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Drivers, barriers, and outcomes of organizational-level human resource analytics adoption: a PRISMA-guided systematic review

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ABSTRACT

Human Resource Analytics (HRA) has emerged as a strategic capability that enables organizations to make data-driven and evidence-based human capital decisions. However, its adoption remains uneven and conceptually fragmented. This study systematically reviews the drivers, barriers, and ethical considerations influencing the organizational adoption of HRA between 2015 and 2025. A structured search was conducted exclusively in the Scopus database following the PRISMA 2020 protocol to ensure transparency and replicability. From an initial corpus of 295 records, 67 studies met the inclusion criteria after duplicate removal, relevance screening, and full-text assessment. The synthesis shows that the Resource-Based View (RBV) remains the dominant theoretical foundation, complemented by Technology-Organization-Environment (TOE) and Socio-Technical Systems perspectives. Technological readiness, top management support, and external support commonly enable adoption, while data quality, analytical capability, and privacy issues remain key barriers. Ethical and sustainability concerns – particularly fairness, transparency, and responsible data governance – are increasingly emphasized in recent studies. This review provides a structured synthesis and future research agenda bridging theoretical and practical perspectives, offering insights for strengthening analytics governance, organizational capability, and evidence-based decision cultures.

Keywords:

Human resource analytics
Systematic literature review
Technology-organization-environment (TOE)
Resource-Based View (RBV)
Socio-Technical Systems (STS)
PRISMA

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Introduction

Human Resource Analytics (HRA) has emerged as a strategic capability within Human Resource Management (HRM), enabling organizations to transform workforce data into actionable insights. It supports evidence-based decisions across recruitment, development, engagement, and retention while enhancing fairness, transparency, and accountability. As digital transformation reshapes business models, organizations increasingly recognize analytics as a critical enabler of agility and sustainable performance. Yet, despite its potential, research on HRA adoption remains fragmented and contextually uneven across regions, industries, and theoretical perspectives (Marler & Boudreau, 2017a; Rasmussen & Ulrich, 2015a).

Earlier studies predominantly focused on descriptive and diagnostic analytics aimed at improving efficiency and reporting accuracy. With the rise of artificial intelligence (AI), big data, and machine learning, the emphasis has shifted toward predictive and prescriptive analytics that support strategic foresight and workforce planning (Margherita, 2022a). These technological advances, however, bring ethical and governance challenges related to data privacy, algorithmic fairness, and accountability (Rigamonti et al., 2024a). Consequently, the discourse around HRA has expanded beyond efficiency toward broader organizational transformation that integrates innovation, responsibility, and sustainability (McCartney & Fu, 2022a; Wang et al., 2024a).

Despite growing scholarly attention, several challenges persist. Literature on HRA continues to exhibit conceptual fragmentation, with many studies isolating technological or adoption factors without incorporating strategic, ethical, or contextual considerations (Fernandez & Gallardo-Gallardo, 2021a; Jiang & Akdere, 2022a). Moreover, research remains concentrated in developed economies, limiting understanding of how institutional and resource conditions shape adoption in emerging contexts (Vargas et al., 2018a). These imbalances create a gap between theoretical generalizations and practical realities (Muhammad & Naz, 2022a). Methodologically, studies also rely heavily on either qualitative or quantitative approaches, while mixed-method designs that could strengthen cumulative insights remain scarce (Gerber et al., 2024a).

Previous literature reviews have made valuable contributions but remain partial in scope. For instance, Marler & Boudreau, (2017) emphasized conceptual foundations, while McCartney & Fu, (2022) focused on evolving themes without integrating ethical and sustainability perspectives that increasingly define the field. As analytics becomes intertwined with AI and responsible data practices, a comprehensive and integrative synthesis is required to map the development of HRA research and connect technological, organizational, and ethical dimensions within a unified framework.

This study addresses these needs by conducting a PRISMA-guided Systematic Literature Review (SLR) of Scopus-indexed publications from 2015 to 2025. It integrates three theoretical lenses – Resource-Based View (RBV), Technology-Organization-Environment (TOE), and Socio-Technical Systems (STS) – to capture the multifaceted nature of HRA adoption. RBV highlights the strategic capability dimension of analytics as a resource that drives performance. TOE explains the interplay among technological readiness, organizational support, and environmental pressure influencing adoption, while STS focuses on the human–technology interface shaping implementation success. Together, these perspectives allow this review to synthesize fragmented insights and establish a holistic understanding of adoption dynamics.

The study contributes in two key ways. First, it develops a theme-based taxonomy that categorizes HRA research into four clusters: data-driven decision-making, strategic alignment, ethical and sustainable practice, and stakeholder engagement. This taxonomy integrates dimensions that prior reviews have treated separately, thereby advancing a more inclusive understanding of HRA. Second, it proposes a conceptual model linking HRA implementation to organizational outcomes through mediating mechanisms such as managerial competence, innovation capability, and social resilience (Diefenhardt et al., 2025a). This approach not only clarifies how HRA supports performance but also embeds ethical and sustainability concerns into analytics practice.

To achieve these objectives, the review addresses four guiding questions: 1) What publication trends, geographical distributions, and methodological approaches characterize HRA research from 2015 to 2025? 2) What theoretical perspectives and thematic clusters define current studies, and how can these be synthesized into a coherent taxonomy? 3) What conceptual and methodological gaps remain, particularly concerning contextual diversity and ethical considerations? 4) How can an integrated model be developed to guide future research and practice in diverse organizational settings?

