

AI-Driven Data Governance for Optimizing Supply Chain and Inventory Management in Pharmaceutical R&D

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Abstract

This paper assesses how the AI-enabled capability of Natural Language Processing, Large Language Models, and Generative AI endorses a robust research and development data governance framework. There is a need to guarantee the supply of necessary drugs and assist in reducing operating inefficiencies in the heavily regulated, overly intricate pharmaceutical business, and robust data governance facilitates end-to-end optimization in research and development (R&D) and supply chain. The study investigates how artificial intelligence (AI), particularly in its key forms of natural language processing (NLP), large language models (LLMs), and generative AI (GenAI), supports the creation of robust R&D data governance frameworks through real-time insights, enhanced data quality, and adherence to industry standards. The data includes real-world applications of AI in supply chain optimization and simulations of AI-driven inventory management models. The research focuses on data standardization and integration challenges from decentralized systems and how AI-driven governance has improved operational efficiency in demand forecasting and inventory control. The findings suggest that AI-driven governance frameworks can support the industry's efforts to achieve this objective, emphasizing the reduction of supply chain disruptions while maintaining efficiency in providing treatments.

Keywords

Natural Language Processing (NLP), R&D Data Governance, Artificial Intelligence (AI), E2E Supply Chain, Pharmaceutical Inventory Management

Biography

Sergio Mastrogiovanni is an Associate Professor and Researcher at New York University, New York, USA; Austral University, and IAE Business School, Buenos Aires, Argentina.

Senior data scientist, executive, entrepreneur, lecturer, and educator with career success leveraging advanced data analytics and technology integration to boost sustainable revenue, and manage change through digital transformation and continuous improvement, his passion in this world is about making data accessible to people.

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