Gestão & Regionalidade

Tipo de artigo:
Original Article

Received: 26/04/2025
Accepted: 15/01/2026

Datafication in Human Resource Management: a systematic literature review of organizational implications

Dataficação na Gestão de Recursos Humanos: uma revisão sistemática de literatura sobre implicações organizacionais

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Abstract
Human Resource Management (HRM), embedded in Industry 4.0, incorporates intensive data analytics (datafication) to optimize processes and decision-making. However, this technological evolution produces a structural paradox, operating as a driver of efficiency while simultaneously serving as a potential instrument of surveillance and objectification. This study examined the implications of datafication in HRM through a Systematic Literature Review (PRISMA), analyzing 68 articles indexed in Scopus and Web of Science. The findings identified four key tension themes: support for human decision-making, data quality and security, control and surveillance, and dehumanization. The critical analysis showed that the technology that optimizes is, paradoxically, the same technology that can alienate. We conclude that mitigating this paradox requires balancing human agency and algorithms, operationalized through the Responsible Datafication in HRM Framework. This sociotechnical model, articulated across Technological, Organizational, and Human levels, provides a structure for aligning algorithmic innovation with ethical responsibility, thereby delivering a central theoretical and managerial contribution to the field.
Keywords: datafication; algorithmic decision-making; control; surveillance.

Resumo
Gestão de Recursos Humanos (GRH), imersa na Indústria 4.0, incorpora a análise intensiva de dados (dataficação) para otimização de processos e decisões. Contudo, essa evolução tecnológica gera um paradoxo estrutural, manifestando-se como um vetor de eficiência e, simultaneamente, como um potencial instrumento de vigilância e objetificação. Este estudo analisou as implicações da dataficação na GRH mediante Revisão Sistemática da Literatura (PRISMA), examinando 68 artigos nas bases Scopus e Web of Science. Os resultados identificaram quatro temas de tensão: suporte à decisão humana, qualidade e segurança de dados, controle e vigilância, e desumanização. A análise crítica demonstrou que a tecnologia que otimiza é, paradoxalmente, a que pode alienar. Concluímos que a mitigação desse paradoxo demanda equilíbrio entre protagonismo humano e algoritmo, operacionalizado pelo Framework Dataficação Responsável na GRH. Este modelo sociotécnico, articulado em níveis Tecnológico, Organizacional e Humano, oferece uma estrutura para alinhar inovação algorítmica e responsabilidade ética, consolidando uma contribuição teórica e gerencial fundamental para o campo.
Palavras-chave: dataficação, decisão algorítmica, controle, vigilância, desumanização.

Citation: Assi, I. L. & Vieira, A. M. (2026). Dataficação na Gestão de Recursos Humanos: uma revisão sistemática de literatura sobre implicações organizacionais. *Gestão & Regionalidade*, v. 42, e202610034. https//doi.org/10.13037/gr.vol42.e202610034

1 Introduction

Contemporary society, deeply shaped by Industry 4.0, is witnessing the transformation of organizational structures and operations through the growing implementation of algorithmic management systems. In HRM, this evolution is reflected in the global expansion of employee supervision by algorithms (Noponen et al., 2023). The advancement of Artificial Intelligence (AI) in the field has culminated in practices such as Human Resource Analytics (HRA) and People Analytics (PA), supported by a range of tools that facilitate the adoption of these developments in the "new HRM" (Edwards et al., 2022; Ferrar & Green, 2021; Rasmussen et al., 2024).

This shift prioritizes data- and evidence-based decision-making in HRM, representing a substantial departure from traditional, intuition-driven decision practices (Davenport & Mittal, 2023; Gupta, 2024). This trend has, in fact, led to a notable 31% increase in academic publications on the topic in databases such as Scopus (Sco) and Web of Science (WoS). However, datafication – defined as the conversion of social actions and aspects of real life into quantified data for analysis and decision support (Thorpe & Sellar, 2023) – is intrinsically interdisciplinary, bringing together knowledge from management, technology, sociology, and ethics. Although this interdisciplinarity is valuable, it also results in knowledge fragmentation, which makes it difficult to obtain a holistic, consolidated view of the consequences of datafication specifically for the strategic function of HRM (Giermindl et al., 2022). It is therefore necessary and important to consolidate this recent literature to inform both academic research and managerial practice.

Given the conceptual fragmentation and the practical urgency surrounding the topic, this Systematic Literature Review (SLR) seeks to identify and analyze the implications – encompassing both optimizing benefits and challenging harms – of implementing datafication in HRM. The central aim of this article is to assess how the datafication process affects contemporary HRM, particularly in terms of its practical effects. To achieve this purpose and provide a comprehensive, condensed view, the study is guided by the following research questions: (i) What does the datafication process consist of from an organizational perspective, and how does it manifest in HRM? (ii) What are the main themes that emerge from the scientific literature on datafication and its implications from the perspective of HRM? The relevance of these questions is indisputable: for the literature, they enable a robust understanding of how the transformation of human behavior into data shapes the field; for managerial practice, they provide a broad view of the challenges and possibilities inherent in embedding algorithms in HRM processes, offering useful insights for managers and organizations (Dasari & Devi, 2024; Devi, 2023).

The incorporation of datafication into HRM reveals a paradox. On the one hand, digital transformation is undeniably a driver of increased competitiveness and organizational efficiency. On the other, it simultaneously emerges as a potential instrument of segregation and human objectification, with the capacity to intensify excessive rationalization and dehumanization and to influence decision-making processes to the point of potentially disrupting institutionalized and legitimized social structures (Konovalova et al., 2021). This duality, pitting optimization against the risk of excessive surveillance and possible dehumanization, requires HRM to move beyond mere technical implementation, demanding a critical stance that acknowledges both the benefits and the inherent risks. This tension is summarized in the analysis of the ambiguities of the datafication process (Table 3) and will be the focus of Section 4. We therefore propose that mitigating this paradox rests on the postulate of human agency, assigning to HR professionals' cognition and agency the ethical and

strat3egic responsibility for governing algorithmic systems without departing from the principles of valuing human capital (Ferrar & Green, 2021).