By addressing these questions, this paper contributes a comprehensive synthesis that consolidates fragmented findings, clarifies theoretical positioning, and highlights opportunities for further exploration. The study offers both academic and managerial implications, emphasizing how HRA adoption can foster organizational innovation and responsible analytics practices in an increasingly data-driven world.

Literature Review

Concepts at the Base and the Evolution of HR Analytics

HRA has more and more been an important sphere in HRM, illustrating the transition from its traditional administrative functional towards a more evidence-based strategic approach. At its heart, HRA involves the systematic employment of more advanced analytical methodologies from statistical modeling through predictive as well as prescriptive analytics to data and model-based simulation and machine learning - that are applied to HR - relevant data to generate actionable insights (Marler & Boudreau, 2017b). From the vantage point of this approach, HR ceases to be only a reactive service-providing department and is instead transformed into a strategic and evidence-based discipline. HR analytics, people analytics and workforce analytics They are also frequently given for each other but with some differences. Although HR analytics in practice concentrates on connecting HR

data to business results, workforce analytics is more concerned with a more integrative view of organizational outcomes (Jiang & Akdere, 2022b).

Curiously, the history of HRA is coincident with the increasing popularity of big data and artificial intelligence (AI). Initial efforts primarily focused on descriptive analysis and benchmarking. However, with increasing data accessibility and analytic maturity, the field rapidly progressed to predictive/prescriptive analytics today, a situation that allowed for more forward-looking workforce planning (Bassi & McMurrer, 2016). Some key developments include the integration of machine learning in talent management (Hülter et al., 2024) and the use of AI driven tools towards improving predictive skills (S. Arora et al., 2024). Despite such progress, some challenges persist, especially in the area of data governance, a shortage of abilities and fears about employee privacy (Chatterjee et al., 2022). Recent works also point to stakeholder involvement (Alam et al., 2025) and readiness assessment maturation frameworks (Rigamonti et al., 2024b) underscoring the intrinsically cross-disciplinary nature of HRA at the cross-roads of HRM, data science, and organization studies.

Theoretical Underpinnings and Classical Approaches

A few theoretical lines of research made valuable contributions to the comprehension of HRA usage and implementation. The TAM (Davis, 1989) and the UTAUT (Venkatesh et al., 2003) are especially relevant in terms of looking at how individuals adopt HR systems through perceived usefulness, perceived ease of use, and social influence (Thakur et al., 2024). Conversely, the Resource-Based View (RBV) (Barney, 1991) depicts HRA as a strategic driver which could potentially enable firms to convert human capital into a source of sustained competitive advantage (Thakur et al., 2025). Consistent with this, the Adaptive Structuration Theory (AST) focuses on how technologies are interdependent with organizational structures and social processes in order to influence outcomes (Wang et al., 2024b). Yet, we find in empirical studies that these features need to be understood in a context of difficulties with data integration, methodological limitations and cultural resistance of organizations (Fernandez & Gallardo-Gallardo, 2021b; Marler & Boudreau, 2017b). These various barriers highlight the challenge of turning theoretical promise into practical impact.

Emerging Trends and Contemporary Directions

In recent years, the focus of the literature has changed significantly from that of the monolithic expression of theoretical HRA to that of application of HRA. Emerging techniques - such as predictive analytics, AI and machine learning - are increasingly applied to talent management and workforce planning (Di Prima, Cepel, et al., 2024). "Good business Radically" outcomes as HRA research highlights, not only works better company by company, but it adds value by creating a strategic advantage as employee motivation, retention, and overtime organization-wide impact measurement isn't indicated. However, adoption is rarely seamless. Many of the structural/organizational barriers require more partnership or stakeholder involvement, which was a common theme in many recommendations and included (Alam et al., 2025; Rigamonti et al., 2024b): Insufficient governance cultural resistance to change.

Similarly remarkable is the increasing focus on ethics and sustainability. There is now pressure among academics to incorporate the triple bottom line (economic, social and environmental) considerations into HRA frameworks (Álvarez-Gutiérrez et al., 2022). This ethic projects a change in the discourse: productivity gains cannot be the only ones, unless matched with the well-being of workers and organizational legitimization. Interestingly, empirical results also show that data literacy moderates the relationship between HRA initiatives and innovative employee behaviors, confirming that competencies at a personal level still play a significant role in capturing the returns from analytics (Abuzaid, 2024).

Interdisciplinary and Comparative Insights

The HRA research field is moving towards greater interdisciplinary reach. Beyond HRM, it intersects with sustainability management, innovation and even crisis response now (Di Prima, Kotaskova, et al., 2024; Qamar & Samad, 2022). Comparison studies demonstrate that there is a significant shift from the traditional descriptive methodology to integrated frameworks where both the Technological-Organizational-Environmental (TOE) model and RBV are combined to enhance predictive HRA (Gurusinghe et al., 2021). Furthermore, hybrid methods like the combination of cumulative belief degree with PLS-SEM have been suggested in order to capture HRA's multi-faceted nature more rigorously (Budak & Soyer, 2025).

