



## Review

# From Adoption to Execution: Challenges and Frameworks for Cloud ERP Implementation-A Systematic Literature Review

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**Abstract:** An increasing number of companies are migrating their Enterprise Resource Planning (ERP) systems to the cloud-an area that remains relatively underexplored, as traditional ERP systems were typically deployed on premises. While many organizations already operate other systems in the cloud, ERP systems are particularly critical because they integrate core business processes and manage daily operations, making cloud migration a high-risk transformation that must be carefully planned and executed to ensure business continuity. This study aims to identify the key challenges and implementation frameworks associated with Cloud ERP migration through a Systematic Literature Review (SLR). Studies published between 2015 and 2025 were retrieved from five academic databases, screened using predefined inclusion and quality criteria, and synthesised using Excel and Orange Data Mining software, resulting in a final sample of 58 studies. The results identify 26 distinct challenges-such as data migration, security and privacy concerns, vendor dependence, and resistance to change-and 12 classes of frameworks intended to mitigate these barriers across different organizational and contextual settings. In contrast to prior reviews that primarily catalogue adoption drivers or isolated challenges, this study contributes a structured synthesis that explicitly maps implementation challenge categories to classes of implementation frameworks across different organisational contexts. This integrative perspective reveals systematic coverage gaps in existing frameworks and provides decision-oriented guidance for selecting implementation approaches in practice.

**Keywords:** challenges, frameworks, cloud Enterprise Resource Planning (ERP) implementation, Systematic Literature Review (SLR)

## 1. Introduction

In recent years, there has been a shift in the world of Enterprise Resource Planning (ERP) systems. Companies are moving their software environments from locally installed solutions to cloud-hosted products, and an increasing number of organisations are following this trend, venturing into new technological and organisational terrain [1, 2]. While many companies have already implemented individual applications in the cloud, ERP systems are particularly critical, as they integrate core business processes, visualise organisational workflows, and manage daily operations [3-5]. As ERP systems are deeply embedded in organisational routines and governance structures, their migration to the cloud represents a complex socio-technical transformation rather than a purely technical change.

ERP systems originated as tools for material requirements planning and have evolved into integrated platforms that automate workflows, exchange data across business functions, and support managerial decision-making through centralised data repositories [3-5]. Compared with traditional on-premises ERP systems, cloud-based ERP solutions offer several advantages, including faster implementation, lower upfront investment, greater flexibility, scalable resource allocation, and access to continuous technological innovation, such as Artificial Intelligence and blockchain-based services [6, 7]. Despite these potential benefits, organisations remain hesitant to adopt cloud ERP solutions. Adoption rates remain comparatively low, with fewer than 16 percent of ERP customers having migrated to the cloud [1, 8], and failure rates of ERP transformation projects remain high, with estimates of up to 60 percent reported in prior studies [9]. This persistent gap between technological potential and successful implementation underscores the importance of understanding the barriers and risks associated with cloud ERP transformations.

Existing research has identified numerous challenges associated with cloud ERP implementation, including security and privacy risks, data migration complexity, vendor dependence, limited customisation, organisational resistance to change, and governance constraints [3-5, 8, 9]. While these studies provide valuable insights into individual problem areas, they often address challenges in isolation or focus predominantly on adoption intentions rather than on the execution and implementation phases, where many failures occur. Moreover, although several frameworks, methodologies, and guidelines have been proposed to support ERP implementations, most existing studies discuss only individual frameworks or specific aspects of implementation without systematically comparing different approaches or analysing their applicability to distinct organisational contexts and implementation challenges. As a result, practitioners face fragmented guidance and lack structured support for selecting appropriate frameworks tailored to their specific organisational, technological, and environmental conditions.

This limitation is particularly relevant given the heterogeneity of cloud ERP implementation contexts, including differences between small and medium-sized enterprises and large organisations, private-sector firms and public institutions, and organisations operating in developed versus developing economies. Frameworks and implementation schemes developed under idealised assumptions about organisational maturity, infrastructure quality, or regulatory stability may therefore exhibit limited transferability to real-world settings characterised by resource constraints, regulatory complexity, and strong legacy system dependencies [3-5, 8, 9]. Consequently, there is a need for a consolidated and context-sensitive synthesis of both implementation challenges and the frameworks intended to mitigate them.

To address this gap, this study conducts a Systematic Literature Review (SLR) following Webster and Watson's guidelines [10] to identify, analyse, and synthesise existing research on cloud ERP implementation challenges and associated frameworks. In contrast to prior reviews that focus primarily on adoption factors or critical success factors, this SLR explicitly maps different classes of frameworks to the specific challenges and contexts they are intended to address, thereby providing an integrative perspective with practical relevance for decision-makers and implementation teams. The following research questions guide the review:

RQ1: What are the main challenges identified during the implementation of a cloud-based ERP system?

RQ2: What are the most utilised frameworks during such an implementation?

This paper makes the following novel contributions: (1) It provides the first integrative synthesis that jointly analyses cloud ERP implementation challenges and implementation frameworks within a single systematic review. (2) It develops a structured classification of framework types and systematically maps these classes to challenge categories, enabling cross-study comparability that is missing in prior reviews. (3) It identifies systematic coverage gaps between frequently reported challenges and the scope of existing frameworks, thereby revealing blind spots in current implementation guidance. (4) It derives context-sensitive implications for framework selection across organisational settings (e.g., Small and Medium-sized Enterprises (SMEs), public sector, developing economies), extending prior reviews that treat cloud ERP adoption primarily in a context-agnostic manner.

The remainder of the paper is structured as follows. The next chapter presents key current literature streams, followed by background information on cloud ERP systems and a comparison of potential ERP implementation scenarios. The SLR methodology is then described, followed by the presentation and discussion of the results. Finally, conclusions, limitations, and directions for future research are provided.

## 2. Literature reviews

Cloud ERP systems are deployed on cloud infrastructures whose performance, energy efficiency, security, and availability directly affect ERP system reliability and user experience. Several recent studies address infrastructure-level mechanisms that, while not ERP-specific, influence the feasibility and operational quality of cloud-based enterprise systems.

Energy-efficient Virtual Machine (VM) management is a key concern for sustainable cloud ERP operation, as ERP workloads are typically long-running and resource-intensive. Gupta et al. [11] propose an enhanced energy-efficient VM consolidation approach based on live migration to reduce data center energy consumption while maintaining service performance. Their Enhanced Energy-Efficient Scheduling Algorithm (EEESA) integrates workload prediction, real-time resource monitoring, and adaptive VM migration strategies to improve sustainability in cloud environments. Such mechanisms are highly relevant for cloud ERP deployments, as ERP systems depend on stable performance guarantees and service-level agreements, which can be affected by inefficient VM placement and energy-driven consolidation strategies.

Security and access control mechanisms at the cloud infrastructure level also affect cloud ERP adoption, particularly in highly regulated industries and public-sector contexts. Namasudra et al. [12] propose a time-efficient, secure DNA-based access control model for cloud computing environments, aiming to enhance data security and access efficiency in large-scale cloud data storage. Although not ERP-specific, this work highlights advanced security architectures that can mitigate risks to data confidentiality and access control—two major concerns repeatedly identified in cloud ERP implementation studies. Such mechanisms are particularly relevant for ERP systems processing sensitive financial, personnel, and operational data.

The performance and availability of cloud ERP systems are further influenced by VM migration efficiency, particularly during load balancing, maintenance, and fault recovery. Gupta and Namasudra [13] propose a novel technique to accelerate live VM migration, reducing downtime, migration time, Central Processing Unit (CPU) usage, and data transfer overhead. Their framework demonstrates how optimized migration strategies can improve service continuity in cloud environments. These aspects are directly relevant to cloud ERP implementations, as ERP systems require high availability and low downtime during operational transitions and infrastructure maintenance.

**Table 1.** Synthesis of literature streams relevant to cloud ERP implementation

Literature stream	Representative focus	Typical methods	Main contributions	Limitations/Gaps
Cloud ERP adoption & implementation challenges	Security, data migration, customization limits, organizational resistance, vendor lock-in	Surveys, case studies, literature reviews	Identify technical, organizational, and environmental barriers to the implementation of Cloud ERP	Fragmented analysis of challenges; limited integration across lifecycle phases
Cloud ERP success factors & adoption models	Critical Success Factors (CSFs), Technology-Organisation-Environment (TOE), Diffusion of Innovations (DOI), unified theory of acceptance and use of technology (UTAUT)-based models	Quantitative surveys, conceptual frameworks	Explain the determinants of adoption intention and perceived success	Focus mainly on adoption intention rather than execution and post-go-live challenges
Cloud ERP implementation frameworks & methodologies	Vendor-specific methods, BPM-enabled frameworks, decision-support tools	Conceptual models, process frameworks, case-based guidelines	Provide structured guidance for planning and implementing Cloud ERP	Frameworks are often discussed in isolation, have limited empirical validation, and have a weak linkage to specific challenges
Context-specific Cloud ERP studies	SMEs, public sector, developing countries	Case studies, conceptual frameworks	Highlight contextual constraints such as resource scarcity and regulatory environments	Limited generalizability; lack of cross-context synthesis
Cloud infrastructure mechanisms relevant for Cloud ERP	VM live migration, energy-efficient consolidation, cloud access control	Algorithm design, simulation-based evaluation	Improve performance stability, sustainability, and security of cloud platforms supporting ERP workloads	Not ERP-specific; rarely integrated into ERP implementation frameworks

Together, these infrastructure-level schemes highlight that cloud ERP implementation challenges are not solely organizational or application-layer problems but are also shaped by underlying cloud platform capabilities in energy efficiency, security, and migration performance. However, existing cloud ERP implementation frameworks rarely explicitly incorporate such infrastructural considerations, indicating a gap between ERP-oriented implementation guidance and cloud platform engineering research.

