MINIMIZING ENTERPRISE RESOURCE PLANNING (ERP) IMPLEMENTATION FAILURE IN SMALL AND MEDIUM ENTERPRISES IN PAKISTAN: A CRITICAL REVIEW

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Abstract

Enterprise Resource Planning (ERP) systems have become essential for enhancing organizational efficiency and facilitating digital transformation, particularly in Small and Medium Enterprises (SMEs). While ERP adoption has historically been dominated by large corporations, SMEs in Pakistan are increasingly implementing these systems due to reduced costs and advancements in ERP technologies. Despite these benefits, Pakistani SMEs face unique challenges during ERP implementation, including limited financial resources, insufficient technical expertise, and resistance to organizational change. This critical review examines the key factors contributing to ERP implementation failures in SMEs in Pakistan, focusing on technological, process-related, and organizational dimensions of digital transformation. The review further highlights effective strategies to mitigate these challenges, emphasizing strong organizational commitment, comprehensive training programs, and alignment of business processes with ERP functionalities. By addressing these critical factors, SMEs in Pakistan can enhance the likelihood of successful ERP adoption, thereby improving operational efficiency, competitiveness, and their contribution to the country's digital economy.

Keywords: Enterprise Resource Planning (ERP), ERP Adoption, ERP Implementation, ERP Failure Factors, Pakistan

Introduction

Enterprise Resource Planning (ERP) systems have emerged as a crucial platform for organizations aiming to enhance operational efficiency, integrate business processes, and drive digital transformation. Historically, ERP adoption was largely confined to large enterprises due to the complexity of operations and high implementation costs (Jacob, 2007; Katuu, 2020). Small and Medium-Sized Enterprises (SMEs), defined as organizations with fewer than 250 employees and annual revenues below €50 million (Sidek et al., 2020; Varga, 2021), face additional challenges in adopting ERP, including constrained budgets, limited technical expertise, and resistance to organizational change (Kim et al., 2005; Ranjan et al., 2016).

In Pakistan, SMEs play a pivotal role in economic development, contributing significantly to GDP, employment generation, and innovation. Unlike large corporations, SMEs foster equitable

wealth distribution, provide opportunities for entrepreneurship, and support local manufacturing and export initiatives (Khalique, 2014; Zafar et al., 2019). Over the past decade, ERP adoption among Pakistani SMEs has increased due to technological maturity, cost reduction, and the recognition that integrated systems can transform operational data into actionable insights, enabling informed decision-making and competitive advantage (Aremu et al., 2021; Kazmi & Mäntymäki, 2016).

Despite these opportunities, ERP implementation in Pakistani SMEs remains challenging. Financial and resource constraints are a primary barrier, as SMEs often lack the capacity to cover software licensing, hardware, consulting, training, and ongoing support costs. Additionally, the scarcity of in-house IT expertise forces reliance on external consultants, increasing project costs and risks (Jamil & Qayyum, 2025; Latif et al., 2025: Naseer et al., 2024). Organizational change resistance is another critical challenge, as ERP adoption necessitates adjustments to workflows, roles, and responsibilities, often perceived as disruptive by employees and managers (Newell et al., 2003; Ngai et al., 2008). Customization requirements further complicate adoption, as ERP systems designed for larger firms may not align with SME-specific processes, and extensive modifications are costly and technically complex (Mogali, 2025). Post-implementation challenges, such as insufficient user training and limited support, exacerbate the risk of poor system utilization and low return on investment (Mensah et al., 2023; Saeed et al., 2010). Cloud-based ERP solutions, while more accessible, introduce additional concerns regarding data security, internet dependency, and integration with legacy systems, highlighting the need for careful contextual adaptation in Pakistan.

Critical success factors for ERP adoption in SMEs include top management support, business process alignment, effective training, and change management (Ahmad & Cuenca, 2013). Leadership engagement ensures resource allocation, drives organizational commitment, and supports prioritization of the ERP project. Aligning ERP systems with business goals through business process re-engineering helps ensure the technology supports operational needs rather than disrupting them. Comprehensive training and change management empower end users, reduce resistance, and enhance adoption, particularly in SMEs with smaller implementation teams and limited IT capabilities. Clear communication, strategic planning, milestone tracking, and careful selection of ERP packages and external consultants further increase implementation success (Hussein, 2024; Jesus & Lima, 2021; Kemei et al., 2018; Kirmizi & Kocaoglu, 2022; Nah & Delgado, 2006; Wright, 2023).

Conversely, failure factors frequently identified include inadequate planning, insufficient management support, misalignment between ERP capabilities and business objectives, lack of user engagement, and poor data quality management (Mankge et al., 2024; Ndaba et al., 2024). These issues can compound throughout the implementation process, resulting in cost overruns, schedule delays, and ultimately underutilized systems. ERP adoption should therefore be viewed as a critical component of digital transformation, encompassing technology, processes, and organizational adoption rather than simply a software deployment.

This review highlights the importance of a proactive approach to ERP implementation in Pakistani SMEs. Strategies to reduce ERP failure include securing top management commitment, aligning ERP with business processes, investing in comprehensive training programs, adopting phased implementation, and establishing robust post-implementation support. By addressing these critical factors, SMEs in Pakistan can enhance the likelihood of successful ERP adoption, improve

operational efficiency, and strengthen their competitive position within the national and global economy.

