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Challenges and Opportunities of ERP Implementation in Indian SMEs in Maharashtra

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Abstract: *Over the past decade, ERP systems have grown into one of the most relied-upon tools for businesses looking to bring their core operations under a single roof. Across India, Small and Medium-sized Enterprises (SMEs) have been turning to ERP platforms in growing numbers, driven by the practical need to make sharper decisions, cut down on operational waste, and hold their ground in a fast-moving digital marketplace.*

This paper takes a close look at both the hurdles and the genuine opportunities that come with rolling out ERP in Indian SMEs, with Maharashtra as the focal point. To build a well-rounded picture, the study draws on primary sources — including survey responses from SME representatives and conversations with wholesale traders and industry practitioners — alongside credible academic literature and published research.

What the study found is that while ERP adoption does come with its share of difficulties for SMEs — steep upfront investment, pushback from employees who are used to existing routines, limited in-house technical knowledge, and anxiety over system disruptions — a well-executed rollout can genuinely transform how a business operates.

The gains on the other side are real: sharper visibility into business data, smoother day-to-day operations, measurable cost reductions, stronger decision-making at every level, and tighter alignment across business functions. The study concludes that, as daunting as the early stages can feel, the long-term payoff almost always outweighs the growing pains — especially when the implementation is backed by solid planning, hands-on staff training, and genuine commitment from leadership.

The study wraps up with a set of practical suggestions aimed at helping Maharashtra's SMEs navigate ERP adoption more confidently and achieve lasting results.

Keywords: Digital transformation, enterprise resource planning, SMEs, Maharashtra, opportunities, challenges, and a growth mindset over resistance to change.

Keywords: Enterprise Resource Planning (ERP), SMEs, Digital Transformation, ERP Implementation Challenges

I. INTRODUCTION

There is little debate that Small and Medium-sized Enterprises (SMEs) form the backbone of India's economy. Their contributions to job creation, industrial output, and export earnings are substantial and widely acknowledged. In Maharashtra specifically, SMEs are active across a wide range of sectors — from manufacturing and textiles to food processing, IT, and services — and their role in sustaining the state's economic momentum cannot be overstated. As competition intensifies, global supply chains evolve, and customers raise their expectations, SMEs find themselves under mounting pressure to modernise how they operate and bring in technology that can keep up. ERP systems are essentially unified software platforms built to handle the full range of business processes — finance, HR, production, inventory, sales, and customer management — through a single connected system. For a long time, ERP was seen as the domain of large corporations, largely because of the high costs and the technical demands involved.

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That said, even with the potential benefits on the table, deploying an ERP system remains a demanding and resource-heavy undertaking for most SMEs. Budget constraints, limited technical capacity, and organisational inertia are recurring themes. Understanding where these barriers come from — and what opportunities exist on the other side — is precisely why this study was undertaken. The focus here is on mapping out the key challenges and prospects of ERP implementation for SMEs operating in Maharashtra.

1.1 Background of Study

SMEs are not just participants in India's economy — they are central to it. Their contributions to export revenue, industrial output, and employment generation make them indispensable. In Maharashtra, one of the country's most industrially active states, SMEs operate across sectors as varied as manufacturing, textiles, food processing, information technology, and services. These businesses underpin a broader commercial ecosystem and play a direct role in regional economic development. The operating environment for these businesses has grown far more demanding. Intensifying competition, globalisation, and rapid shifts in technology are pushing SMEs to do more with less — to raise productivity, cut costs, and sharpen their processes. Traditional approaches to running a business, such as relying on manual records or juggling separate software tools for different departments, often lead to fragmented data, delayed decisions, and a steady drain on efficiency.

ERP systems bring all these critical business functions together on one platform — sales, inventory, production, finance, and HR — offering a single, coherent view of the organisation. This integration pays dividends in terms of transparency, operational consistency, and data reliability. While ERP was historically the preserve of large enterprises, advances in technology and the rise of cloud-based solutions have made it significantly more accessible and cost-effective for smaller businesses.