Table 1 synthesizes the main streams of literature on Cloud ERP implementation and highlights the fragmentation among challenge-focused studies, framework-oriented contributions, and cloud infrastructure research, which motivates the integrative synthesis provided in this SLR.

### 3. Theoretical background

This section provides a structured overview of the main research streams related to cloud ERP systems, including implementation challenges, adoption and success factor models, existing implementation frameworks, and mechanisms that enable cloud infrastructure. In contrast to the Systematic Literature Review presented later, which synthesizes and classifies individual studies based on explicit inclusion criteria, this section serves as a conceptual framing and positioning of the research field. It delineates the dominant perspectives, typical methodological approaches, and recurring limitations in existing work to (1) contextualize the subsequent SLR results, (2) highlight fragmentation across research streams, and (3) motivate the need for an integrative synthesis of challenges and frameworks undertaken in this study.

ERP systems are Information Systems (IS) for optimally managing and planning resources across the whole organisation [14, 15]. By integrating and streamlining business processes and functions, a comprehensive view of operations is provided through a centralised platform [16]. All information is generated and accessed in real time from a single data repository, minimising redundancy and improving integrity [8, 16, 17]. In addition, key functions across departments are automated, increasing operational efficiency and, consequently, competitive advantage [15, 16].

Cloud computing enables access to the ERP system via Software as a Service (SaaS), making it readily accessible over the internet. The other comparisons to a traditional ERP system are listed in Table 2.

**Table 2.** Comparison of on-premises ERP and cloud ERP systems

Feature	On-premises ERP	Cloud ERP
Deployment	Installed locally on company-owned servers and hardware	Hosted virtually on the vendor’s cloud platform
Access	Application or link on a local computer; limited to on-site access, unless extra configurations are made	Via clients like a web browser, supporting remote work and mobile access
Installation	Complex and resource-intensive	Faster and cheaper through virtualisation
Maintenance	Organisations Information Technology (IT) department	ERP vendor
Scalability	Requires additional hardware and IT resources	Easy and highly adaptable to the business needs
Customisation	Highly customisable	No or only limited customisation
Compliance and Security	The company is fully responsible for security and compliance	Managed by a cloud vendor or third party; requires trust in them
Costs	High initial investment	Lower upfront costs, but ongoing subscriptions

The implementation of a cloud ERP system can be divided into three phases: pre-implementation, implementation, and post-implementation [18]. The first phase involves planning, project design, and preparation, including selecting a supplier and informing employees about upcoming changes [9, 19, 20]. The implementation includes the system installation, data migration, and testing. Once validated, the system goes live, supported by user training. The post-

implementation phase focuses on system monitoring and user support, both of which are vital to project success [19, 21]. Ongoing maintenance and updates ensure continuous improvement [19, 20].

Although frameworks may divide the process into varying numbers of phases, they all address planning, implementation, and post-implementation [22, 23]. Key focus areas include change management, data migration, and system integration [24, 25]. Depending on company size, data volume, and resources, implementation can last from a few months to several years [19].

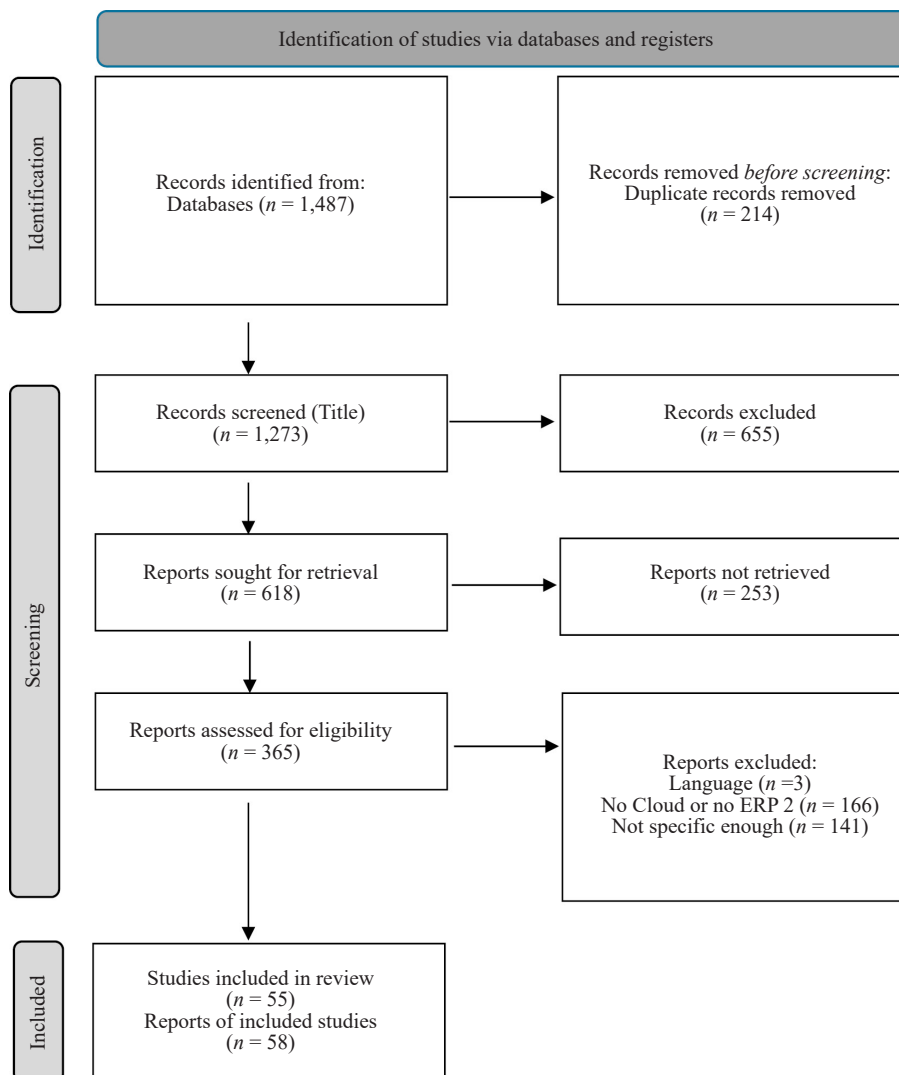
## 4. Methodology

This chapter describes the study’s methodological aspects and the steps of the SLR.

In this paper, an SLR guided by Webster and Watson [10] is conducted to find empirical evidence, which in turn serves to answer the predefined research questions:

RQ1: What are the main challenges identified during the implementation of a cloud-based ERP system?

RQ2: What are the most utilised frameworks during such an implementation?



**Figure 1.** Step-wise process of the SLR based on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), from database search to synthesis of challenges and frameworks

A SLR is a research technique that conceptualises particular research questions or subjects by identifying, analysing, and synthesising prior research [10, 26]. By systematically and explicitly summarising all the findings, bias is reduced, leading to accurate, precise, and trustworthy information from which conclusions can be drawn. Based on them, decisions are made. The goal is to identify all relevant empirical evidence to answer a specific research hypothesis or question, using predefined inclusion criteria [27]. The overall process comprises six sequential steps, from protocol definition to data synthesis, as illustrated in Figure 1 and described in the following paragraphs.

Step 1-Definition of the Research Scope and Research Questions. The scope of the review was defined to focus on cloud-based ERP systems, with particular emphasis on implementation challenges and implementation frameworks. Based on this scope, the two research questions (RQ1 and RQ2) were formulated to guide the search strategy, screening, and synthesis processes.

Step 2-Search Strategy and Data Sources. A structured search strategy was developed using predefined keyword combinations related to “cloud ERP”, “ERP implementation”, “migration”, “challenges”, and “frameworks”. The search was conducted across five academic databases (e.g., Scopus, Web of Science, IEEE Xplore, ACM Digital Library, and Google Scholar) within the defined time frame (2015-2025). The initial search yielded N records before duplicate removal.

Step 3-Screening and Eligibility Assessment: The identified records were screened in two stages. First, titles and abstracts were reviewed against predefined inclusion and exclusion criteria given in Table 3 (e.g., relevance to cloud ERP implementation, peer-reviewed status, and English-language publication). Second, the full texts of the remaining studies were assessed for eligibility. Studies that did not directly address cloud ERP implementation challenges or frameworks were excluded at this stage. The screening process adhered to PRISMA guidelines and yielded a final sample of 58 studies.

Step 4-Quality Appraisal: To ensure methodological rigor, the included studies were assessed using the Joanna Briggs Institute (JBI) critical appraisal tools. Studies that did not meet the minimum quality threshold were excluded. This step ensured that the synthesis was based on methodologically sound and relevant evidence.

Step 5-Data Extraction and Coding: Relevant data were extracted from each included study using a standardized extraction template. Extracted variables included publication year, research method, organizational context, reported implementation challenges, and described frameworks or implementation approaches. The extracted data were coded and organized using Excel, while Orange Data Mining was used to support clustering and pattern identification across challenge categories and framework types.

Step 6-Synthesis and Classification: The extracted data were synthesized using qualitative content analysis and frequency-based aggregation. Challenges were grouped into thematic categories, and frameworks were classified into conceptual classes. Finally, challenges and framework types were systematically mapped to identify coverage patterns and research gaps, addressing both research questions.