Methodologically, this study adopts a Systematic Literature Review (SLR) approach, following the scientific rigor established by the PRISMA protocol (Moher et al., 2015). This approach is justified by the need to map the fragmented field of datafication and consolidate the extensive interdisciplinary literature (Fisch & Block, 2018). The search was conducted in the Sco and WoS databases, selected because they are widely recognized as large, multidisciplinary bibliographic databases and are suitable for evidence synthesis in systematic reviews (Gusenbauer & Haddaway, 2020). The primary analysis of the 68 articles is guided by a concept-centric perspective (Fisch & Block, 2018; Webster & Watson, 2002), enabling the identification and assessment of concepts relevant to the datafication process in HRM.

The article is organized into four main sections: following this Introduction, Section 2 presents the Theoretical Background, establishing the conceptual foundations of the topic; Section 3 details the Methodological Procedures, including the rationale for database selection, and presents the descriptive results, revealing the four key themes emerging from datafication in HRM; finally, Section 4 comprises the Discussion and Final Considerations, dedicated to the critical synthesis and articulation of the datafication paradox, culminating in the proposition of Human Agency and the Responsible Datafication Framework (Figure 1), along with its concrete theoretical and managerial contributions.

2 Theoretical Background

2.1 Datafication and its Foundations

Contemporary society is undergoing multiple technology-mediated transformations, which calls for careful conceptual distinctions to ground the analysis in HRM. Digitalization (digitization or digitalization), although a necessary precursor, primarily involves the adoption of digital technologies to optimize operations, goals, strategies, risk management, production, marketing, and people management itself (Cöster et al., 2023; Manresa et al., 2024).

In a fundamentally different sense, datafication consists of a deeper process: the conversion of social actions, interactions, and aspects of real life, such as communication, job performance, and everyday decisions, into quantified data, which are then treated as a new type of raw material and economic resource for analysis and decision support (Gobble, 2017; Thorpe & Sellar, 2023). Driven by the logic of digital platforms and the connected environment, this transformative process radically reshapes social and commercial practices through pervasive, intensive data collection and use (Ayokanmbi, 2021; Beer, 2017; Kalpokas, 2019; Marjanovic & Cecez-Kecmanovic, 2017).

Having data is not enough. Feasibility and legitimacy, as well as data quality and validity, fundamentally shape datafication processes in HRM because algorithmic decisions depend directly on the reliability of input information (Hassenstein & Vanella, 2022; Jansen et al., 2023; Strong et al., 1997). Validity refers specifically to the extent to which data accurately represent the physical or virtual world, whereas quality concerns fitness for use and the absence of defects. Data quality is not monolithic; it includes dimensions such as intrinsic, accessibility, contextual, and representational quality (Strong et al., 1997). Conceptually, data science is the field that provides the technical foundation for transforming and modeling such data, structured or unstructured, by integrating mathematical and statistical rigor with organizational practices to produce analyses, predictions, and strategic optimizations (Davenport & Mittal, 2023; Zorić, 2019).

In the operational domain of HRM, datafication strengthens and centralizes the role of Human Resource Information Systems (HR Information Systems – HRIS) by integrating databases and algorithmic tools, fostering interdepartmental integration and the holistic perspective required to adopt People Analytics (PA) (Marler & Boudreau, 2017; Rasmussen et al., 2024). However, this same informational centralization, although it generates more and better organizational knowledge, intensifies the challenges of data privacy and security, which underpin the ethical and operational risks of the process (Jha, 2022; Pellegrino et al., 2019; Thorpe & Sellar, 2023). HRM that adopts datafication has an imperative need to protect its data assets against external threats, internal sabotage, and the unintentional introduction of biases and algorithmic prejudice. This complexity requires new and urgent ethical and technical competencies from HR professionals (Gaur et al., 2024; Kumar, 2024; Varzoni & Amorim, 2024).

2.2 Challenges of Datafication

The centralization and volume of operational data dramatically intensify both security opportunities and risks, facilitating attacks and increasing the potential for systemic failures that can compromise organizational and individual privacy (Henninger, 2024). In response to this expanded vulnerability, the Information Technology (IT) sector and management research have explored advanced technologies. Blockchain has emerged as a promising distributed ledger technology for secure data storage and sharing, initially prioritized in banking systems but with growing applications in HRM (Mazharunnisa et al., 2024; Rashmi et al., 2023). Blockchain's immutability and cryptographic features can strengthen audit trails, helping ensure the integrity and privacy of HRM records (Vidhya & Sangeetha, 2024).

Another possibility is homomorphic encryption, a technological frontier that aims to enhance data privacy and data transmission by enabling the processing of encrypted information without the need for decryption, a meaningful advance for HRM (Kakulapati, 2021). Despite their theoretical potential, the practical implementation of these technologies faces substantial barriers, such as the complexity of integrating them into existing HRIS and meeting stringent requirements within the global data protection regulatory framework (Vidhya & Sangeetha, 2024). It is therefore imperative that the development and monitoring of controls for the datafication process be conducted systematically and continuously, ensuring ethical and operational alignment with the organization's actual capabilities (Subrahmanyam, 2024; Subramaniyan et al., 2018).

