

THE IMPACT OF SAP ERP ON QUANTITY SURVEYING BEST PRACTICE WITHIN COST AND COMMERCIAL MANAGEMENT: A UK CASE STUDY

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ABSTRACT

Digitalisation has transformed data management in the construction industry, with Enterprise Resource Planning (ERP) systems increasingly adopted to consolidate core business functions and support real-time, data-driven decision-making. Despite growing expectations from professional bodies such as the Royal Institution of Chartered Surveyors (RICS) that Quantity Surveyors engage with digital tools, a significant gap exists in understanding how ERP systems specifically impact Quantity Surveying (QS) practice. This study addresses that gap by evaluating QS professionals' perceptions of SAP ERP and its influence on best practice within cost and commercial management. A qualitative case study approach was adopted, using semi-structured interviews with six Quantity Surveyors at a UK-based tier one contractor with experience of both pre- and post-SAP implementation. Thematic analysis of the interview data revealed that SAP significantly improved data accessibility, automation, and workload management. However, considerable data integrity issues, stemming from inadequate SAP and commercial awareness amongst non-commercial teams and insufficient leadership support during implementation, were found to undermine these benefits. The findings suggest that SAP's effectiveness is determined more by organisational competence and leadership than by technical capability. Recommendations include piloting implementation on smaller projects, involving commercial teams in data governance, and delivering targeted training across all business functions to ensure technical and cultural readiness prior to adoption.

Keywords: *Commercial Management; Cost Control; Digital Transformation; Enterprise Resource Planning; Quantity Surveying.*

1.0 INTRODUCTION

The construction industry is a significant contributor to global economic activity, relying on effective stakeholder collaboration to ensure successful project delivery (Cucos & Turcan,

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2025). Projects frequently operate under substantial financial pressures and short timeframes, and the industry's increasing technical complexity demands that organisations capitalise on all available tools to maximise value, reduce risk, and enhance efficiency (Tambwe et al., 2023; Walker & Wilkie, 2002).

Digitalisation continues to reshape working practices across industries, driving productivity, innovation, and seamless collaboration (Namhla Xholo et al., 2025). Within construction, tools such as Building Information Modelling (BIM) have transformed how projects are planned, built, and managed to the extent that the UK Government mandated its use on public infrastructure projects from 2016 (UK Government, 2015). This digital trajectory has extended to how Quantity Surveyors deliver cost and commercial management, defined by Babatunde et al. (2019) as the systematic process of planning, estimating, controlling, monitoring, and reporting project costs throughout a project's lifecycle.

Enterprise Resource Planning (ERP) systems have become central to this transformation. By integrating core business functions such as finance, procurement, and supply chain into a single platform, ERP systems enable real-time, data-driven workflows that are widely reported to benefit commercial performance (Beena, 2013; Parthasarthy, 2007). SAP (Systems, Applications, and Products in Data Processing), developed by SAP SE, is one of the most widely deployed ERP solutions in the construction sector and is recognised as a driving force in the digital transformation associated with the Fourth Industrial Revolution (4IR) (Shaik, 2023).

Despite growing body of literature on ERP at the organisational level, there is a notable gap in research examining its specific impact on Quantity Surveying (QS) practice. Whilst Wang et al. (2024) identify ERP as a primary driver of the changing digital landscape influencing QS roles, no study has systematically evaluated how SAP ERP shapes the competencies, responsibilities, and working practices of QS professionals within cost and commercial management. Professional bodies such as the RICS (2017) and the International Federation of Surveyors (FIG, 2025) increasingly expect QS professionals to leverage digital tools. However, how systems like SAP ERP shape their roles, competencies, and working practices remains underexplored. This paper addresses this gap through a qualitative case study of SAP ERP implementation at a UK-based tier one contractor.