All six steps are illustrated in Figure 1, which presents the PRISMA-based screening and selection process, showing the number of records at each step.

**Table 3.** Inclusion and exclusion criteria

Inclusion criteria
<p>All fields contain “Cloud ERP” OR “Cloud Enterprise Resource Planning” OR “cloud-based ERP” OR “cloud-based Enterprise Resource Planning” AND “Implementation”            Additional Factor includes either “Framework” OR “Challenge”            Research area included “Computer Science” OR “Business, Management and Accounting” OR “Engineering” OR “Decision Sciences” OR “Social Sciences” or “Multidisciplinary”            Literature published between 1 January 2015 and 1 May 2025            Research written in English</p>
Exclusion criteria
<p>Everything outside the inclusion criteria</p>

**Table 4.** Search syntax used in each database and the results

Database	No. of literature extracted
Emerald publishing	293
IEEE	56
ScienceDirect	137
Scopus	895
Springer nature link	106

To qualify as a proper research procedure, the SLR must maintain a certain quality and produce verifiable results. This is done through a repeatable search process that follows the following steps:

- Identification of a research question and creating a research strategy;
- Specification of inclusion and exclusion criteria (Table 3);
- Selection of Studies within the different databases (Table 4);
- Assessing the quality of the studies (Appendix Table 9);
- Extract and synthesise data;
- Analyse and present results;
- Transparent reporting [26, 28].

The SLR's article selection process is strictly regulated; by following these steps, bias can be reduced and transparency enhanced [29]. For applying the search strategy, the following five databases were selected:

Emerald Publishing is chosen because of its broad coverage of various areas related to cloud ERP and its long history with a variety of researchers.

As the IEEE Xplore database is leading in most of the recent advancements in technology, the platform has been included in the search database.

Science Direct was included in the search strategy because of its focus on engineering literature, including research on ERP systems and cloud computing.

Scopus allows users to gain an interdisciplinary perspective of different areas. Because the theme of cloud ERP implementation spans multiple subject areas, this resource is suitable.

Springer Nature Link is one of the top publishers in the field of Science, Technology, Engineering, and Mathematics (STEM). Therefore, because it provides quick, easy access to deep and broad knowledge in this area, it is chosen as a search database.

Together, these databases offer broad interdisciplinary access to peer-reviewed publications across technical, managerial, and organizational fields. Limiting the search to this set ensured methodological rigor, relevance, and efficiency while still capturing the essential body of literature required for the review.

Scopus was selected as the primary bibliographic database due to its broad multidisciplinary coverage and comprehensive indexing of peer-reviewed literature across major publishers. ScienceDirect was also included to ensure full-text access to recent and in-press Elsevier publications that may not yet be comprehensively indexed in Scopus at the time of the search, and to reduce the risk of missing domain-specific studies in ERP and information systems published in Elsevier journals. To mitigate potential overlap between the two databases, all retrieved records were systematically deduplicated before screening. This approach prioritised recall over minimal redundancy and is consistent with established recommendations for comprehensive evidence synthesis in systematic literature reviews.

Accordingly, a timeframe from 2015 to 2025 was chosen, as it captures the post-SaaS emergence and rapid market growth of cloud ERP, and to keep the synthesis current through recent shocks and innovations such as COVID-19 and Artificial Intelligence (AI), a choice consistent with SLR guidance on justifying time limits. Based on all these inclusion and exclusion criteria, the following search string was applied in each of the portals:

*((“Cloud ERP”) OR (“Cloud Enterprise Resource\* Planning”) OR (“cloud-based ERP”) OR (“cloud-based*

*enterprise resource system”) AND (Implementation) AND (Framework) AND (“Cloud ERP”) OR (“Cloud Enterprise Resource Planning”) OR (“cloud-based ERP”) OR (“cloud-based enterprise resource system”) AND (Implementation) AND (Challenge\*)).*

In order to discover articles closer to the target questions, the advanced search functions are used. They were handled specific to each database. In addition, the whole process is supported by the PRISMA Statement. The found articles were extracted from the databases and imported into an Excel Sheet. With the help of a function, the duplicates were removed from the list. The majority of duplicate records originated from overlap between Scopus and ScienceDirect. The further reduction which included the screening of the Title, Abstract and Full-Text were done manually by the author.

The results of each step are shown in Figure 1. The final 58 pieces of literature were assessed for their quality (Appendix). This was done with the help of the JBI quality assessment tool. They offer personalised questionnaires for different kind of studies which rate the quality of a research work with nine to eleven questions. As all of them were of above-average quality, their content was read, synthesized, reported, and the results obtained. Overall, the sampling approach ensured relevance, quality, and transparency, while balancing breadth and depth by combining rigorous filtering with interdisciplinary database coverage.

To ensure dataset quality and authenticity, only peer-reviewed publications in English that directly addressed cloud ERP implementation challenges or frameworks were included. Non-peer-reviewed sources such as blogs, white papers, vendor marketing material, and practitioner reports were excluded. In addition, a quality appraisal was conducted using the JBI critical appraisal tools, and studies that did not meet the minimum quality threshold were excluded from the final dataset.

The final dataset, therefore, represents an authentic and curated body of scientific evidence rather than a convenience sample. While publication bias and database coverage limitations cannot be entirely excluded, the use of multiple major indexing databases and formal quality appraisal procedures enhances the dataset’s reliability and trustworthiness.

The analysis and synthesis of the selected studies were conducted in a desktop-based experimental environment. Data extraction and preliminary coding were performed using Microsoft Excel, which was used to structure bibliographic metadata, study characteristics, challenge categories, and framework types. To support pattern detection and clustering, the Orange Data Mining toolkit was employed to identify co-occurrence patterns between challenge categories and framework classes.

All analyses were conducted on a standard personal computing environment (Windows-based operating system, 64-bit architecture). No proprietary datasets or restricted software environments were required. The use of openly available tools ensures that the analytical procedures can be replicated by other researchers using comparable software configurations.

## 5. Results of the research

The results presented in this section are based on a structured coding and aggregation procedure applied to the final dataset of 58 studies. Each included study was analysed in full text, and all reported cloud ERP implementation challenges and implementation frameworks were extracted. A single research could contribute to multiple challenge categories and framework classes, reflecting the multi-dimensional nature of cloud ERP implementations.

Challenge categories were derived through inductive coding and subsequently consolidated into higher-level thematic groups (e.g., technical, organisational, vendor-related, and environmental). Frameworks were classified into conceptual classes based on their primary purpose (e.g., lifecycle-oriented, decision-support, adoption, and governance frameworks).

Frequencies reported in tables and figures represent absolute counts of occurrences across the dataset rather than the number of distinct studies, as individual studies often report multiple challenges and frameworks. No weighting or normalization was applied. Co-occurrence analyses between challenge categories and framework classes were computed using frequency matrices derived from the coded dataset. The figures in this section are based on the aggregated and coded dataset described in the Methodology section.



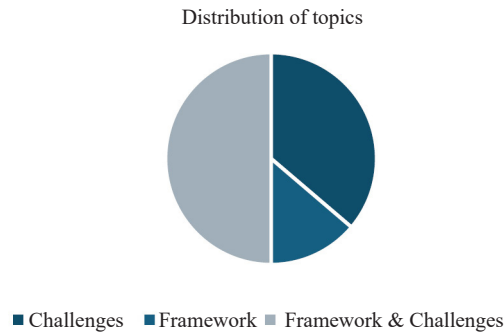


Figure 4. Distribution of papers on the different topics

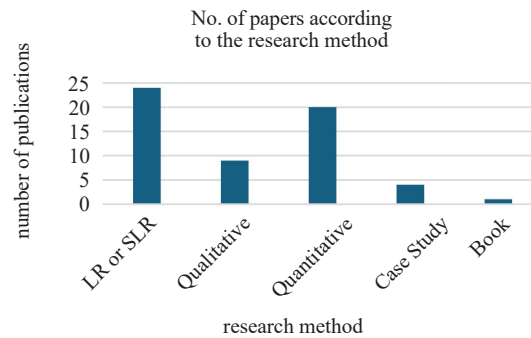


Figure 5. Number of documents according to the research method

Although all the literature addresses the same topic, different research methods, such as Literature Review, Qualitative Study (e.g., interviews), Quantitative Study (e.g., surveys), and case study, were employed. The identified approaches are shown in Figure 5. Thus, the most commonly used empirical practice is a structured or simple literature review. For papers employing multiple methods, the research method listed in the overview table in the Appendix corresponds to the most significant approach. In addition, it provides information on the author(s), the topic, and the year of publication.

## 6. Discussion

In this chapter, the insights from the studies included in the SLR will be related to the research questions and further interpreted in the context of other evidence. First, an overview of the key challenges and frameworks identified across the 58 articles is provided, thereby addressing both research questions. The analysis of the papers revealed difficulties associated with implementing cloud ERP systems and multiple studies on the frameworks used for that process. In addition, the connection between these two factors will be shown.

All 26 challenges identified in the literature and listed in Table 5 were divided into four categories: technical, organisational, external, and context-specific. Some of the problems belong to more than one category. However, the challenges were classified under a single category, as described in the original literature.

