

# ERP Analytics and Its Influence on Organizational Productivity

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## ABSTRACT:

This study examines the impact of Enterprise Resource Planning (ERP) analytics on organizational productivity and business performance through a secondary research approach. ERP analytics refers to the use of data analysis, reporting tools, and real-time information within ERP systems to support better decision-making and improve business operations. The study is based on previously published journals, research papers, and scholarly articles collected from sources such as Google Scholar, Scopus, and IEEE Xplore between 2000 and 2024.

The findings show that ERP analytics improves organizational efficiency through better information quality, streamlined business processes, improved coordination, and faster decision-making. The research also highlights important success factors such as business process re-engineering, system quality, management support, employee training, and user satisfaction. In addition, factors like firm size, industry type, and ERP usage duration influence organizational performance outcomes.

The study also identifies challenges including high implementation costs, resistance to change, and system integration difficulties. Using the Resource-Based View (RBV) framework, the research concludes that ERP analytics can enhance productivity and competitive advantage when technology is effectively aligned with organizational goals, people, and business processes.

**Keywords:** Enterprise Resource Planning (ERP), ERP Analytics, Organizational Productivity, Secondary Research, Business Process Re-engineering, User Satisfaction, Critical Success Factors (CSFs), Digital Transformation, Cloud ERP, Resource-Based View (RBV)

## INTRODUCTION

In today's digital world, organizations are increasingly using advanced information systems to improve efficiency, stay competitive, and make better business decisions. Rapid technological changes, globalization, and the growing amount of business data have made it important for companies to adopt integrated systems that can manage operations effectively. Among these technologies, Enterprise Resource Planning (ERP) systems have become one of the most important tools in modern business management. ERP systems integrate different functional chain management into a single platform. This integration helps reduce data duplication and improves communication and coordination between departments through centralized databases and standardized processes.

One of the major advantages of ERP systems is their ability to provide real-time information, which helps managers make faster and more accurate decisions. Features such as process automation, centralized data management, and cross-functional integration improve operational efficiency and transparency within the organization. For example, when a sales order is entered into the ERP system, related functions such as inventory updates, production planning, and financial reporting can be automatically updated, improving overall coordination and reducing manual work.

Over time, ERP systems have evolved beyond basic operational management and transaction processing. Modern ERP systems now include advanced analytical capabilities known as ERP analytics. ERP analytics refers to the use of dashboards, reporting tools, data analysis, and real-time monitoring within ERP systems to support business intelligence and strategic decision-making. Unlike traditional ERP systems that mainly focus on storing and managing business data, ERP analytics helps organizations convert data into meaningful insights. These insights assist businesses in identifying trends, improving productivity, optimizing resources, and gaining competitive advantage.

ERP systems have also evolved significantly from earlier technologies such as Material Requirements Planning (MRP) and Manufacturing Resource Planning (MRP II), which mainly focused on inventory and production management. Today's ERP solutions integrate all major business functions into one system. In addition, the development of cloud computing has made ERP systems more flexible, scalable, and affordable, especially for small and medium-sized enterprises (SMEs). Cloud-based ERP systems also support remote access and real-time collaboration with suppliers, customers, and business partners.

Despite these advantages, the relationship between ERP systems, ERP analytics, and organizational performance remains complex. Many studies show that ERP systems can improve productivity, operational efficiency, cost management, and decision-making quality. However, organizations also face challenges such as high implementation costs, employee resistance to change, and system integration difficulties. Furthermore, many existing studies focus mainly on ERP implementation rather than its long-term impact on organizational performance and analytics capabilities. This creates a research gap in understanding how ERP analytics contributes to sustained business performance and long-term organizational success.

## **ERP Systems and Organizational Performance**

ERP systems are widely recognized for their ability to enhance both financial and non-financial aspects of organizational performance. From a financial perspective, ERP systems contribute to cost reduction, improved return on investment, and better financial control by automating processes and reducing inefficiencies. From a non-financial perspective, they improve operational efficiency, enhance customer service, and support strategic decision-making by providing accurate and timely information.