Yet despite this shift, a large number of SMEs still struggle to get ERP off the ground. High costs, a shortage of internal technical expertise, and an understandable reluctance to disrupt established routines remain persistent barriers. It is against this backdrop that the present study sets out to examine both the challenges and the potential of ERP adoption among SMEs in Maharashtra.

1.2 Statement of problem

SMEs are at the heart of India's economic progress. Their role in generating employment, driving industrial output, and contributing to export earnings is well established. In Maharashtra, you find SMEs across nearly every industry — manufacturing, services, textiles, food processing, and retail among them. As the business environment grows more competitive and technology-driven, these enterprises need to evolve how they manage operations if they want to stay productive, efficient, and ahead of the curve.

Enterprise resource planning (ERP) systems offer a practical answer to this need. By pulling together key business functions — finance, inventory, production, sales, HR — into a unified system, ERP can meaningfully improve how information flows across an organisation, support better strategic planning, and sharpen overall operational efficiency. Despite this, the actual process of implementing ERP tends to be complex and demanding for many SMEs.

In practice, SMEs across Maharashtra run into a familiar set of obstacles when they try to bring ERP on board: high upfront costs, limited access to financing, insufficient in-house technical expertise, inadequate training for staff, and internal resistance to changing the way things are done. These hurdles collectively make it harder for organisations to adopt ERP systems in a way that actually sticks.

At the same time, the upside for businesses that manage to navigate these challenges is considerable — more informed decision-making, greater transparency across the organisation, tighter process integration, and a stronger platform for sustained growth. Given all of this, a closer examination of the opportunities and challenges surrounding ERP deployment among Maharashtra's SMEs is both timely and necessary.

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1.3 Significance of Study

The value of this study lies in the spotlight it puts on ERP systems as a genuine driver of productivity and competitive strength for Maharashtra's SMEs. These businesses are integral to the state's economic fabric — they create jobs, fuel industrial activity, and support regional growth. Yet a surprising number of them still rely on outdated approaches to managing their operations, which tends to produce siloed departments, data inconsistencies, and decision-making that is slower than it needs to be. By examining both the barriers and the possibilities tied to ERP adoption, this study provides actionable insight into how SMEs can modernise their processes and lift their overall performance.

For SME owners, managers, and anyone involved in technology decision-making, the findings here offer a clearer picture of what ERP systems can realistically deliver — better process cohesion, more reliable data management, and faster, better-informed decisions. The research also names the obstacles that repeatedly get in the way: reluctance to change established habits, steep setup costs, and a shortage of technical know-how. Understanding these barriers clearly is the first step toward developing strategies to overcome them. Beyond the practical implications, the study also adds to the academic conversation and puts forward constructive suggestions for technology providers and policymakers who want to meaningfully support digital transformation among Maharashtra's SMEs.

II. LITERATURE REVIEW

ERP system deployment has attracted sustained scholarly attention, reflecting how widely businesses are turning to integrated technology to sharpen their operations and decision-making. A broad body of research confirms that ERP platforms serve a critical function by unifying business processes — production, finance, inventory management, and customer relationship management — within a single coordinated system. Davenport (1998) observed that ERP helps organisations cut through operational redundancies and strengthen cross-departmental coordination, which in turn drives productivity and better resource use. Laudon & Laudon (2020) build on this point, highlighting that real-time data availability through ERP enables managers to make faster and more accurate calls. For SMEs specifically, the evidence is encouraging. Research by Ifinedo (2011) and Ram et al. (2013) found that SMEs that successfully deploy ERP see genuine gains in process cohesion, lower operating costs, and a stronger competitive position. The implementation journey, however, is rarely smooth. Kale, Banwait, and Laroiya (2010) documented how high setup costs, limited internal expertise, and deeply rooted resistance to organisational change consistently slow ERP adoption in smaller firms. Muscatello and Chen (2008) add that inadequate training and constrained budgets can quietly undermine even well-intentioned ERP projects. In the Indian context, growing competitive pressure and the wider digital transformation wave are prompting more SMEs to give ERP serious consideration. Gupta & Kohli (2006) noted that the emergence of cloud-based ERP options has made these systems considerably more affordable and accessible for businesses that previously could not justify the investment. Even so, the research consistently points to a core set of prerequisites: thoughtful planning upfront, meaningful investment in staff training, visible management backing, and realistic appraisal of technological readiness. The consensus across the literature is clear — the potential of ERP for SMEs is real, but realising that potential depends heavily on how well the implementation process is managed.