Beyond technical and compliance challenges, datafication intensifies the rationalization of HRM, generating greater analytical capacity for strategic decision-making (Rasmussen et al., 2024). However, this advance requires HRM to evolve beyond the mere collection of descriptive metrics (Marler & Boudreau, 2017) and to deepen its understanding of the business's strategic needs and those of key stakeholders (Dasari & Devi, 2024). The literature encourages the management of analytics projects that remain rigorously focused on each organization's specificities and contextual reality, avoiding exclusive reliance on generic, superficial benchmarking (Rasmussen et al., 2024). The ethical and social threat lies in an imbalance in social relations that may arise if technical and algorithmic rationality is prioritized at the expense of human subjectivity (Ferrer-Conill et al., 2023).

In principle, HRM must remain attentive to the potential dysfunctions of datafication, especially with respect to shifts in power and control derived from large-scale data analysis. This informational power can relativize human subjectivity, which is central to people management (Schultz et al., 2022). Under extreme algorithmic management, this phenomenon can reduce workers' prosocial motivation, inducing objectification and severely undermining collaborative behavior and knowledge sharing (Granulo et al., 2023). When workers feel they are managed by opaque algorithms, they show lower willingness to value machine advice or to share knowledge, which compromises freedom, parity, respect, and equity in the workplace (Galliers et al., 2017; Granulo et al., 2023).

At the individual level, this algorithmic dependence may ultimately amount to a "data dictatorship," in which human experience and judgment are obscured in favor of machine logic (Ferrer-Conill et al., 2023). A top-down, purely technical implementation of datafication makes it difficult to sustain human-centered HRM practices (Roberts & Zheng, 2022). Algorithm-driven dehumanization becomes evident when employees are treated as tools or as purely interchangeable resources, minimizing individuality and negatively affecting both well-being and organizational outcomes (Arcidiacono & Sartori, 2024; Bal et al., 2023; Lagios et al., 2022). This objectification is exacerbated when work is perceived as fragmented and alienated, associating the worker more with an object than with a human being in their full complexity (Baldissarri et al., 2017).

Additionally, intensive practices of constant monitoring and detailed control of time and professional activity intensify surveillance and reduce autonomy (Adams-Prassl et al., 2024). This dynamic aligns with the conceptual notion of "surveillance capitalism," as coined by Zuboff (2019), in which the primary purpose of connected technology is surveillance oriented toward economic advantage, breaking with traditional reciprocal relationships with people and prioritizing shareholder value over society (Zuboff, 2019). Such algorithmic surveillance can create a temporal paradox: a reduction in paid working time coexisting with expanded expectations of worker availability, which produces relentless pressure and lower autonomy, well-being, and satisfaction (Piasna, 2024).

Within this complex landscape, Böhmer and Schinnenburg (2023), corroborated by Roberts and Zheng (2022), highlight the existence of structural and inherent ambiguities in the introduction of datafication into HRM. These ambiguities increase environmental complexity and the potential for managerial conflict. They are characterized by dual impact vectors: on the one hand, datafication can enhance skills and competencies through interaction with AI; on the other, it can weaken human critical analysis by reducing task complexity. Similarly, although datafication can provide greater performance visibility and support stronger person–task fit, it also tends to produce an extreme process of control and surveillance, transforming power relations within these relationships (Böhmer & Schinnenburg, 2023; Roberts & Zheng, 2022).

Ambiguity in organizational datafication also results from difficulties in developing and validating predictive models that accurately represent complex human systems. The literature indicates that current models often rely on simplifications, which undermines practical validation and makes it difficult to build trust in algorithmic outputs (Carmichael, 2018). In addition, persistent data-quality problems and the production of inaccurate or incomplete data exacerbate this ambiguity, amplifying the social and economic impacts of biased decisions (Horgan & Dourish, 2018). It is therefore essential that HRM address these technical issues in information systems to ensure the accuracy and reliability of the data used in strategic decision-making (Strong et al., 1997).

Finally, at the macro-organizational and societal level, datafication reshapes the information cycle, with the capacity to consolidate hierarchies and oligopolies or to alter

competitiveness by centralizing power in the hands of data controllers and generating consequent asymmetries (Beer, 2017; Sharma, 2020; Wahdaniah et al., 2023). Large technology companies exemplify this concentration of power, influencing strategies, managerial practices, and the dynamics of global markets. This concentration is intrinsically tied to the historical commodification of data (Cieslik & Margocsy, 2022), reinforcing the idea that understanding data dynamics and meaning confers an unquestionable competitive advantage (Ferrer-Conill et al., 2023). Operating through standardization and classification, datafication decisively shapes the choices of individuals and organizations through "democratizing" artifacts and social media or through nudging, potentially creating a vicious cycle of systematic control (Baumgart et al., 2023; Ruehle, 2022).

3 Methodology

This study is grounded in the rigor of a qualitative Systematic Literature Review (SLR), following the guidelines established by Tranfield et al. (2003) – planning, execution, and dissemination – and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol (Moher et al., 2015). This methodological choice is essential given the fragmented nature of research on datafication in HRM and aims to ensure that the process is explicit and reproducible. The corpus analysis is conducted from a concept-centric perspective (Fisch & Block, 2018; Webster & Watson, 2002), enabling the identification and assessment of key concepts such as datafication, surveillance, and dehumanization, thereby ensuring the necessary balance between the breadth of the search and the depth of analysis within the specific domain of HRM.

3.1 Research Design

The study's initial planning focused on defining the thematic scope, acknowledging the highly interdisciplinary nature of datafication. The literature identification was conducted in the Sco and WoS databases. The selection of these databases is methodologically justified by their recognized quality as large, multidisciplinary repositories with global standing for evidence synthesis in systematic reviews (Gusenbauer & Haddaway, 2020). In addition, Scopus in particular proved effective for retrieving peer-reviewed scientific documents, offering a consistent national and international overview. The keywords used, including "Datafication," "Datification," "Decision-Making," "Surveillance," "Control," and "Dehumanization", were combined with Boolean operators (AND, OR), as detailed in Table 1, and the results were imported in .bibtex format for subsequent modeling in RStudio (Aria & Cucurullo, 2008).