In addition, Table 6 provides an overview of ERP adoption across industries, reporting each sector's approximate share of total ERP implementations, the estimated distribution between cloud-based and on-premises systems, and typical production database sizes as an indicator of future research potential. Manufacturing represents the largest share of ERP usage, followed by IT and professional services, whereas sectors such as construction and mining exhibit comparatively lower adoption rates. Across most industries, cloud-based ERP systems predominate over on-premises solutions, although the relative balance varies by domain. Typical ERP data volumes generally fall within the small-to-medium range; however, manufacturing, healthcare, and utilities tend to exhibit higher storage requirements than sectors

such as construction or IT.

**Table 5.** Challenges identified and the corresponding paper

	Challenge	References
Technical Challenges	Security risk and data privacy issues	[8, 21, 30-44]
	Data migration	[8, 30, 34-36, 41, 45]
	Performance risks	[33, 34, 36, 38, 41, 46, 47]
	Adequate reliability levels	[30, 42]
	Limited customisation, integration, and functionality	[21, 30, 31, 33, 34, 36, 41-43, 45, 47-49]
	Loss of IT competency, technical knowledge, and control	[33, 34, 36, 37, 41]
	Compatibility problems and infrastructural embeddedness	[8, 14, 33, 37, 42, 50]
Organisational Challenges	Lack of support from top management and a lack of leadership	[14, 35, 39, 43, 47, 48, 51-55]
	Availability of resources	[14, 35]
	Resistance to change	[30, 34-36, 41-45, 50, 52, 54, 56]
	Business Process Reengineering (BPR)	[31, 50, 54]
	Knowledge gaps and other personnel-related gaps	[31, 34, 43]
	Adaptation to new processes and workflows	[8, 31, 43]
	User-centric issues	[40, 48, 51]
	Organisational structure	[36, 44, 48, 50, 57]
	Relationship difficulties	[21, 31, 43, 47, 51, 57]
	Awareness and perception of the system	[36, 48]
External/Vendor-specific Challenges	Project management	[39, 40, 47, 48, 51, 55, 58]
	Vendor dependency or lock-in	[8, 31, 34, 37, 39, 43, 48, 59, 60]
	Service-level agreements and hidden expenses	[31, 33, 34, 36, 41, 42, 47, 56]
	Lack of cloud ERP expertise	[31, 33, 39, 43, 47]
	Lack of standardization and regulations	[31, 34, 56, 59]
Context-specific Challenges	Control and governance challenges	[8, 33, 34, 41]
	Challenges in SMEs	[36, 42, 61, 62]
	Challenges for developing countries	[14, 49, 63-66]
	Industry-specific challenges	[49, 64, 67]

**Table 6.** Comparison of ERP implementation shares by industry, including estimated cloud vs. on-premise adoption rates and typical hosted ERP data volumes per organization

Domain	Industry Share of ERP implementations (est. cloud ERP/est. on-prem)	Hosted ERP Typical ERP data volume per org (live Database (DB))
Manufacturing	~34% (60-70%/30-40%)	0.5-5 TB
IT	~15% (75-85%/15-25%)	0.2-2 TB
Professional & Financial services	~14% (70-80%/20-30%)	0.5-3 TB
Distribution/Wholesale	~10% (70-80%/20-30%)	0.3-3 TB
Public sector & Non-profit	~7% (55-65%/35-45%)	0.3-5 TB
Healthcare	~5% (55-65%/35-45%)	0.5-5 TB
Retail	~4% (65-75%/25-35%)	0.2-3 TB
Utilities	~4% (55-65%/35-45%)	0.5-5 TB
Construction	~2% (50-60%/40-50%)	0.1-1 TB
Mining/Heavy industry	~2% (50-60%/40-50%)	0.3-3 TB

#### Technical Challenges:

Technical challenges arise during system development and implementation and affect all organisational levels. Moving to the cloud enables real-time data access but raises significant security and privacy concerns, especially in multi-tenant environments that are prone to vulnerabilities and data leaks [31, 34]. Data migration from legacy systems is another challenge, particularly for large firms, as it is time-consuming and costly and entails risks of data loss or performance issues due to connectivity problems [8, 36].

Cloud ERP systems also pose challenges for customisation and integration, as they offer less flexibility than traditional systems. Adapting or integrating new modules and third-party software is complex, expensive, and affects both SMEs and large organisations equally [30, 42, 48]. These constraints can lead to functional gaps and poor alignment between business processes and system features, particularly in industries that require high customisation, such as construction [14].

The shift to cloud services often results in a loss of IT expertise and resistance from technical staff, making training and skill development essential to retain control and understanding of the system [34, 37]. Finally, compatibility issues may arise when integrating cloud ERP with existing applications and governance structures, requiring new work arrangements, compliance efforts, and data migration [8, 50]. Future challenges will also involve integrating emerging technologies such as blockchain and AI [42].

#### Organisational Challenges:

Organisational challenges in cloud ERP implementation vary by company size, culture, and structure and are as critical as technical issues [40, 53]. A lack of top management support is among the main barriers, as leadership is vital for setting vision, allocating resources, and driving change [47, 52]. Insufficient motivation or planning can lead to financial and resource constraints, poor budgeting for training and change management, and rising costs for subscriptions, storage, and customisation [14, 31].

Employee resistance to change is another major obstacle, often driven by fear of job loss, altered routines, and insufficient communication [30, 54]. This affects both SMEs and large firms and requires strong change management and training to address [8, 55]. Resistance also stems from knowledge gaps-missing IT skills, dependence on vendors, and loss of technical expertise [31, 34]-all of which are aggravated by inadequate training [35, 39].

Further barriers include difficulties adapting to new workflows, especially with complex legacy systems, which can disrupt collaboration, communication, and documentation [8, 40]. Poor attention to user experience and satisfaction also affects engagement, productivity, and the willingness to continue using the system [40, 43].

Organisational structure plays a significant role-centralised and complex systems reduce flexibility and slow transformation [44, 50]. Additional issues include strained vendor relationships, internal conflicts, and differing opinions among company groups [31, 47]. Misaligned perceptions and awareness, and weak project management-such as unclear responsibilities or unsuitable methods-can lead to failure even before implementation begins [50, 55, 58].

External/Vendor-specific Challenges:

This dimension covers external factors beyond a company’s control, such as vendor relations and regulations [40]. The vendor plays a crucial role in cloud ERP projects-issues like lack of trust, unclear contracts, and limited transparency can hinder success [8, 31, 34, 37, 59, 60]. Choosing the right provider affects costs, storage, and subscription fees, while overreliance may lead to vendor lock-in [8, 59]. Compared to traditional systems, many cloud ERP solutions offer limited customisation and integration, which can be mitigated through strong Service-Level Agreements (SLAs). Missing vendor support or unclear contracts can delay or jeopardize implementation [30, 33, 34, 36, 38, 42, 48, 60].

Cloud adoption also causes skill and knowledge gaps, as outsourcing reduces in-house IT expertise and increases dependence on external providers. Moving data to third-party cloud servers raises security and privacy concerns, especially for companies handling sensitive information, and jurisdictional issues may arise when data is stored abroad [8, 31, 34, 37, 59, 60].

Moreover, the lack of standardisation and regulation in the cloud ERP market creates uncertainty around data protection, compliance, and government oversight [31, 34, 56, 59]. Reliable infrastructure and internet connectivity are essential, as network or performance issues can disrupt collaboration and access [21, 30, 36, 39, 48, 51, 60]. Finally, governance and control become more complex than in on-premises systems, since responsibility shifts to the provider and clear regulatory frameworks for managing data and relationships remain lacking [34, 43, 60].

Context-specific Challenges:

Challenges in cloud ERP implementation vary by context, such as industry, country, and company size. SMEs face different issues than large enterprises due to limited resources, IT skills, and capacity, making problems like skill loss more severe, while large firms struggle more with data migration. Other technical challenges-like performance, functionality, or security-affect all firms similarly [36, 42]. For SMEs, key issues include data management, organisational structure and culture, usability, network dependency, and vendor trust [61, 62].

**Table 7.** Identified frameworks and their sources

Frameworks	References
Vendor-specific frameworks	[49, 55, 58, 68, 69]
Project management methods	[53, 55, 68, 69]
Models based on new technologies	[31, 34, 46, 53, 61, 70-72]
Product-line engineering framework	[73]
ERP module deployment guidelines	[64, 74]
BPM-enabled requirements engineering framework	[30, 38, 48, 75]
Decision-making tools	[8, 14, 31, 33, 42, 59, 67, 69, 76]
Theoretical frameworks	[31, 33, 39, 40, 51, 52, 59, 60, 63, 64, 77, 78]
Conceptual frameworks	[31, 33, 39, 50, 56, 59, 63, 79]
Frameworks for SMEs	[14, 42, 61, 80]
Frameworks for developing countries	[14, 52, 64, 74, 78, 81]
Frameworks for public entities in developing countries	[49, 67]

In developing countries, research and frameworks remain limited and are often adapted from Western, top-down models that do not fit local conditions, which require a bottom-up approach. These countries face additional barriers, including outdated infrastructure, poor connectivity, limited financial and technological resources, a lack of skilled labour, and complex legal environments [14, 49]. Regulatory challenges are significant, as shown by examples from Brazil and Uganda, where compliance and incentives are lacking.

In the public sector, cloud ERP adoption is even more complex due to bureaucratic structures, rigid procurement rules, and regulatory oversight. Lengthy approval processes, limited budgets, and low autonomy slow progress and may lead to suboptimal solutions [49, 67]. Skill gaps among employees further increase dependence on vendors, and disruptions can have wide-reaching effects on public services [32]. High levels of customisation and lengthy business process redesigns also increase costs and risks. These issues indicate that governments and specific industries—such as construction—face unique barriers that impede the implementation of standard cloud ERP solutions.

