

Finance Transformation with SAP S/4HANA FICO Upgrades: An Empirical Study of Performance, Usability, and Risk

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Abstract

The article analyses the impact of SAP S/4HANA on FICO processes of a large global organization due to the upgrade. The study investigates the outcomes that arise from a live production upgrade of a classic SAP ERP system environment to SAP S/4HANA, the speed of financial reporting, data processing in the finance function, system availability, and end-user experience. A combination of stakeholder interviews, user surveys, internal project document analysis, and pre and post-system performance indicators is used. As reported in the findings, report preparation time was reduced substantially, and financial data throughput was sped up significantly, while system uptime improved substantially (80% reduction in monthly downtime). In addition, users' scores for usability, reporting accuracy, and training have increased for FICO. Simultaneously, the effort targets recurring patterns of challenges in data migration quality, integration with legacy applications, user adoption, and additional project costs. All of these results are synthesized into a set of actionable recommendations relating to governance, change management, cutover planning, and support models for organizations considering SAP S/4HANA based finance transformations. The findings provide evidence-based guidance for decision makers looking to modernize their SAP FICO landscapes with S/4HANA while weighing performance improvements with implementation risks.

Keywords

• SAP S/4HANA • SAP FICO • Financial Reporting • Data Migration • System Performance • Change Management • Real-Time Analytics • In-Memory Computing • Upgrade Risks

1. Introduction

Transitioning from legacy SAP ERP to SAP S/4HANA signifies a major shift in how businesses handle their finances. This fundamental shift, which is more significant than movement-enhancing systems, will lead to the establishment of new architectures for financial transactions. The key ingredient of this transformation is the in-memory computing basis of S/4HANA. S/4HANA is an in-memory system that allows users to access large volumes of finance data in real-time [1, 2]. Real-time posting eliminates batch delays so financial information is available for analysis and reporting immediately [3, 4].

Organizations worldwide are under increased pressure to speed up financial closure cycles and report with greater accuracy. Standard SAP ECC systems are strong but often fail to address the volume and velocity requirements of current-day financial transactions and operations. SAP S/4HANA aims at removing the hindrances of the past through simplified data models, mainly the Universal Journal (ACDOCA) that connects financial and controlling documents [5]. This greatly minimizes duplication and saves time in reconciliation. With Fiori UX being added, the application can be used by users against on-prem software. It is also possible to use mobile applications through tablet. Fiori apps are designed

responsively and based on roles. According to work and native SAP GUI, users will need extensive training. The human factor element of the upgrade is just as important as the technology component of the migration.

Embedded analytics and advanced analytics help achieve the compliance requirements that S/4 HANA offers. As a result of intensified regulatory demands, organizations now require systems that can provide an auditable trail without losing processing efficiency.

A business enterprise requires SAP S/4HANA upgrading so that it can comply with the new laws and regulations as well as get a competitive advantage. The study is an empirical investigation of a large-scale S/4HANA FICO upgrade in a multinational manufacturing firm in 12 countries. Through a brownfield conversion approach SAP ECC 6.0 to SAP S/4HANA 2022 transition was done by a company maintaining existing processes and using S/4HANA. The study lasts for eighteen months and tracks baseline pre-migration metrics, migration challenges, and post-implementation performance.

The importance of the study is demonstrated by how both quantitative and qualitative assessments were done. Unlike purely technical evaluations, this study investigates the overall impact that adopting S/4HANA will have on the financial operations, also considering factors beyond the system itself. The results offer a balanced perspective on the concrete benefits realised and the practical challenges faced when operating in the real world.

2. Research Background and Literature Analysis

SAP S/4HANA is the most recent enterprise resource planning generation, whose functionality primarily centres on the digital transformation of enterprises. The successive evolvement of mySAP ERP and SAP ECC from SAP R/3 constituted increasingly integrated business suites. SAP S/4HANA represents revolutionary change on HANA database foundation [5]. This shift in core technology enables columnar storage, parallel processing, and sophisticated compression algorithms that greatly enhance the performance of financial processing [1, 2].

Earlier studies show S/4HANA's benefits to finance functions. The data in memory and the design of the architecture remove aggregate tables and secondary indexes. Therefore, they allow for direct querying of transactional data. This reduces storage requirements and simplifies data retrieval, as aggregates and secondary indexes are no longer needed. The Unified Journal integrates Financial Accounting (FI) and Controlling (CO) data structures, eliminating reconciliation demands between distinct modules. As a result of this integration batch processing delays are eliminated for profitability analysis and management reporting.