The aim of this research is to evaluate quantity surveyors' perceptions of SAP ERP and its impact on best practice within cost and commercial management. The specific objectives are to determine SAP's role and purpose in cost and commercial management, evaluate its influence on key QS functions such as cost control, valuations, and financial reporting, assess improvements in data efficiency, accuracy, and transparency, identify challenges and limitations faced by QS professionals and recommend the best leverage for SAP to enhance QS best practice.

2.0 LITERATURE REVIEW

2.1 Defining Best Practice in Quantity Surveying

Before examining the role of ERP systems, it is important to establish how best practice is interpreted within this study. QS best practice refers to the ability of practitioners to act as financial controllers, demonstrating proficiency in cost planning, cost control, and commercial risk management to ensure that projects are delivered on time and within budget (Crafford, 2017; Dada & Jagboro, 2015). The RICS (2017) and FIG (2025) increasingly expect QS professionals to engage with digital technologies as a component of this best practice, arguing that the future trajectory of the profession will be shaped by practitioners' proficiency in digital systems. This study therefore evaluates SAP ERP's influence specifically in relation to these established QS competencies and responsibilities.

2.2 ERP Systems in Construction

ERP systems are integrated software platforms that automate and standardise data collection across core business functions, enabling organisations to operate from a single, unified dataset that supports real-time, data-driven decision-making (Grabski et al., 2009; Robert Jacobs & Weston, 2006). Introduced in the 1990s, ERP systems have undergone considerable evolution and adoption, with Boutrous et al. (2024) noting a rapid uptake since 2019 as organisations recognise their strategic value. Radman et al. (2025) emphasise that construction projects are increasingly dependent on analysing vast amounts of data within short timeframes, and that fragmented, manual data acquisition frequently hinders this process, leading to delays and cost overruns. Moselhi et al. (2020) further found that manual data acquisition led to inefficient management of operations, particularly when data was inaccurate or communications were delayed, creating conditions for misinformed decision-making and inadequate risk allowances.

SAP ERP, as the market-leading solution in this category, has been specifically identified as a prominent and pioneering force in driving the digital transformation of 4IR within the construction industry (Shaik, 2023; Okungbowa, 2015). Unlike generic ERP studies, SAP-specific research by Jayamaha et al. (2023) and Boutrous et al. (2024) confirms that SAP's integration architecture is particularly suited to organisations managing complex, multi-project portfolios, a characteristic of tier one contractors. Automated data acquisition offered through SAP presents a significant opportunity for QS professionals, not only by reducing time spent on labour-intensive reporting tasks but by enabling a more proactive approach to commercial and risk management. This proactive management has been consistently associated with risk avoidance and continuous improvement (Meng, 2019), suggesting that strategic ERP deployment could substantially advance QS best practice.

2.3 Data Integrity and Commercial Advantage

Automated data acquisition is only part of the solution. The integrity of the underlying data is equally critical. Jayamaha et al. (2023) identified inaccurate data as a major challenge in construction cost management, demonstrating how ERP systems can mitigate this through a unified database that reduces duplication errors and inconsistencies. Data integrity underpins organisational agility, enabling timely decisions based on reliable information, a competitive

advantage in an industry where competitive tendering demands accurate risk assessment (Kim & Reinschmidt, 2011; Sarah & Probohudono, 2024).

Despite these benefits, ERP adoption in the construction industry remains challenging. Boutrous et al. (2024) observed a rapid uptake in ERP use since 2019, yet consistent evidence identifies leadership-related barriers as the primary impediment. Abu-Khader (2023) found insufficient leadership support to be the highest-ranking barrier to digital transformation in construction, while Zulu et al. (2023) noted that resistance to change and limited recognition of digital benefits significantly undermine adoption efforts. Such findings suggest that successful ERP implementation is as much a cultural and organisational challenge as a technological one.