Table 7 provides an overview of the 12 frameworks utilised by the authors. Most of them are developed in response to the challenges listed above.

The identified frameworks range from theories for determining challenges to tools for supporting decision-making to guidelines applicable across all phases of implementation.

Vendor-specific frameworks:

The first type of framework is vendor-specific frameworks. Various ERP system providers offer methodologies for migrating from legacy systems, whether their own or those from other brands, to a new cloud-based solution. Examples include Accelerated SAP, SAP Activate, Application Implementation Method, Oracle's Unified Method (OUM), Oracle ERP Cloud Implementation Methodology, Microsoft Dynamics Sure Step, Direct Path, and Dynamic Enterprise Modeler [49, 55, 58, 68, 69].

Project management methods:

There are different project management methods for facilitating such a transformation; they can be either generic or agile [68, 69]. Examples of the first type are the Project Management Institute (PMI) methodology or PRINCE2. Agile frameworks, such as Scrum or Kanban, have now become a standard. However, more important is applying the method consistently throughout the project and combining it with other methodologies, rather than the choice of project management method itself [53, 55, 69].

Models based on new technologies:

Several studies, such as those of [38, 46, 61, 70-72], focus on the aspect of including new technologies like machine learning, AI, edge computing, or blockchain to change the way of implementing cloud ERP systems. They aim to leverage innovations to improve various aspects of the implementation process, including security, automation, and performance.

Product-Line-Engineering framework:

This method enhances security by extending traditional Product-Line Engineering (PLE) approaches for developing configurable solutions. During the development and engineering phases, security engineering sensors will be included to identify changes earlier [73].

Optimizing ERP module deployment:

The strategy proposed by Boutros et al. [64] recommends installing modules in order of priority for the company and the business to optimise the deployment and diffusion of each model during the transition.

Business Process Management (BPM)-enabled requirements engineering framework:

This framework is a hybrid approach that integrates technology and processes to bridge the gap between the functionality of cloud ERP systems and their business needs. This is achieved through formulating appropriate requirements and applying business process modelling methods in each phase [48, 68, 75].

Decision-making tools:

ERP implementation involves many critical decisions. Studies by [8, 34, 42, 67] provide tools for evaluating cloud ERP options but do not address the full project lifecycle or cost implications. To fill this gap, L'yarfi et al. [76] propose guidelines covering key decisions, cost comparisons, and organisational criteria to support informed choices and estimate the Total Cost of Ownership as an early feasibility indicator. Other works [14, 31, 33, 59] utilise conceptual frameworks that identify variables influencing cloud ERP adoption but lack detailed guidance. In addition, challenges are often discussed within theoretical frameworks, such as the Technology-Organisation-Environment (TOE) framework

or the DOI Theory.

Theoretical frameworks for implementation:

These frameworks are not step-by-step guides for transitioning to the new software. Instead, they help analyse and better understand the implementation process. The most utilised are the TOE framework and the DOI Theory. By doing so, the barriers of other companies can be identified, and strategies can be formulated to mitigate them [39, 63, 64, 78]. Other frameworks utilised include the Resource-Based View [78, 81], Contingency Theory [51, 77, 81], and the Resource Dependence Theory [51, 77, 81].

Conceptual frameworks:

Various other studies suggest further conceptual frameworks. They provide a basic understanding and guidelines that consider multiple aspects of a cloud ERP implementation. The first concerns the relationship between environmental factors and their strategic consequences [81]. Another study presents various perspectives on a Cloud ERP Implementation [33], and Ali et al. [31] examine enablers and barriers and their implications for innovation. Another essential aspect to consider is the CSFs of an implementation, which have been investigated in several studies [50, 56, 59, 63, 82]. To mitigate IS discontinuation, Kinnunen [79] suggests maintaining both on-premises and cloud-based systems in parallel.

Framework for SMEs:

SMEs face different challenges than larger organisations. Therefore, [14, 80] suggest understanding the CSFs to mitigate the extent of regional factors, so they do not conflict with the values of small companies, or to utilise an action plan designed specifically for management or decision-makers. The concept developed by Sørheller et al. [42] focuses on reducing costs and execution delays in such projects within SMEs. Basu et al. [61] use the Unified Theory of Acceptance and Use of Technology 2 to identify challenges in this type of organisation and to develop a conceptual framework that considers data security, usability, and vendor lock-in.

Several frameworks, such as those by Barbieri and Sott [14], can also be applied in developing countries, such as Malaysia. Other studies focusing on developing regions include Jayeola et al. [78] in Malaysia, Barbieri and Sott [14] in Brazil, and Boutros et al. [64] in Africa and the Middle East. Given the limited resources of developing countries, [52, 81] propose a resource-based framework that constrains project budgets, encourages leaders to promote and support system adoption, and aligns implementation with company objectives. The benefits should be defined early, and efforts should focus on achieving them rather than merely completing the project [74].

Frameworks for public organisations in developing countries:

Developing countries have different contextual conditions from developed countries. In addition, public entities are structured differently from private organisations. Therefore, Mpanga and Elbanna [49] developed a framework that includes monitoring and evaluation within all phases of an ERP system lifecycle. Cebekhulu et al. [67] suggest using decision-making frameworks in conjunction with a project management checklist to identify implementation aspects that have not been adequately considered or planned.

Among the frameworks listed in Table 5, those that provide lifecycle coverage, decision support, cost transparency, or context-specific implementation guidance demonstrate the most significant practical significance. In contrast, purely theoretical or factor-based frameworks primarily provide explanatory rather than actionable value.

To better understand the connection between the challenges and frameworks described in the sections before, Table 8 presents the frameworks on the left and, on the opposite side, the challenges they should address or mitigate.

Some guidelines apply across contexts, such as conceptual frameworks, whereas others address a single topic, such as decision-making tools or project management methods. Some challenges, such as the decision-making problem, can be addressed using several frameworks, but it is also essential to consider the other issues the company faces. To know what framework is the best suitable for the project, (1) analyse the company, its size, the industry they are in, and the countries it is operating in. Then (2) identify the challenges that already came up, or that could arise in the future, based on similar projects and experiences of competitors. (3) The challenges should then be ranked in priority and intensity. (4) Based on these two factors, one or several frameworks can be chosen, if necessary combined, and applied. Therefore, it is crucial to focus on the guidelines that help mitigate the highest-priority risks.

**Table 8.** Confrontation of the frameworks and the corresponding challenges

Frameworks	Challenges they solve/mitigate
Vendor-specific frameworks	Diverse challenges during all phases of the move from the legacy system of one's own or another brand to the new solution
Project management methods	Project management method, team, responsibilities, and communication
Model based on new technologies	Supply chain management Decision-making Data security and safety issues
Product-line-engineering framework	Configuration problems System deployment Data privacy and security Product-line-engineering
Optimising ERP module deployment	Challenges during the deployment and diffusion of individual modules
BPM-enabled requirements engineering framework	BPR Formulation of appropriate requirements and business needs
Decision-making tools	Decision-making
Theoretical frameworks	Various technological, organisational, and environmental challenges Resource allocation
Conceptual frameworks	Environmental challenges Challenges in innovation Organisational and technological challenges of cloud vendors Technological, organisational and human challenges in non-profit organisations Diverse other challenges IS discontinuance
Frameworks for SMEs	Structure of the company Fewer resources and capabilities Extensive costs and execution delays Various challenges that are described in 5.2 Context-specific Challenges
Frameworks for developing countries	Challenges in Malaysia, Brazil, Africa, and the Middle East Restricted resources Acceptance issues Wrong or missing leadership Other challenges pointed out in Chapter 5.2
Frameworks for public organisations in developing countries	Structure of organisation Decision-making Additional challenges for public companies that are SMEs, listed in the section above

While prior systematic reviews on cloud ERP and cloud enterprise systems have predominantly focused on adoption drivers, critical success factors, or isolated implementation challenges, they typically treat implementation frameworks as secondary or discuss them in isolation. In contrast, this study provides an integrative synthesis that explicitly links classes of implementation frameworks to specific categories of implementation challenges across different organisational contexts. This mapping reveals systematic coverage gaps—such as the limited treatment of vendor lock-in and post-go-live governance in existing frameworks—and highlights mismatches between dominant challenge patterns and available methodological support. By shifting the analytical focus from descriptive enumeration to relational mapping between challenges and frameworks, this work advances the state of knowledge from fragmented evidence toward actionable, decision-oriented guidance for cloud ERP implementation.

## 7. Limitations & future research

This study is subject to several limitations. First, the SLR process was conducted by a single researcher, including study selection, quality assessment, coding, and synthesis. Although established quality appraisal guidelines were applied consistently, the absence of independent cross-validation introduces the risk of subjective bias. Second, the distribution of topics in the reviewed literature is uneven. Most studies focus on challenges in cloud ERP

implementation. At the same time, frameworks are often discussed only briefly or without explicit linkage to specific challenges, which may affect the interpretability of the framework-challenge mapping. Third, the SLR was limited to five academic databases and English-language publications, which may have excluded relevant studies published in other languages or indexed in other databases.

Future research should extend the systematic identification and evaluation of cloud ERP implementation frameworks, particularly vendor-specific and practice-oriented methodologies that are underrepresented in academic literature. In addition, emerging technological developments such as AI-enabled ERP functionalities, blockchain-based data governance mechanisms, and advanced data security architectures warrant deeper investigation with respect to their implications for cloud ERP implementation frameworks. Comparative studies across organisational contexts, especially between private-sector organisations and public institutions, could further refine context-sensitive framework selection and adaptation.