Spatial variation in the diffusion of HRA Spatial diffusion of HRA adopted uneven patterns geographically. Research from high income economies - e.g., United States, Germany, and the Netherlands - have a strong focus

on technological embedding and complex data infrastructures (Rasmussen & Ulrich, 2015b). Comparatively, studies in transitional regions like India and Pakistan emphasize infrastructural and competency-based barriers (Saxena et al., 2022; Muhammad & Naz, 2022b). This discrepancy not only expresses structural inequalities, but also issues a call for comparative, cross-sectoral and cross-cultural studies in order to build a more holistic and internationally relevant HRA practice.

Research Gaps and Future Directions

Notwithstanding its such rapid growth, the HRA literature is found to have remained some open deficiencies. First, the predominance of literature coming from developed countries makes the perspectives from less developed countries, the public sector and non-profit organizations relatively less explored (Bahuguna et al., 2024). Second, the field is still somewhat splintered with technical, strategic and ethical dimensions often being analyzed separately and in isolation from one another (Margherita, 2022b). Third, methodological limitations persist: systematic reviews and qualitative case studies are preeminent whereas integrated designs or longitudinal research are conspicuously rare (Gerber et al., 2024b).

Vulnerabilities in these gaps are multidimensional and need to be addressed as well. Future studies need to include the technical, organizational and ethical regime views and explicitly take account of regional and sectorial differences. Similarly, broader methodological toolboxes - in terms of mixed-method and longitudinal designs - would further solidify theory and application. Lastly, more consideration should be given to the social and ethical aspects of HRA, such as their influence on employee trust, inclusivity, and sustainability. Only a focus on these still underdeveloped areas can let the field fully deliver on its dual promises to enhance both organizational performance and responsible people management.

This 'humanized' review of the literature not only reviews what we know about HRA, historically and in terms of theory and practice but also demonstrates that all are changing, interdisciplinary fields. Emphasizing trends, gaps, and critical engagement with the literature, it situates HRA as a strategic imperative and ethical obligation in digital transformation times.

Methods

This study employed a Systematic Literature Review (SLR) guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) framework (Page et al., 2021) to ensure transparency, traceability, and replicability of the entire review process. All four PRISMA stages – identification, screening, eligibility, and inclusion – were conducted sequentially and documented in accordance with PRISMA-S recommendations for search transparency.

The review focused exclusively on Human Resource Analytics (HRA) studies indexed in the Scopus database during 2015-2025. Scopus was selected because of its comprehensive multidisciplinary coverage, strict peer-review indexing standards, and consistency in metadata quality (Lasda Bergman, 2012; Rocha et al., 2023). Although relying on a single database may limit coverage, this boundary ensures methodological consistency, comparability of results, and control over publication quality.

The search strategy combined Boolean operators and controlled vocabulary to capture variations in terminology commonly used in the field. The final search string applied was: ("Human Resource Analytics" OR "Human Resources Analytics" OR "HR Analytics"). Filters were set to include only journal articles published in English between 2015 and 2025 within business, management, and social science subject areas. The initial Scopus search yielded 295 records. After manual consolidation and preliminary exclusion, a refined list of 256 articles was obtained. At this stage, several records were removed: 101 pairs of duplicates, 3 automatically identified as irrelevant, 4 without abstracts, and 26 with insufficient journal quality, resulting in 122 potential articles for full-text inspection. Interestingly, this filtering process temporarily adjusted the dataset size to 161 articles, as additional relevant records were identified through the Watase System (Wahyudi, 2024) to ensure inclusiveness and completeness.

A fine-grained screening of titles and abstracts was then conducted. Of the 161 records, 38 were excluded for not aligning with the research focus, leaving 123 studies for full-text assessment. Despite repeated retrieval attempts through institutional repositories and direct author contact, 41 full texts could not be obtained and were consequently excluded, but transparently recorded in the PRISMA 2020 flow diagram. As a result, 82 studies

proceeded to the eligibility stage, where quality appraisal based on predefined inclusion criteria led to the removal of 15 papers that lacked sufficient methodological alignment. The final dataset thus consisted of 67 studies, which served as the empirical and conceptual basis for the synthesis and subsequent analysis.

Each included study was evaluated using well-defined inclusion criteria: relevance to HRA, methodological transparency, and publication within Scopus-indexed journals between 2015 and 2025. A Mixed Methods Appraisal Tool (MMAT, 2018) was applied to assess research quality across quantitative, qualitative, and mixed-method designs. Dual screening was performed by two independent reviewers, achieving substantial agreement (Cohen's $\kappa = 0.87$), confirming the reliability of the selection process.

Data extraction followed a structured matrix containing key variables such as publication year, country, journal quartile, research design, theoretical framework, analytical approach, and key findings. Thematic coding was carried out inductively and refined iteratively until saturation was achieved. Coding was conducted in NVivo and cross-validated through the Watase System, an internal triangulation framework that compares automated and manual coding outputs to ensure consistency and minimize subjectivity. This process strengthened the credibility of the derived themes and reinforced confidence in the synthesis outcomes.

Quantitative information from the extracted dataset was summarized through descriptive analysis to map research trends and journal quality distribution. As illustrated in Figure 1, the majority of HRA publications appeared in Scopus Q1 and Q2 journals, demonstrating strong academic rigor and credibility.