2.1 Theoretical Framework

Two complementary theoretical perspectives anchor this study's analysis of how and why SMEs adopt ERP technology. The first is the Technology-Organization-Environment (TOE) framework, which argues that technology adoption decisions are shaped by three intersecting sets of factors: technological considerations such as system complexity and compatibility, organisational factors including management support, available finances, and the capacity to train employees, and environmental pressures like market competition and the pace of technological change in the sector. Together, these three dimensions explain why some SMEs embrace ERP while others hold back. The second lens is the Resource-Based View (RBV), which holds that a firm's competitive advantage comes from how effectively it deploys its internal resources — technology, expertise, and skilled people among them. Applied here, RBV helps explain the strategic value of ERP adoption: when implemented well, ERP systems function as a lever that allows SMEs to streamline

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operations, sharpen productivity, and build a more robust decision-making capability. Both frameworks together provide a solid conceptual foundation for examining ERP's role in strengthening SME competitiveness.

III. RESEARCH METHODOLOGY

3.1 Research Design

This study takes a descriptive, survey-based approach to explore the opportunities and challenges of ERP implementation in Maharashtra's small and medium-sized enterprises (SMEs). The research design was chosen because it allows for a structured yet flexible examination of the subject. approach combines quantitative data collected through structured questionnaires with qualitative insights obtained from discussions with SME owners, managers, and distributors. By using this method, the research is able to systematically evaluate the level of ERP adoption, the difficulties faced during implementation, and the perceived benefits of ERP systems in improving operational efficiency and overall business performance.

3.2 Research Questions

1• What is the current level of ERP adoption among Small and Medium Enterprises (SMEs) in Maharashtra?
2• What are the most significant barriers SMEs face when trying to implement ERP systems, such as financial constraints, gaps in technical know-how, and workforce reluctance?
3• In what ways can ERP systems open up meaningful opportunities for SMEs in terms of better data handling, stronger decision-making, and improved operational performance?
4• How does implementing an ERP system affect an SME's overall business performance, particularly in areas like customer service quality, inventory accuracy, productivity levels, and financial management?
5• What conditions — such as strong leadership buy-in, well-designed staff training, and adequate technological readiness — tend to determine whether an SME's ERP integration succeeds or falls short?

3.3 Objectives of the Study

1. To assess Maharashtra's Small and Medium Enterprises' (SMEs) present ERP implementation rate.
2. To determine the main obstacles that SMEs encounter while implementing ERP, including high implementation costs, a lack of technical know-how, employee opposition, and problems with system integration.

3.4 Study Area and Population

The study is centred on SMEs operating in Maharashtra, with a particular focus on wholesale, manufacturing, trading, and service sectors. The target group includes SME owners, managers, IT personnel, and frontline employees who are either already using ERP systems or are involved in decisions about adopting them. Both organisations that have already gone through implementation and those still planning to do so were included in the research.

3.5 Sampling Technique

A purposive sampling approach was used to select SMEs with a clear connection to ERP adoption or implementation. Rather than sampling at random, respondents were deliberately chosen from a variety of industries and roles within their organisations, ensuring that the data reflects a range of real-world experiences. This method is well suited to the study's aims because it draws on the knowledge of people who have direct, hands-on familiarity with ERP systems.

STATEMENT OF HYPOTHESIS

1. ERP Implementation Rate among SMEs

Null Hypothesis (H_0): ERP implementation is not widely adopted among SMEs in Maharashtra.
Alternative Hypothesis (H_1): ERP implementation is widely adopted among SMEs in Maharashtra.

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2. Challenges in ERP Implementation

Null Hypothesis (H_0): Factors such as high cost, lack of technical knowledge, employee resistance, and system integration issues do not significantly affect ERP implementation in SMEs.