Methodology

This study adopts a systematic literature review approach to examine Enterprise Resource Planning (ERP) adoption and implementation in Small and Medium-Sized Enterprises (SMEs). A total of 85 peer-reviewed studies published between 2012 and 2024 were reviewed to capture both foundational work and recent developments in ERP research within the SME context. The reviewed literature consisted of 54 journal articles and 31 conference proceedings, providing comprehensive coverage of established empirical evidence as well as emerging research trends.
The studies were retrieved from recognized academic databases and scholarly outlets in the fields of information systems, management, and industrial engineering. Inclusion criteria focused on studies addressing ERP adoption, implementation processes, success factors, and failure drivers within SMEs. Studies exclusively centered on large enterprises or lacking methodological rigor were excluded to maintain relevance and quality.

Regarding research design, survey-based studies and case study approaches were the most commonly employed methodologies in the reviewed literature. These methods were primarily used to examine organizational readiness, implementation challenges, and post-implementation outcomes of ERP systems in SMEs. Other approaches, such as conceptual frameworks and mixed-method designs, appeared less frequently. Overall, the methodological distribution reflects a strong empirical emphasis in ERP research within the SME sector.

To complement the secondary data, this study integrates insights from a structured ERP implementation framework developed through extensive international ERP project experience. The framework follows a six-phase implementation process—Launch, Design, Realization, Pre-Deployment, Deployment, and Closure—adapted to the operational and resource constraints typically faced by SMEs. Particular attention is given to business process alignment, executive involvement, user training, and change management to address commonly reported ERP failure drivers.

By integrating findings from the literature with practical insights derived from the implementation framework, the methodology offers a holistic and applied perspective on ERP adoption. This combined approach strengthens the study's ability to identify persistent challenges and propose practical strategies for improving ERP implementation outcomes in SMEs.

Results and Discussion

The findings suggest that ERP implementation approaches emphasizing top management commitment, structured planning, and alignment with organizational processes are consistently linked with positive outcomes for SMEs. The reviewed studies indicate improvements in operational efficiency, system integration, and information quality when ERP systems are implemented using phased and well-coordinated methodologies.
The results further underscore the importance of organizational and human factors in ERP success. Strong executive involvement facilitates effective resource allocation and timely decision-making, while comprehensive training and change management initiatives help reduce user resistance and

enhance system acceptance. SMEs that prioritize these factors demonstrate higher levels of ERP utilization and long-term system effectiveness.

At the same time, several recurring ERP failure drivers are identified in the literature, including inadequate planning, limited strategic alignment, insufficient top management support, and weak communication during implementation. Early warning indicators such as low user engagement, data quality issues, and unclear project ownership frequently precede unsuccessful ERP initiatives. The structured ERP framework discussed in this study addresses these challenges by emphasizing early preparation, stakeholder engagement, and continuous monitoring across implementation phases.

Overall, the discussion highlights that ERP success in SMEs is not driven solely by technological capabilities but is largely shaped by managerial commitment, organizational readiness, and contextual adaptation. The alignment between insights from the literature and practical framework experience reinforces the value of structured implementation approaches for enhancing ERP outcomes in SMEs.

Future Research Directions and Gaps

The literature review reveals several important gaps in ERP research, particularly in relation to the later stages of the ERP life cycle. While adoption, acquisition, implementation, and use have been widely examined, relatively limited attention has been given to ERP system evolution, upgrading, and retirement. As SMEs increasingly depend on ERP systems, understanding how these systems are adapted or replaced over time remains an underexplored research area.

Future studies should also investigate the role of government policies, regulatory frameworks, and institutional support in influencing ERP adoption, especially in developing economies. Additionally, the increasing shift toward cloud-based and Software as a Service (SaaS) ERP solution presents new research opportunities related to cost structures, scalability, and implementation risks for SMEs.

There is also a need for cross-national and cross-sectoral research to compare ERP adoption patterns across regions and industries. Differences among small, medium, and relatively larger SMEs warrant closer examination, as organizational size may significantly influence ERP implementation strategies and outcomes. Furthermore, service-oriented SMEs remain underrepresented in existing research, with most studies focusing on manufacturing firms. Incorporating diverse industry contexts and multiple stakeholder perspectives—including employees, consultants, and vendors—will deepen understanding of ERP success and failure and support the development of more effective implementation practices.

Conclusion

This study offers a comprehensive review of ERP adoption in Small and Medium-Sized Enterprises (SMEs), highlighting both the challenges and key success factors that influence successful implementation. As ERP systems continue to play a significant role in driving digital transformation, SMEs are increasingly adopting these systems despite facing obstacles like financial limitations, lack of IT expertise, and resistance to organizational change. The review

identifies that inadequate planning, lack of top management support, poor communication, and misalignment with business processes are the most common drivers of ERP failure. To mitigate these risks, SMEs must prioritize executive commitment, invest in comprehensive training, and ensure that ERP systems are aligned with their business objectives from the outset. Additionally, the DRM Success Framework can serve as a useful blueprint for ERP adoption, helping SMEs manage risk factors throughout the ERP lifecycle. Future research should focus on exploring the evolution and retirement phases of ERP systems, the influence of government policies, and conducting cross-national studies to address gaps in the existing literature. By focusing on these areas, SMEs can enhance their chances of successful ERP implementation, improving efficiency and gaining a competitive advantage in the market.

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