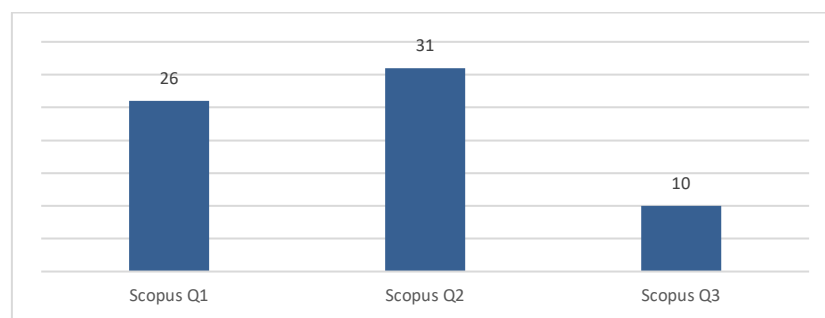


Figure 1. Distribution of Publications on HR Analytics by Scopus Quartile (Q1–Q3)

Figure 2 presents the annual distribution of publications from 2015 to 2025, revealing a steady growth trajectory with a notable increase between 2022 and 2024. This pattern reflects the expanding relevance of HRA in the broader context of digital transformation and evidence-based HR practices.

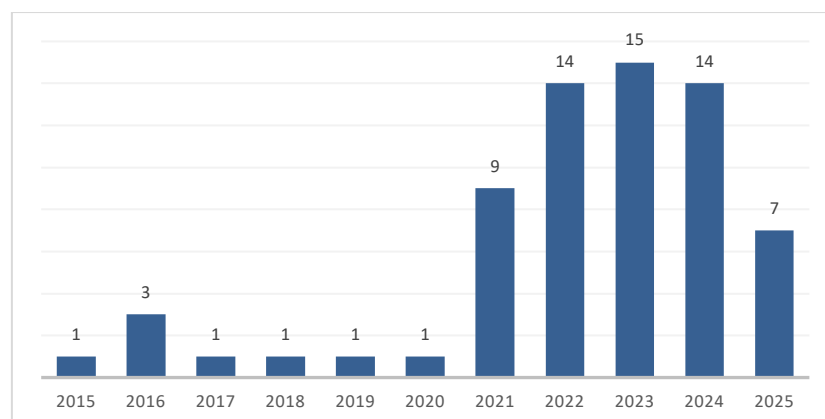


Figure 2. Number of Publications on HR Analytics by Year (2015–2025)

To illustrate the review process, Figure 3 depicts the PRISMA 2020 flow diagram summarizing the identification, screening, eligibility, and inclusion stages. The logical progression from 295 initial records to 67 final studies confirms the systematic rigor and internal coherence of the review design.

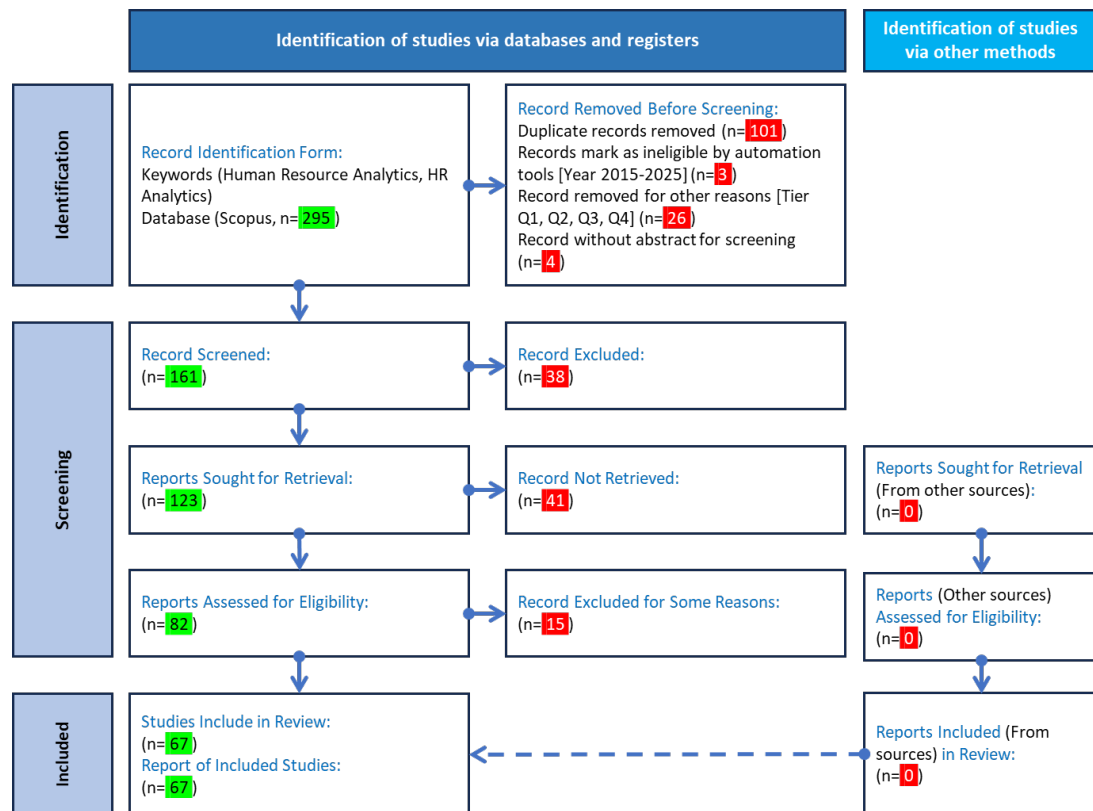


Figure 3. PRISMA Diagram

The synthesis combined both quantitative mapping and qualitative thematic analysis. Descriptive statistics revealed macro-level publication trends, while thematic synthesis identified recurring concepts such as technological readiness, leadership commitment, data quality, and ethical governance. Integration between descriptive and thematic analyses followed a sequential explanatory approach, supported by triangulation through the Watase System to ensure methodological transparency and traceability.