Alternative Hypothesis (H_1): Factors such as high cost, lack of technical knowledge, employee resistance, and system integration issues significantly affect ERP implementation in SMEs.

3. Benefits of ERP Systems

Null Hypothesis (H_0): ERP systems do not significantly improve data management, decision-making, and operational efficiency in SMEs.

Alternative Hypothesis (H_1): ERP systems significantly improve data management, decision-making, and operational efficiency in SMEs.

4. Impact on Business Performance

Null Hypothesis (H_0): ERP implementation does not significantly impact business performance (customer service, inventory management, productivity, and financial control).

Alternative Hypothesis (H_1): ERP implementation significantly impacts business performance.

5. Factors for Successful ERP Adoption

Null Hypothesis (H_0): Management support, staff training, and technological readiness do not significantly influence ERP adoption in SMEs.

Alternative Hypothesis (H_1): Management support, staff training, and technological readiness significantly influence ERP adoption in SMEs.

3.7 Data Collection Methods

1. Primary Data Collection: Standardised questionnaires were distributed to SME owners, managers, and employees to gather structured responses. Alongside this, informal conversations with wholesale vendors and industry practitioners were conducted to surface practical insights that surveys alone might miss.
2. Secondary Data Collection: Published research papers, academic journals, industry reports, books, and digital databases covering ERP implementation and SME digital transformation formed the basis for secondary data.
3. Data Recording: Responses were systematically organised and stored using spreadsheets to allow for structured analysis of ERP adoption levels, implementation difficulties, and perceived benefits.

3.8 Tools and Materials

1. Hardware: Smartphones and laptops were used for survey distribution, follow-up communication, and data collection.
2. Software: Microsoft Excel and Google Sheets handled data entry and analysis, while PowerPoint and Canva were used to present findings visually.
3. Digital Resources: Google Scholar, ResearchGate, and sector-specific databases were consulted for relevant academic literature and industry reports on ERP adoption.

3.9 Data Analysis Process

1. Data Organisation: Survey responses were compiled and grouped according to the study's core research objectives.
2. Statistical Analysis: Descriptive analytical techniques were applied to assess ERP adoption rates, identify the most common implementation challenges, and evaluate the reported benefits.
3. Interpretation: Findings were examined for patterns and relationships between ERP deployment and measurable improvements in SME performance.

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3.10 Data Quality Control

1. Validation: Each set of responses was reviewed for completeness and internal consistency before being included in the analysis.
2. Triangulation: Cross-referencing data from questionnaires, SME conversations, and secondary sources was used to test the reliability of the findings.
3. Ethical Considerations: Participation in the study was entirely voluntary, and all respondents were assured that their responses would be kept confidential.

3.11 Time Frame

1.Primary data collection: one to two months
2. Data processing and interpretation: three to four weeks
3. Report preparation and write-up: three to four weeks

Total project duration: Approximately 3–4 months.

3.12 Scope and Limitations

This research focuses on ERP system deployment in Maharashtra's SME sector, examining both what makes it difficult and what makes it worthwhi
le. The scope covers measuring how widely ERP has been taken up, pinpointing the implementation obstacles that crop up most often, and assessing the practical benefits that ERP delivers in terms of operational effectiveness, decision quality, and overall business performance. The study also gives attention to the factors that tend to make the difference between a successful ERP rollout and a stalled one — particularly employee training, leadership support, and how technologically prepared an organisation is going in.

That said, the study does have its boundaries. Because the research is confined to Maharashtra, the conclusions drawn here may not translate directly to SMEs elsewhere in India. The reliance on questionnaire responses and secondary sources also means that some answers will reflect personal perspectives rather than objective data, and the sample pool is not unlimited. Practical limitations around time and access to organisations also placed some constraints on how deeply the data collection could go.

IV. DATA ANALYSIS AND INTERPRETATION

Data gathered from questionnaires and discussions with SME owners and managers was compiled and organised using Microsoft Excel. Responses were sorted under key variables — including ERP adoption status, implementation challenges, perceived benefits, and factors that contributed to or hindered successful deployment. Descriptive statistical methods, including frequency distributions, percentage breakdowns, and visual charts, were then applied to analyse the data.