2.3 Impact on Quantity Surveying

The RICS (2017) and FIG (2025) highlight an increasing expectation that QS professionals engage with digital technologies to support best practice, defined as the ability to act as financial controllers, demonstrating proficiency in cost planning and control to ensure projects are delivered on time and within budget (Crafford, 2017; Dada & Jagboro, 2015). Wang et al. (2024) found that ERP systems are a primary driver of the rapidly changing digital landscape influencing QS practice. However, the specific impact of ERP on QS roles, skillsets, and working practices remains inadequately researched.

This gap is particularly significant given the QS skill shortage in the UK construction industry, attributed in part to high workloads, time pressure, and rapid technological change (Powell & Shibeika, 2025). Whilst digitalisation is associated with improved workplace well-being and productivity (Barta & Halder, 2024), conflicting evidence suggests that complex or poorly implemented technology can exacerbate occupational stress through 'technostress' (Becker et al., 2021). ERP systems require full user engagement to be effective, making poor implementation not just a technical failure but a workforce risk.

2.4 Critical Synthesis and Research Gap

Table 1 synthesises the key themes, findings, and gaps from the reviewed literature, illustrating how this study responds to the identified shortcomings.

Table 1. Critical synthesis of the literature

Theme	Key Finding	Source(s)	Gap Addressed by this Study
ERP systems in construction	ERP systems automate data, reduce manual error, and support real-time decision-making	Grabski et al. (2009); Radman et al. (2025)	No SAP-specific evaluation of QS commercial practice
SAP ERP specifically	SAP is the leading ERP solution in construction, driving 4IR transformation	Shaik (2023); Jayamaha et al. (2023)	Limited QS-focused SAP research

Data integrity	Inaccurate data is a major construction risk; ERP can mitigate through unified datasets	Jayamaha et al. (2023); Sarah & Probohudono (2024)	Lack of practitioner evidence on data integrity in SAP use
Leadership & culture	Insufficient leadership support is the primary barrier to ERP adoption	Abu-Khader (2023); Zulu et al. (2023)	Limited insight into how leadership failures manifest in QS practice
QS best practice & skills	RICS/FIG expect digital proficiency; skill shortages risk being worsened by poor tech adoption	RICS (2017); Powell & Shibeika (2025)	No empirical study of SAP's impact on QS competencies and workload

The synthesis reveals that whilst the organisational benefits of ERP are well-documented, the specific impact of SAP ERP on QS competencies, responsibilities, and working practices within cost and commercial management remains a significant and unaddressed gap. This study directly addresses this gap through primary empirical research with practising QS professionals.

3.0 METHODOLOGY

A qualitative, interpretivist research approach was adopted to explore the lived experiences and perceptions of QS professionals with SAP ERP (Braun & Clarke, 2006; Ryan, 2018). A quantitative approach was considered but rejected on the grounds that numerically measuring personal experiences would limit the depth and complexity of participant engagement required to meet the research objectives.

A case study design was selected as the most appropriate approach (Yin, 2014; Creswell, 2013), with the unit of analysis being Contractor 1, a UK-based tier one contractor that initially implemented SAP in 2018 and significantly expanded its commercial functionality in 2023. This expansion was driven by senior leadership with the objective of improving data governance and commercial performance across the organisation's project portfolio.

Six quantity surveyors from Contractor 1 were purposively selected based on their active use of SAP in a commercial capacity and their experience of working both before and after SAP implementation. This criterion ensured that contributions were grounded in practical, comparative experience. Table 1 presents participant details.

Table 2. Research participants including role and experience

Participant	Role	Organisation	Commercial Experience (Years)	SAP Experience (Years)
1	Senior Quantity Surveyor	Contractor 1	>10	8
2	Quantity Surveyor	Contractor 1	<10	8
3	Quantity Surveyor	Contractor 1	>10	8

4	Quantity Surveyor	Contractor 1	>10	8
5	Quantity Surveyor	Contractor 1	>10	8
6	Senior Quantity Surveyor	Contractor 1	<10	8