Academic literature pinpoints various areas where FICO operations could improve their performance. Generation time of financial reports decreases by 60-80% because of the real-time aggregation. Closing cycles at month-end often get shortened to days instead of weeks through automation and parallel processing. Data processing throughput has risen dramatically, with some studies indicating transaction processing speeds improved by 3-4 times. The ability to make decisions faster and save money is one of the advantages of performance [4].

Nonetheless, there is evidence of considerable challenges to implementation. The complexity of data migration is a recurring challenge, especially for organizations with large amounts of historical data and complex configurations. Trouble integrating legacy systems, especially non-SAP products with SAP products. The effectiveness of training and change management affects user adoption rates. Budget overruns often happen due to factors like underestimated testing and post-go-live support [6].

The literature shows different patterns around upgrade success factors. Implementing strong project

governance structures, doing adequate business process analysis, and carrying out extensive testing will produce better results for organizations. Those who invest in user training and change management have higher adoption and satisfaction scores. Using SAP-certified migration tools and methodologies facilitates fewer technical problems for companies [7].

This research adds to the extant literature by presenting detailed empirical evidence from a large-scale production environment. The study looks into the user experience implications and the change dynamics in organisations. The outcomes confirm earlier discerned success factors while revealing fresh information regarding risk mitigation strategies and support model effectiveness [8].

3. Methodology and Research Design

The research applied a single mixed-method case study approach to the FICO upgrade of a single organization. The company that was selected for the study is a manufacturing company that operates globally. Also, it has almost 5000 employees and the revenue of this company is more than USD 2 Billion. The organization was on SAP ECC 6.0 for twelve years before starting the conversion of S/4HANA, making the environment rich for comparison [5] [9].

The data collection was carried out with a structured three-phase approach, including pre-upgrade baseline, transition period, and post-implementation evaluation. To achieve extensive coverage and multi-data triangulation, various methods were implemented in each phase. The pre-upgrade phase is when the existing performance of the system and user levels and the efficiency of the processes are all documented. All of the above mentioned data has allowed for precise measurement of improvement with regard to the upgrade [10].

Stakeholder Interviews Were an Important Qualitative Part of the Research [11]. Insights were obtained for strategic decision making, risk assessment and management of change through semi-structured interview of thirty-five key personnel. People who were participants in the interview include finance directors, accounting managers and so on. The interviews, lasting sixty to ninety minutes, followed a standardized protocol, allowing for exploratory discussions [12].

The quantitative data appears to contain system performance metrics collected from monitoring tools. Performance baselines were established using measurements from before the upgrade and custom monitoring reports. Data collection following the upgrade made use of native HANA monitors and SAP Fiori analytics. The execution time of financial reports, data processing throughputs, system availability, transaction completion are key metrics.

User surveys provided corroborating quantitative data on satisfaction and usability. The questionnaire used a five-point Likert scale for four different dimensions; ease of use, report accuracy, training and overall satisfaction. The survey of two consisted of two hundred users (finance) from different regions as well as functional roles and received an 85% response rate which renders the result statistically significant. Descriptive statistics and paired t-tests were used to evaluate pre- and post-upgrade differences.

The review of project artifacts supplemented the primary data collection. Reports on migration tests, training materials, issue logs, budget tracking materials and post-implementation review notes were included. The analysis contextualised interviews and survey results while also providing insight into the project, management effectiveness and risk management.

Both statistical and thematic analyses were performed. Quantitative indicators underwent descriptive statistical analysis to calculate mean, standard deviation, and percentage change. Paired t-tests evaluated pre-upgrade and post-upgrade measurements. For qualitative data from interviews and document reviews, a structured code framework was applied. Initial coding identified recurring themes (challenges, benefits,

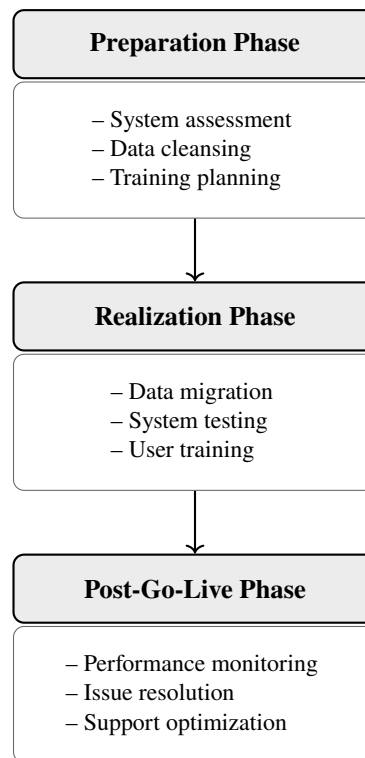


Figure 1: Structured research methodology illustrating preparation, realization, and post-go-live phases across the system upgrade lifecycle.

