Article

Data Science in the Management of Healthcare Organizations

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Abstract: The transformation of healthcare organizations is essential to address their inherent complexity and dynamic nature. This study emphasizes the role of Data Science, with the incorporation of Artificial Intelligence tools, in enabling data-driven and interconnected management strategies. To achieve this, a thermodynamic approach to Knowledge Representation and Reasoning was employed, capturing healthcare workers' perceptions of their work environment through structured questionnaires. Over several months, the entropic efficiency in healthcare workers' responses was analyzed, offering insights into the intricate relationships between leadership, teamwork, work engagement, and their influence on organizational performance and worker satisfaction. This approach demonstrates Data Science's potential to enhance organizational effectiveness and adaptability while empowering healthcare workers. By bridging technological innovation with human-centric management, it provides actionable insights for sustainable improvements in healthcare systems. The study underscores that involving healthcare workers in decision-making processes not only could enhance satisfaction but also facilitate meaningful organizational transformation, creating more responsive and resilient healthcare organizations capable of navigating the complexities of modern healthcare.