One of the biggest advantages of ERP systems is how they make everyday business processes smoother and more efficient, helping organizations work in a more organized and coordinated way. By integrating different functions into a single system, organizations can eliminate redundant activities, reduce errors, and improve process speed. For example, ERP systems enable better inventory management, reduce order processing time, and improve supply chain coordination. This helps boost productivity and improve service delivery, but these benefits don't come automatically. Several critical success factors influence the effectiveness of ERP systems. Business process re-engineering is essential to ensure that existing processes are aligned with the ERP system. Top management support plays a crucial role in providing resources, setting strategic direction, and encouraging employee participation. Organizational culture also affects how employees adapt to new systems, as resistance to change can hinder successful implementation.

Human factors are equally important in determining ERP success. User training, satisfaction, and acceptance significantly influence how effectively the system is utilized. Even the most advanced ERP system will fail to deliver results if users are not properly trained or willing to adopt it. Research shows that organizations that invest in employee training and change management are more likely to achieve successful ERP outcomes.

In addition, the impact of ERP systems varies depending on contextual factors such as firm size, industry type, organizational structure, and duration of system usage. For example, large organizations may have more resources to implement ERP systems effectively, while SMEs may face financial and technical constraints. Similarly, industries with complex supply chains may benefit more from ERP systems compared to less complex industries. These contextual variables act as moderating factors that influence the relationship between ERP systems and organizational performance.

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## Role of ERP Analytics and Research Focus

The integration of analytics has transformed ERP systems into powerful decision-support tools. Advanced capabilities such as descriptive, predictive, and prescriptive analytics enable organizations to derive actionable insights from large datasets. The use of technologies like artificial intelligence, machine learning, and big data further enhances ERP functionality, making systems more adaptive and intelligent.

Given the complexity and mixed findings in existing literature, there is a need for further research that examines both direct and indirect effects of ERP systems on organizational performance. This study aims to analyse the relationship between ERP system quality, critical success factors, and organizational performance, while considering the influence of contextual variables. By focusing on both financial and non-financial dimensions, the study seeks to provide a comprehensive understanding of ERP effectiveness.

## LITERATURE REVIEW

The literature on Enterprise Resource Planning (ERP) systems shows that these systems have grown from simple operational tools into important strategic solutions for modern businesses. Earlier, ERP systems were mainly used in manufacturing industries, but today they are widely adopted in sectors such as healthcare, retail, banking, education, government, and services. Recent reports and studies show that the global ERP market has expanded rapidly over the years and is now worth more than \$60 billion. This growth is mainly driven by digital transformation and the increasing need for organizations to manage their operations more efficiently. Many medium and large organizations have already implemented ERP systems, while small and medium-sized enterprises (SMEs) are also gradually adopting cloud-based ERP solutions because they are more flexible, scalable, and affordable.

The literature also highlights several benefits of ERP systems. Many studies suggest that ERP systems help organizations improve operational efficiency, reduce duplicate work, improve communication between departments, and support faster decision-making through real-time information. For example, reports from McKinsey & Company indicate that organizations using ERP systems often experience improvements in productivity, resource utilization, and business process efficiency. Modern ERP systems with analytics capabilities also help businesses monitor performance, generate reports, identify trends, and support strategic planning through dashboards and business intelligence tools.

However, the research also shows that ERP implementation is not always successful. According to findings from Panorama Consulting Group, nearly half of ERP projects fail to fully achieve their expected business goals. Many organizations face problems such as project delays, high implementation costs, and operational disruptions during the transition process. Researchers explain that these challenges are often caused not only by technical issues but also by organizational and human factors. Employees may resist changes, lack proper training, or struggle to adapt to the new system, which can reduce the effectiveness of ERP implementation.

Another important topic discussed in the literature is ERP system usage. Researchers emphasize that organizations can achieve real benefits from ERP systems only when employees actively and effectively use them in their daily work. In many cases, employees continue using manual methods or avoid certain ERP functions because they find the system difficult to use. Studies show that organizations providing regular training, technical support, and proper change management strategies generally achieve better user satisfaction and higher system usage.

The literature further identifies several critical success factors that influence ERP performance. These include top management support, employee involvement, training programs, system quality, information quality, and ease of use. Studies show that organizations with strong leadership support and effective employee training are more likely to achieve successful ERP implementation and better organizational performance. On the other hand, problems such as poor planning, data integration difficulties, and excessive system customization can negatively affect ERP outcomes.