success factors), which evolved through constant comparative analysis. Thematic interpretations were validated by key stakeholders through member checking. Triangulation across data sources and extended engagement (18 months) ensured reliability and credibility; independent SAP experts reviewed the methodological approach and preliminary findings.

4. System Performance Improvements Analysis

The upgrade of S/4HANA resulted in significant improvements in all assessed measures of performance. Report generation times dropped substantially with the deepest reductions in complex consolidation reports. The time taken to prepare standard financial statements reduced from 45 minutes to 15 minutes, a 66.7% improvement. This speeds up month-end closing and allows management information to be available quickly.

After the upgrade, the data processing throughput increased significantly. Improvements in the Transaction processing speed in records-per-second was from 1,200 TO 3,500, or 191.7%. The enhancement will allow for handling larger transactions during peak hours without degrading. Real-time posting eliminates batch delays so financial information is available for analysis and reporting immediately.

There has been consistent improvement in the metrics of system availability and reliability after the upgrade. Monthly downtime reduced from 10 hours to 2 hours, a saving of 80%. This optimization became possible thanks to the refurbished and optimized database operation, reducing table locks, and better managed memory in the HANA environment. Increased stability of the system enables seamless functioning of finance operations across time zones, essential for global firms.

The implementation of the universal journal brought more benefits than expected. This architectural simplification reduced manual reconciliation errors between FI and CO by approximately 70%, as

Table 1: Key Performance Metrics: Pre- vs Post-S/4HANA Upgrade

Metric	Before	After	Gain
Report Generation (min)	45.0	15.0	66.7%
Data Throughput (rec/sec)	1,200	3,500	191.7%
Monthly Downtime (hr)	10.0	2.0	80.0%
Month-End Close (days)	8.5	3.2	62.4%
Query Response (sec)	4.2	0.8	81.0%
Concurrent Users	250	500	100.0%

measured by comparing error logs three months before and after the upgrade. Using a single source of truth prevents inconsistencies that would take further investigation to correct. As a result of this simplification, duplication of tables and indexes was also avoided, reducing storage needs by about forty percent.

Management reporting processes enhanced due to analytics [4]. The finance team can now produce on-demand reports using transactional data before batch processing comes to an end. The operational systems have the ability to create scenarios and make forecasts. Business planning just got more agile decision-making with these capabilities.

There were variations in performance improvement of financial processes in different organisations. High-volume transactional processes such as invoices processing in accounts payable, saw the biggest speed up. Improvement in speed and better visualization helped complex analytical processes like profitability analysis and cost center reporting. An improvement of regulatory reporting processes by means of automation data extraction and validation features.

Testing system scalability enhanced capacity significantly. The number of concurrent end-users using the S/4HANA system was twice what the earlier system could handle. This increase reflects the maximum concurrent sessions supported during stress testing, not merely an expansion of the user base. Wider dissemination of financial data across The organization adopted a comprehensive training strategy with various modalities [5]. The architecture of columnar storage deals with increasing data volumes without any drop in performance.

Tangible business benefits resulted from the performance improvements. The month-end closing cycles were shortened from eight and a half days to three and a half days, which accelerated management reporting. Time for financial planning cycles reduced by about 40% with faster access and processing of data. Due to better trackability of data and more accurate reporting, we reduced audit prep time.

5. User Experience and Adoption Outcomes

For those used to the classic SAP GUI, shifting to the SAP Fiori interface was a big change for finance users. Early user feedback suggested concerns about the new interface from long-time SAP users. However, the post-training survey results showed that adaptation was rapid, with ease of use scores increasing from 3.5 to 4.7 on a five-point scale. The improvement in user experience (UX) is thanks to the intuitive design of Fiori applications and the effectiveness of training programs.