Inclusion and exclusion criteria were meticulously defined to ensure the study's focus on HRM and its strict alignment with the proposed research problem. As inclusion criteria, we considered only high-relevance peer-reviewed journal articles written in English that directly contributed to the discussion of the HRM datafication process and were primarily associated with the Business, Management and Accounting (BUSI) knowledge area.

We excluded duplicate records; studies that did not fit the primary HRM scope (such as an excessive focus on software engineering or medicine, although interdisciplinarity was acknowledged); and secondary publication formats such as conference proceedings, editorials, errata, and book reviews.

After applying the search strings in the Sco and WoS databases, 151 articles were identified. To refine the corpus, we conducted a first screening phase based on titles and abstracts, excluding 83 articles that did not meet the established criteria. The remaining 68 articles underwent double checking, an essential negotiation method for SLR rigor, in which convergences and divergences were presented and discussed among the authors, ensuring consensus and robustness in the final selection of the analytic corpus before full-text reading. This systematic process ensured that the retained set of articles was as representative and qualified as possible to support an in-depth concept-centric analysis, as proposed by Fisch and Block (2018) and Webster and Watson (2002).

Table 1
Research Process

PHASE	PHASE TITLE AND KEY ACTIONS	METHODOLOGICAL DETAILS AND RATIONALE
1	Analysis and delimitation of the thematic scope	Emphasis on the interdisciplinary nature of datafication to ensure alignment with the research problem
2	Definition of keywords and search *strings*	Keywords ("Datafication," "Control," "Surveillance," "Dehumanization") combined with Boolean operators (AND, OR). The search strategy was designed to maximize the retrieval of peer-reviewed scientific documents
2a	Search execution in databases	Search conducted in **Scopus (Sco) and Web of Science** (WoS), selected as large, multidisciplinary, globally recognized repositories suitable for evidence synthesis in SLRs. Results exported in .bibtex format for initial modeling
3	Definition and application of eligibility criteria	**Inclusion:** Peer-reviewed journal articles; English language; direct contribution to the HRM datafication process; classified in the BUSI area. **Exclusion:** Duplicates; incompatible scope; secondary formats (conference proceedings, editorials, errata)
4	First screening phase (titles and abstracts)	Initial analysis of 151 records. Exclusion of 83 articles. The remaining 68 articles underwent double checking, with convergences and divergences discussed to ensure intersubjective consensus on eligibility
5	Second phase (full-text reading and extraction)	Full-text reading of the 68 articles in the final corpus for mapping and compilation of key concepts
6	Qualitative analysis and synthesis of the *corpus*	Construction of a reference matrix and definition of the four key themes. Use of the snowballing technique to validate coverage.

Source: Research (2024)

3.2 Key Themes on Datafication in HRM

The analysis of the corpus of 68 articles, obtained through the systematic process detailed in the previous section and following PRISMA guidelines, enabled the identification and consolidation of four predominant key themes in the academic discourse on the implications of datafication in HRM. Introduced in Table 2 and discussed individually in subsequent sections, these themes represent the main axes of tension and the ethical and operational challenges that confront HRM in the algorithmic era: optimizing decision-making, the imperative of data quality and security, the problem of control and surveillance, and, finally, dehumanization.

Table 2
Emerging Themes

THEMES	DEFINITIONS	KEY ASPECTS	EXAMPLES
Decision-making optimization	Reduce complexity and act on large data volumes, with speed and an evidence-based focus	Expand the scope of analysis. Increase capacity for data storage, modeling, and governance. Comparability and testability	(Alaimo & Kallinikos, 2024; Calzada, 2024; Hamilton & Davison, 2022; Khan, 2024; Konovalova et al., 2021; Mahmudi, 2024)
Data quality and security	Ensure lawful and unrestricted access. Manage security and traceability. Ensure transparency and data integrity. Ensure legitimacy and privacy in processes	What qualifies as "high quality"? Validate transactional systems. Promote systematic auditing systems. Maintain transactional transparency and legal compliance. Privacy as a critical vector	(Ayokanmbi, 2021; Calzada, 2024; Hassenstein & Vanella, 2022; Kakulapati, 2021; Lukaszewski et al., 2016; Väyrynen & Laari-Salmela, 2018)
Control and surveillance	Under Big Data, power is amplified and tends toward total control	Creation of "data poles" (data hubs), which can disrupt markets and social environments. Algorithmic influence that alters social meanings and symbols. Control or reduction of freedom of expression. Decision shaping through the concept of "nudge"	(Calzada, 2024; Hamilton & Davison, 2022; Hassenstein & Vanella, 2022; Heiland, 2022; Kakulapati, 2021; Lukaszewski et al., 2016; Thorpe & Sellar, 2023)
Dehumanization	Centrality of human rights in datafication. Management of negative impacts of bureaucracy and autonomy in a datafied workplace	Subjectivity subordinated to rationality. Human objectification. Erosion of relational dimensions. Economic interests above human concerns. Datafication is not a neutral process	(Bal et al., 2023; Baldissarri et al., 2017; Granulo et al., 2023; Megoran, 2022; Väyrynen & Laari-Salmela, 2018)

Source: Research (2024)

Building on the categorization presented in Table 2, the subsequent in-depth analysis aims to detail the conceptual foundations of each theme, showing how the corpus findings delineate the practical and theoretical implications of datafication. The themes are organized in a logical progression, beginning with the optimizing potential – Themes 1 and 2 – and then moving to ethical and relational challenges – Themes 3 and 4 – thereby reflecting the central duality that will be examined in Section 4.