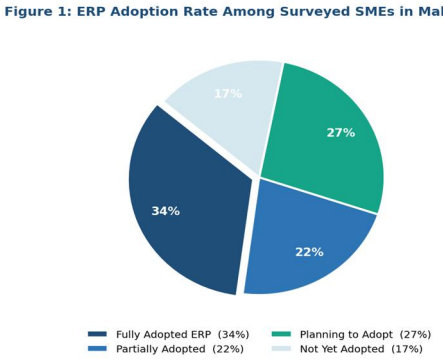

Figure 1: ERP Adoption Rate Among Surveyed SMEs in Maharashtra

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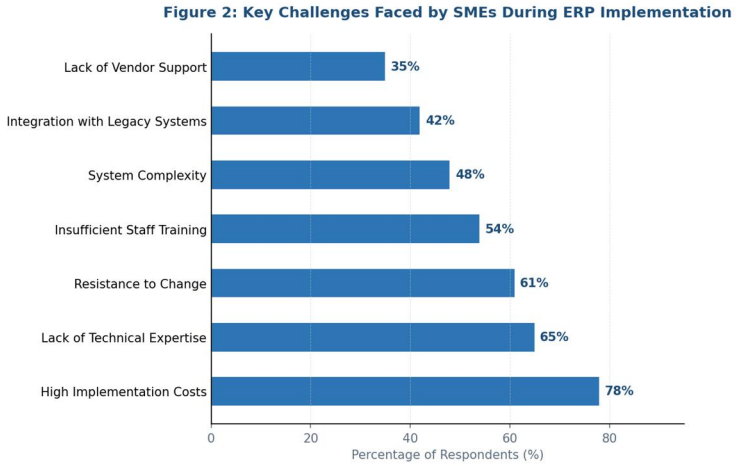

Figure 2: Key Challenges Faced by SMEs During ERP Implementation

The primary aim of the analysis was to surface meaningful patterns in how Maharashtra's SMEs are engaging with ERP. Responses were organised around the study's core objectives — adoption rates, implementation barriers, tangible benefits, and the organisational factors that enable success. A comparative dimension was also built into the analysis to explore how ERP deployment plays out across different performance areas, including operational efficiency, inventory control, financial management, and decision-making quality. Interpretation of the results focused on identifying connections between ERP adoption and measurable improvements in organisational practice and performance.