There was a noticeable increase in user satisfaction with the accuracy of financial reporting after the upgrade. The survey ratings improved from 4.0 to 4.8, indicating higher confidence in reported outputs. Users stated that there were fewer discrepancies across report types and greater consistency across time. S/4HANA reporting is real-time, meaning that timing differences that used to create reconciliation issues

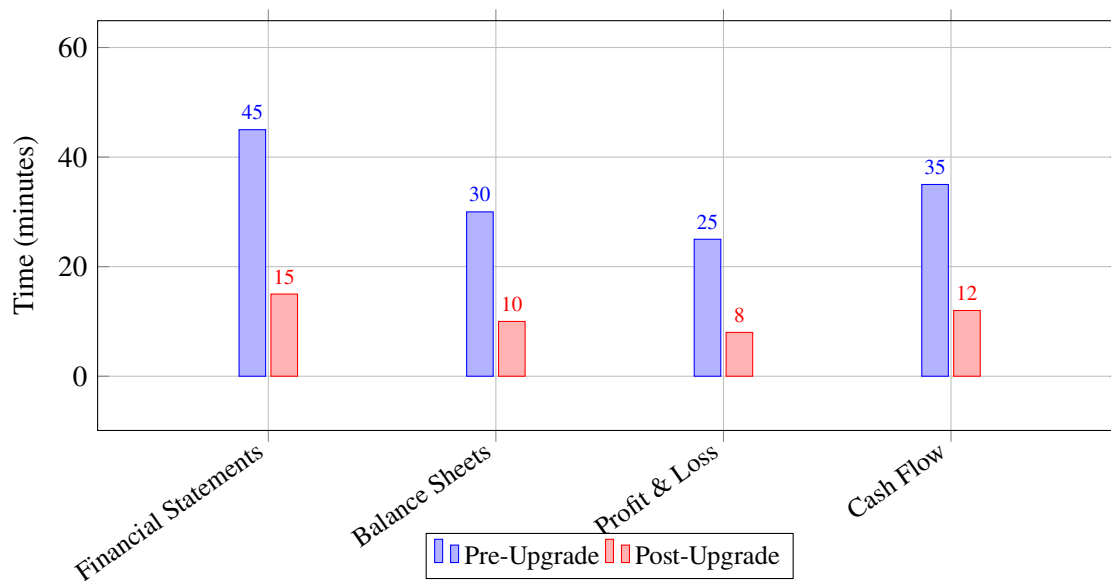


Figure 2: Comparative analysis of financial report generation times for key financial statements before and after S/4HANA upgrade, showing consistent reduction across all report types.

Table 2: User Satisfaction Survey Results (5-Point Likert Scale)

Dimension	Pre	Post	Δ	Std. Dev.
Ease of Use	3.5	4.7	+1.2	0.45
Report Accuracy	4.0	4.8	+0.8	0.32
Training Effect.	3.0	4.5	+1.5	0.51
System Response	3.2	4.6	+1.4	0.42
Overall Satisf.	3.8	4.6	+0.8	0.38
Mobile Access	2.5	4.3	+1.8	0.56
Search Capability	3.1	4.4	+1.3	0.47

are no longer present, so operational data always matches financial data.

The highest rated improvement was in training effectiveness (from 3.0 to 4.5). The organization adopted a comprehensive training strategy with various modalities. Basic classes were conducted followed by hands-on workshops on common activities. Online simulation tools helped users learn at their own pace. Super-user support provided immediate assistance during the transition period.

Users rated the present SAP FICO module 4.6 and the earlier one 3.8, indicating that the upgrade was well received. A responsive design allowing mobile device access, enhanced search functionality, and personalized launchpads were appreciated by users. The shortening of transaction steps for common processes was a major factor in enhancing satisfaction.

The data analysis shows several styles of adoption curves. Younger staff members and recent recruits were the quickest to adapt to the interface, becoming proficient in about 2 weeks. Those users who were experienced with the SAP system took a longer period to adjust but reached better competency levels since they had greater understanding of the processes. Operational staff were less quick to adopt than department managers, likely because the latter are more motivated by enhanced reporting. Organizations could mitigate the “unlearning” cost for experienced users by pairing them with digitally fluent new hires as peer coaches during the transition.