3.2.1 Theme 1 – Datafication as Support for Human Decision-Making

In HRM, datafication, materialized through People Analytics (PA) tools, emerges with the central purpose of improving decision-making capacity, seeking greater speed, efficiency, and effectiveness through the analysis of large volumes of data. This approach enables the examination of multiple scenarios and the use of prototyping (Khan, 2024), and it is concretely reflected in the automation of HR processes such as recruitment, selection, performance analysis, turnover prediction, and sentiment analysis (Tursunbayeva et al., 2018). The analytical support provided by datafication can expand the scope and complexity of analysis, promoting the comparability and testability of HRM interventions (Ghatak, 2022).

However, automating algorithm-mediated decisions introduces a field of epistemic and operational dilemmas that threaten trust and the full adoption of these tools in HRM. While technical challenges persist in integrating new analytics systems with existing Enterprise Resource Planning (ERP) systems, an often complex undertaking (Gupta et al., 2022), the most critical issue lies in a legitimacy conflict. The opacity inherent in algorithmic decision-making, often referred to as a "black box," not only hinders auditing but also generates profound human insecurity and distrust (Kumar et al., 2024).

Overcoming this crisis of trust requires active epistemic work. Research on Explainable Artificial Intelligence (XAI) has emerged as an ethical and technical imperative, aiming to restore process transparency (Blattner et al., 2024; Galhotra et al., 2021; Žlahtič et al., 2024). Human acceptance of machine-mediated decisions is fundamentally conditioned by perceived fairness and explainability, factors that demonstrably increase trust and users' full adoption (Vantrepotte et al., 2022). HRM managers therefore take on a new pedagogical role. This requires not only considering employees' cognitive capacity but, above all, prioritizing effective communication to align organizational interests and legitimize the different tactical and strategic implications of data analytics, thereby countering fear of algorithmization (Rigamonti et al., 2024).

It is essential to recognize that the influence of algorithms on organizational power is mediated by both technological characteristics and human agency (Bucher et al., 2021). Rather than functioning as a dictator of outcomes, data-driven HRM can be used purposefully and constructively to manage organizational complexity, operating within a process of work co-creation and hybridization, as proposed by Mollick (2024).

3.2.2 Theme 2 – Datafication, Data Quality, and Data Security

In Industry 4.0, data are widely recognized as a vital asset and the "new oil" (Kumar et al., 2020). Consequently, the quality and security of these assets become central issues for datafication in HRM. Strong et al. (1997) already underscored the essential role of IT professionals in managing data quality and accessibility, a responsibility that becomes even more critical in the current context, given the growing reliance on People Analytics (Rasmussen et al., 2024). Data quality is intrinsically linked to validity (accurate representation of the world)

and fitness for the purpose of analysis, and it is important to distinguish technical accessibility from broader concerns about user access (Hassenstein & Vanella, 2022). Ineffective data-quality management, which includes intrinsic, contextual, and representational dimensions, has a direct and substantial economic impact, with annual losses estimated in the trillions of dollars (Strong et al., 1997; Hassenstein & Vanella, 2022).

Data centralization and volume intensify security risks, shifting the core privacy concern from the mere disclosure of personal information to control over the insights generated from those data (Mai, 2016). This indicates that controlling the information provided does not ensure control over the knowledge inferred. To enhance privacy and security, research has explored advanced technologies. Blockchain, with its immutability and cryptographic features, has emerged as a promising technology for strengthening audit trails and the integrity of HRM records (Mazharunnisa et al., 2024; Rashmi et al., 2023; Vidhya & Sangeetha, 2024). Similarly, homomorphic encryption aims to increase privacy by enabling the processing of encrypted data (Kakulapati, 2021). However, implementing these solutions in HRM presents considerable challenges related to integration with legacy systems and regulatory compliance (Vidhya & Sangeetha, 2024), requiring systematic monitoring aligned with organizational capabilities (Subramaniyan et al., 2018).

3.2.3 Theme 3 – Datafication as a Means of Control and Surveillance

Datafication has genuine potential to operate as a means of control and surveillance. The growing use of networked communication systems, although it increases efficiency, also creates a need for organizational control that can inadvertently reveal a darker side (Calzada, 2024). Calzada (2024) argues that organizations can become “data poles,” concentrating monopolistic power that can lead to democratic erosion and destabilize markets and social environments, while warning about the harmful influence of algorithms during sensitive periods.

This capacity for influence is made explicit through the concept of “nudge,” in which human decision-making is subtly steered through suggestions (Thaler & Sunstein, 2008). This strategy is amplified by algorithms capable of large-scale correlation and clustering (Congiu & Moscati, 2022). From a sociological perspective, Zuboff (2019) stresses a central purpose: economic advantage. This dynamic breaks with traditional reciprocal relationships, prioritizing shareholder value over society (Beer, 2017; Wahdaniah et al., 2023).

In HRM, algorithmic management intensifies monitoring and reconfigures autonomy and power relations (Jarrahi, 2018; Jarrahi et al., 2021). This technological dependence increases the “black-box power” (Heiland, 2022), establishing automated control that restricts workers’ agency and capacity to contest decisions. To mitigate the inherent risk of power abuse, transparency (XAI) and international regulation of algorithmic management are ethical imperatives (Adams-Prassl et al., 2024; Žlahtič et al., 2024). However, persistent constraints on agency and the primacy of control lead to Theme 4, in which this objectification reaches its most severe consequence: dehumanization.