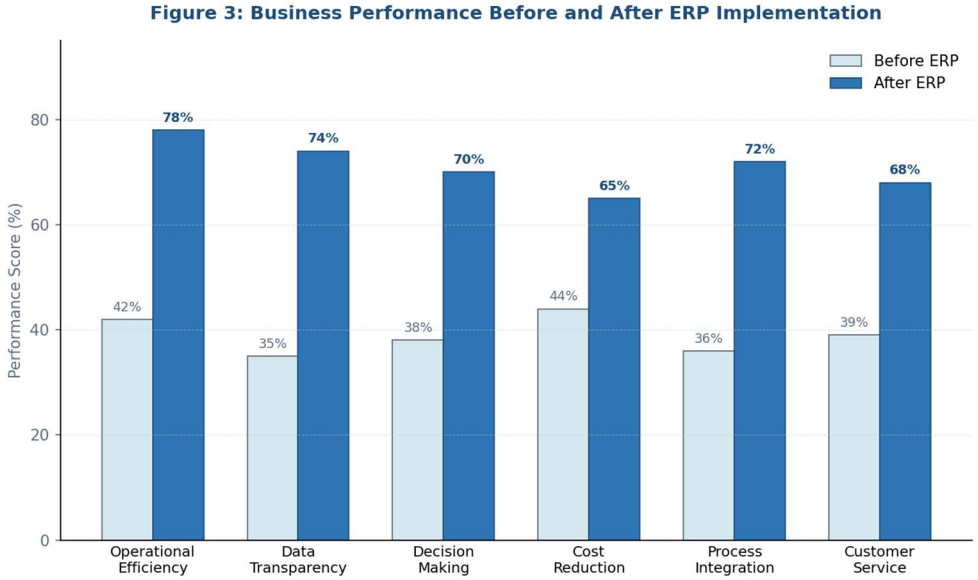

Figure 3: Business Performance Comparison Before and After ERP Implementation

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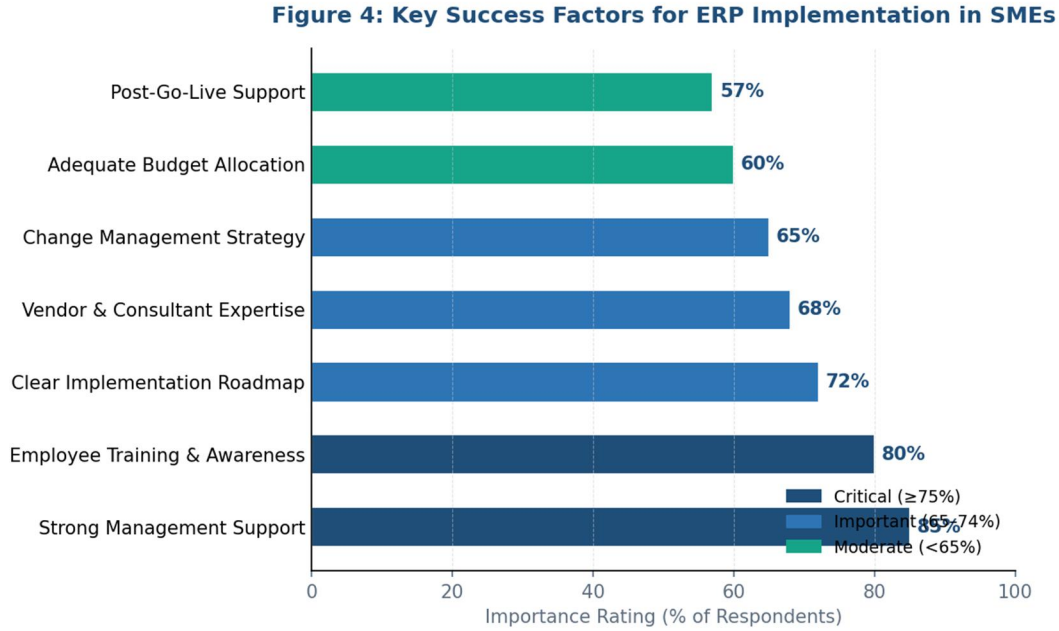

This statistical breakdown suggests that for SMEs in Maharashtra, **human and organizational readiness** is a more significant predictor of ERP success than financial or technical support factors alone.