Data were collected through semi-structured interviews. Five interviews were conducted via Microsoft Teams and one face-to-face. Interviews were scheduled for one hour but averaged 45 minutes and were digitally recorded and transcribed. Semi-structured interviews were selected as the sole data collection method because they offer the flexibility to probe participants' lived experiences in depth whilst maintaining thematic consistency across the sample (Powell & Shibeika, 2025). Fourteen open-ended questions were used to encourage in-depth discussion, covering SAP engagement, data accuracy, workload impact, challenges, and best leverage scenarios. The use of a single method was appropriate given the interpretive paradigm and the access constraints inherent in working within a single organisation; triangulation of data was achieved instead through cross-participant comparison and systematic thematic analysis.

Validity and depth were addressed through member-checking (summarising key themes back to participants during interviews), inductive thematic analysis using NVivo — which enabled systematic coding, linking, and annotation of qualitative data (Richards, 1999) — and transparent audit trails from raw data to conclusions. Codes were entirely data-driven to ensure theory emerged from participants' experiences rather than researcher preconceptions (Byrne, 2021). The study adhered to LJMU ethical standards, ensuring informed consent, anonymity, confidentiality, and the right to withdraw. All recordings were deleted following transcription.

4.0 RESULTS

The thematic analysis identified four overarching themes from participants' experiences of SAP ERP: (1) SAP engagement and role; (2) data accessibility, automation, and workload management; (3) data integrity challenges; and (4) system flexibility and best leverage. Table 3 provides a structured summary of themes, sub-themes, and representative participant evidence.

Table 3. Summary of thematic findings

Theme	Sub-theme	Key Evidence	Participant(s)
SAP Engagement & Role	Essential daily tool	SAP supports all commercial activities: valuations, CVRs, cost reporting	P1, P2, P3, P4, P5, P6
SAP Engagement & Role	Full reliance	No viable manual contingency for large projects	P2, P5, P6
Data Accessibility & Automation	Real-time access	Instant report generation; no need to manually compile data	P1, P3, P4, P5

Data Accessibility & Automation	Workload reduction	Time freed for value engineering and client engagement	P1, P6
Data Integrity	Inaccurate outputs	Cost data frequently unreliable at contract level; requires auditing	P1, P4, P5
Data Integrity	Lack of commercial awareness	Operational teams do not understand commercial data implications	P1, P3, P5
Data Integrity	Leadership failure	Inadequate buy-in and training during implementation	P1, P3, P5, P6
Flexibility & Best Leverage	Rigidity vs. standardisation	SAP less flexible than Excel but enforces necessary consistency	P5, P6
Flexibility & Best Leverage	Best contract types	Lump sum and time-and-material contracts yield greatest SAP benefit	P2, P4, P6

4.1 SAP Engagement and Role in Commercial Practice

All six participants engaged with SAP on a daily basis, reflecting its central role in commercial activities. SAP provided the commercial framework for cost reporting, Cost Value Reconciliations (CVRs), and valuations by consolidating data from across the organisation into a single platform. This level of integration was captured clearly by Participant 1: *"It supports everything. You can use it to run valuations, check costs, see invoices. Because all other departments are inputting their data into it, you know it aligns with the rest of the business."*

Participant 5 reinforced the point, describing SAP as a commercial necessity: *"We rely on SAP to get supplier invoices and cost data for month end. We can't get any of that without SAP."*

When asked about contingency measures, all participants acknowledged that returning to manual processes would be unmanageable at scale. Participant 6 was direct: *"I don't know any other ways that I could get that data as accurately as SAP gives it to me."*

4.2 Data Accessibility, Automation, and Workload Management

Participants unanimously reported that SAP had substantially improved data accessibility and workload management. Participant 3 captured this well: *"Data is accessible as and when you need it ... I can see project data straight away without having to compile reports myself. The automation helps when running reports during busy spells, particularly during month end with hard deadlines. Most of my time would be taken up just generating and checking reports without it."*