All reviewed materials were secondary and publicly available, requiring no ethical approval. Nevertheless, methodological reflexivity was maintained to acknowledge potential limitations. The exclusive reliance on Scopus introduces possible publication and language bias by excluding grey literature and non-English studies. This constraint is recognized as a deliberate design boundary to preserve peer-reviewed quality and methodological consistency. Future reviews could extend database coverage to include Web of Science, ProQuest, or non-indexed repositories to mitigate coverage bias.

Through these systematic procedures, the review achieved a transparent, replicable, and credible workflow consistent with PRISMA 2020 standards. The combined application of MMAT for quality appraisal, dual-reviewer reliability testing, and triangulation through the Watase System enhanced methodological integrity. The final 67 studies constitute a robust foundation for the Results and Analysis section, which explores theoretical orientations, methodological diversity, and emerging research trends in the global development of Human Resource Analytics.

Results and Discussion

This section presents the empirical and conceptual synthesis of sixty-seven Scopus-indexed studies on Human Resource Analytics (HRA) published between 2015 and 2025. The analysis integrates descriptive mapping and thematic interpretation to address the four research questions formulated earlier: publication trends and methodological patterns, dominant themes and theoretical foundations, existing gaps and limitations, and the integrative conceptual framework derived from these findings. The results are reported analytically, combining qualitative reasoning with quantitative description drawn from the reviewed corpus.

Publication and Methodological Trends

The volume of publications on HRA has increased steadily throughout the review period. Early works before 2017 were largely exploratory, focusing on conceptual discussions of data use in HR functions. After 2020, the number of empirical studies grew significantly, reflecting the acceleration of digital transformation and the increasing integration of data analytics in HRM. This surge corresponds with the wider diffusion of predictive analytics and artificial intelligence across organizational processes.

Methodologically, the corpus remains dominated by qualitative and conceptual studies, particularly case analyses and structured reviews that explore the organizational meaning and practical barriers of HRA. Quantitative approaches such as regression analysis and partial least squares structural equation modeling (PLS-SEM) appear in a smaller subset of papers, while mixed-method studies are still rare. The overall pattern confirms the methodological fragmentation described in previous reviews (McCartney & Fu, 2022), where evidence generation relies heavily on perception-based designs rather than large-scale empirical validation.

In terms of geographical concentration, research continues to be led by institutions in Europe and North America, with increasing contributions from Asian contexts such as India and China in recent years. Studies from emerging economies often highlight the challenges of data infrastructure and analytical capability, contrasting with advanced-economy research that emphasizes strategic integration and performance outcomes (Vargas et al., 2018). These regional differences suggest that HRA maturity is shaped by both institutional support and digital-readiness levels, indicating the importance of contextual diversity in future investigations.

Thematic and Theoretical Landscape

The thematic synthesis identified seven recurring categories that collectively illustrate how HRA scholarship has evolved conceptually and empirically. These categories were derived inductively from the coding of study objectives, key terms, and findings, and subsequently verified through cross-analysis in the Watase System (Wahyudi, 2024). The categories are not mutually exclusive but interrelated, reflecting the multidimensional nature of analytics adoption.

The first and most recurrent theme concerns Human Resource Data Management and Infrastructure. Many studies emphasize data architecture, integration of HR information systems, and the establishment of data governance frameworks as essential building blocks for analytics maturity (Margherita, 2022). The literature indicates that while most organizations have begun collecting HR data systematically, the transformation of raw data into actionable insight remains limited, especially where system integration and interoperability are weak.

The second theme, Strategic Decision Support and Organizational Performance, focuses on the link between analytics and strategic outcomes. Studies under this category analyze how data-driven evidence informs managerial decisions and influences organizational effectiveness. The Resource-Based View (RBV) is the most frequently used theoretical lens here, conceptualizing HRA as a strategic capability that enables organizations to convert information into sustained advantage (Bassi & McMurrer, 2016).

A third stream addresses Ethics, Privacy, and Responsible Analytics. Research within this area has gained visibility since the implementation of global data-protection regulations such as the EU's General Data Protection Regulation (GDPR). Authors including Chatterjee et al. (2022) and Rigamonti et al. (2024) discuss how fairness, transparency, and algorithmic accountability are emerging as determinants of employee trust and social legitimacy in analytics initiatives. These studies frequently draw on Socio-Technical Systems (STS) theory, underscoring the interdependence between technological design and human values.

A fourth area centers on Analytics Competence and Data Literacy among HR professionals. Many organizations still lack the analytical skills and data interpretation capabilities necessary to leverage advanced analytics effectively. The literature suggests that enhancing analytical literacy and fostering a culture of evidence-based HR decision-making are prerequisites for realizing HRA's potential (Saxena et al., 2021).

The fifth theme involves Technology Adoption and Digital Transformation, reflecting studies that examine the role of AI, Machine Learning, and predictive algorithms in transforming HR processes. These works often employ the Technology-Organization-Environment (TOE) framework to explain how technological readiness and environmental pressures interact with organizational structures to facilitate adoption.

