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ORIGINAL ARTICLE

Comprehending the Aspects, Antecedents, and Consequences of the Data-Driven Human Resources Management Based on Concept Analysis Methodology

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EXTENDED A B S T R A C

Introduction
The rapid development of information technology and digital transformation has transformed the role of human resource management (HRM) from a primarily administrative function into a more strategic component of organizational performance and value creation. In this context, data-driven human resource management (DDHRM) has emerged as an approach that improves HR decision-making through the systematic collection, analysis, interpretation, and use of employee and organizational data. Unlike traditional approaches that rely heavily on managerial intuition and experience, DDHRM emphasizes evidence-based decision-making. The growing use of data in HR has also generated overlapping concepts, including HR analytics, people analytics, human capital analytics, workforce analytics, and data-driven HR decision-making. Although these concepts share common elements, their boundaries and relationships remain unclear. This conceptual ambiguity has limited theoretical development and created challenges for organizations seeking to implement data-driven HR practices. Therefore, this study aimed to clarify the concept of DDHRM by identifying its defining dimensions, antecedents, and consequences and by establishing a more coherent conceptual foundation for future research and organizational practice.

Methodology
This qualitative study employed Rodgers' evolutionary concept analysis methodology, which is particularly appropriate for emerging concepts whose meanings evolve across time and contexts. The approach examines the defining characteristics of a concept, its antecedents and consequences, related concepts, and, where appropriate, empirical referents. The literature search was conducted in the Web of Science (WoS) and Scopus databases using a range of keywords associated with data-driven HRM and HR analytics. The search covered titles, abstracts, and keywords without imposing a publication-year restriction. The initial search yielded 480 publications, including 285 records from Scopus and 195 from Web of Science. After merging the databases, 95 duplicate records were removed. Screening of titles and abstracts resulted in the exclusion of 313 publications because of insufficient relevance. Consequently, 72 articles were selected for full-text analysis. The

inclusion criteria consisted of English-language journal articles containing relevant keywords in the title, abstract, or keywords and providing access to the full text. Conference papers and books were excluded. The selected studies were systematically reviewed, and information concerning the characteristics, antecedents, and consequences of DDHRM was extracted and coded. Thematic analysis was conducted through iterative comparison and refinement of emerging themes, following the components of Rodgers' evolutionary concept analysis. The resulting concepts, dimensions, and operational definitions were also reviewed by two experts involved in the analytical process to enhance the credibility of the findings.

Findings

The analysis identified five central dimensions of data-driven human resource management: data collection and analysis, data governance, data technology, data storytelling, and data-based decision-making.

First, data collection and analysis constitutes the foundation of DDHRM. It involves systematically obtaining data from internal sources, such as HR management systems, employee surveys, and performance evaluations, as well as external labor-market and industry sources. Descriptive, predictive, and prescriptive analytics can then be applied to identify patterns and predict future developments.

Second, data governance encompasses the policies, processes, responsibilities, standards, and structures required to ensure data quality, security, privacy, appropriate access, and regulatory compliance. Effective DDHRM therefore requires clear ownership and accountability for employee data and explicit rules governing its collection, storage, analysis, and use.

Third, data technology refers to the technological infrastructure and analytical tools that enable organizations to store, integrate, process, visualize, and analyze HR data. Technology connects data resources with HR processes and provides the infrastructure necessary for transforming raw data into actionable information.

Fourth, data storytelling represents the ability to translate analytical results into meaningful and understandable narratives for managers and organizational stakeholders. It serves as a bridge between technical analysis and managerial action, because analytical capabilities alone do not guarantee that insights will be incorporated into organizational decisions.

Fifth, data-based decision-making represents the practical realization of DDHRM. It occurs when decisions concerning recruitment, performance management, employee development, and other HR functions are systematically informed by evidence and analytical results rather than relying solely on intuition, precedent, or personal experience. Together, these dimensions demonstrate that DDHRM is a socio-organizational process rather than an analytical activity.

The study also identified several antecedents necessary for successful implementation, including information technology capability and infrastructure, skilled data analysts, data governance, a data-oriented organizational culture, organizational size and resources, managerial capabilities and support, and behavioral factors such as performance expectancy, social influence, and facilitating conditions. These findings indicate that successful adoption requires the simultaneous development of human, organizational, managerial, and behavioral capabilities.

The identified consequences include improved HR decision-making, greater efficiency and effectiveness, stronger alignment between HR activities and organizational objectives, improved talent management, and enhanced organizational performance and competitiveness. Improved HR processes may also contribute to employee well-being. However, DDHRM can create challenges concerning employee privacy, data security, and the responsible use of personal information, which depend substantially on effective governance of employee data.

Discussion and Conclusion

The findings provide a comprehensive conceptualization of DDHRM by integrating technological, analytical, organizational, and human dimensions. The five identified dimensions demonstrate that data-driven HRM extends beyond the technical application of HR analytics. In particular, data storytelling highlights the importance

of transforming analytical outputs into managerial understanding and actionable knowledge. The findings further indicate that DDHRM should be understood as an integrated system in which technology, human expertise, organizational culture, governance, and managerial support interact. Consequently, investment in analytical technologies alone is unlikely to ensure successful adoption unless organizations simultaneously develop analytical capabilities, governance mechanisms, and an evidence-oriented culture. Conceptually, the study helps clarify the boundaries of DDHRM in relation to related constructs such as HR analytics, people analytics, and human capital analytics. Although these concepts overlap, DDHRM represents a broader process integrating data collection and analysis, governance, technology, interpretation, and evidence-based decision-making within HR practices. From a practical perspective, organizations should approach DDHRM as an organizational transformation rather than simply as the acquisition of analytical software. Developing technological infrastructure and storytelling competencies, data governance, a data-oriented culture, and managerial support are complementary requirements for effective implementation. At the same time, organizations must establish appropriate safeguards for data security and responsible data use. Overall, DDHRM is a multidimensional and evolving concept that can strengthen the strategic role of HRM when technological and analytical capabilities are combined with effective governance, human expertise, organizational readiness, and responsible decision-making.

K E Y W O R D S
Data-Driven Human Resources, Concept Analysis, Human Resource Management, Human Resource Analytics