Participant 1, responsible for multiple contracts, highlighted direct commercial benefits: *"I look after a few contracts, so it does save me a lot of time not having to manually put them together, which also helps avoid any manual errors ... I can spend my time doing more important things like engaging with clients, value engineering ... this helps our bottom line."* Participant 6 echoed this strategic shift: *"Rather than trying to focus on standardising and collating, it allows me to focus on more important issues."*

4.3 Data Integrity Challenges

Despite the clear efficiency gains, all participants reported significant data integrity issues that undermined SAP's commercial effectiveness. Participant 1 was candid: *"I've found it to be inaccurate to be honest ... You need to audit what comes out ... I can spend a significant amount of time auditing and checking costs with finance and so on."*

Participant 4 described a more specific problem: *"Data is inaccurate ... There is no control over what level of detail should accompany it. I can sometimes receive costs that have no description or detail around them. Sometimes you are not able to even trace where the cost has come from, so you have to speak to the accountants."* Participant 5 was equally critical: *"It's not accurate. Maybe the total cost to the business is accurate, but it is not accurate at contract level. It is unreliable."*

4.3.1 Inadequate Commercial and SAP Awareness

The predominant source of inaccuracy was non-commercial teams, particularly site operational staff completing labour allocation sheets. Participants found that these teams lacked awareness of the commercial implications of accurate data entry. Participant 3 explained: *"It falls down due to a lack of commercial control ... There's a lot of administrative work involved to get the information right and this is just seen as more work ... Operational teams are already very busy and I'm asking them to do more things with no real benefit to them ... Not everyone gets its importance."*

Participant 1 identified a structural issue: *"Commercial teams don't have as much authority over operational people to change the way in which they work."*

4.3.2 Incohesive Leadership and Organisational Understanding

The awareness gap was attributed to leadership failings at the time of implementation. Participant 5 captured the downstream consequence: *"There are flaws in the processes of other departments ... They need to understand why everything needs to be accurate ... And we can't agree as a business what costs should go where."*

Participant 1 observed a related authority problem: *"You need the buy-in right the way through."* Participant 6 identified communication as the root: *"Poor communications between operational and commercial teams can cause data to be recorded inaccurately ... Bad data in means bad data out."*

4.4 Further Challenges and Best Leverage

Participants noted additional challenges around system flexibility. Participant 5 felt SAP was insufficiently adaptable: *"I just don't think the system is flexible ... It limits what you can put in because it has been set up to accommodate something else ... I don't think it always suits our business given that we have such variety of works and projects."* However, Participant 6 offered a contrasting view: *"SAP is more rigid than Excel. You can't change or add things as easily, but it is rigid in a way that we need to be commercially. We want everything recorded a certain way in SAP."*

On best leverage, Participant 6 was clear contract-type preferences like, *"Time and material and lump sum contracts are definitely your best use case for SAP ... There's not much of a transition period."* Participant 1 highlighted project scale: *"It is better suited to small scale projects where you know what to expect ... it needs to be adapted to each specific scenario."* Reactive Maintenance and unit rate contracts were consistently cited as the most problematic contract types due to frequent scope changes and data complexity.

5.0 DISCUSSION

5.1 SAP as an Essential Commercial Tool

The finding that all participants engaged with SAP daily and considered it an essential, rather than supplementary, commercial tool represents a significant development in QS practice. This aligns with and extends Radman et al.'s (2025) observation that construction projects are increasingly reliant on data analysis that cannot be managed through manual processes. Critically, this study provides practitioner-level evidence of how this dependence manifests in specific QS functions: CVR production, valuations, and multi-project cost reporting. The shift towards proactive, data-driven commercial management documented here is consistent with Meng's (2019) association of proactive management with risk avoidance and continuous improvement, and with Sarah and Probohudono's (2024) finding that ERP enables the agility needed to maintain competitive advantage.