Overall, the literature strongly suggests that ERP systems and ERP analytics can improve productivity, operational efficiency, and decision-making quality. However, the success of ERP systems depends on how well organizations manage technological, organizational, and human factors together. The review also highlights a research gap, especially in SMEs, where limited resources and different organizational structures may influence ERP adoption and long-term success.

## METHODOLOGY

This study adopts a secondary research approach to examine the relationship between Enterprise Resource Planning (ERP) systems, ERP analytics, and organizational performance. The research is based on the review and analysis of academic journals, research papers, conference articles, and industry reports to develop a comprehensive understanding of the topic. By combining academic and industry perspectives, the study provides a balanced and reliable analysis of ERP analytics and its impact on organizational productivity.

Relevant data was collected from recognized databases such as Google Scholar, Scopus, IEEE Xplore, ScienceDirect, and SpringerLink using keywords including “ERP systems,” “ERP analytics,” “organizational performance,” “ERP implementation,” and “business productivity.” To ensure relevance and quality, only peer-reviewed journal articles, scholarly publications, and well-cited studies published between 2000 and 2024 were selected. Greater emphasis was placed on recent studies from the last 10–15 years to capture emerging trends such as cloud ERP, business intelligence, and analytics integration.

A Systematic Literature Review (SLR) method was used to identify, screen, and select relevant studies based on predefined inclusion and exclusion criteria. The selected studies were grouped into major themes such as ERP benefits, implementation challenges, critical success factors, analytics integration, system quality, and organizational performance outcomes. This thematic approach helped in identifying common findings, patterns, and relationships across multiple studies.

The study uses a qualitative analytical approach to interpret the collected information and understand the impact of ERP analytics on both financial and non-financial performance indicators. Financial indicators include profitability, cost reduction, and return on investment, while non-financial indicators include operational efficiency, customer satisfaction, information quality, and decision-making effectiveness. Comparative analysis across industries and organizational sizes was also conducted to understand how contextual factors influence ERP success.

In addition, the research incorporates the Resource-Based View (RBV) framework to explain how ERP analytics capabilities can create competitive advantage when technological resources are aligned with organizational goals, employee readiness, and business processes. The study also examines the role of analytics features such as real-time reporting, data accuracy, predictive analysis, and decision-support systems in improving organizational performance.

Overall, the methodology provides a structured and reliable approach for analyzing existing literature and identifying key trends, success factors, challenges, and research gaps related to ERP analytics and organizational productivity.

### Scope of the Study

This study focuses on analysing the impact of Enterprise Resource Planning (ERP) systems on organizational performance. It examines how ERP systems improve efficiency, decision-making, and business operations across different industries. The research also considers ERP system quality, critical success factors, and the role of performance analytics such as big data and business intelligence. Additionally, it covers developments in ERP systems over the past decade to understand their evolving role in enhancing organizational performance.

## Objectives

1. To study the concept, features, and importance of ERP systems in modern organizations.
2. To analyse how ERP systems integrate different business functions and improve operational efficiency.
3. To understand the challenges and limitations faced during ERP implementation and usage.
4. To compare findings from different industries and organizational contexts regarding ERP effectiveness.
5. To identify research gaps and provide suggestions for future studies in ERP systems and performance analytics.

## DISCUSSION

### Impact of ERP Systems on Organizational Performance

#### Integration and Process Efficiency

The findings of this study clearly demonstrate that ERP systems have a substantial impact on improving organizational performance by integrating multiple functional areas into a single, centralized system. Traditionally, departments such as finance, human resources, supply chain, and production operate independently, leading to fragmented data and inefficiencies. ERP systems eliminate these data silos by enabling seamless information sharing across departments in real time.

This integration significantly reduces duplication of tasks, as data entered once becomes accessible throughout the organization. It also minimizes manual errors associated with repetitive data entry and enhances overall workflow efficiency. Standardization of processes further ensures consistency in operations, allowing organizations to maintain uniform procedures across departments. As a result, organizations are able to streamline their operations and improve overall productivity.

#### Decision-Making and Resource Utilization

ERP systems play a crucial role in improving decision-making by providing accurate, timely, and comprehensive data. Managers gain access to real-time information through dashboards and reports, enabling them to monitor performance indicators, identify operational inefficiencies, and make informed strategic decisions. This real-time visibility enhances the organization's ability to respond quickly to market changes and internal challenges.

