

# Consultant Competencies and ERP Project Success: The Mediating Role of ERP Implementation Critical Success Factors

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## ABSTRACT

This study examines how consultant competencies influence ERP project success by shaping critical success factors specific to the implementation and early stabilization stages of ERP projects. Thirteen ERP implementation critical success factors and 17 consultant competencies were operationalized based on prior research. Survey data from 227 SAP consultants were analysed using multiple regression to estimate competency effects on ERP implementation critical success factors and the effects of both critical success factors and competencies on project success. The results indicate that consultant competencies affect project success primarily through critical success factors, while direct competency effects are generally weak. Software Hardware Compatibility shows the strongest positive association with project success. User Training and Software Testing are significant predictors but exhibit negative relationships, suggesting that these practices may become more salient in projects facing implementation difficulty, rework, or instability. The study extends prior ERP research by specifying a structured competency to critical success factor to success pathway that clarifies the role of consultants and helps explain mixed findings regarding training, testing, and teamwork in ERP implementations.

**Keywords:** Enterprise Resource Planning, ERP Implementation Project Success, Consultant Competencies, ERP Implementation Critical Success Factors

## 1. Introduction

Rapid technological innovation and the rise of digital transformation have made it essential for businesses to enhance their competitiveness and improve operational efficiency. One vital mechanism for achieving these goals lies in the effective use of enterprise resource planning (ERP) systems, which offer integrated platforms for consolidating and streamlining an organization's core processes. By merging distinct functional areas, such as finance, human resources, production, and supply chain management, ERP solutions optimize the flow of information, accelerate decision-making, and support an organization's capacity to adapt to a dynamic marketplace (Ruivo et al., 2020). Although ERP systems promise significant advantages, including faster processes, improved data accuracy, and reduced costs, they also entail substantial initial expenses, complex implementation activities, and ongoing maintenance requirements (Al Assaf et al., 2025; Rajapakse & Thushara, 2023). These dual aspects of ERP underscore the importance of managing both technical requirements and stakeholder expectations to achieve sustainable benefits. In this study, the term critical success factors refers specifically to ERP implementation critical success factors, that is, the organizational, process, and technical conditions that shape configuration, data migration, testing, training, go live, and early

stabilization outcomes. It does not refer to all phases of the broader ERP lifecycle, such as vendor selection, contract negotiation, or long term post implementation optimization, where the relevant success factors may differ. This delimitation is important because ERP projects unfold across multiple stages and the salience of critical factors changes accordingly.

Given the complexity of ERP initiatives, numerous studies have highlighted the critical success factors as key elements that significantly impact the effectiveness of an implementation effort. These factors may encompass top management support, user training, project management, and business process alignment (Leyh et al., 2024; Kusumawardhana et al., 2024). At the same time, resource-based and capability oriented perspectives highlight the strategic value of specialized organisational capabilities, such as technical and managerial resources, while knowledge-based perspectives emphasise that strong knowledge transfer mechanisms are central for mobilising and disseminating expertise during complex change programmes (Ellström et al., 2022; Argote et al., 2022). These theoretical perspectives suggest that companies must cultivate both tangible resources (e.g., software and hardware compatibility) and intangible assets (e.g., consultant skills and communication channels) to ensure the success of their ERP projects. Empirical ERP work also links knowledge management and ERP implementation effectiveness, consistent with this mechanism-based view (Karim et al., 2023).

An often overlooked aspect of ERP research is the roles and competencies of consultants who facilitate system implementation and guide organizational transformation. While internal teams are crucial to any ERP project, consultants often influence decisions regarding system configuration, documentation, knowledge transfer, and managing stakeholder expectations under delivery constraints (Nakayama et al., 2024; Bawack & Kala Kamdjoug, 2023). Effective ERP consulting entails not only deep technical knowledge but also strong communication, leadership, and problem solving skills, ensuring that complex challenges can be addressed in a manner that aligns with overarching business objectives (Avikal et al., 2022; Bawack & Kala Kamdjoug, 2023). Despite the recognized importance of these consultant competencies, many existing studies remain narrowly focused on specific internal success factors (e.g., user acceptance) or broad consultant attributes (e.g., overall experience) without systematically investigating how individual competencies shape critical success factors or project outcomes.

Despite heavy investment in established success factors and the engagement of capable consultants, many ERP implementation projects still underperform, suggesting that consultant capabilities do not translate into success in a simple or uniform way. This paper addresses a non trivial question: how do specific consultant competencies translate into ERP implementation project success through identifiable ERP implementation critical success factors, and why do some widely recommended practices appear non beneficial in the empirical evidence? By addressing this question, the study moves beyond treating consultants as a generic support resource and instead explains the mechanism through which their competencies become consequential during implementation. More specifically, the paper specifies and tests a competency to ERP implementation critical success factor to success pathway, thereby showing not only which factors matter, but how consultant capabilities shape implementation outcomes through project level conditions. This perspective also helps reconcile mixed findings in the ERP literature by showing why practices such as training, testing, and teamwork may exhibit non uniform empirical signs when examined within a broader implementation process rather than as isolated inputs. Accordingly, this study makes three contributions to the ERP literature. First, it clarifies the theoretical role of consultants by identifying a structured pathway from consultant competencies to ERP implementation critical success factors and then to ERP implementation project success. Second, it offers a more nuanced explanation for mixed empirical findings around training, testing, and teamwork. Third, it provides a practically relevant basis for consultant selection, capability development, and project governance in ERP implementation settings.