Another theme relates to Employee Engagement and Well-being Analytics, exploring how sentiment analysis and behavioural metrics support inclusion, wellness, and retention strategies. This area represents an emerging intersection between people analytics and sustainable HRM.

Finally, Change Management and Organizational Culture appears as a recurrent contextual factor influencing adoption. Studies such as Rasmussen and Ulrich (2015) demonstrate that top-management support and a data-driven mindset are central to successful implementation, while resistance to change and lack of alignment between HR and IT remain persistent barriers.

Across these seven categories, three theoretical perspectives – RBV, TOE, and STS – emerge as dominant explanatory frameworks. RBV highlights analytics as a resource for strategic advantage, TOE contextualizes adoption within technological and organizational environments, and STS focuses on the human-technology interface and ethical dimensions. Other theories such as Contingency and Institutional perspectives appear occasionally, reinforcing the field’s theoretical pluralism but also its limited integration. The combined insights reveal that HRA research has moved beyond descriptive efficiency analysis toward broader considerations of capability, governance, and socio-ethical responsibility.

Geographic and Sectoral Distribution

The country-level mapping shows that the majority of reviewed studies originate from developed regions, particularly the United States, the United Kingdom, and Germany. Contributions from Asia and Latin America are fewer but steadily increasing, particularly from India, Singapore, and Brazil. These studies frequently highlight local challenges such as technological readiness, skills shortages, and limited access to analytic tools, confirming that national digital capacity shapes adoption behaviour.

Figure 4 illustrates this Geographic Distribution of publications. While the figure visually emphasizes Western dominance, it also indicates emerging interest from developing economies since 2020, reflecting globalization of the analytics discourse. The concentration of research in high-income countries implies potential bias in theory development, as frameworks grounded in digitally advanced contexts may not directly apply to resource-constrained environments.

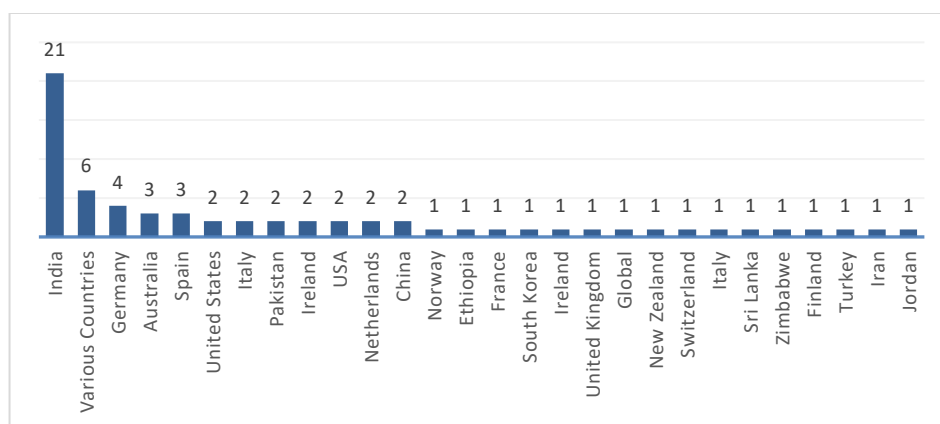
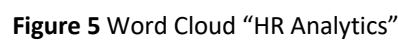


Figure 4 Number of Publications on HR Analytics by Country

Sectorally, most studies are situated in large enterprises, consulting, and technology-driven industries. Research in public-sector or non-profit contexts remains sparse, though a few papers explore analytics for workforce planning and service delivery in government institutions. These variations highlight how organizational scale and sectoral characteristics influence the perceived value and feasibility of HRA.

Quantitative Patterns and Visual Synthesis

Descriptive analysis of publication patterns reveals that scholarly attention toward HRA has expanded notably after 2020. This growth parallels the widespread adoption of remote work technologies and increasing organizational demand for workforce intelligence. Figure 4, as noted above, depicts the distribution of studies by region, while Figure 5 provides a Word Cloud Visualization generated from keywords across the 67 studies.



Synthesizing these findings leads to the conceptual integration of three complementary lenses—Resource-Based View, Technology-Organization-Environment, and Socio-Technical Systems. Across the reviewed literature, technological readiness, leadership commitment, and external support consistently appear as enabling conditions for analytics adoption, aligning with TOE. These conditions translate into organizational capabilities such as data governance, analytical competence, and strategic alignment, which RBV interprets as valuable resources driving

performance. STS provides the necessary socio-ethical perspective, emphasizing that effective analytics implementation depends on trust, user acceptance, and ethical data practices.

The integrated interpretation can be viewed as a multi-layered system where technological infrastructure enables capacity, organizational support ensures direction, and human-ethical awareness provides legitimacy. This conceptual model builds on previous frameworks by explicitly embedding ethical, contextual, and capability-based contingencies – data literacy, IT maturity, and regulatory readiness – that shape adoption outcomes.

Contextual and Boundary Conditions

The synthesis highlights that HRA adoption is not a uniform process but contingent upon organizational and environmental conditions. Studies emphasize that the successful use of analytics depends on three interrelated capabilities. First, data literacy and analytical competence among HR professionals determine whether insights are interpreted meaningfully and integrated into decision-making. Second, IT maturity and infrastructure interoperability affect the scalability and consistency of analytics systems. Third, regulatory and ethical readiness – through policies on privacy, consent, and transparency – defines the legitimacy of analytics practices. Without these conditions, analytics initiatives tend to remain technical experiments rather than strategic levers.