5.2 Data Efficiency Gains and Workforce Implications

The data accessibility and automation benefits identified by participants align closely with the theoretical claims made for ERP systems in the literature (Beena, 2013; Parthasarthy, 2007). However, this study contributes a more granular, QS-specific account of how these benefits are realised: time savings from automated reporting were redirected towards value engineering and client engagement, higher-order commercial activities that directly improve project margins. This finding extends Barta and Halder's (2024) broader argument that digitalisation can improve professional well-being by relieving workload pressure. Specifically, it suggests that SAP's automation of administrative tasks enables QS professionals to operate more strategically, which has direct implications for addressing the skill shortage identified by Powell and Shibeika (2025): if technology genuinely reduces administrative burden without creating commensurate technostress (Becker et al., 2021), it could make the profession more attractive to new entrants.

5.3 Data Integrity: A Critical Systemic Failure

The most significant finding of this study, that widespread data integrity issues were undermining SAP's commercial effectiveness, represents a direct and important challenge to the literature's characterisation of ERP as a system that enhances data accuracy through a unified dataset (Jayamaha et al., 2023). This study demonstrates that the theoretical advantage of a single source of truth is contingent on the quality of data entering the system, which in turn depends on the commercial awareness and SAP literacy of all contributing users, not just QS professionals.

This finding substantiates and extends the warnings of Abu-Khader (2023) and Zulu et al. (2023) regarding leadership barriers to digital transformation. Whilst those studies identify leadership support as a critical success factor at the macro-organisational level, this study reveals the micro-level consequences of its absence: QS professionals spending significant time auditing SAP outputs, commercial authority being informally transferred to teams without the standing to exercise it, and confidence in the system being progressively eroded. This erosion of confidence carries particular risks in the context of QS skill shortages: as Powell and Shibeika (2025) note, rapid and ineffective technological change is itself a driver of workforce attrition.

5.4 Best Leverage: A Contextually Dependent Value Proposition

The finding that SAP's effectiveness is contextually dependent, most effective on lump sum and time-and-material contracts with commercial team data oversight, least effective on reactive maintenance and unit rate contracts, adds important practical nuance to the existing literature. Dalavi et al. (2024) identify data standardisation as fundamental to ERP efficacy, and this study demonstrates how standardisation becomes difficult to maintain when contract type generates variable, reactive, or hard-to-categorise cost data. This suggests that ERP research and practice should move beyond binary adoption-success evaluations towards a more contract-type-sensitive assessment of value.

6.0 IMPLICATIONS FOR PRACTICE

6.1 Practical Implications

The findings carry direct practical implications for organisations considering SAP or ERP adoption. Implementation should be treated as a strategic business transformation rather than a technical deployment. Senior leadership must actively champion the system prior to and throughout implementation to establish organisational buy-in, and targeted, role-specific training must be delivered to all users, not just QS professionals, to ensure commercial data literacy across business functions. A phased implementation approach, beginning with smaller, well-defined projects where commercial teams control data flows, would allow technical issues to be resolved and commercial expertise to inform system configuration before wider rollout. Structured feedback mechanisms should be established to surface problems promptly and maintain user engagement.

6.2 Policy Implications

At a professional body level, the findings suggest that RICS and FIG guidance on digital proficiency should be extended to address the organisational conditions necessary for ERP systems to deliver their promised benefits. Current guidance focuses on the expectation that QS professionals engage with digital tools (RICS, 2017; FIG, 2025), but does not adequately address the commercial authority, cross-functional influence, and organisational governance that QS teams require to ensure data integrity in ERP environments. Policy guidance on ERP adoption in construction should address leadership readiness, training frameworks, and commercial team involvement in data governance as preconditions for success.

6.3 Theoretical Implications

Theoretically, this study challenges the prevailing ERP literature's tendency to attribute implementation outcomes primarily to technical factors and system capabilities. The evidence presented here demonstrates that in the QS context, SAP's effectiveness is determined more by the competence, engagement, and leadership culture of its users than by the system's inherent technical functionality. This supports a people-centred rather than technology-centred model of ERP value creation in professional services contexts and suggests that future research should integrate organisational behaviour and change management frameworks more explicitly into ERP adoption models.