## 2. Literature Review

Prior work shows that ERP outcomes depend on how organisations manage phase specific risks across selection, configuration, data migration, testing, deployment, stabilisation, and benefits realisation, rather than treating implementation as a single event (Ibrahim et al., 2024; Salas, 2023; Anaya et al., 2023). Building on this view, the literature highlights a relatively stable core of ERP critical success factors, but also emphasises that their importance can shift by context and timing, particularly under cloud ERP and platform-based delivery models (Leyh et al., 2024; Rajapakse & Thushara, 2023; Xie et al., 2022). The review then examines ERP consultant competencies as complementary resources that can strengthen project delivery and knowledge transfer, and it summarises recent evidence linking consultant capabilities and relationship governance to ERP performance (Jæger et al., 2020; Bawack & Kala Kamdjoug, 2023; Nakayama et al., 2024).

Finally, the section motivates the constructs used in this study by synthesising these streams into an integrated view of ERP implementation conditions and consulting competencies.

### 2.1. ERP Project Implementation Process

Recent studies continue to conceptualize ERP implementation as a staged transformation programme that spans pre implementation decision making, solution design and configuration, deployment, and post implementation stabilization and optimization. In the pre implementation stage, organizations define the business case, assess readiness, and select an ERP package and deployment model. The implementation stage typically includes process mapping and blueprinting, configuration and integration, data migration, and iterative validation and testing. The deployment stage culminates in go live and a stabilization period, followed by post implementation support, continuous improvement, and benefits realization management, which is increasingly emphasized as a determinant of sustained value from ERP investments (Ibrahim et al., 2024; Salas, 2023; Anaya et al., 2023). Across this lifecycle, risk exposure and control needs vary by phase. Evidence from recent empirical and review studies indicates that implementation outcomes are shaped by interdependent organizational, process, and technical conditions, and that weaknesses in early stage governance, data preparation, or change management can propagate to later stage adoption challenges and reduced realized benefits (Leyh et al., 2024; Rajapakse & Thushara, 2023; Butarbutar et al., 2023).

### 2.2. ERP Critical Success Factors

ERP projects integrate enterprise wide processes and data, which makes them vulnerable to scope volatility, coordination breakdowns, data quality issues, and user resistance. Recent studies therefore treat ERP success as a multi dimensional outcome that includes project delivery performance as well as post implementation use, service quality, and value realization. This stream also shows that failure mechanisms are often socio technical, combining governance and capability gaps with technology and vendor ecosystem constraints, particularly in cloud and platform based deployments where vendor customer alignment becomes central (Rajapakse & Thushara, 2023; Mamoghli, 2025; Hammad et al., 2024).

Contemporary syntheses converge on a stable core set of critical success factors while highlighting context and phase dependence. At the organizational level, top management support, cross functional ownership, and a credible benefits and governance structure remain central. At the process level, disciplined project management, change management, communication, and user involvement support coordination and adoption. At the technical level, package process fit, data governance and migration capability, integration readiness, and rigorous testing support system reliability and performance. Evidence also suggests that resource allocation across these factors is not neutral, since prioritization decisions can shape delivery outcomes and sustained performance (Kusumawardhana et al., 2024; Xie et al., 2022; Abu Madi et al., 2024; Leyh et al., 2024).

A key refinement in the recent literature is a shift from static checklists toward dynamic configurations of CSFs. For example, post implementation studies emphasize training reinforcement, user support, and continuous improvement routines as determinants of sustained ERP effectiveness, while agile and hybrid delivery approaches highlight iterative validation, frequent stakeholder feedback, and pragmatic documentation practices as mechanisms to manage uncertainty during configuration and rollout (Butarbutar et al., 2023; Nakayama et al., 2024; Salas, 2023).

Authors	ERP Critical Success Factors
Butarbutar et al. (2023)	Top Management Support, Project Management, Change Management, User Training and Support, Data Governance, Continuous Improvement, Vendor Support
Xie et al. (2022)	Top Management Support, Project Governance, Project Team Capability, Business Process Alignment, Data Quality, Vendor Consultant Support
Anaya et al. (2023)	Benefits Realization Governance, Cross Functional Team Capability, Change Management, Training, Post Implementation Support
Rajapakse & Thushara (2023)	Change Resistance Management, Project Management Discipline, Top Management Support, Training Adequacy, Data Quality and Integration Readiness
Abu Madi et al. (2024)	Governance and Decision Rights, Stakeholder Engagement, Communication, Change Management, Training, Data Management

Authors	ERP Critical Success Factors
Kusumawardhana et al. (2024)	Project Team Competency, Top Management Support, System Fit, Change Management, Communication, Training, Testing
Leyh et al. (2024)	Project Management, Change Management, User Involvement, Communication, Training, Data Migration Readiness, Testing
Hammad et al. (2024)	User Involvement, Change Management, Environmental and Competitive Pressure, System Quality, Information Quality
Mamoghli (2025)	Vendor Customer Cultural Compatibility, Relationship Quality, Governance Alignment, Communication, Trust Building
Llavisaca Villazhañay et al. (2025)	Strategic Alignment, Digital Transformation Readiness, Operational Efficiency Focus, Management Commitment
Nguyen et al. (2024)	Cloud ERP Capability Fit, Integration Readiness, Vendor Support, Flexibility and Scalability, Security Management