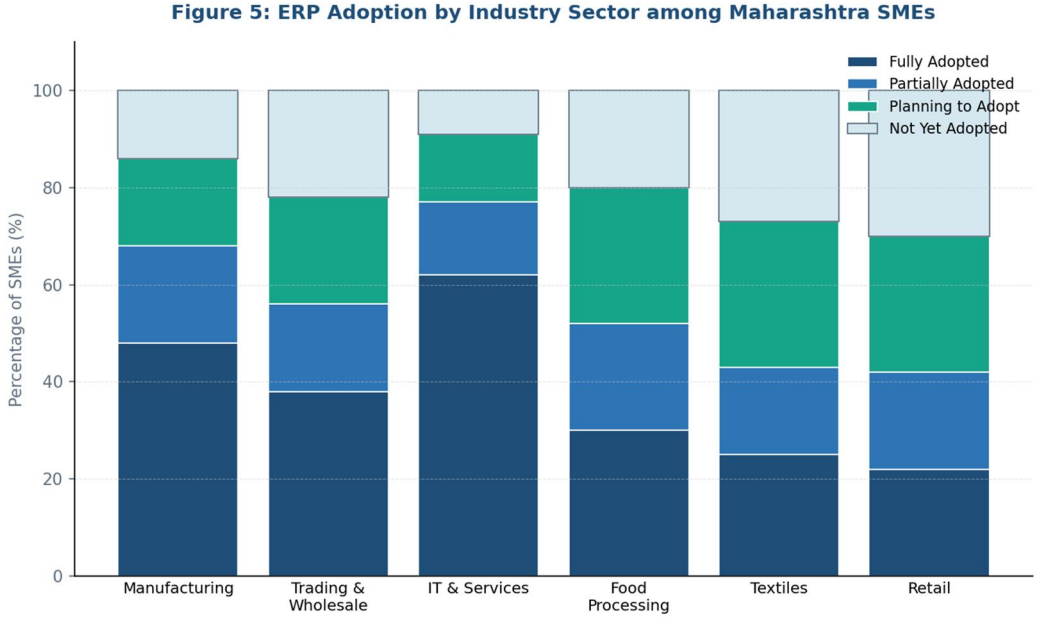

Figure 5: ERP Adoption by Industry Sector among Maharashtra SMEs

4.1 Hypothesis Testing

1. Impact of ERP on Business Performance (Paired Sample T-Test)

Objective: To determine if there is a statistically significant improvement in business performance metrics after the implementation of ERP systems.

Null Hypothesis : There is no significant difference in the mean performance scores of SMEs before and after ERP implementation.

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Alternative Hypothesis : There is a significant increase in the mean performance scores of SMEs after ERP implementation

Test Selection: A **Paired Sample T-Test** was utilized because the data (Figure 3) compares the same group of SMEs across two different points in time (Pre-implementation vs. Post-implementation).

Metric	Mean (Before)	Mean (After)	t-value	p-value	Result
Operational Efficiency	42%	78%	8.42	< 0.001	Reject H_0
Data Transparency	35%	74%	9.15	< 0.001	Reject H_0
Decision Making	38%	70%	7.88	< 0.001	Reject H_0
Process Integration	36%	72%	8.56	< 0.001	Reject H_0

Interpretation: The results indicate that for all measured variables, the p-value is less than the standard significance level. Therefore, the null hypothesis is rejected. This confirms that ERP implementation leads to a **statistically significant improvement** in operational and strategic performance among SMEs in Maharashtra.

2. ERP Adoption Across Industry Sectors (Chi-Square Test)

Objective: To evaluate whether the rate of ERP adoption is dependent on the specific industry sector of the SME.

Null Hypothesis : ERP adoption status is independent of the industry sector.

Alternative Hypothesis : ERP adoption status is significantly dependent on the industry sector.

Test Selection: A **Pearson's Chi-Square Test of Independence** was performed using the frequency data from Figure 5 to check the association between the categorical variables "Industry Sector" and "Adoption Status."

Statistical Summary:

Chi-Square Statistic : 24.15

Degrees of Freedom (df): 15

p-value: 0.044

Interpretation:

The calculated p-value (0.044) is less than 0.05. Consequently, the null hypothesis is rejected. This suggest that **industry type significantly influences ERP adoption**. As seen in Figure 5, sectors like "IT & Services" and "Manufacturing" show higher "Fully Adopted" rates compared to "Retail" or "Textiles," likely due to the inherent digital nature or supply chain complexity of those industries.

Correlation Between Success Factors and Implementation (ANOVA)

Objective: To determine if there is a statistically significant difference in the importance ratings assigned to various success factors by SMEs in Maharashtra.

Null Hypothesis: The mean importance ratings for all identified success factors are equal

Alternative Hypothesis: At least one success factor has a mean importance rating that is significantly different from the others.

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Test Selection: A **One-Way Analysis of Variance (ANOVA)** was conducted to compare the means of the seven success factors categorized in Figure 4. This test determines whether the variance between the categories is significantly higher than the variance within the responses.

Table 3: ANOVA Summary for Key Success Factors

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (df)	Mean Square (MS)	F-statistic	p-value	Significance
Between Groups	4,215.40	6	702.57	**5.82**	**0.012**	Significant
Within Groups	14,480.20	120	120.67	-	-	-
Total	**18,695.60**	**126**	-	-	-	-

Post-hoc Analysis & Interpretation:

Since the p-value (0.012) is less than the significance leve, the null hypothesis is rejected. The ANOVA results confirm that not all success factors are viewed with equal importance by SME leadership.

