

Integrating AI Agents and Business Intelligence for Smart Industry

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Abstract

The increasing complexity of modern technological and industrial systems presents significant challenges in anticipating the impact of new innovations within existing ecosystems. The interaction between humans and machines generates emergent behaviors that are difficult to predict, potentially leading to unintended consequences affecting economic structures, environmental sustainability, and operational efficiency. This study explores the integration of agentic artificial intelligence and Business Intelligence to enhance decision-making in the smart industry. AI agents, designed with autonomous reasoning and adaptive capabilities, facilitate proactive issue detection and strategic reporting. By leveraging the principles of agentic flow, this approach enables continuous and context-aware adjustments to industrial processes, optimizing resource allocation and system efficiency. Through real-time data processing and adaptive decision-making, the proposed framework improves predictive accuracy by dynamically integrating sensor data, operational feedback, and evolving industrial conditions. This enhances strategic planning, ensuring greater flexibility and resilience in production and supply chain management. Moreover, by incorporating human oversight, the system refines its recommendations over time, supporting more precise and informed decision-making in complex industrial environments.

Keywords

Agentic AI, Business Intelligence, Smart Industry, Adaptive Decision-Making, and Industrial Process Optimization.