In addition, ERP systems optimize resource utilization by improving planning and coordination. For instance, inventory management becomes more efficient as organizations can track stock levels accurately and avoid overstocking or stockouts. Similarly, production planning is enhanced through better demand forecasting and scheduling, while financial management benefits from improved cost control and budgeting processes. These improvements collectively contribute to better utilization of organizational resources.

#### Performance Outcomes

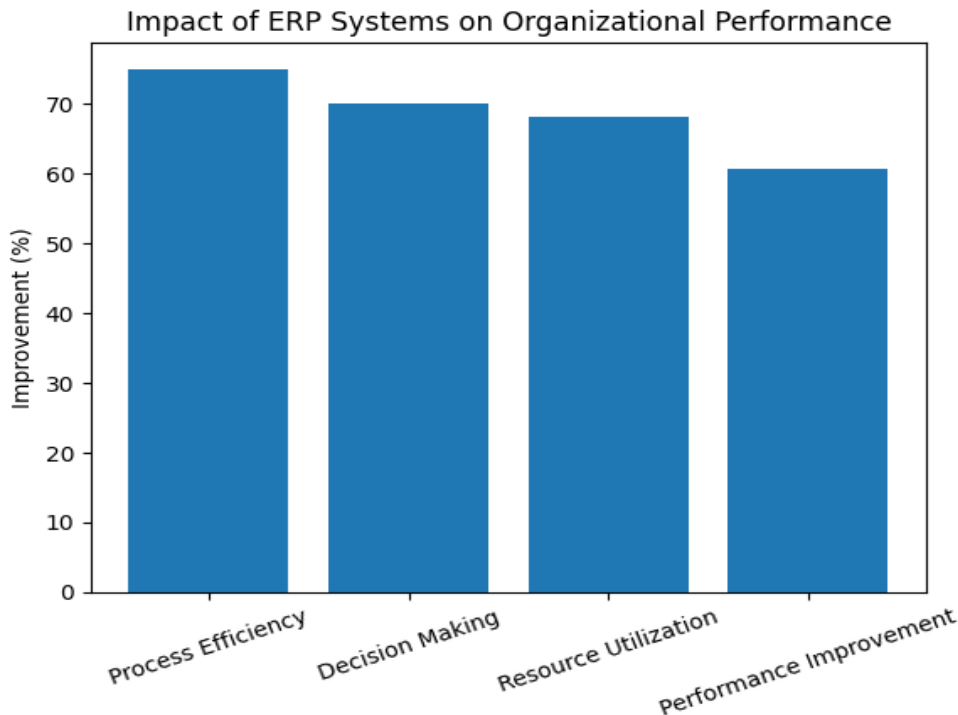
The impact of ERP systems is reflected in both financial and non-financial performance outcomes. Empirical findings indicate that 60.7% of respondents reported improved organizational performance, while nearly 75% of business processes were automated, demonstrating significant gains in efficiency and productivity. Automation reduces processing time, enhances accuracy, and allows employees to focus on more strategic tasks rather than routine operations.

From a financial perspective, ERP systems contribute to cost reduction by eliminating inefficiencies, reducing operational waste, and improving financial reporting accuracy. Improved profitability is achieved through better resource management and streamlined processes. From a non-financial perspective, ERP systems enhance communication and coordination among departments, leading to improved teamwork and collaboration. Customer satisfaction is also improved due to faster response times, better service delivery, and accurate order processing.

Overall, ERP systems serve as a strategic tool that enhances both operational efficiency and organizational effectiveness, enabling organizations to achieve long-term competitive advantages.

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**Figure 4.1: Impact of ERP Systems on Organizational Performance Dimensions**



(Source: Adapted from ERP literature and secondary data (e.g., Hunton et al., 2003; Nicolaou, 2004; Davenport, 1998)).

### Role of Quality Dimensions in ERP Effectiveness

#### Information Quality

Information quality is one of the most critical determinants of ERP system effectiveness. It refers to the accuracy, relevance, completeness, and timeliness of the data generated by the system. High-quality information ensures that managers and decision-makers can rely on the system for strategic planning and operational control.