3.2.4 Theme 3 – Datafication and Dehumanization

Dehumanization represents the apex of ethical tension in datafication. Datafication operates within a continuous, historical process of data extraction, accumulation, and mechanization (Cieslik & Margocsy, 2022), challenging the consideration of human rights. Lagios et al. (2023) note that datafication can produce bureaucratic dysfunction and dehumanization, negatively affecting satisfaction, commitment, and turnover. This dehumanization is characterized by the deterioration of trust and perceived benevolence, resulting in an unintended indifference to employee well-being and treating employees as robots or interchangeable tools (Brison et al., 2022; Väyrynen & Laari-Salmela, 2018).

Work objectification, as evidenced by Baldissarri et al. (2017), links the perception of work as fragmented and alienated directly to the denial of workers' humanity. In environments where datafication reinforces bureaucracy, command, and control, human judgment and subjectivity are subordinated to algorithmic rationality (Schultz et al., 2022). This requires management to minimize authoritarian behavior and increase autonomy and freedom, fostering more humanized workplaces (Megoran, 2022).

HRM intervention is vital. Dehumanized environments undermine reciprocity, encourage dysfunctional behavior, and can make employees more compliant or less likely to engage in innovative behavior, substantially affecting their mental state (Stinglhamber et al., 2023). In addition, algorithm-driven dehumanization can impair organizational learning through knowledge hiding, a behavior that reflects a lack of trust in the algorithm (Rubbab et al., 2022).

3.2.5 Other Themes

The inclusion of these themes aims to reinforce the holistic scope of this SLR, reaffirming that datafication is an omnipresent phenomenon that transcends HRM's functional boundaries. Datafication manifests critically in digital transformation and technological infrastructure, where connectivity enables new forms of work monitoring (Leonardi & Treem, 2020) but also requires new approaches to protecting workers (Kolb et al., 2020). Analyses in contexts such as healthcare (Begkos et al., 2024; Hoeyer & Wadmann, 2020) and social movements (Milan & Beraldo, 2024) attest to the inherent duality of datafication. The datafication process must be conducted in a way that does not compromise professional judgment or render work meaningless (Hoeyer & Wadmann, 2020), which can function as a direct mirror of dehumanization and objectification in HRM (Schultz et al., 2022).

By highlighting these cross-cutting contexts and the resulting power asymmetries (Beer, 2017; Wahdaniah et al., 2023), we emphasize that algorithmic management constitutes a corporate and societal governance challenge, not merely a departmental one. This contextual analysis supports the premise that datafication must be an organizational strategy aligned with a broader purpose (Chopra, 2023).

We conclude the results section by confirming that overcoming ambivalence requires the strategic role of human agency and, under no circumstances, its replacement (Mollick, 2024). This need establishes a clear bridge to the subsequent discussion, in which we posit Human Agency as the ethical and strategic driver for mediating and mitigating the datafication paradox.

4 Discussion and Final Considerations

4.1 Establishing the Analytical Axis

We sought to analyze the implications of datafication in HRM. We examined its potential and its conceptual and operational challenges as they manifest in contemporary workplaces. The SLR enabled a multidisciplinary analysis of the topic, through which we categorized four central themes emerging from the corpus: support for human decision-making, data quality and security, control and surveillance, and dehumanization, as described in the previous section. We now articulate the interconnections among these four themes within the duality inherent to datafication, developing a theoretical and practical proposition. In a balanced manner, we confront the benefits and harms of this evolutionary process, recognizing that technological advancement is consistently a driver for addressing organizational complexity through data analysis (Ferrar & Green, 2021; Rasmussen et al., 2024).

4.2 The Datafication Paradox in HRM: A Critical Synthesis

Datafication in HRM constitutes a structural and non-negotiable duality. The four central themes identified do not operate in isolation; rather, they emerge as interconnected manifestations of this ambiguity. They reflect the inherent conflict associated with introducing AI into HRM, which consistently increases complexity and the potential for organizational conflict (Böhmer & Schinnenburg, 2023; Roberts & Zheng, 2022).

For this critical analysis, we draw on Table 3, which synthesizes the paradox as the conceptual axis underpinning this study's theoretical proposition.

Table 3
Ambiguities

DIMENSION	VECTOR	CHARACTERISTICS	
Work Design	Development and learning	Tends to enhance skills through interaction with AI	Can weaken critical analysis by reducing task complexity
Empowerment	Transparency	Can improve information flow and participation	Tends to reduce understanding of algorithmic decision-making "black box"
Data	Processing and modeling	Generates insights from previously untapped data, requiring new skills	Can become an endless pursuit of high-quality data, resulting in legal and ethical violations.
Performance	Control	Provides greater performance visibility	Tends to produce extreme control and surveillance processes

Source: Research (2024)

Theme 1 – Human Decision-Making and Ambiguity: Work Design and Empowerment/Transparency

The analysis of the themes emerging from the literature shows how each theme aligns with one or more dimensions of the paradox, as follows:

Datafication increases speed and effectiveness in decision-making. However, this optimization paradoxically threatens to weaken human critical analysis by reducing task complexity (Work Design ambiguity). In addition, the opacity of algorithmic processes (the "black box") undermines transparency, eroding trust and human acceptance of machine-mediated decisions (Empowerment/Transparency ambiguity). The pursuit of Explainable AI (XAI) emerges as a direct response to this tension.