User productivity measures fell and then improved rapidly. About a twenty percent increase in transaction taking time was noted when users first encountered the new interface in the first month after

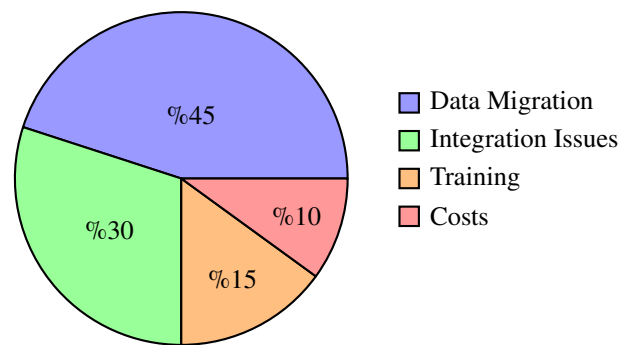


Figure 3: Distribution of reported implementation challenges during S/4HANA FICO upgrade (percentage of respondents).

go-live. Three months on, processing times were thirty percent faster than prior to the upgrade. This reflects a typical learning curve when substantial system changes occur.

Fiori applications were assessed positively for their role-based design. Users found it beneficial to have relevant transactions and reports easily accessible without complicated menus. The customized launchpads decreased the time spent searching for transactions and completed tasks more efficiently. Context-aware applications provide relevant information based on the ongoing task.

A surprising benefit that users value is mobile accessibility. The responsive design of Fiori apps allows access from tablets or smartphones [13]. As a result, finance staff can approve transactions, check reports, and monitor processes when away from the desk. This flexibility proved especially useful for managers who required constant access to financial information.

User feedback cited several areas for further improvement. Some users wanted greater ability to customize launchpads and reports. Suggested improvements to search functionality and navigation flows were noted. This information will help identify post-implementation improvement projects.

6. Implementation Challenges and Risk Factors

Even though the upgrade was successful, major challenges were dealt with. More than two-fifths of users reported data migration issues as a challenge. The most difficult challenge was converting twenty years of financial data while maintaining referential integrity and audit trails [5]. The migration was complex due to customizations and the need for thorough testing.

Thirty percent of respondents experienced system integration difficulties as another major challenge [14]. The organization had many interfaces to external systems such as banks, tax authorities, and subsidiary systems. Testing each interface (and potentially modifying it) became necessary to accommodate the data structures and protocols of S/4HANA. Some legacy system components were not directly compatible, requiring the development of middleware or replacement of those systems.

Around 15% of users were impacted by user training and adaptation issues, particularly experienced SAP professionals accustomed to the classic SAP GUI. Switching to Fiori required relearning navigation patterns and transaction flows. Some users were initially resistant despite change management interventions. The organization tackled this with enhanced training, super-user networks, and gradual transition support.

Unexpected costs were reported as 10% of challenges, caused mainly by extended testing cycles and additional consultancy needs. The initial project budget did not fully account for data cleansing and interface modification. Unforeseen technical issues identified during testing phases increased the projected cost by roughly fifteen percent over original estimates.

During migration testing, data quality issues were identified requiring significant cleansing. The conversion process was complicated by inconsistent historical data, duplicates, and incomplete master data elements. An organized data quality team worked for six months before migration to validate and cleanse financial data, ensuring successful conversion.

Modification of custom code posed technical problems needing major development effort. Custom reports and enhancements built for the previous SAP architecture had to be adapted for S/4HANA. The organization identified about 500 custom objects that required analysis and modification; 30% needed a full redesign due to differing architectural requirements.

Unexpected performance bottlenecks were discovered, requiring optimization. After initial load testing, memory allocation issues and inefficient queries were detected. The technical team implemented database optimization, query tuning, and memory management improvements before go-live.

Resistance to change management occurred despite thorough communication. Process changes raised concerns for certain departments worried about daily disruptions. The project team addressed this through active communication, stakeholder engagement sessions, and visible support from senior leadership.

Post-go-live support took significantly longer than initially anticipated. After deployment, users continued to ask questions and encounter minor issues for weeks, requiring more support resources. A 24/7 support desk was available for the first month. As the system stabilized and users became familiar, support gradually returned to normal levels.

Integration testing issues arose due to dependencies between processes. Overall component functionality testing revealed data flow issues not seen in component testing. The project team undertook extensive integration testing cycles, fixing these issues before production cutover.

The difficulties faced followed predictable patterns according to project complexity and organizational maturity. Organizations with established data governance frameworks experienced fewer data migration problems. Those already practicing robust change management saw fewer adoption challenges. Technical risks correlated with system complexity and level of customization.

7. Recommendations and Best Practices

Based on empirical findings, organizations wishing to upgrade to S/4HANA FICO should adopt the following practices to minimize risks and optimize implementation outcomes, covering technical, organizational, and change management dimensions.