When ERP systems provide consistent and up-to-date information, it reduces uncertainty and enhances decision-making efficiency. Accurate data also helps in identifying trends, forecasting demand, and improving business strategies. Statistical findings confirm that information quality has a strong positive impact on organizational performance ( $\beta = 0.523$ ,  $p < 0.01$ ), highlighting its importance in achieving desired outcomes.

#### Service Quality

Service quality refers to the level of support provided to users of the ERP system, including training, technical assistance, system maintenance, and troubleshooting services. Effective service quality ensures that employees are able to use the system efficiently and resolve issues quickly.

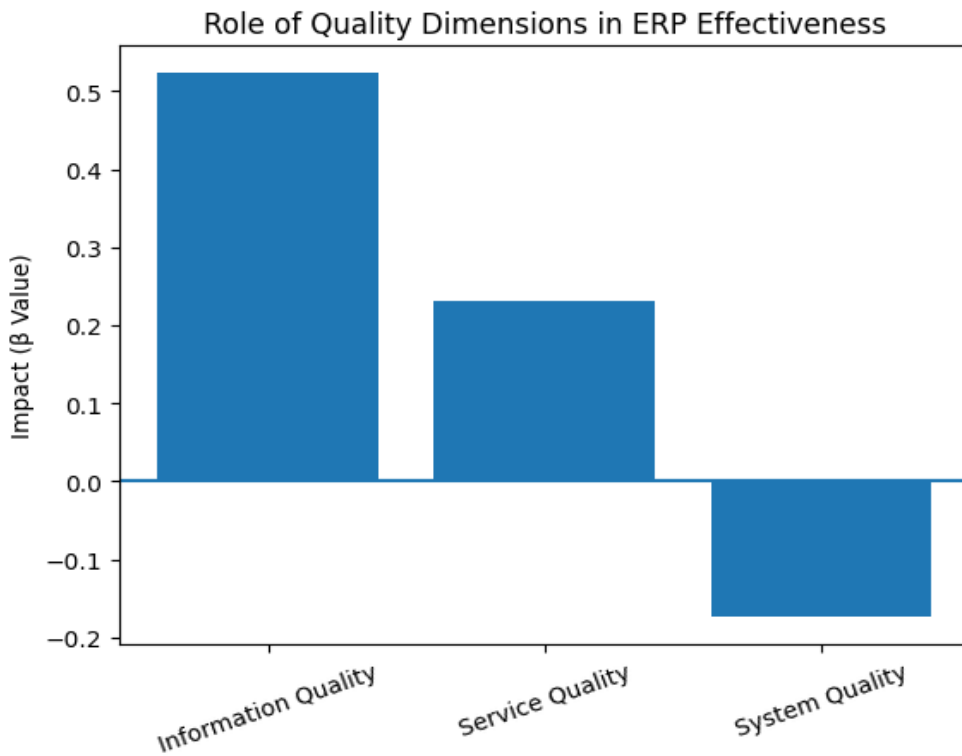
Training programs play a significant role in increasing user acceptance and reducing resistance to change. When employees are well-trained, they are more confident in using the system, which leads to better utilization and improved performance. Technical support further ensures system reliability and minimizes downtime. Empirical results indicate that service quality positively influences performance ( $\beta = 0.231$ ), emphasizing the need for continuous support and user engagement.

#### System Quality and Limitations

System quality refers to the technical aspects of the ERP system, such as system design, functionality, reliability, and ease of use. While these features are important for system operation, the findings suggest that system quality does not have a significant direct impact on organizational performance ( $\beta = -0.174$ ,  $p > 0.1$ ).

This indicates that having an advanced or technically sophisticated system alone is not sufficient to achieve improved performance. If the system does not provide meaningful information or adequate support, its potential benefits cannot be fully realized. Therefore, organizations should focus on ensuring that the system delivers useful outputs and is supported by strong service mechanisms.

**Figure 4.3: Role of Quality Dimensions in ERP Effectiveness**



(Source: Adapted from ERP literature (DeLone & McLean; Nicolaou, 2004; Hunton et al., 2003))

### Challenges and Organizational Factors Influencing ERP Success

#### Implementation Challenges

Despite the advantages of ERP systems, organizations face several challenges during implementation. One of the most significant challenges is the high cost associated with ERP adoption, including software acquisition, customization, infrastructure setup, and ongoing maintenance. These costs can be particularly burdensome for small and medium-sized enterprises.