Summary of Analytical Contributions

Overall, the results demonstrate a cumulative yet uneven development of HRA scholarship. The analysis confirms a consistent upward trajectory in publication activity, a concentration in Western contexts, and a growing but still fragmented theoretical landscape. RBV, TOE, and STS have emerged as complementary perspectives explaining different facets of analytics adoption, while ethics and responsible data use are becoming integral to the research agenda.

The evidence indicates that the field is transitioning from descriptive assessments toward integrated, context-sensitive analyses. However, theoretical integration, regional diversification, and methodological triangulation remain underdeveloped. The present synthesis thus provides a clearer understanding of where the literature converges and where it diverges, offering a reliable foundation for the subsequent discussion on theoretical implications and future research directions.

The findings of this systematic literature review (SLR) underscore the multifaceted nature of Human Resource Analytics (HRA) and provide a platform for critical reflection on how these results align with, diverge from, or extend previous studies. Several core themes emerged, including HR data management, predictive analytics, employee well-being, ethical concerns, and organizational performance. This discussion critically engages with these themes by situating them in relation to earlier scholarship, highlighting theoretical and practical implications, and emphasizing the novelty of this review.

Data Management as a Persistent Foundation

Our synthesis reveals that HR data management remains a dominant theme as it's shown in the Table 1 below, consistent with the conclusions of (Marler & Boudreau, 2017b) and (Rasmussen & Ulrich, 2015b), who identified data quality and integration as persistent bottlenecks. In line with these earlier studies, our review confirms that robust data governance is foundational for advanced applications of HRA. However, unlike prior SLRs which primarily treated data management as a technical challenge (Bahuguna et al., 2024), this study extends the findings by demonstrating its socio-technical dimension, where data practices intersect with organizational culture, ethics, and employee trust. This nuance adds depth to the existing literature by situating data management within broader organizational dynamics.

Table 1. Themes Across HR Analytics Publications

Theme	Number of Publications
HR Data Management	48
Employee Well-being	7
Performance Evaluation	3
Talent Management	3
Predictive Analytics	3
Employee Retention	2
Recruitment and Selection	1

Predictive Analytics and the Technological Frontier

Predictive analytics has emerged as a focal point, supported by the proliferation of machine learning and artificial intelligence (Hülter et al., 2024; Margherita, 2022b). Our review is in line with these studies in recognizing predictive analytics as transformative for workforce planning, performance forecasting, and talent management. Yet, this review offers a novel perspective by linking predictive models not only to efficiency but also to ethical trade-offs, such as fairness in decision-making and potential bias in algorithmic predictions. Unlike prior reviews that celebrated the technological promise, this synthesis critically underscores the dual-edged nature of predictive analytics, highlighting both opportunities and risks.

Employee Well-being: An Understudied Dimension

A striking finding of this review is the growing, yet still underexplored, attention to employee well-being. While earlier research (Wirges & Neyer, 2023) acknowledged the relevance of HRA to engagement and satisfaction, the literature has largely prioritized organizational-level outcomes. This review adds nuance by revealing how HRA can both enhance and undermine well-being, depending on how analytics are designed and implemented. For instance, while predictive analytics can be harnessed to anticipate burnout or turnover, they can also fuel perceptions of surveillance and erode trust (Chatterjee et al., 2022). This tension indicates an understudied aspect of HRA that warrants closer scrutiny in future research.

Ethics, Privacy, and Legitimacy in HR Analytics

Ethical concerns surrounding employee data use have been recurrent in the literature (Rigamonti et al., 2024b; Chatterjee et al., 2022). In line with prior findings, our review affirms that ethics and privacy remain pressing challenges. However, this review extends the discussion by situating ethics within broader socio-political debates on surveillance, fairness, and organizational legitimacy. Unlike earlier reviews that addressed ethics as a compliance matter, this synthesis highlights its role in sustaining employee trust and organizational reputation. This reframing positions ethics not as a peripheral issue but as a central determinant of HRA's long-term viability.

Theoretical Anchors and Contributions

The dominance of the Resource-Based View (RBV) in prior studies (McCartney & Fu, 2022b; Thakur et al., 2024) is reaffirmed in our findings, underscoring the view of HRA as a strategic asset. However, this review adds to the theoretical discourse by integrating Contingency Theory and Socio-Technical Systems Theory, demonstrating that effective adoption requires alignment not only with resource configurations but also with contextual contingencies and human-technology interactions. This integrative perspective advances theory by moving beyond mono-theoretical explanations toward a multidimensional conceptualization of HRA.

Geographic and Contextual Variability

The geographic distribution of studies highlights persistent imbalances, with the Global North dominating influential contributions (Marler & Boudreau, 2017b; Rasmussen & Ulrich, 2015b). In line with (Fernandez & Gallardo-Gallardo, 2021b), this review confirms the relative neglect of emerging economies, even though contexts such as India and Pakistan are increasingly represented (Saxena et al., 2021; Muhammad et al., 2024). Unlike prior reviews, however, this study emphasizes that insights from developing economies extend beyond local idiosyncrasies; they challenge prevailing assumptions about resource availability, digital infrastructure, and cultural readiness, thereby enriching global theorization of HRA.

