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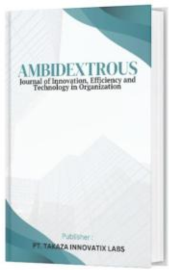

Implementation of Enterprise Resource Planning (ERP) as Part of Management Information System

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Abstract: *The rapid development of digital technology has encouraged organizations, from micro, small, and medium enterprises to large corporations, to adopt integrated information systems to improve operational effectiveness and decision-making quality. This article examines the implementation of Enterprise Resource Planning (ERP) as an integral component of Management Information Systems (MIS) through a systematic review of 20 national and international journal articles. The review focuses on three main dimensions: optimization of internal functional management, implications for financial performance and firm value, and critical success factors and organizational challenges. The findings indicate that ERP implementation can improve administrative efficiency, strengthen data integration, enhance financial reporting accuracy, and support inventory management. In addition, ERP adoption is generally associated with improved profitability and working capital efficiency, although its effect on market value is conditional and influenced by company size and industrial sector stability. The main implementation barriers are related to user discipline, resistance to change, work culture, and leadership support. Overall, ERP is proven to be a strategic instrument in modern MIS that supports operational integration and organizational performance improvement.*

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Introduction

In the era of economic digitalization, an organization's competitive advantage depends heavily on its ability to manage data flows and transform them into timely strategic information. Conventional Management Information Systems (MIS), which rely on manual recording, the use of separate spreadsheets (data silos), and the verification of physical receipts, often lead to massive operational inefficiencies. These obstacles are found at the level of Micro, Small, and Medium Enterprises (MSMEs) that manage multiple outlets or marketplaces, all the way up to national manufacturing and energy corporations. Inventory recording imbalances, financial reporting delays, human resource compensation miscalculations, and penalties due to digital stock mismatches across sales channels are logical consequences of this fragmented basic information system.

Enterprise Resource Planning (ERP) is an integrated information technology architecture solution designed to overcome these data bureaucracy barriers. As a core component of modern MIS, ERP systems consolidate an organization's key functional areas—including financial accounting, supply chain management, inventory, operations management, and human resource management—into a single, transparent, real-time data repository. By adopting an ERP platform, whether open-source (such as Odoo) or a proprietary enterprise-scale system (such as Asscend ERP), organizations aim to eliminate data redundancy, enforce internal controls, and minimize manual data manipulation interventions.

The main objective of this scientific article is to comprehensively examine the implementation of ERP as a driving instrument for MIS based on empirical evidence contained in 20 previously published national and international research journal articles. This article will systematically dissect how the integration of various operational modules can optimize a company's internal performance, influence financial profitability and market value appreciation on the Indonesia Stock Exchange (IDX), while also evaluating moderating variables such as company size, work culture, leadership style, and personal adaptation readiness. Through this structured literature synthesis approach, it is hoped that a valid conceptual roadmap will be created for academics and practitioners in mitigating the risk of failure in information technology implementation in the future.

Research methods

This research uses a systematic literature review approach by analyzing, comparing, and synthesizing 20 selected scientific articles focusing on the topic of Enterprise Resource Planning (ERP) and Management Information System implementation. The selection of reference articles was carried out by considering the diversity of methodologies (qualitative case study research, RAD or Waterfall model-based information system development, as well as quantitative research based on structural equation modeling [SEM] surveys and secondary data linear regression) and the diversity of research objects, ranging from the culinary and craft MSME scale, the consumer goods and footwear manufacturing industry, to energy sector issuers listed on the Indonesia Stock Exchange.

The data analysis stage begins with data extraction on key components of each journal article, which includes author identity, year of publication, observed operational focus, methodology, and the main findings produced. Next, clustering of findings is carried out based on three main ERP impact dimensions, namely: (1) Optimization of Internal Functional Management (HR, Finance, and Logistics);
(2) Quantitative Implications of Financial Performance and Market Assessment; and (3) Critical Success Factors and Barriers to Organizational Behavior. The synthesis results of these groupings are then converted into a comprehensive and in-depth theoretical-practical discussion.

RESULTS AND DISCUSSION

Table 1. ERP Implementation Research Synthesis Matrix Based on Impact Dimensions

ERP Impact	Module	Conceptualization	Key Findings & Empirical

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Dimensions	& Focus	Contradictions
Functional Management Optimization	Integration of Accounting/Finance, Human Resource Management (HRM), Inventory, POS, and modules Omnichannel Marketplace.	Increase financial administration efficiency by up to 15-20%, speed up payroll recapitulation, cut lead-time coordination of multi-outlet logistics, as well as preventing stock penalty sanctions on e-commerce via automatic synchronization.
Financial Performance & Market Valuation	Evaluation of Return on Investment (ROI), Return on Assets (ROA), Profit Margin (Gross, Operating, Net), Inventory Turnover, as well as PBV and Tobin's Q metrics.	Consistently improving internal profitability and long-term working capital efficiency. However, the impact on market value is conditional: significantly amplified by firm size but insensitive to macroeconomic energy industry volatility.
Critical Factors & Organizational Behavior	Internal Control, Work Culture, Leadership Style, Work Motivation, and User Discipline.	ERP systems strengthen data authorization and minimize fraud. Work culture and leadership directly boost employee performance, but Work motivation has not been shown to moderate system effectiveness. The main obstacle is data input delay (user delay).