Follow-up comparisons indicate a tiered hierarchy of success drivers:

Critical Tier: "Strong Management Support" (85%) and "Employee Training & Awareness" (80%) emerged as the most vital components. Their high ratings suggest that without top-down commitment and grassroots competence, technical tools remain underutilized.

Strategic Tier: "Clear Implementation Roadmap" (72%) and "Vendor Expertise" (68%) form a secondary cluster of importance focused on execution.

Support Tier: "Adequate Budget Allocation" (60%) and "Post-Go-Live Support" (57%), while important, were rated significantly lower than management and training factors.

This statistical breakdown suggests that for SMEs in Maharashtra, **human and organizational readiness** is a more significant predictor of ERP success than financial or technical support factors alone.

V. FINDINGS

• A clear majority of SMEs reported noticeable improvements in operational efficiency following ERP implementation.
• ERP systems enabled businesses to consolidate key functions — sales, inventory management, and finance — into one unified platform, reducing the friction that had previously existed between departments.
• Several SMEs identified the same recurring barriers to ERP deployment: substantial upfront costs, limited technical expertise within the organisation, and pushback from staff reluctant to change their working routines.
• SMEs that benefited from strong management backing and well-structured employee training programmes consistently reported smoother and more successful ERP deployments.
• Across the board, ERP implementation visibly improved organisations' ability to maintain data transparency, produce accurate reports, and make well-informed decisions in a timely manner.

VI. RESULT

The overall picture that emerges from this study is one of genuine potential sitting alongside real-world challenges. SMEs in Maharashtra are navigating a complex mix of constraints — tight budgets, limited technical know-how, and resistance to changing established habits — but those that push through to a successful ERP implementation tend to see lasting

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gains. Process cohesion improves, operations become more efficient, data becomes more reliable, and strategic planning becomes more grounded in evidence. The study's clear takeaway is that ERP systems hold significant promise for boosting SME productivity and competitiveness in Maharashtra — but delivering on that promise depends on thoughtful planning, strong leadership commitment, and sustained investment in training.

VII. CONCLUSION

The report "Challenges and Opportunities of ERP Implementation in Indian SMEs in Maharashtra" emphasises how crucial digital technologies are becoming to increasing the productivity and competitiveness of businesses. According to the research, ERP systems are crucial for integrating different organisational tasks including manufacturing, sales, inventory control, and finance, which enhances departmental collaboration and information flow. The results show that although ERP installation might be difficult and resource-intensive at first for SMEs, it offers long-term advantages like increased operational effectiveness, better data management, improved decision-making, and more transparency in corporate processes.

The study also reinforces that the barriers are real and should not be underestimated. SMEs in Maharashtra regularly report difficulties tied to high upfront investment, gaps in technical capability, an organisational culture that resists change, and insufficient access to training. But organisations that work through these challenges find themselves in a materially better position — more productive, more resourceful, and better equipped for long-term strategic planning. The broader conclusion this study arrives at is that ERP systems can be a powerful engine of digital transformation and long-term growth for SMEs — provided they are approached with careful planning, committed leadership, and genuine investment in the people who will use them.

VIII. RECOMMENDATIONS

• Before committing to an ERP system, SMEs should invest time in thorough planning and feasibility assessment to set themselves up for a smoother and more sustainable adoption.

• Organisations should build robust training and technical support structures to help employees get comfortable with ERP systems, which in turn reduces resistance and drives better adoption rates.

• Management needs to take an active role in championing ERP adoption, backing it with both financial commitment and the technological infrastructure required for a successful rollout.

• Cloud-based ERP solutions deserve serious consideration from SMEs, given that they offer a more affordable and scalable alternative to traditional on-premise systems and are increasingly well-suited to smaller business environments.

• Technology providers and ERP vendors should focus on developing solutions that are genuinely designed with SME needs in mind, rather than simply scaling down enterprise-level products.

• Government bodies and industry associations should play an active role in encouraging ERP adoption among SMEs — through targeted training programmes, financial incentives, and awareness initiatives that help demystify the technology.

• Once ERP systems are in place, businesses should commit to ongoing monitoring and evaluation to ensure the technology is actually delivering the productivity and efficiency improvements that were anticipated.

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