Novelty and Scholarly Contribution

This review offers a novel perspective by synthesizing fragmented insights across data, technology, ethics, and employee well-being into a unified conceptual frame. Unlike prior SLRs that were either bibliometric (M. Arora et al., 2023) or narrowly focused on adoption barriers (Fernandez & Gallardo-Gallardo, 2021b), this study develops a multidimensional taxonomy encompassing four clusters: data-driven decision-making, strategic alignment, ethical and sustainable practices, and stakeholder engagement. The findings reveal an understudied aspect of HRA: its role as an enabler of organizational transformation that extends beyond efficiency toward resilience, trust, and sustainability. This contribution advances both theoretical and practical debates by reframing HRA as not merely a technical tool but as a socio-technical system embedded within complex organizational and societal contexts.

Theoretical Implications

Theoretically, this review enriches the discourse by challenging the primacy of RBV and demonstrating the utility of blending multiple theoretical perspectives. By incorporating socio-technical, contingency, and stakeholder theories, the review emphasizes that the effectiveness of HRA depends on the interplay between technical

infrastructures, organizational culture, and institutional environments. This integrative lens paves the way for future research to explore how HRA mediates relationships between human capital, innovation, and organizational resilience.

Practical Implications

From a practical standpoint, the review underscores that successful HRA implementation requires more than technological investment. It necessitates cultivating data literacy, fostering trust through transparent practices, and embedding ethical safeguards. Managers should treat HRA not only as a decision-support tool but also as a catalyst for organizational learning and cultural change. Importantly, insights from developing economies highlight that even with limited resources, organizations can leverage HRA effectively if they align analytics initiatives with local needs and institutional constraints.

Concluding Reflections

In summary, this discussion situates the findings of the SLR within existing scholarship, noting areas of alignment, divergence, and extension. In line with earlier studies, it confirms the centrality of data, performance, and predictive analytics. Contrary to earlier SLRs, however, it brings employee well-being, ethics, and global contextual variability to the fore. By developing a multidimensional taxonomy and emphasizing HRA's socio-technical character, this review contributes novel insights that enrich theory and inform practice. The findings suggest that the future of HRA research and practice lies not in technological determinism but in holistic, ethical, and context-sensitive approaches that recognize the complexity of managing people in a digital age.

Conclusion

The present systematic review consolidates a decade of scholarship on Human Resource Analytics (HRA) and provides an integrated understanding of its theoretical, methodological, and contextual evolution. Synthesizing evidence from sixty-seven Scopus-indexed studies published between 2015 and 2025, this review highlights that the Resource-Based View (RBV) remains the most influential theoretical foundation for explaining the strategic role of analytics as a unique capability that enhances organizational competitiveness. The Technology-Organization-Environment (TOE) framework extends this view by accounting for infrastructural readiness, managerial support, and environmental pressures as contextual determinants of adoption. Complementing both, the Socio-Technical Systems (STS) perspective underscores the importance of ethical alignment and human-technology interaction. Together, these frameworks offer a multidimensional explanation of how technological, organizational, and social forces jointly shape the trajectory of HRA adoption.

The synthesis reveals three main insights derived from the reviewed corpus. First, data governance and analytical capability emerge as the most persistent themes linking technology readiness and strategic value creation. Second, ethical responsibility and privacy protection have gained prominence, especially after 2020, when digital transformation intensified and regulatory frameworks such as GDPR shaped new norms for responsible data use. Third, data literacy and skill development among HR professionals remain critical mediators for translating analytic potential into meaningful outcomes. These thematic intersections suggest that HRA is both a strategic and an ethical construct—capable of enhancing decision quality yet contingent on organizational maturity and cultural acceptance.

Geographically, HRA scholarship remains concentrated in developed economies, with limited empirical evidence from developing regions. Studies from Western contexts emphasize predictive capability and performance outcomes, whereas those from Asia and Latin America point to institutional and cultural barriers that hinder adoption. This uneven landscape indicates a pressing need to expand theoretical and empirical attention toward emerging economies, where digital readiness and governance structures differ significantly.

From a methodological standpoint, the field remains dominated by qualitative designs and systematic reviews. While these approaches provide depth and conceptual richness, they offer limited generalizability. Future research should adopt mixed-method and longitudinal designs to capture how HRA capabilities evolve over time and across diverse institutional settings. Such approaches would enable scholars to examine causal mechanisms—linking data infrastructure, managerial commitment, and employee behavior to measurable outcomes such as performance, innovation, and well-being.

The implications of this synthesis are threefold. Theoretically, future research should advance integrative frameworks that connect RBV's resource logic with TOE's adoption conditions and STS's ethical and socio-technical dimensions. Empirically, studies should extend the current Western bias by examining how cultural norms, data maturity, and regulatory systems shape HRA adoption in developing countries and public-sector institutions. Methodologically, researchers should pursue cross-country and multi-level analyses combining survey, case-based, and computational techniques to strengthen analytical triangulation.

In closing, this review demonstrates that Human Resource Analytics represents far more than a technical tool—it is a transformative organizational capability that redefines how data, ethics, and strategic value intersect within human capital management. Yet, unlocking its full potential requires not only technological investment but also a commitment to ethical governance, data literacy, and contextual adaptation. Future investigations that build on these insights will not only refine theoretical understanding but also ensure that HRA contributes to sustainable, responsible, and human-centered organizational transformation.

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