Theme 2 – Quality and Security and Ambiguity: Data/Processing

Data are the "new oil" and a vital asset, and datafication generates insights from previously untapped volumes. Yet the demand for high data quality and validation collides with the reality that data seldom prove sufficient or consistently high quality, which can produce out-of-context insights or, worse, legal and ethical violations (Data/Processing ambiguity). Informational centralization, although it promotes greater knowledge, intensifies systemic insecurity, which makes the search for technologies such as blockchain and homomorphic encryption an organizational and ethical imperative rather than a mere technical advance

Theme 3 – Control and Surveillance and Ambiguity: Performance/Control

Datafication enables greater performance visibility and stronger person–task fit. However, the dominance of data analytics increases power and control, which can manifest as extreme surveillance that restricts workers' agency. Datafication therefore functions as a means of control that can align with the concept of "surveillance capitalism," in which surveillance is oriented toward economic advantage at the expense of reciprocal relationships with people. This power dynamic fundamentally reshapes autonomy and can produce a temporal paradox in which pressure increases and well-being declines.

Theme 4 – Dehumanization and Ambiguity: Performance/Control and Work Design

This theme represents the point of convergence for ethical risks. Datafication reinforces rationalization, command, and bureaucratic control, relativizing human subjectivity. Dehumanization occurs when employees are objectified and treated as interchangeable tools, which negatively affects well-being, satisfaction, and organizational learning. The literature shows that perceiving work as fragmented and alienated is directly linked to dehumanization and human objectification (Baldissarri et al., 2017). Thus, the Performance/Control ambiguity, in the pursuit of a "perfect fit," can lead to the denial of individuality and bureaucratic dysfunction (Lagios et al., 2023).

In sum, the four themes are two sides of the same coin: the technology that optimizes (Decision-Making and Quality) is intrinsically the same technology that controls and alienates (Surveillance and Dehumanization). This finding points to the need to posit a theoretical solution capable of mediating this paradox.

4.3 Theoretical Proposition: Human Agency and Responsible Datafication in HRM

In light of the ambiguities and the ethical and operational dilemmas identified in Section 4.2, we advance the theoretical proposition of Human Agency for contemporary HRM. This proposition argues that HRM must assume responsibility for critical agency over algorithmic systems. Human Agency assigns to HR professionals' cognition and experience the strategic, relational, technical, and ethical responsibility for governing automation and automated processes without departing from the organization's foundational principles of valuing human capital (Ferrar & Green, 2021).

Although algorithmic capability to generate associations and propose solutions can exceed human capacity, it is vital to recognize that algorithms are human products that replicate the commands provided to meet human needs (Strohmeier, 2022). HRM therefore cannot adopt a passive or positivist stance that reinforces or amplifies a "data dictatorship" (Ferrer-Conill et al., 2023).

The theoretical contribution of this study materializes in the proposition of a structural model to mediate the datafication paradox: the Responsible Datafication in HRM Framework. This sociotechnical model, which aligns governance, ethics, and strategy, provides the means by which human agency can be operationalized. Structured across three levels of articulation and intervention – Technological/Algorithmic, Organizational/Governance, and Human/Relational – it ensures that technology serves worker autonomy, dignity, and integration. By adding this framework to the literature, we show how HRM can position itself as the transforming driver, using data analytics to inform, rather than dictate, people policies, strengthening analytical quality without neglecting ethical dimensions.

4.4 Practical Implications and Contributions: The Responsible Datafication Model

Our systematic review and the proposition of the Responsible Datafication Framework yield practical contributions for managers and organizations, organized across the three levels of articulation and intervention:

1. Technological or Algorithmic Level:

Implications at this level require HRM, in strategic partnership with IT, to ensure the integrity of the data infrastructure and systems. Datafication cannot serve as a vehicle for generating out-of-context insights or for enabling legal and ethical violations (Horgan & Dourish, 2018). The first managerial imperative, therefore, is to require Ethics by Design and the adoption of state-of-the-art technologies. The key to countering power asymmetries and distrust lies in transparency, both from a technological perspective (XAI) and from a managerial perspective, which serves as a vital lever to dismantle algorithmic opacity (Kumar et al., 2024; Žlahtič et al., 2024). In addition, security and privacy, which go beyond mere regulatory compliance, must be elevated to a systemic imperative. This requires moving beyond traditional security systems (Jha, 2022) and actively exploring advanced privacy technologies (such as blockchain and encryption) to mitigate the risk intensified by data centralization and volume (Henninger, 2024; Vidhya K & Sangeetha P, 2024). This level focuses on innovation, bounded by data responsibility.