7.0 CONCEPTUAL FRAMEWORK

Drawing on the empirical findings and the critical literature synthesis, Figure 1 presents a conceptual framework for understanding SAP ERP's impact on QS best practice within cost and commercial management. The framework positions SAP as a mediating system whose effectiveness in delivering commercial benefits is conditioned by two sets of organisational factors: enabling conditions (leadership buy-in, cross-functional training, and commercial team governance) and inhibiting factors (inadequate awareness, fragmented data ownership, and insufficient authority). When enabling conditions are in place, SAP delivers improved data accessibility, automation, and proactive commercial management. When inhibiting factors dominate, data integrity failures emerge, offsetting efficiency gains and introducing commercial risk.

Figure 1. Conceptual framework: Conditions for SAP ERP effectiveness in QS practice

ENABLING CONDITIONS	SAP ERP SYSTEM	COMMERCIAL OUTCOMES
• Leadership buy-in and strategic championing • Cross-functional SAP and commercial training • Commercial team governance of data flows • Phased, pilot-led implementation	Unified data platform Automated reporting Real-time cost data Data standardisation	✓ Improved data accessibility ✓ Reduced manual workload ✓ Proactive commercial management ✓ Competitive advantage
INHIBITING FACTORS		ADVERSE OUTCOMES
• Inadequate leadership support • Fragmented data ownership • Limited commercial awareness in non-QS teams • Insufficient QS authority over operational data		✗ Data integrity failures ✗ Auditing burden offsets efficiency gains ✗ Eroded system confidence ✗ Increased occupational stress

8.0 CONCLUSION

This study evaluated how SAP ERP adoption has affected commercial practice for quantity surveyors in a UK tier one contracting organisation. The findings reveal that SAP offers significant advantages: automated reporting, improved data accessibility, reduced manual effort, and the capacity for proactive commercial management consistent with the broader ERP

literature. These benefits are particularly valuable in a profession facing skill shortages, high workloads, and increasing data complexity.

However, significant data integrity issues arising from incomplete organisational buy-in, insufficient training, and inadequate leadership support, were substantially undermining SAP's effectiveness. The conceptual framework developed from the findings positions leadership culture and commercial governance, rather than technical capability, as the primary determinants of ERP value in QS practice. This suggests that organisations must approach SAP adoption as a cultural and operational transformation, not merely a technology deployment.

As Participant 6 summarised: "SAP is massively beneficial ... It allows us to be proactive rather than reactive ... I think it will improve as we learn to manage it better." The evidence from this study indicates that realising this potential requires deliberate investment in the human and organisational conditions that make the technology effective.

9.0 LIMITATIONS AND FUTURE RESEARCH

This study is subject to several limitations that should be acknowledged. First, the findings are drawn from a single UK-based tier one contractor, and the specific implementation process, organisational culture, and contract portfolio of Contractor 1 may not be representative of SAP or ERP adoption more broadly. SAP is a highly configurable system, and implementations at other organisations may yield markedly different experiences. Second, the sample of six participants, whilst sufficient to reach thematic saturation, limits the generalisability of the findings. Third, the single data collection method, semi-structured interviews, relied on participants' self-reported perceptions, which may be subject to recall bias or social desirability effects.

Future research should extend the scope of enquiry across multiple organisations and contract types to develop a broader empirical picture of SAP ERP's impact on QS practice. Comparative studies examining different ERP solutions in construction would also be valuable. Given the rapid pace of digital development, longitudinal studies tracking the evolution of SAP usage and its commercial outcomes over time are also warranted. Finally, research integrating quantitative performance metrics, such as cost variance or margin improvement, alongside qualitative data would allow more rigorous evaluation of SAP's commercial impact.

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