**Table 1.** ERP Critical Success Factors Used in the Literature

To avoid implying that the construct labels used in this study are literal quotations from prior studies, the 13 ERP implementation critical success factors were developed through construct aggregation. Specifically, semantically related labels from the literature were grouped into broader operational constructs so that conceptually overlapping success conditions could be measured consistently in the survey instrument. For instance, labels such as project team capability, cross functional team capability, and user involvement informed the construct Project Team Competency; project governance and project management discipline informed Project Management; system fit and business process alignment informed Minimum Customization; data quality, data governance, and data migration readiness informed Data Accuracy; package appropriateness and capability fit informed Suitable Package Selection; and technical compatibility, system quality, and integration readiness informed Software Hardware Compatibility and Technical Infrastructure as related but distinct constructs. The labels used in this study should therefore be interpreted as analytical construct names derived from prior ERP literature rather than as verbatim labels taken from any single source. This aggregation approach was adopted to translate a fragmented but overlapping literature into a coherent set of survey measurable ERP implementation critical success factors. Accordingly, this study uses the following 13 ERP implementation critical success factors consistently throughout the manuscript: Project Management, Top Management Support, Project Team Competency, Effective Communication, Change Management, User Training, Clear Goals, Software Hardware Compatibility, Technical Infrastructure, Minimum Customization, Data Accuracy, Suitable Package Selection, and Software Testing.

**2.3. ERP Consultant Competencies**

As ERP projects have expanded in scope and technological sophistication, organizations increasingly rely on external consultants to supplement internal capabilities across selection, implementation, and stabilization. Recent research describes consultants as boundary spanners who translate business requirements into system design, coordinate across vendor and client teams, and accelerate knowledge transfer through training and documentation. Effective client consultant relationship management has also been linked to improved benefits realization, suggesting that consultant competencies can influence ERP outcomes both directly and indirectly (Jæger et al., 2020; Bawack & Kala Kamdjoug, 2023; Nakayama et al., 2024).

Authors	Consultant Competencies
Jæger et al. (2020)	Process Facilitation, Business Process Mapping, User Support, Cross Functional Coordination
Bawack & Kala Kamdjoug (2023)	Relationship Governance, Trust Building, Conflict Resolution, Stakeholder Coordination, Benefits Realization Support
Avikal et al. (2022)	Domain Expertise, Technical Capability, Project Management, Communication, Experience and Reputation
Anaya et al. (2023)	Benefits Management Capability, Change Leadership, Team Formation and Coordination, Post Implementation Support

Authors	Consultant Competencies
Nakayama et al. (2024)	Knowledge Transfer and Documentation Practices, Situational Awareness, Dialogue Based Documentation
Asan (2025)	Intelligent ERP Competence, ERP Data Structure Knowledge, Analytical Capability, Decision Support Skills
Hoblos et al. (2024)	Stakeholder Alignment, Framing and Sensemaking, Communication Across Stakeholder Groups
Mamoghli (2025)	Vendor Customer Relationship Management, Cultural Compatibility, Collaboration and Communication

**Table 2.** Consulting Competencies Used in the Literature

Recent studies on consultant selection and relationship management indicate that ERP consulting effectiveness depends on an integrated portfolio of competencies. Technical and functional ERP expertise and integration know-how are necessary but insufficient. Successful consultants also demonstrate deep business process knowledge, project management capability, and the ability to structure knowledge transfer through training artifacts and living documentation. In addition, stakeholder alignment and governance competencies such as expectation management, negotiation, and conflict resolution help consultants navigate competing priorities during design and rollout (Avikal et al., 2022; Asan, 2025; Hoblos et al., 2024).

Relational competencies have been consistently emphasized in recent literature. These include communication that bridges business and technical audiences, customer orientation, and the capacity to build trust in multi party settings that involve vendors, client leadership, and end users. Empirical evidence also highlights the importance of professionalism and accountability, as these behaviours shape client perceptions of service quality and the willingness to collaborate during problem solving and change adoption (Bawack & Kala Kamdjoug, 2023; Mamoghli, 2025). The competencies required of ERP consultants are evolving in tandem with the shift toward cloud ERP platforms, automation, and intelligent ERP features. This evolution increases the value of staying updated, industry knowledge, and the ability to design pragmatic governance for data, integration, and security. Studies that position ERP implementation within broader digital transformation also emphasize the ability to align stakeholder frames around value, reinforcing the need for consultants to combine technical expertise with strategic and organizational insight (Nguyen et al., 2024; Hoblos et al., 2024).

Based on the recent literature, the consultant competencies considered in this study include Technical Competency, Business Process Knowledge, Communication Skills, Consultant Project Management, Problem Solving, Teamwork, Customer Orientation, Industry Knowledge, Staying Updated, Presentation Skills, Document Preparation, Leadership, Motivation, Conflict Management, Minimizing Errors, Responsibility Taking, and Persuasion Skills (Avikal et al., 2022; Bawack & Kala Kamdjoug, 2023).

### 3. Methodology

This study employed a quantitative cross sectional survey design to examine the relationship between consultant competencies, ERP implementation critical success factors, and ERP implementation project success. The empirical setting was SAP implementation projects, selected because SAP remains one of the most widely used ERP platforms and provides a suitable context in which consultants actively shape configuration, knowledge transfer, testing, and go live support. The unit of analysis was the individual SAP consultant.

Data were collected from 227 SAP consultants in Turkey. The questionnaire was administered in Turkish between February 2025 and May 2025 through online and face to face surveys. Only respondents with direct involvement in at least one SAP implementation project were retained in the sample. The study therefore focuses on ERP consultants and not on general ERP users. The representation of respondents aged 20 to 25 reflects the inclusion of early career consultants and analysts who already participate in implementation related tasks such as requirements support, testing, documentation, training assistance, and post go live support. For this reason, younger respondents were considered relevant to the empirical setting provided that they satisfied the project involvement criterion.