## 8. Conclusion

Companies increasingly face pressure to migrate from on-premises ERP systems to cloud-based solutions, as vendor support for traditional deployments is being reduced or phased out and cloud platforms offer functional and economic advantages. However, cloud ERP implementation represents a complex socio-technical transformation accompanied by numerous technical, organisational, and environmental challenges. While prior research has extensively documented individual barriers to cloud ERP adoption, comparatively few studies systematically examine implementation frameworks and their relationship to concrete implementation challenges and organisational contexts. This SLR addresses this gap by synthesising 58 peer-reviewed studies and identifying 26 challenge categories and 12 framework classes. By explicitly mapping framework types to challenge categories and organisational contexts, this study shifts the analytical focus from adoption intention to real-world execution and provides an integrative, decision-oriented perspective for both private-sector organisations and public institutions.

Private-sector enterprises and public institutions face many similar cloud ERP implementation challenges, such as data migration complexity, security and privacy concerns, vendor dependence, and resistance to change. However, these challenges tend to be more pronounced in the public sector due to stricter regulatory requirements, bureaucratic decision-making structures, longer procurement cycles, and greater skill shortages, which collectively slow down implementation processes and increase organisational risk. The findings indicate systematic coverage gaps in existing frameworks, particularly with regard to post-go-live governance, vendor dependence, and regulatory compliance in highly regulated environments. Overall, awareness of implementation challenges and the structured application of suitable frameworks can help project teams anticipate risks and increase the likelihood of successful cloud ERP implementation. By providing an integrative synthesis and explicit framework-challenge mapping, this study supports more informed, context-sensitive decision-making in cloud ERP transformation projects.

## Conflict of interest

The authors declare no competing financial interest.

## References

- [1] Mathieu RG, Turovlin AE. Lost in the middle-a pragmatic approach for ERP managers to prioritize known vulnerabilities by applying classification and regression trees (CART). *Information & Computer Security*. 2023; 31(5): 655-674. Available from: <https://doi.org/10.1108/ICS-02-2023-0027>.
- [2] Paulsson V, Johansson B. Cloud ERP systems architectural challenges on cloud adoption in large international organizations: A sociomaterial perspective. *Procedia Computer Science*. 2023; 219: 797-806. Available from: <https://doi.org/10.1016/j.procs.2023.01.353>.
- [3] AlMarri M, Al-Ali M, Alzarooni M, AlTeneiji A, Al-Ali K. Enterprise resource planning systems for health, safety, and environment management: Analyzing critical success factors. *Sustainability*. 2025; 17(7): 2947. Available

from: <https://doi.org/10.3390/su17072947>.

- [4] Abdelgawad A, Jamil A, Hameed AA. *Intelligent Systems, Blockchain, and Communication Technologies*. Cham: Springer Nature Switzerland; 2025.
- [5] Bitkowska A, Dziembek D, Gzik T. Enterprise resource planning based on cloud computing (cloud ERP). *Journal of Software and Systems Development*. 2024; 2024: 1-16. Available from: <https://doi.org/10.5171/2024.206232>.
- [6] Chang V, Walters RJ, Wills GB. Cloud computing and frameworks for organisational cloud adoption. In: *Web-Based Services: Concepts, Methodologies, Tools, and Applications*. USA: IGI Global Scientific Publishing; 2016. p.683-707.
- [7] Chi J. A study on determinants of enterprises migrating ERP systems to the cloud. *American Journal of Industrial and Business Management*. 2024; 14: 1070-1087. Available from: <https://doi.org/10.4236/ajibm.2024.148056>.
- [8] Hustad E, Sørheller VU, Høvik Jørgensen E, Vassilakopoulou P. Moving enterprise resource planning (ERP) systems to the cloud: the challenge of infrastructural embeddedness. *International Journal of Information Systems and Project Management*. 2020; 8: 5-20. Available from: <https://doi.org/10.12821/ijispm080101>.
- [9] Mahmud I, Ramayah T, Kurnia S. To use or not to use: Modelling end user grumbling as user resistance in pre-implementation stage of enterprise resource planning system. *Information Systems*. 2017; 69: 164-179. Available from: <https://doi.org/10.1016/j.is.2017.05.005>.
- [10] Webster J, Watson RT. Analyzing the past to prepare for the future: Writing a literature review. *MIS Quarterly*. 2002; 26: 13-23.
- [11] Gupta A, Kumar P, Namasudra S. Sustainable cloud computing: An enhanced energy-efficient VM consolidation approach using live migration. *Iran Journal of Computer Science*. 2026; 9: 27. Available from: <https://doi.org/10.1007/s42044-025-00385-y>.
- [12] Namasudra S, Roy P, Vijayakumar P, Audithan S, Balusamy B. Time efficient secure DNA based access control model for cloud computing environment. *Future Generation Computer Systems*. 2017; 73: 90-105. Available from: <https://doi.org/10.1016/j.future.2017.01.017>.
- [13] Gupta A, Namasudra S. A novel technique for accelerating live migration in cloud computing. *Automated Software Engineering*. 2022; 29: 34. Available from: <https://doi.org/10.1007/s10515-022-00332-2>.
- [14] Barbieri LM, Sott MK. Critical success factors in the implementation of cloud ERP in SMEs: A case study in Brazilian organizations. *REGPE Entrepreneurship and Small Business Journal*. 2025; 14: e2624. Available from: <https://doi.org/10.14211/regepe.esbj.e2624>.
- [15] Jagoda K, Samaranyake P. An integrated framework for ERP system implementation. *International Journal of Accounting & Information Management*. 2017; 25(1): 91-109. Available from: <https://doi.org/10.1108/IJAIM-04-2016-0038>.
- [16] Qorihatunnasik A, Maesaroh SS, Nugraha MR. Analysis of success factors for one single ERP (enterprise resource planning) implementation (case study of soe holding). *Indonesian Interdisciplinary Journal of Sharia Economics (IJSE)*. 2025; 8: 1860-1876. Available from: <https://doi.org/10.31538/ijse.v8i1.6349>.
- [17] Alaskari O, Pinedo-Cuenca R, Ahmad MM. Framework for implementation of enterprise resource planning (ERP) systems in small and medium enterprises (SMEs): A case study. *Procedia Manufacturing*. 2021; 55: 424-430. Available from: <https://doi.org/10.1016/j.promfg.2021.10.058>.
- [18] Xie Y, Allen C, Ali M. Critical success factor-based resource allocation in ERP implementation: A nonlinear programming model. *Heliyon*. 2022; 8: e10044. Available from: <https://doi.org/10.1016/j.heliyon.2022.e10044>.
- [19] Kenge R, Khan Z. A research study on the ERP system implementation and current trends in ERP. *Shanlax International Journal of Management*. 2020; 8: 34-39. Available from: <https://doi.org/10.34293/management.v8i2.3395>.
- [20] Wyrobek J, Gonera P, Winkler R. Strategic approaches to ERP implementation in enterprise environments. In: *Proceedings of the 32nd International Conference on Information Systems Development*. Gdańsk, Poland: University of Gdańsk; 2024.
- [21] Tongsuksai S, Mathrani S, Taskin N. Cloud enterprise resource planning implementation: A systematic literature review of critical success factors. In: *2019 IEEE Asia-Pacific Conference on Computer Science and Data Engineering (CSDE)*. Melbourne, VIC, Australia: IEEE; 2019. p.1-8.
- [22] Elbahri FM, Al-Sanjary OI, Ali MAM, Ali Naif Z, Ibrahim OA, Mohammed MN. Difference comparison of SAP, oracle, and microsoft solutions based on cloud ERP systems: A review. In: *2019 IEEE 15th International Colloquium on Signal Processing & Its Applications (CSPA)*. Penang, Malaysia: IEEE; 2019. p.65-70.
- [23] Marsintauli F, Sari M. Evaluation of ERP Oracle NetSuite implementation using the unified theory of acceptance and use of technology (UTAUT) model to create a sustainable business. *E3S Web of Conferences*. 2023; 426:

02037. Available from: <https://doi.org/10.1051/e3sconf/202342602037>.

- [24] Chien TK, Syu CS, Lai WL, Chang HL. Is there a difference between traditional and cloud ERP in implementation activity? In: *2016 International Conference on Applied System Innovation (ICASI)*. Okinawa, Japan: IEEE; 2016. p.1-4.
- [25] Jo H, Bang Y. Understanding continuance intention of enterprise resource planning (ERP): TOE, TAM, and IS success model. *Heliyon*. 2023; 9: e21019. Available from: <https://doi.org/10.1016/j.heliyon.2023.e21019>.
- [26] Lame G. Systematic literature reviews: An introduction. *Proceedings of the Design Society: International Conference on Engineering Design*. 2019; 1: 1633-1642. Available from: <https://doi.org/10.1017/dsi.2019.169>.
- [27] Snyder H. Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*. 2019; 104: 333-339. Available from: <https://doi.org/10.1016/j.jbusres.2019.07.039>.
- [28] Nightingale A. A guide to systematic literature reviews. *Surgery (Oxford)*. 2009; 27: 381-384. Available from: <https://doi.org/10.1016/j.mpsur.2009.07.005>.
- [29] Torraco RJ. Writing integrative literature reviews. *Human Resource Development Review*. 2016; 15: 404-428. Available from: <https://doi.org/10.1177/1534484316671606>.
- [30] Alharbi ZH, Almouteq NJ. Exploring the impact of shifting ERP systems to the cloud. *International Journal of Computing and Digital Systems*. 2024; 15: 1303-1313.
- [31] Ali I, Nguyen NDK, Gupta S. A multi-disciplinary review of enablers and barriers to Cloud ERP implementation and innovation outcomes. *Journal of Enterprise Information Management*. 2023; 36: 1209-1239. Available from: <https://doi.org/10.1108/JEIM-08-2022-0273>.
- [32] Alsharari NM. Institutional change of cloud ERP implementation in the public sector. *International Journal of Disruptive Innovation in Government*. 2021; 1: 2-14. Available from: <https://doi.org/10.1108/IJDIG-03-2019-0002>.
- [33] Alsharari NM, Al-Shboul M, Alteneiji S. Implementation of cloud ERP in the SME: Evidence from UAE. *Journal of Small Business and Enterprise Development*. 2020; 27: 299-327. Available from: <https://doi.org/10.1108/JSBED-01-2019-0007>.
- [34] Elmonem A, Mohamed A, Nasr ES, Geith MH. Benefits and challenges of cloud ERP systems-A systematic literature review. *Future Computing and Informatics Journal*. 2016; 1: 1-9. Available from: <https://doi.org/10.1016/j.fcij.2017.03.003>.
- [35] Ghebreselassie MY, Hammen H, Hustad E. Challenges and considerations in migration to cloud solutions: A systematic literature review. *Procedia Computer Science*. 2025; 256: 214-221. Available from: <https://doi.org/10.1016/j.procs.2025.02.114>.
- [36] Gupta S, Misra SC, Singh A, Kumar V, Kumar U. Identification of challenges and their ranking in the implementation of cloud ERP. *International Journal of Quality & Reliability Management*. 2017; 34: 1056-1072. Available from: <https://doi.org/10.1108/IJQRM-09-2015-0133>.
- [37] Hentschel R, Leyh C, Baumhauer T. Critical success factors for the implementation and adoption of cloud services in SMEs. In: *Proceedings of the 52nd Hawaii International Conference on System Sciences (HICSS)*. Maui, HI, USA: University of Hawai'i at Mānoa, Shidler College of Business; 2019. p.7342-7351.
- [38] Lee C, Kim HF, Lee BG. A systematic literature review on the strategic shift to cloud ERP: Leveraging microservice architecture and MSPs for resilience and agility. *Electronics*. 2024; 13: 2885. Available from: <https://doi.org/10.3390/electronics13142885>.
- [39] Ploder C, Spiess T, Bernsteiner R, Dilger T, Weichelt R. A risk analysis on blockchain technology usage for electronic health records. *Journal of Cloud Computing and Data Science (CCDS)*. 2021; 2: 1-16. Available from: <https://doi.org/10.37256/ccds.222021777>.
- [40] Rîndașu SM, Ionescu-Feleagă L, Ionescu BȘ, Barbu AM. Unveiling challenges and insights in cloud enterprise resource planning systems adoption: A case study of the oracle fusion cloud ERP. *Management & Marketing*. 2024; 19: 644-666. Available from: <https://doi.org/10.2478/mmcks-2024-0029>.
- [41] Shatat AS, Shatat AS. Cloud-based ERP systems implementation: Major challenges and critical success factors. *Journal of Information & Knowledge Management*. 2021; 20: 2150034. Available from: <https://doi.org/10.1142/S0219649221500349>.
- [42] Sørheller VU, Høvik EJ, Hustad E, Vassilakopoulou P. Implementing cloud ERP solutions: A review of sociotechnical concerns. *Procedia Computer Science*. 2018; 138: 470-477. Available from: <https://doi.org/10.1016/j.procs.2018.10.065>.
- [43] Vuković V, Taušan N, Gagić L, Raković L, Marić S. Challenges in the establishment of cloud enterprise resource planning systems. *KSII Transactions on Internet and Information Systems*. 2025; 19(3): 831-850. Available from: <https://doi.org/10.3837/tiis.2025.03.007>.

- [44] Zieliński R, Kot S, Zielińska K. Assessment of benefits and disadvantages of implementing Cloud-specific solutions in Polish companies on the example of ERP systems. *Procedia Computer Science*. 2023; 225: 70-79. Available from: <https://doi.org/10.1016/j.procs.2023.09.093>.
- [45] Garg S, Gupta S, Srivastava V. Migration RoadMap for on-premises ERP to cloud. In: *2024 International Conference on Signal Processing and Advance Research in Computing (SPARC)*. Lucknow, India: IEEE; 2024. p.1-8.
- [46] Chand S, Lal S, Chen S, Devi A. Cloud ERP implementation using edge computing. In: *2018 5th Asia-Pacific World Congress on Computer Science and Engineering (APWC on CSE)*. Nadi, Fiji: IEEE; 2018. p.235-240.
- [47] Ploder C, Bernsteiner R, Schlögl S, Walter J. Critical success factors of Hybrid-ERP implementations. In: Uden L, Ting IH, Wang K. (eds.) *Knowledge Management in Organizations*. Cham: Springer; 2021. p.305-315.
- [48] Jiang PHW, Wang WYC. Comparison of SaaS and IaaS in cloud ERP implementation: The lessons from the practitioners. *VINE Journal of Information and Knowledge Management Systems*. 2024; 54: 683-701. Available from: <https://doi.org/10.1108/VJKMS-10-2021-0238>.
- [49] Mpanga D, Elbanna A. A framework for cloud ERP system implementation in developing countries: Learning from lower local governments in Uganda. In: *IFIP Advances in Information and Communication Technology: Proceedings of the IFIP WG 8.6 Conference 2019*. Cham: Springer; 2019. p.274-292.
- [50] Gupta S, Misra SC. Implementation of cloud ERP-Moderating effect of compliance on the organizational factors. In: *Proceedings of the 5th International Conference on Cloud Computing and Services Science (CLOSER 2015)*. Setúbal, Portugal: SciTePress; 2015. p.194-198.
- [51] Gupta S, Misra SC. Moderating effect of compliance, network, and security on the critical success factors in the implementation of cloud ERP. *IEEE Transactions on Cloud Computing*. 2016; 4: 440-451. Available from: <https://doi.org/10.1109/TCC.2016.2617365>.
- [52] Jayeola O, Sidek S, Rahman A, Bali Mahomed ASB, Jimin H. Is top management support relevant in the implementation and post-implementation phases of cloud ERP in SMEs? Evidence from Malaysia. *SCMS Journal of Indian Management*. 2022; 19(4): 50-63.
- [53] Morawiec P, Softysik-Piorunkiewicz A. Cloud computing, big data, and blockchain technology adoption in ERP Implementation methodology. *Sustainability*. 2022; 14: 3714. Available from: <https://doi.org/10.3390/su14073714>.
- [54] Moumane K, Rharoubi I, Razouk C, Abderrahman HA, Asri IE. Transforming ERP systems for supply chain management: Designing a machine learning-based framework to overcome implementation challenges. In: *Proceedings of the 7th International Conference on Logistics Operations Management (GOL'24): Smart Sustainable and Green Logistics*. Cham: Springer; 2024. p.77-88.
- [55] Salas WH. Model to improve an ERP implementation based on agile best practice: A delphi study. *Procedia Computer Science*. *Procedia Computer Science*. 2023; 219: 1785-1792. Available from: <https://doi.org/10.1016/j.procs.2023.01.474>.
- [56] Rabaya A, Graffi K. Implementing enterprise resource planning systems in the cloud: Challenges and solutions. In: *2019 International Symposium on Networks, Computers and Communications (ISNCC)*. New York: IEEE; 2019. p.1-8.
- [57] Nandi ML, Kumar A. Centralization and the success of ERP implementation. *Journal of Enterprise Information Management*. 2016; 29: 728-750. Available from: <https://doi.org/10.1108/JEIM-07-2015-0058>.
- [58] Kim HS, Oh DS, Kim SH. Cloud-based ERP construction process framework in the customer's perspective. *Computer Science and Information Systems*. 2023; 20: 25-50. Available from: <https://doi.org/10.2298/CSIS123456789X>.
- [59] Gupta S, Misra SC, Kock N, Roubaud D. Organizational, technological and extrinsic factors in the implementation of cloud ERP in SMEs. *Journal of Organizational Change Management*. 2018; 31: 83-102. Available from: <https://doi.org/10.1108/JOCM-06-2017-0230>.
- [60] Johansson B, Andersson F, Gustavsson M. Replacing on-premise ERP with cloud ERP solutions-Reasons and drivers. *Procedia Computer Science*. 2025; 256: 521-529. Available from: <https://doi.org/10.1016/j.procs.2025.02.148>.
- [61] Basu A, Dutta S, Jha R. A comprehensive approach to study the adoption and implementation of cloud-based ERP among SMEs. *International Journal of Business Information Systems*. 2023; 42: 305. Available from: <https://doi.org/10.1504/IJBIS.2023.129714>.
- [62] Tongsuksai S, Mathrani S, Weerasinghe K. Critical success factors and challenges for cloud ERP system implementations in SMEs: A vendors' perspective. In: *2021 IEEE Asia-Pacific Conference on Computer Science and Data Engineering (CSDE)*. Brisbane, Australia: IEEE; 2021. p.1-6.
- [63] Ahmed Z, Alsakkaf N. Optimizing cloud ERP implementation in non-profit organizations: Challenges, success factors, and strategic approaches case study: IRC organization yemen. *Journal of Science and Technology*. 2025; 30: 103-111.