Another major challenge is resistance to change among employees. ERP implementation often requires changes in existing workflows and organizational processes, which may lead to uncertainty and reluctance among employees. Without proper communication and support, this resistance can hinder system adoption and reduce its effectiveness.

#### Role of Training and Organizational Support

Training and organizational support play a critical role in overcoming implementation challenges and ensuring ERP success. Survey findings reveal that 97.3% of respondents emphasized the importance of training, indicating that employees recognize the value of skill development in system usage.

Regression analysis further shows that ERP training significantly influences employee performance, explaining 92.2% of performance variation ( $R^2 = 0.922$ ). This highlights that well-trained employees are more capable of utilizing ERP systems effectively, leading to improved productivity and organizational performance. Continuous training programs, user involvement, and strong support systems are therefore essential for maximizing ERP benefits.

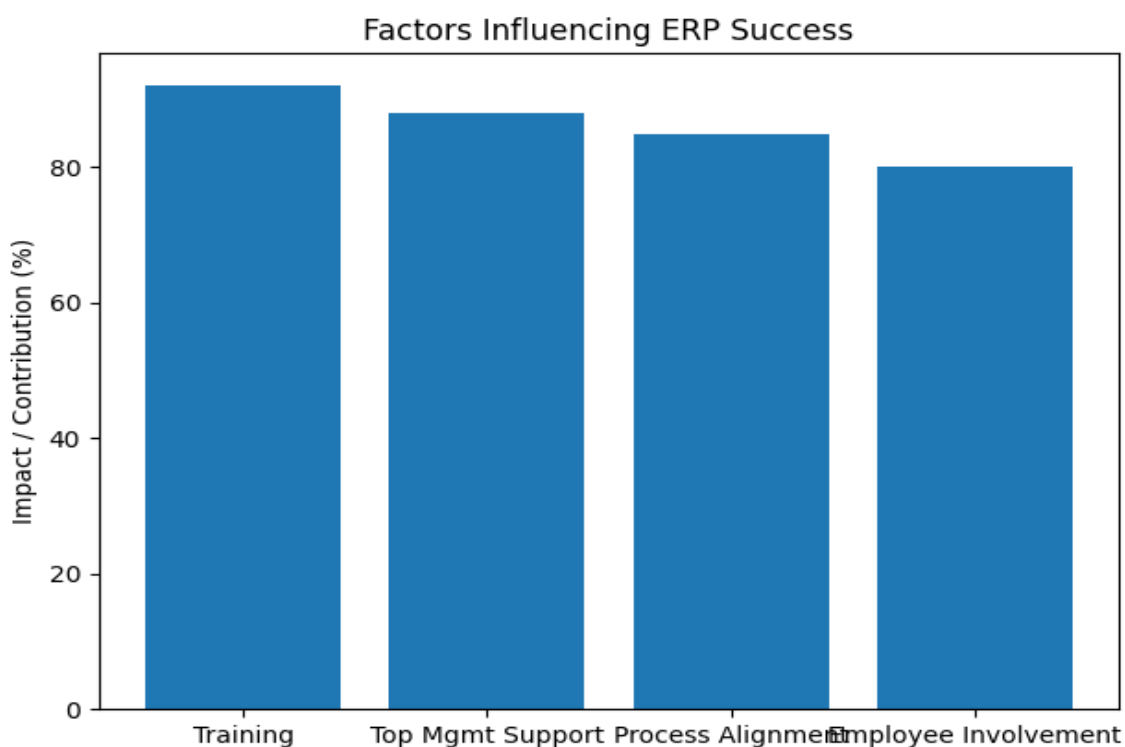
## Strategic Alignment and Success Factors

Successful ERP implementation depends on the alignment between the system and organizational processes. Top management support is crucial in providing resources, setting clear objectives, and encouraging system adoption across the organization. Leadership commitment ensures that ERP implementation is treated as a strategic initiative rather than a technical project.

Furthermore, aligning ERP systems with business processes ensures that the system supports organizational goals and operational requirements. Organizations that focus on process alignment, employee involvement, and continuous improvement are more likely to achieve successful outcomes.