The project success construct was operationalized as a 12 item ERP implementation outcome index. Each item asked whether a core implementation outcome had been achieved in the focal project and was coded dichotomously as Yes = 1 and No = 0. The items were then aggregated into an overall project success score

ranging from 0 to 12. A binary format was preferred because these items refer to realized implementation outcomes rather than degrees of attitudinal agreement. In ERP practice, consultants often assess whether key milestones or outcome conditions were achieved, such as successful stabilization, acceptable fit, operational continuity, or satisfactory implementation results, which makes a dichotomous checklist suitable for retrospective project evaluation. This choice also reduces respondent burden and avoids artificial precision in project level recall. At the same time, the measure is intentionally parsimonious and should be interpreted as a coarse implementation success index rather than a fully multidimensional performance scale.

The instrument consisted of four sections. The first section captured demographic and professional background information. The second measured ERP implementation project success through a 12 item implementation outcome index. The third measured ERP implementation critical success factors using 52 Likert type items. The fourth measured consultant competencies using 71 Likert type items. For the CSF and competency sections, responses were recorded on a five point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The research model is presented in Figure 1.

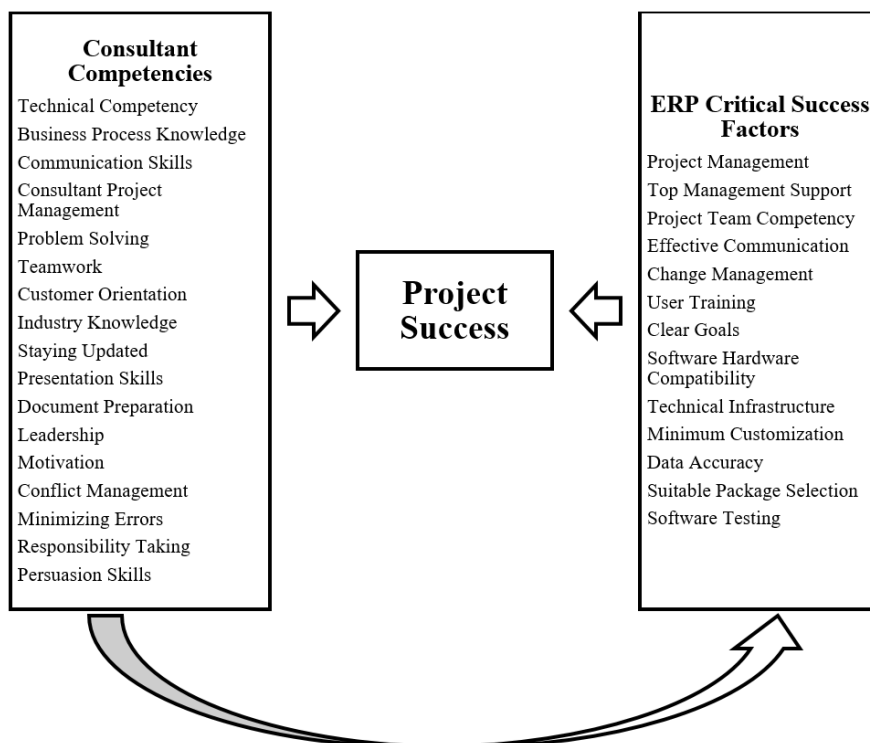


Figure 1. The Research Model

### 3.1. Model Hypotheses and Research Question

**H1 (Antecedent Paths).** Selected consultant competencies are positively associated with ERP implementation critical success factors.

**H2 (Outcome Path).** ERP implementation critical success factors are positively associated with ERP implementation project success.

**H3 (Mediation).** Consultant competencies influence ERP implementation project success indirectly through ERP implementation critical success factors.

**RQ1 (Clarifying Mixed Findings).** Given prior mixed evidence, this study examines how user training, software testing, and teamwork relate to ERP implementation project success and why their estimated associations may appear weak or negative in some empirical settings.

### 3.2. Threats to Validity

Several steps were taken to reduce threats to validity. First, construct validity was addressed by deriving the ERP implementation CSF and consultant competency measures from prior literature and by operationalizing each construct with multiple items. Second, common method bias was mitigated by measuring consultant competencies, CSFs, and project success as conceptually distinct constructs presented in separate sections of the questionnaire. Harman's single factor test indicated that a single factor did not account for the majority of total variance. Third, analytical validity was examined through reliability and regression diagnostics. Cronbach's alpha values for the multi item constructs were within acceptable ranges, variance inflation factor values were below common cut off levels, Cook's distance values did not indicate influential observations, and residual analyses did not show major violations of normality or homoscedasticity assumptions. Fourth, external validity remains bounded by the study context because the sample consists of SAP consultants from Turkey. The findings should therefore be generalized primarily to ERP implementation settings with similar project structures, consultant roles, and delivery conditions.

### 4. Empirical Study Results

The empirical results of this study highlight specific relationships between consultant competencies and ERP implementation critical success factors. Table 3 provides detailed demographic characteristics of the survey participants, including gender distribution, age groups, seniority, educational background, and work systems. The data show a relatively balanced gender distribution, with 41.9% female, 32.2% male, and 26% preferring not to specify their gender. Most participants fall within younger age groups, particularly the 20-31 range (47.1% combined), followed by significant representation in the 43+ age category (20.3%). Regarding seniority, the largest group has 3-5 years of experience (26.1%), followed closely by those with 6-8 years (23%) and those with over eight years of experience (22.1%). Educationally, participants primarily hold bachelor's degrees (29.5%) or doctoral degrees (28.6%), with master's degrees (21.6%) and associate degrees (20.3%) also represented. Regarding work systems, a hybrid approach is the most common (33%), while office-based and remote systems each account for 26.4% of the respondents. This demographic profile indicates that the sample includes both early career and experienced SAP consultants with direct implementation exposure, which broadens the range of consultant perspectives captured in the study.