2. Organizational and Governance Level

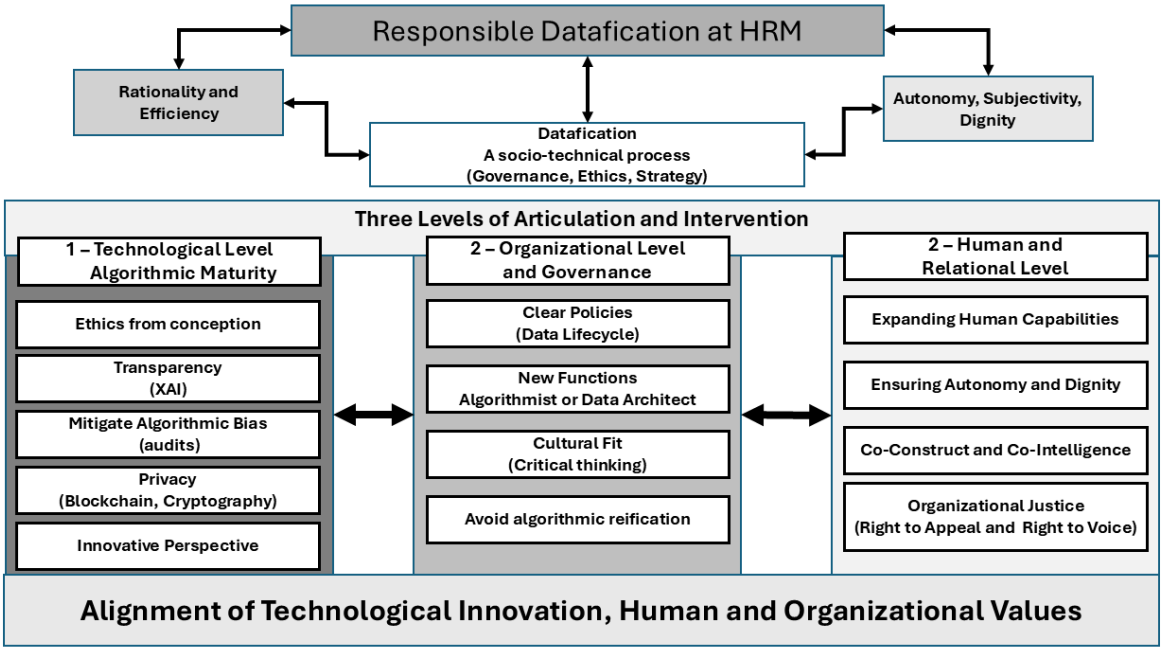
The primary practical contribution at this level lies in the strategic imperative. Datafication must be treated as an organizational and sociotechnical strategy, not as a merely departmental or technical function. The core objective must go beyond immediate operational efficiency and instead focus on generating sustainable value through the analysis of people data and behavior, ensuring that strategic resources and purposes align with a long-term vision (Ayokanmbi, 2021; Chopra, 2023; Jansen et al., 2023). This level of intervention requires the implementation of clear policies governing the data life cycle, mitigating the risks of systemic insecurity (Christenson & Goldstein, 2022). HRM must catalyze cultural alignment and critical thinking within the organization to actively prevent algorithmic reification, expanding co-construction capacity, moving beyond traditional logic, and preserving human judgment (Heiland, 2022). This level frames datafication as a sociotechnical process in which governance is the key to constitutive balance.

3. Human and Relational Level: Agency Through Human Agency

This level represents the core of this study's proposition: Human Agency, which acts directly against dehumanization and mitigates power asymmetries. Data centralization, by granting disproportionate power to controlling organizations, tends to remove individuals' agency; Human Agency re-establishes that agency through HRM practice (Hamilton & Davison, 2022; Jarrahi et al., 2021; Marjanovic & Cecez-Kecmanovic, 2017). To restore autonomy and dignity, HRM must establish robust mechanisms of organizational justice – appeal and participation – so that workers can actively contest and participate in the development of algorithmic systems (Adams-Prassl et al., 2024). Overcoming the fear and distrust produced by algorithmization requires investment in effective communication (Rigamonti et al., 2024) and, above all, expanding human capabilities through co-creation and co-intelligence (Mollick, 2024). This approach not only reduces the slow adoption of algorithmic processes in HRM but also, fundamentally, ensures the alignment of technological innovation with human and organizational values (Gobble, 2017; Peeters et al., 2020).

These contributions are represented in Figure 1: Responsible Datafication, which proposes this strategic enhancement of HRM in an era of datafication.

Figure 1
Responsible Datafication. Source: Authors' research (2024)



Source: Research (2024)

5 Final Considerations, Limitations, and Suggestions

This systematic review met its primary objective by analyzing the implications of datafication in contemporary HRM, transforming a vast and fragmented body of literature into a critical synthesis and an original theoretical proposition with potential practical applications. By highlighting the duality of datafication – contrasting its analytical and optimizing potential with the risks of surveillance, control, and dehumanization, we show that the four emergent themes – Decision-Making, Security, Control, and Dehumanization – are interconnected manifestations of this paradox. Our contribution to the state of the art is consolidated by presenting this paradox through a critical synthesis of the ambiguities of datafication in HRM and, subsequently, by demonstrating the necessity and urgency of human agency within a balanced process. As highlighted and operationalized in the Responsible Datafication in HRM Framework, human agency is the sociotechnical response that aligns algorithmic innovation with ethical and organizational values, providing a three-level structure for managers' deliberate intervention in the digital era. HRM is therefore called upon to assume a strategic role in mediating between technological potential and responsibility toward human capital.

Beyond methodological rigor, certain scope limitations should be considered. Restricting the primary search to the Business, Management and Accounting (BUSI) area was necessary to ensure a focus on HRM; however, given the intrinsically interdisciplinary nature of datafication, spanning fields such as sociology, ethics, and IT, some peripheral literature may have been minimized. Although interdisciplinarity fragments the field, the BUSI focus enabled a deeper analysis of the organizational and managerial consequences of datafication. Limiting the review to journal articles, excluding conference proceedings, editorials, and book reviews, may also constrain the scope of this review, even though the systematic procedure used ensures traceability and the robustness of the consolidated knowledge.

The Responsible Datafication Framework opens multiple and meaningful avenues for future research aimed at validating and extending its propositions. We recommend empirical, qualitative studies that examine the effectiveness of Human Agency in practical settings, testing employees' acceptance of and trust in algorithm-mediated decisions. It would be particularly valuable to investigate how the framework's three levels of articulation – Technological, Organizational, and Human – interrelate in practice to mitigate, specifically, the risks of dehumanization and algorithmic control.

Future research could focus on: (i) developing and validating metrics to measure Human Agency and Responsible Datafication; (ii) examining the implementation and impact of Explainable Artificial Intelligence (XAI) in reducing algorithmic opacity in HRM (Blattner et al., 2024; Žlahtič et al., 2024); and (iii) analyzing case studies of data governance that use technologies such as blockchain to address power asymmetries and security (Rashmi et al., 2023; Vidhya & Sangeetha, 2024).

Methodologically, comparative studies of the framework's application across different cultures or countries are recommended, given that sociocultural context shapes datafication dynamics. The central challenge of datafication lies in managing the paradox between efficiency and humanity, and continued research is vital to ensure that technology becomes an ally in valuing human capital.

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