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ENHANCING ERP SYSTEMS FOR HEALTHCARE DATA MANAGEMENT

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ABSTRACT

In the healthcare sector, effective data management is crucial for ensuring quality patient care, optimizing operational efficiency, and complying with regulatory requirements. Traditional Enterprise Resource Planning (ERP) systems often struggle to meet the dynamic needs of healthcare organizations due to their monolithic architecture, which limits scalability and flexibility. This paper presents a comprehensive approach to enhancing ERP systems through the adoption of microservice architectures, focusing on their application in healthcare data management.

The implementation of our proposed architecture was evaluated in a case study involving a mid-sized hospital that faced significant data management challenges. Prior to the implementation, the hospital experienced delays in accessing critical patient information, leading to inefficiencies in clinical decision-making and operational processes. After integrating the microservice-based ERP solution, we observed a significant improvement in data accessibility and system performance. Key performance indicators (KPIs) were established to measure the success of the implementation, focusing on system uptime, data retrieval times, and user satisfaction.

Results showed that the average data retrieval time decreased by 40%, significantly enhancing healthcare professionals' ability to access patient records and making informed decisions in real time. Furthermore, user satisfaction surveys indicated a 30% increase in satisfaction levels post-implementation, with users highlighting the system's improved responsiveness and ease of use. The microservice architecture also facilitated seamless integration with third-party applications, enabling better data sharing and collaboration across different healthcare departments.

In conclusion, this research demonstrates that enhancing ERP systems through microservice architectures can significantly improve healthcare data management. The findings highlight the importance of adopting flexible and scalable solutions to meet the evolving needs of healthcare organizations. Future research should explore the potential of integrating advanced technologies such as artificial intelligence and machine learning to further optimize data management processes in healthcare ERP systems.

KEYWORDS: ERP Systems, Healthcare, Data Management, Integration, Compliance, Interoperability, Patient Records, Workflow Optimization

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