	Demographic Characteristics	Frequency (n)	Percentage (%)
Gender	Female	95	41.9
	Male	73	32.2
	No Options	59	26
Age	20-25	52	22.9
	26-31	55	24.2
	32-37	39	17.2
	38-43	35	15.3
	43+	46	20.3
Seniority Year	3-5 year	59	26.1
	6-8 year	52	23
	8+ year	50	22.1
Education Status	Associate Degree	46	20.3
	Bachelor's Degree	67	29.5
	Master's Degree	49	21.6
	Doctorate	65	28.6
Work System	Office	60	26.4
	Hybrid	75	33
	Remote	60	26.4

**Table 3.** Findings on the Demographic Characteristics of Survey Participants

Table 4 presents skewness and kurtosis values, assessing the normality of data distribution. Skewness values ranged from -0.638 (Customer Orientation) to 0.249 (Project Management and User Training), and kurtosis ranged from -1.697 (Teamwork) to -0.261 (Customer Orientation). According to George (2011), data are

considered normally distributed if skewness and kurtosis values lie between +2.0 and -2.0. As all variables fall within this acceptable range, we conclude that the data distribution is normal.

Criteria	Skewness	Kurtosis
Project Management	0.249	-0.914
Top Management Support	-0.125	-0.869
Project Team Competency	-0.435	-0.270
Effective Communication	-0.430	-0.600
Change Management	-0.427	-0.447
User Training	0.249	-0.914
Clear Goals	-0.438	-0.492
Software Hardware Compatibility	0.133	-1.199
Technical Infrastructure	0.049	-1.052
Minimum Customization	-0.250	-0.364
Data Accuracy	0.091	-0.455
Suitable Package Selection	-0.107	-1.476
Software Testing	-0.217	-1.228
Technical Competency	-0.376	-0.457
Business Process Knowledge	-0.435	-0.270
Communication Skills	0.029	-0.930
Consultant Project Management	0.178	-0.323
Problem Solving	0.073	-0.444
Teamwork	0.041	-1.697
Customer Orientation	-0.638	-0.261
Industry Knowledge	-0.393	-0.491
Staying Updated	-0.323	-0.659
Presentation Skills	0.145	-1.012
Document Preparation	0.108	-0.726
Leadership	-0.099	-0.438
Conflict Management	-0.323	-0.659
Minimizing Errors	-0.257	-1.267
Responsibility Taking	-0.430	-0.600
Persuasion Skills	-0.347	-0.756
Motivation	-0.286	-0.691

**Table 4.** Kurtosis and Skewness Values

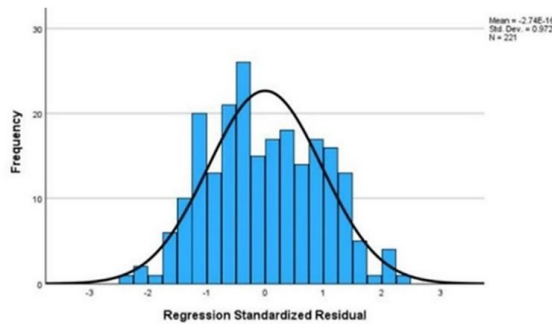
Table 5 shows Cronbach’s Alpha values for ERP critical success factors and consultant competencies, reflecting the internal consistency and reliability of the scales used. All ERP critical success factors achieved Cronbach’s Alpha values above the acceptable threshold of 0.6, ranging from 0.620 (Minimum Customization) to 0.947 (Suitable Package Selection). Similarly, consultant competencies achieved values ranging from 0.601 (Problem Solving) to 0.931 (Minimizing Errors), indicating high reliability across the scales.

ERP Critical Success Factors	Cronbach’s Alpha	Consultant Competency	Cronbach’s Alpha
Project Management	0.856	Technical Competency	0.749
Top Management Support	0.738	Business Process Knowledge	0.703
Project Team Competency	0.703	Communication Skills	0.793
Effective Communication	0.770	Consultant Project Management	0.610
Change Management	0.705	Problem Solving	0.601
User Training	0.856	Teamwork	0.927
Clear Goals	0.731	Customer Orientation	0.761
Software Hardware Compatibility	0.923	Industry Knowledge	0.674
Technical Infrastructure	0.765	Staying Updated	0.881
Minimum Customization	0.620	Presentation Skills	0.799
Data Accuracy	0.642	Document Preparation	0.771

Suitable Package Selection	0.947	Leadership	0.705
Software Testing	0.907	Motivation	0.795
		Conflict Management	0.881
		Minimizing Errors	0.931
		Responsibility Taking	0.770
		Persuasion Skills	0.737

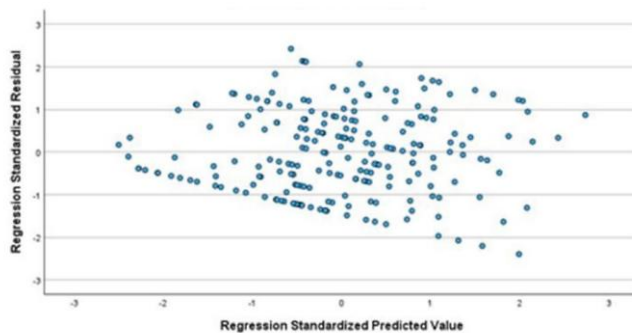
**Table 5.** Reliability of ERP Implementation Critical Success Factors and Consultant Competencies

The Cook’s Distance value (0.053) further supports the absence of influential outliers, as values below 1 are considered acceptable (Weisberg & Cook, 1982). The normal probability plot (P-P plot) and scatterplot of standardized residuals, shown in Figure 2, confirmed the normality of residuals and the absence of heteroscedasticity. Consequently, all assumptions necessary for performing multiple regression analyses were satisfied.