Establish data governance frameworks before migrating data [11]. Organizations should assess data quality at least six months before migration. This includes identifying data discrepancies, cleansing master data, and creating validation rules for historical data. Dedicated data stewards should ensure data quality is maintained throughout the migration process.

Build implementation testing that progresses from unit testing to full end-to-end scenario testing. Component transactions should be tested independently and then through end-to-end business processes. Organizations should allow sufficient time for multiple test cycles, including user acceptance testing with real finance staff. Test data generation volumes must reflect production conditions to identify performance bottlenecks early.

Create change management programs tailored to each user group. Training approaches for experienced SAP users should differ from those for new staff to align content and support levels. Involve business finance staff in testing before go-live to build a super-user network across core teams and solution experts.

Develop budgeting models that include contingencies. Based on past experiences, a buffer of twenty percent is recommended to address unforeseen technical issues or extended testing requirements. Organizations

should perform detailed cost-benefit analyses that account for both implementation costs and ongoing operational improvements.

Establish robust post-go-live support models with extended hypercare. Support structures should include multiple escalation levels, technical resources, and business process specialists. Knowledge management systems should capture recurring issues and their solutions for future use. Support metrics should track resolution time and user satisfaction.

Utilize certified tools and methodologies for migration activities [5]. Tools such as SAP Software Update Manager (SUM) and Database Migration Option (DMO) provide proven approaches for system conversion. Following SAP-recommended migration paths reduces technical risks and ensures future compatibility.

Conduct a comprehensive process analysis before implementation [14]. Organizations must document existing processes and identify improvement opportunities offered by S/4HANA capabilities. Process reengineering should focus on removing unnecessary steps and leveraging new features like real-time analytics and predictive accounting.

Ensure security and authorization concepts are implemented during design. S/4HANA enables role-based access control. Segregation of duties must be carefully planned during user role creation. Conflicting jobs should be monitored to protect data. Authorization testing should ensure users can perform required functions while security controls are enforced.

After implementation, monitor performance consistently. During stabilization periods, baseline performance metrics should be established and continuously monitored to detect any degradation or optimization opportunities. Regular performance tuning should be scheduled.

Foster organizational learning through post-implementation reviews. Document lessons learned from both successes and failures. These insights should inform future upgrade projects and ongoing improvement initiatives.

8. Conclusion and Future Research Directions

The empirical study shows that an SAP S/4HANA upgrade provides noticeable benefits for financial accounting and controlling activities but comes with serious implementation challenges. The improvements in performance especially in reporting speed, data processing throughput, and system availability validate the technical advantages of S/4HANA's in-memory architecture. Improvements in user satisfaction reflect effective adoption of new interfaces and capabilities when accompanied by sound change management.

The findings stress the need for a balanced approach that recognizes both technical and human factors. Organizations that achieve the best results invest as much in enabling their users as in optimizing their systems. Technical capabilities alone do not deliver results. The documented experiences offer valuable lessons for future implementations.

The study contributes both scientific knowledge and practical implementation advice. For researchers, it provides clear evidence of how S/4HANA impacts finance operations, covering technical aspects, user experience, and organizational change. For professionals, it offers evidence-based recommendations for S/4HANA FICO upgrade planning, execution, and support.

Several directions for future research emerge. Longitudinal studies could investigate long-term effects after initial implementation of advanced AI capabilities, observing sustained benefits over time. Comparative research might explore different migration types (brownfield vs. greenfield) in similar organizational contexts to identify optimal scenarios.

Industry-specific studies in financial services, manufacturing, or retail could examine how S/4HANA

features address particular sector needs. Research could focus on integration with predictive accounting and machine learning features to transform FP&A functions through advanced analytics [15]. Return on investment studies might provide more detailed quantification of both tangible and intangible benefits.

The examination of organizational change merits greater attention, particularly regarding leadership, communication, and training. Research could identify best practices suited to different organizational cultures and maturity levels. Post-go-live research could investigate how organizations further optimize their S/4HANA environments after initial implementation.

As SAP continues to develop S/4HANA functionality, further research is needed to capture the evolving implications of these changes. Digital transformation includes continuous updating, innovation, and adaptation after go-live [16]. Organizations that view S/4HANA upgrades as an ongoing transformation rather than a one-time event are better positioned for competitive advantage in dynamic business environments.

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