Optimization of Internal Company Functional Management

Based on a review of various operational case studies, the implementation of specific modules in ERP has been proven to eliminate conventional administrative inefficiencies. In small and medium-sized organizations such as multi-outlet culinary and artisanal craft businesses, the integration of Point of Sales (POS), Inventory Management, and Point of Purchase modules is crucial for aligning raw material supplies between branches in a timely manner. The shift from paper-based recapitulation or manual spreadsheets has been proven to reduce management work time, balance cash inflows and outflows in real time, and minimize the risk of asset loss (stock loss) due to biased recording.

Furthermore, digital transformation in customer relationship management and multi-platform (omnichannel) distribution has had a massive impact on the efficiency of managing MSME digital stores. Through an integrated ERP architecture, mass-uploading product catalogs and synchronizing physical stock quantities with e-commerce applications can be automated without requiring significant additional human resources. Meanwhile, in the internal management cluster, the adoption of the Human Resource Management (HRM) module has been proven to accelerate payroll administration processes, digital attendance recapitulation, and accurate employee leave requests, which directly contributes to an increase in internal job satisfaction by up to 20% and a reduction in administrative operational costs by up to 15%.

Implications for Financial Performance and Firm Value

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A macro quantitative analysis of companies listed on the Indonesia Stock Exchange (IDX) shows a consistent positive correlation between ERP system adoption and improved profitability metrics. Through long-term statistical difference tests, manufacturing companies, particularly in the consumer goods sector, demonstrated significant increases in gross profit margins, operating profit, and net profit following system implementation. This improvement was driven by optimized working capital management, reflected in improved inventory turnover ratios and reduced cash conversion cycles, as companies were able to precisely align production volumes with market demand trends.

However, the referenced articles show an interesting paradox regarding the external market response to this information technology investment. ERP implementation has been shown to have a positive effect on Company Value as proxied by Price to Book Value (PBV), but this effect is not independent, but is moderated by Company Size. Investors tend to provide a higher premium valuation when ERP adoption is carried out by large corporations because they are considered to have a strong capital structure capacity to reduce the risk of system failure. Conversely, in industrial sectors with high levels of macro volatility—such as energy issuers—ERP investment contributes significantly to the efficiency of internal investment profitability (Return on Investment), but does not have a sensitive effect on market value ratios such as Tobin's Q. This occurs because the price of stock instruments in this sector is much more dominated by global commodity price fluctuations and geopolitical regulatory interventions than by the efficiency of internal technology systems.

Critical Success Factors and Challenges of Organizational Behavior

ERP implementation is not simply a software digitization project, but rather a restructuring of operational governance (Business Process Reengineering). From an accountability perspective, ERP systems strengthen the effectiveness of internal inventory control systems through restricted access rights, automated validation systems before transactions are saved (audit logs), and strict separation of work functions to reduce the potential for fraud or financial data manipulation. However, the reliability of this control system is often hampered by user discipline. The phenomenon of delays in inputting operational transactions by field staff (user delay) remains a potential source of discrepancies between actual and system inventory data during the initial transition phase.

Besides technical aspects, the dynamics of organizational behavior play a very dominant role in individual work performance after ERP adoption. Empirical evidence using SEM-PLS modeling confirms that ERP infrastructure factors, adaptive corporate work culture, and participatory-managerial leadership style have a positive and significant simultaneous influence on employee performance. However, there is a unique finding where the work motivation variable is not proven to have a moderating role in this interaction. This indicates that employee performance optimization after ERP implementation occurs independently and mechanistically; that is, when information systems are well integrated, Standard Operating Procedures (SOPs) are strictly implemented, and leadership is effective,
Employee productivity will automatically increase without having to rely on internal psychological motivational stimulation of employees.

Conclusion

This study successfully concluded that the implementation of Enterprise Resource Planning (ERP) plays a very crucial role as the main pillar of modern Management Information Systems (MIS). Centralized and real-time data integration has been empirically proven to be able to eliminate information silos, increase functional operational efficiency (HR, Finance, Inventory, Omnichannel), and encourage improvements in the company's

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internal financial performance in the form of increased profitability (ROI, ROA, Profit Margin) and working capital management efficiency. However, external stock market appreciation of ERP investments is not absolute, but rather conditional on the size of the company and the stability characteristics of the related industrial sector.

The primary challenge to successful ERP adoption no longer lies in technical computing constraints, but rather in the management of organizational behavioral change. Management must focus on improving user data input discipline, developing a supportive work culture, and fostering active leadership to mitigate resistance to change. This study's limitations lie in its reliance on secondary analysis based on a variety of prior literature. For future research, it is recommended to conduct direct empirical testing of the effectiveness of open-source cloud-ERP implementation on MSME clusters in developing regions, incorporating a more comprehensive cost-benefit analysis.

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