**Figure 2.** Normal Probability Plot of Standardized Residual for Regression

In the Scatterplot of the standardized residuals shown in Figure 3, most of the points are concentrated around the center (along the 0 point), and the residuals are roughly distributed in a rectangular shape. According to the scatterplot diagram, there is no evidence of heteroscedasticity in the data.



**Figure 3.** Scatterplot of the standardized residuals

The adjusted R-squared value indicates the linear relationship between the variance explained by the independent variables and the dependent variable. Results show that the independent variables explain % 14 of the variance in the dependent variable linearly (with an adjusted R<sup>2</sup> value of 0.143). The regression analysis findings indicate that specific consultant competencies significantly influence several ERP implementation critical success factors. Leadership consistently and positively predicts Project Management, Top Management Support, User Training, Technical Infrastructure, and Minimum Customization. Problem Solving significantly influences Top Management Support and Minimum Customization. Communication Skills are important for User Training and Technical Infrastructure. Conflict Management and Teamwork positively affect Data

Accuracy, while Minimizing Errors and Teamwork enhance Suitable Package Selection. Persuasion Skills, Teamwork, and Minimizing Errors significantly improve Software Testing outcomes. However, no significant predictive relationships were identified between consultant competencies and Project Team Competency, Change Management, Clear Goals, or Software Hardware Compatibility. Table 6 presents selected regression results for the relationship between consultant competencies and ERP implementation critical success factors. Because reporting the complete set of regression outputs for all dependent variables would require a large number of tables and reduce readability, the manuscript reports the most substantively meaningful and representative results. Project Management and Software Testing are shown here because they capture important patterns in the broader set of estimated relationships.

Variable	B	Std. Error	Beta	T	p
Constant (Project Management)	2.153	0.826		2.607	0.010
Communication Skills	-0.231	0.117	-0.182	-1.972	0.050
Industry Knowledge	-0.064	0.106	-0.053	-0.610	0.543
Presentation Skills	-0.060	0.101	-0.044	-0.598	0.551
Document Preparation	-0.208	0.111	-0.148	-1.870	0.063
Persuasion Skills	0.086	0.111	0.063	0.776	0.439
Business Process Knowledge	0.099	0.111	0.070	0.896	0.371
Problem Solving	0.088	0.126	0.067	0.701	0.484
Teamwork	0.110	0.161	0.108	0.686	0.494
Customer Orientation	-0.188	0.159	-0.111	-1.179	0.240
Leadership	0.387	0.117	0.323	3.314	0.001
Conflict Management	0.088	0.100	0.078	0.874	0.383
Minimizing Errors	0.060	0.166	0.046	0.362	0.718
Constant (Software Testing)	-0.088	0.650		-0.135	0.893
Communication Skills	-0.158	0.092	-0.122	-1.718	0.087
Industry Knowledge	0.009	0.083	0.007	0.103	0.918
Presentation Skills	0.026	0.079	0.019	0.330	0.741
Document Preparation	-0.134	0.088	-0.093	-1.535	0.126
Persuasion Skills	0.214	0.087	0.152	2.461	0.015
Business Process Knowledge	0.024	0.087	0.017	0.280	0.780
Problem Solving	0.040	0.099	0.029	0.399	0.691
Teamwork	0.368	0.126	0.351	2.918	0.004
Customer Orientation	-0.183	0.125	-0.106	-1.464	0.145
Leadership	0.033	0.092	0.027	0.364	0.716
Conflict Management	0.108	0.079	0.094	1.373	0.171
Minimizing Errors	0.598	0.130	0.448	4.594	< 0.001

Note: Table 6 reports selected regression results for illustrative and interpretive purposes. Additional regressions were estimated for the full set of ERP implementation critical success factors but are not reproduced here in full in order to maintain readability.

**Table 6.** Consultant Competencies - ERP Critical Success Factors Regression Partial Results

Tables 7 and 8 present selected regression results examining the direct effects of ERP implementation critical success factors and consultant competencies on ERP implementation project success. Because the full set of outputs is extensive, the manuscript reports the most substantively meaningful results in order to preserve readability and interpretive focus. Table 7 shows that Software Hardware Compatibility positively and significantly predicts project success. In contrast, User Training, Suitable Package Selection, and Software Testing exhibit significant negative relationships with project success, suggesting that these factors may become more salient in projects facing implementation difficulty, rework, instability, or unmet expectations.

Table 8 shows that Customer Orientation among consultant competencies significantly and positively predicts ERP implementation project success, underscoring the importance of client focused behaviour in ERP implementations. By contrast, Teamwork shows a significant negative relationship with project success, indicating that higher coordination intensity may characterize more challenging implementation environments. The remaining reported consultant competencies do not exhibit statistically significant direct relationships with project success. Taken together, the results in Tables 7 and 8 further illustrate the complexity of consultant influence on ERP implementation outcomes.

