social exchange) to enhance theoretical rigor and cumulative knowledge development.

Adopt mixed-method and longitudinal designs: Combining quantitative analytics with qualitative insights (interviews, case studies) can provide deeper understanding of how HR analytics influences decision-making and employee behavior over time.

Increase use of advanced analytics responsibly: Greater adoption of machine learning, NLP, and predictive modelling is recommended, accompanied by ethical audits and explainable AI approaches to ensure responsible use.

Promote multi-source and contextual data integration: Researchers and practitioners should integrate HRIS, performance metrics, behavioural data, and external labor market data to improve robustness and reduce single-source bias.

Shift focus toward strategic HR analytics: More research is needed on how HR analytics supports organizational strategy, competitive advantage, and long-term workforce sustainability, rather than only short-term efficiency.

5. Conclusion

This systematic review synthesizes findings from 80 HR analytics studies to provide a comprehensive overview of the field's thematic focus, methodological trends, analytical techniques, and research gaps. The results indicate that HR analytics research is currently operationally focused, quantitatively driven, and moderately advanced in analytical sophistication, yet limited in ethical depth, theoretical grounding, and strategic integration. While emerging technologies such as machine learning and AI show promise, their responsible adoption remains underexplored. Addressing ethical concerns, contextual factors, and strategic alignment will be crucial for advancing HR analytics from a technical tool to a strategic and sustainable organizational capability. This review offers a structured foundation for future research and provides practical insights for organizations seeking to leverage HR analytics responsibly and effectively.

Reference

1. Angrave, D., Charlwood, A., Kirkpatrick, I., Lawrence, M., & Stuart, M. (2016). HR and analytics: Why HR is set to fail the big data challenge. *Human Resource Management Journal*, 26(1), 1–11. <https://doi.org/10.1111/1748-8583.12090>
2. Belizon, M. J., & Kieran, S. (2022). Human resources analytics: A legitimacy process. *Human Resource Management Journal*, 32(3), 603–630. <https://doi.org/10.1111/1748-8583.12417>
3. Davenport, T. H., Harris, J., & Shapiro, J. (2010). Competing on talent analytics. *Harvard Business Review* (October).
4. Fernández, V., & Gallardo-Gallardo, E. (2021). Tackling the HR digitalization challenge: Key factors and barriers to HR analytics adoption. *Competitiveness Review: An International Business Journal*, 31(1), 162–187. <https://doi.org/10.1108/CR-12-2019-0163>
5. Giermindl, L. M., Strich, F., Christ, O., Leicht-Deobald, U., & Redzepi, A. (2022). The dark sides of people analytics: Reviewing the perils for organisations and employees. *European Journal of Information Systems*, 31(3), 410–435. <https://doi.org/10.1080/0960085X.2021.1927213>
6. Hugosson, M., & Espegren, Y. (2023). HR analytics-as-practice: A systematic literature review. *Journal of Organizational Effectiveness: People and Performance*, 12(5), 83–111. <https://doi.org/10.1108/JOEPP-11-2022-0345>
7. Khan, S. A., & Tang, J. (2016). The paradox of human resource analytics: Being mindful of employees. *Journal of General Management*, 42(2), 57–66.
8. King, K. G. (2016). Data analytics in human resources: A case study and critical review. *Human Resource Development Review*, 15(4), 487–495. <https://doi.org/10.1177/1534484316675818>
9. Kryscynski, D., Coff, R., & Jones, C. (2018). Something like “Analytical abilities” in HR (workforce analytics) and strategic value. *Human Resource Management*, 57(3), 715–738.
10. Leicht-Deobald, U., Busch, T., Schank, C., Weibel, A., Schafheitle, S., Wildhaber, I., & Kasper, G. (2019). The challenges of algorithm-based HR decision-making for personal integrity. *Journal of Business Ethics*, 160, 377–392. <https://doi.org/10.1007/s10551-019-04204-w>
11. Leonardi, P., & Contractor, N. S. (2018). Better people analytics: Measure who they know, not just who they are. *Harvard Business Review* (November–December).
12. Levenson, A. (2018). Using workforce analytics to improve strategy execution. *Human Resource Management*, 57(3), 685–700. <https://doi.org/10.1002/hrm.21850>

13. Levenson, A., & Fink, A. (2017). Human capital analytics: Too much data and analysis, not enough models and business insights. *Journal of Organizational Effectiveness: People and Performance*, 4(2), 145–156. <https://doi.org/10.1108/JOEPP-03-2017-0029>
14. Marler, J. H., & Boudreau, J. W. (2017). An evidence-based review of HR analytics. *The International Journal of Human Resource Management*, 28(1), 3–26. <https://doi.org/10.1080/09585192.2016.1244699>
15. Margherita, A. (2022). Human resources analytics: A systematization of research topics and directions for future research. *Human Resource Management Review*, 32(2), Article 100795. <https://doi.org/10.1016/j.hrmr.2020.100795>
16. McCartney, S., & Fu, N. (2022). Bridging the gap: Why, how and when HR analytics can impact organizational performance. *Management Decision*, 60(13), 25–47. <https://doi.org/10.1108/MD-12-2020-1581>
17. Minbaeva, D. (2018). Building credible human capital analytics for organizational competitive advantage. *Human Resource Management*, 57(3), 701–713. <https://doi.org/10.1002/hrm.21848>
18. Qamar, Y., & Samad, T. A. (2022). Human resource analytics: A review and bibliometric analysis. *Personnel Review*, 51(1), 251–283. <https://doi.org/10.1108/PR-04-2020-0247>
19. Rasmussen, T., & Ulrich, D. (2015). Learning from practice: How HR analytics avoids being a management fad. *Organizational Dynamics*, 44(3), 236–242. <https://doi.org/10.1016/j.orgdyn.2015.05.008>
20. Tursunbayeva, A., Pagliari, C., Di Lauro, S., & Antonelli, G. (2018). The ethics of people analytics: Risks, opportunities and recommendations (people analytics overview stream). *International Journal of Information Management*, 43, 224–247. <https://doi.org/10.10>