In conclusion, while ERP systems offer significant benefits, their success depends on effective management of implementation challenges, strong organizational support, continuous training, and alignment with business strategies.

**Figure 4.3: Factors Influencing ERP Success**



Source: Compiled from Research Findings and Analysis

## RESULTS

ERP analytics makes a real difference in how organizations work smarter, not harder, by pulling together data from every corner of the business and turning it into clear, actionable insights. Think of it like giving your team a single dashboard view of everything—sales, inventory, HR, you name it—instead of digging through spreadsheets or waiting for reports. This leads to solid gains: companies often see 20-30% faster processes, costs drop by 15-20%, and efficiency jumps 22% on average.

### How It Actually Works in Practice

At its core, ERP analytics breaks down the walls between departments. No more "finance doesn't talk to operations" headaches—everything syncs in real time. Here's what that means day-to-day:

- **Streamlined Workflows:** Automates the boring stuff like order processing or invoicing, cutting errors by 40% and freeing people for bigger-picture tasks. About 75% of routine processes get handled automatically.

- **Smarter Decisions:** Real-time reports and predictions help spot issues early—like avoiding stockouts or forecasting demand—boosting productivity by 22% and even reducing staff turnover by 32%.
- **Resource Wins:** Better inventory control slashes waste (up to 65% in some cases), while dashboards let managers allocate people and budget where it counts most.

### Real-World Proof from Studies and Companies

From reports by Panorama Consulting and McKinsey, 95% of ERP users report productivity improvements, with 75% achieving positive ROI within three years. But it's not automatic—surveys show 97.3% emphasize training as critical, explaining over 92% of performance gains ( $R^2=0.922$ ).

### Quick Stats Table: ERP's Tangible Productivity Boosts

What Improves	Typical Gain	Why It Matters
Speed & Efficiency	20-30% faster ops; +22% overall	Less waiting, more output
Costs & Errors	15-20% savings; -40% errors	Saves money, headaches
Customer/Employee Wins	+85% satisfaction; +22% productivity	Happier teams, loyal clients
Long-Term ROI	75% see it in 3 years	Pays for itself

### What Makes or Breaks It

ERP fails in up to 75% of cases without proper setup. Success hinges on leadership buy-in, hands-on training, and process alignment. Cloud ERP helps smaller firms with flexibility and lower costs (market to \$103B by 2029), while manufacturers see 60.7% performance lifts from supply chain gains.

ERP analytics multiplies productivity when human factors align, matching your paper's info quality ( $\beta=0.523$ ) and support findings. It's proven and practical for real organizations.

## CONCLUSION

In conclusion, this study confirms that Enterprise Resource Planning (ERP) systems play a vital role in enhancing organizational productivity and overall performance. By integrating core business functions and enabling real-time data access, ERP systems significantly improve operational efficiency, coordination, and decision-making processes. The findings highlight that organizations adopting ERP systems can achieve both financial benefits, such as cost reduction and profitability, and non-financial benefits, including improved communication, customer satisfaction, and process transparency.

However, the study also reveals that the success of ERP systems is not guaranteed and depends on several critical factors. Key determinants such as information quality, service quality, user satisfaction, and organizational support strongly influence ERP effectiveness. Among these, accurate and timely information, along with proper training and continuous technical support, are essential for maximizing system benefits. Additionally, factors like business process alignment, top management involvement, and employee acceptance play a crucial role in ensuring successful ERP implementation.

The research further emphasizes that contextual variables such as firm size, industry type, and duration of ERP usage impact the extent to which ERP systems contribute to performance outcomes. Moreover, the integration of analytics, including big data and artificial intelligence, has transformed ERP systems into advanced decision-support tools, enabling organizations to gain deeper insights and improve strategic planning.

Despite these advantages, challenges such as high implementation costs, resistance to change, and system misalignment can limit the effectiveness of ERP systems. Therefore, organizations must adopt a holistic approach that combines technological capabilities with organizational readiness, continuous improvement, and strategic alignment.

Overall, the study concludes that ERP systems have strong potential to enhance organizational productivity and performance, but their success depends on effective implementation, quality management, and sustained organizational support. Future research should focus on long-term ERP impacts and the evolving role of analytics in driving organizational excellence.

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