Variable	B	Std. Error	Beta	T	p
Constant (Project Success)	2.6222	0.151		17.344	< 0.001
Effective Communication	-0.049	0.048	-0.107	-1.032	0.303
Change Management	-0.007	0.022	-0.015	-0.346	0.730
User Training	-0.056	0.021	-0.143	-2.637	0.009
Clear Goals	0.019	0.050	0.041	0.386	0.700
Software Hardware Compatibility	0.087	0.027	0.192	3.290	0.001
Minimum Customization	0.005	0.025	0.010	0.196	0.845
Data Accuracy	0.016	0.025	0.031	0.625	0.532
Suitable Package Selection	-0.166	0.036	-0.408	-4.578	< 0.001
Software Testing	-0.210	0.027	-0.559	-7.811	< 0.001
Technical Infrastructure	-0.040	0.022	-0.082	-1.810	0.072
Top Management Support	0.000	0.024	0.000	-0.005	0.996

Table 7. ERP Critical Success Factors - Project Success Regression Results

Variable	B	Std. Error	Beta	T	p
Constant (Project Success)	1.527	0.238		6.405	< 0.001
Communication Skills	0.048	0.034	0.100	1.419	0.157
Industry Knowledge	-0.032	0.030	-0.071	-1.065	0.288
Presentation Skills	-0.019	0.029	-0.036	-0.636	0.525
Document Preparation	0.052	0.032	0.097	1.616	0.108
Persuasion Skills	-0.039	0.032	-0.074	-1.213	0.227
Business Process Knowledge	0.003	0.032	0.005	0.087	0.930
Problem Solving	-0.048	0.036	-0.096	-1.320	0.188
Teamwork	-0.343	0.046	-0.881	-7.401	< 0.001
Customer Orientation	0.328	0.046	0.510	7.128	< 0.001
Leadership	-0.002	0.034	-0.004	-0.049	0.961
Conflict Management	-0.020	0.029	-0.047	-0.690	0.491
Minimizing Errors	-0.041	0.048	-0.083	-0.856	0.393

Table 8. Consultant Competencies - Project Success Regression Results

### 5. Discussion

Our evidence provides substantial support for H1 and mixed support for H2, while the overall pattern is consistent with H3. Consultant competencies are clearly associated with several ERP implementation critical success factors, ERP implementation critical success factors are in turn associated with project success, and direct competency effects on success are generally weak, which is consistent with a primarily indirect pathway operating through critical success factors. This also helps clarify RQ1, as the non uniform signs for training, testing, and teamwork become more interpretable when viewed within the broader competency to critical success factor to success sequence. Our findings largely align with recent ERP research that positions consultants as central contributors to knowledge creation, skill development, and benefit realization across the implementation and post implementation phases (Bawack & Kala Kamdjoug, 2023). Leadership, problem solving, and teamwork appear especially important in shaping ERP outcomes, consistent with evidence that top management support and involvement, organizational fit, and a balanced cross functional project team remain among the most frequently cited ERP CSFs (Leyh et al., 2024). Our results reinforce this logic by showing that stronger consultant leadership and practical problem solving are associated with greater executive involvement, which in turn supports resource allocation to CSFs throughout the project lifecycle (Xie et al., 2022; Leyh et al., 2024). We also observed that teamwork skills significantly affect whether a suitable software and hardware compatibility package is selected and integrated, which is consistent with work showing that team effectiveness in enterprise systems implementation is an emergent property of interaction and coordination rather than a simple sum of individual capabilities (Bellini et al., 2020).

The negative coefficients for user training, software testing, and teamwork should not be interpreted as evidence that these practices are inherently detrimental to ERP implementation success. In complex ERP implementations, these activities are often intensified precisely when projects face misfit, user resistance, rework, schedule pressure, or post configuration instability. Under such conditions, greater training or more extensive testing may reflect a corrective response to implementation difficulty rather than a straightforward

positive input. Similarly, higher reported teamwork may indicate heavy coordination demands in projects with greater interdependence and unresolved issues. Accordingly, these negative signs are more plausibly interpreted as context dependent associations within multivariate models than as universal causal effects. Because the study is cross sectional and based on self reported project evaluations, modelling issues such as suppression effects, omitted project complexity variables, or reverse signaling cannot be fully ruled out. We therefore interpret these coefficients cautiously, as indicators of where managerial effort becomes concentrated under challenging implementation conditions.

Interestingly, we found mixed effects for communication skills, which positively influenced some areas (for example, documentation) but showed negative coefficients in others (for example, top management support and user training). Recent evidence helps interpret this pattern: “effective communication” in ERP implementations is often described as timely, accurate, and tailored to the recipient, but it also requires substantial attention and coordination effort across stakeholders. In parallel, contemporary ERP projects are increasingly characterized by fast moving, dialogue based, and transient documentation practices, which can improve situational awareness while also increasing the volume and velocity of messages that stakeholders must process (Nakayama et al., 2024). In this context, communication abundance can plausibly diminish perceived support or overwhelm end users when it is not carefully curated, aligning with broader evidence that many employees experience excessive volumes of organizational communication. Taken as a whole, our study reinforces the view that ERP success hinges on an integrated set of consultant skills (leadership, coordination, conflict handling, and communication discipline) combined with enabling organizational conditions such as executive involvement, fit focused configuration choices, and strong project governance around the CSFs that matter most (Leyh et al., 2024; Xie et al., 2022; Bawack & Kala Kamdjoug, 2023).

### 5.1. Managerial Implications

Our findings highlight that success in ERP initiatives often hinges on the skills of consultants, including leadership, teamwork, problem solving, and collaboration with key process enablers, such as top management support. Managers should act on the full competency to critical success factor to success pathway: invest in the consultant skills that most reliably strengthen executive support, project management discipline, and goal clarity, then ensure those CSFs are translated into execution. From a managerial standpoint, several actionable insights emerge. Leadership consistently stood out as a driver of multiple CSFs, including project management and user training. Managers hiring external consultants or assembling internal ERP teams should assess candidates’ technical credentials and probe their history of directing cross-functional teams, managing complex organizational dynamics, and influencing senior stakeholders.

The positive link between consultants’ problem solving ability and top management support indicates that skilled troubleshooting builds credibility at the highest levels of the organization. In consultant onboarding and development programs, providing real-life scenarios, simulation exercises, or “challenge sessions” can sharpen these skills. Consultants can maintain leadership commitment throughout the project lifecycle by demonstrating a reliable capacity to handle unexpected setbacks. Teamwork proved essential for software hardware compatibility and customizing ERP solutions. This suggests that managers would benefit from promoting work routines, such as agile stand-ups or cross-departmental workshops, where consultants and client teams jointly map requirements, resolve functional overlaps, and make collective decisions about configuration options. The result is a more unified, context-aware approach that reduces rework and fosters clarity.

Our results reveal a detailed effect of communication skills: well-targeted communication aids documentation and knowledge transfer, but excessive or poorly aligned messaging can lower top management support. Managers should train consultants to adapt their communication volume, frequency, and content to each stakeholder group, ensuring that executives, front-line staff, and IT specialists receive only the most relevant information. While baseline technical competency remains essential, it may not be the primary differentiator for achieving higher-level success factors. Consequently, managers should ensure that project teams feature a blend of technical specialists alongside consultants who excel at people-centric tasks such as conflict resolution, leadership, and creative problem solving. This combination helps harness the full spectrum of capabilities needed for a robust ERP rollout. Organizations can move beyond simple systems installation by adopting these measures and positioning their ERP projects for more profound, sustained benefits. Ultimately, managers who invest in well-rounded, leadership and teamwork-oriented consultants and align them with executive support and informed communication structures will be better positioned to achieve timely, efficient, and strategically meaningful ERP outcomes.

## 6. Conclusion

This study examined how specific consultant competencies influence ERP implementation project success through ERP implementation critical success factors in SAP implementation contexts. Using survey data from 227 SAP consultants, the study investigated whether consultant competencies shape ERP implementation critical success factors and whether these factors, together with consultant competencies, explain variation in ERP implementation project success. Based on the literature, three measurement instruments were used to capture consultant competencies, ERP implementation critical success factors, and project success. The consultant competency scale included 17 competencies, and the study operationalized 13 ERP implementation critical success factors derived from prior research.

Statistical analysis using multiple regression identified significant relationships between certain consultant skills and ERP success factors. Leadership skills have a positive influence on project management effectiveness, suggesting that consultants with strong leadership abilities manage ERP projects more effectively. Problem solving and leadership competencies significantly improved top management support, underscoring that skilled problem solvers and leaders facilitate better cooperation with senior management. Leadership and communication skills significantly enhanced the effectiveness of user training and the implementation of technical infrastructure. Consultants demonstrating these skills established stronger client relationships, thus improving training outcomes and infrastructure setup. Additionally, problem solving and leadership positively impacted minimal customization, indicating that these competencies help avoid unnecessary system complexity. Consultants' conflict management and teamwork significantly enhanced data accuracy. Similarly, minimizing error handling and effective teamwork had a positive influence on the selection of a suitable package. Furthermore, teamwork, persuasion skills, and error handling have notably improved the effectiveness of software testing. However, consultant competencies did not significantly impact ERP project team competency, change management, or the achievement of clear goals. Regarding overall project success, software hardware compatibility emerged as a positive predictor, aligning with existing literature emphasizing its importance. Conversely, compared to common literature findings, user training, suitable package selection, and software testing exhibited negative associations with project success. Among consultant skills, customer orientation has a positive influence on project outcomes, as supported by existing literature. Unexpectedly, teamwork had a negative impact on project success, indicating potential issues with team coordination.

In conclusion, this study provides valuable insights into how specific consultant competencies influence ERP implementation critical success factors and overall project success. While several findings align with existing literature, some unexpected negative relationships, such as the impact of teamwork on project success, reveal underlying complexities that warrant deeper investigation. Beyond listing "what matters," the paper specifies how consultant capabilities translate into success via critical success factors, strengthening the theoretical account. This pathway framing also reconciles mixed results for training, testing, and teamwork observed in prior studies and in our evidence. These insights offer practical guidance for organizations in selecting and developing consultants for ERP implementation projects.

Despite these contributions, several limitations should be acknowledged. First, the study focuses exclusively on SAP consultants in Turkey, which may limit generalizability to other ERP platforms, countries, or implementation environments. Second, the cross sectional survey design does not allow strong causal inference and cannot fully rule out reverse signaling, omitted contextual factors, suppression effects, or other modelling artifacts. Third, the project success construct was intentionally designed as a parsimonious binary implementation outcome index rather than a fully multidimensional success framework. Fourth, the analytical approach was based on multiple regression rather than a formal mediation model or a structural equation modelling framework. This choice was made to provide a transparent and interpretable assessment of the relationships between consultant competencies, ERP implementation critical success factors, and project success in an empirically direct manner. However, multiple regression does not estimate latent constructs, measurement error, simultaneous pathways, or indirect effects with the same level of integration as SEM based approaches. Therefore, the mediation logic proposed in this study should be interpreted as evidence of a regression based pathway pattern rather than as a full latent variable mediation test. Future research could extend the present model by using longitudinal designs, multi source data, mediation analysis, or covariance based or partial least squares SEM to examine the indirect competency CSF success mechanism more comprehensively. Future studies could also expand the analysis to other ERP vendors, compare different national or sectoral contexts, and investigate how project scale, organizational culture, and client consultant relationship quality condition the pathway from consultant competencies to ERP implementation project success.

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