- [64] Boutros M-B, El Hajj C, Jawad D, Montes GM. Diffusion of ERP in the construction industry: An ERP modules approach: Case study of developing countries. *Buildings*. 2024; 14: 3224. Available from: <https://doi.org/10.3390/buildings14103224>.
- [65] Miraz MH, Jin HH, Salleh NM, Hossain MA, Hasan MT. What factors affect the adoption of cloud-based ERP in companies' operations in Malaysia? *International Journal of Management and Sustainability*. 2024; 13: 490-505. Available from: <https://doi.org/10.18488/11.v13i3.3827>.
- [66] Saif A, Rahman A, Mostafa R. Post-implementation challenges of ERP adoption in apparel industry of developing country. *LogForum*. 2021; 17(4): 519-529.
- [67] Cebekhulu B, Ozor P, Mbohwa C. Implementation of a cloud-based enterprise resource planning system at a south african public entity. In: *Proceedings of the 2nd African International Conference on Industrial Engineering and Operations Management*. Harare, Zimbabwe: IEOM Society International; 2020. p.1-8.
- [68] Alharthi S, Shehab E, Al-Ashaab A. A study on the challenges of implementing cloud-based ERP. In: *Advances in Manufacturing Technology*. Amsterdam: IOS Press; 2019. p.436-445.
- [69] Banks-Grasedyck D, Lippke E, Oelfin H, Schwaiger R, Seemann V. The SAP S/4HANA project: How it should be. In: *Successfully Managing S/4HANA Projects*. Cham: Springer; 2022. p.69-100.
- [70] Jain N, Bagga T. SAP S/4 HANA framework: I-ERP towards digital transformation. In: *2021 9th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO)*. Noida, India: IEEE; 2021. p.1-6.
- [71] Baur N, Blasius J. Handbuch Methoden der empirischen Sozialforschung [Handbook of Methods of Empirical Social Research]. Wiesbaden: Springer VS; 2014.
- [72] Zughoul B, Omari NKTE, Refai MA. Using deep learning methods in detecting the critical success factors on the implementation of cloud ERP. *International Journal of Business Information Systems*. 2023; 44: 219-248. Available from: <https://doi.org/10.1504/IJBIS.2023.134953>.
- [73] May R, Biermann C, Kenner A, Krüger J, Leich T. A product-line-engineering framework for secure enterprise-resource-planning systems. *Procedia Computer Science*. 2024; 239: 1619-1626. Available from: <https://doi.org/10.1016/j.procs.2024.06.338>.
- [74] Madathala H, Yeturi G, Mane V, Muneshwar PD. Navigating SAP ERP implementation: Identifying success drivers and pitfalls. In: *2025 3rd International Conference on Intelligent Data Communication Technologies and Internet of Things (IDCIoT)*. Bengaluru, India: IEEE; 2025. p.75-83.
- [75] Zhao F, Kirche ET. ERP on-premise or on-demand. In: *Research Anthology on Digital Transformation, Organizational Change, and the Impact of Remote Work*. Hershey (PA): IGI Global; 2021. p.1385-1403.
- [76] L'yarfi H, Motaki N, Derrhi M, Lahlou I. Towards a decision-making framework for successful ERP project implementation: A qualitative study. *Production Engineering Archives*. 2025; 31(1): 91-105. Available from: <https://doi.org/10.30657/pea.2025.31.9>.
- [77] Huang Q, Rahim M, Foster S, Anwar M. Critical success factors affecting implementation of cloud ERP systems: A systematic literature review with future research possibilities. In: *Proceedings of the 54th Hawaii International Conference on System Sciences*. New York: IEEE; 2021. p.4683-4692.
- [78] Jayeola O, Sidek S, Rahman AA, Mahomed ASB, Jimin H. Contextual factors and strategic consequences of cloud enterprise resource planning (ERP) adoption in malaysian manufacturing SMEs: A conceptual framework. *International Journal of Economics and Business Administration*. 2020; 8: 176-201. Available from: <https://doi.org/10.35808/ijeba/495>.
- [79] Kinnunen J. Leaving the lights on? Exploring cloud ERP migrations and IS discontinuance. In: *2021 IEEE 12th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)*. New York: IEEE; 2021. p.58-64.
- [80] Barbieri LM, Sott MK, Monticelli JM. Critical success factors for implementing cloud ERP in SMEs: A systematic review. *International Journal of Innovation and Technology Management*. 2024; 21(2): 2430003. Available from: <https://doi.org/10.1142/S0219877024300039>.
- [81] Jayeola O, Sidek S, Sanyal S, Hasan MM, Singh AP, Hasan SI. The nexus between top management support on change management, cloud ERP implementation, and performance of SMEs. *Academic Journal of Interdisciplinary Studies*. 2022; 11: 293. Available from: <https://doi.org/10.36941/ajis-2022-0084>.
- [82] Amore E, Dilger T, Ploder C, Bernsteiner R, Mezzenzana M. Leverage the COBIT 2019 design toolkit in an SME context: A multiple case study. *KnE Social Sciences*. 2023; 8: 73-101. Available from: <https://doi.org/10.18502/kss.v8i1.12636>.

# Appendix

Quality checklist of the articles selected for the review.

Table 9.

Method	Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Score	Overall appraisal	Year	Topic
LR	L'yarfi et al. [76]	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	11	Include	2025	Framework & Challenges
SLR	Madathala et al. [74]	Yes	Yes	Yes	Yes	Yes	Unclear	No	Yes	Yes	Yes	No	9	Include	2025	Framework & Challenges
SLR	Ghebreslassie et al. [55]	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	N.A.	Yes	11	Include	2025	Challenges
SLR	Vukovic et al. [43]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N.A.	No	10	Include	2025	Framework & Challenges
Qualitative	Alharbi & Almoutaq [30]	N.A.	Yes	Yes	Yes	Yes	No	No	No	No	N.A.	No	6	Include	2024	Framework & Challenges
SLR	Barbieri et al. [80]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N.A.	No	9	Include	2024	Challenges
SLR	Lee et al. [38]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	Include	2024	Framework
Qualitative	Barbieri & Soti [14]	N.A.	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	9	Include	2024	Framework & Challenges
Qualitative	Garg et al. [45]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	9	Include	2024	Framework
Qualitative	Ali et al. [31]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	10	Include	2023	Framework & Challenges
SLR	Zielinski et al. [44]	Yes	No	No	No	No	No	N.A.	Yes	Yes	Yes	Yes	7	Include	2023	Challenges
Quantitative	Zughoul et al. [72]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	Include	2023	Challenges
SLR	Morawiec & Sotysik-Piorunkiewicz [53]	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	6	Include	2022	Framework & Challenges
LR, Qualitative	Salas [55]	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	5	Include	2022	Framework & Challenges
SLR	Jaycola et al. [78]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	Include	2022	Framework & Challenges
Quantitative, PLS-SEM	Jaycola et al. [78]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N.A.	Yes	Yes	9	Include	2022	Framework & Challenges
Quantitative	Kim et al. [58]	No	Yes	Yes	Yes	Yes	No	No	No	N.A.	Yes	Yes	5	Include	2022	Framework & Challenges
Quantitative	Basu et al. [61]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	Include	2023	Framework
LR, Expert Group formation	Oureshi [54]	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	5	Include	2022	Framework & Challenges
Quantitative	Jaycola et al. [78]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N.A.	Yes	Yes	9	Include	2022	Challenges
Quantitative	Basu et al. [61]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	Include	2022	Framework
Quantitative	Shatat & Shatat [41]	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	8	Include	2021	Challenges
Quantitative	Ploder et al. [62]	N.A.	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	7	Include	2021	Framework & Challenges
Qualitative	Jain & Bagga [70]	N.A.	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	11	Include	2021	Framework
Qualitative	Tongsuksai et al. [62]	N.A.	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	6	Include	2020	Challenges
Qualitative	Ploder et al. [62]	N.A.	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	7	Include	2020	Framework & Challenges
SLR	Huang et al. [77]	No	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes	6	Include	2020	Framework & Challenges
SLR, Qualitative	Saif et al. [66]	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	7	Include	2020	Challenges
Qualitative	Alsharari et al. [33]	N.A.	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	5	Include	2020	Framework & Challenges
Quantitative	Jaycola et al. [78]	Yes	N.A.	No	No	N.A.	N.A.	Yes	No	No	Yes	Yes	6	Include	2020	Framework & Challenges
Quantitative, Qualitative	Cebekhulu et al. [67]	Yes	Yes	No	Yes	Yes	Yes	Unclear	Yes	No	Yes	Yes	7	Include	2020	Framework & Challenges
Quantitative	Alharthi et al. [68]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	Include	2019	Challenges
LR	Hustad et al. [8]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	9	Include	2020	Framework & Challenges
Quantitative	Alharthi et al. [68]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	8	Include	2019	Challenges
Quantitative	Gupta & Misra [50]	Yes	N.A.	No	No	Yes	N.A.	N.A.	Yes	No	Yes	Yes	6	Include	2016	Framework & Challenges
Quantitative	Gupta & Misra [50]	Yes	N.A.	No	No	Yes	N.A.	N.A.	Yes	No	Yes	Yes	10	Include	2015	Framework & Challenges
LR	Gupta & Misra [50]	Yes	N.A.	No	No	Yes	N.A.	N.A.	Yes	No	Yes	Yes	6	Include	2016	Framework & Challenges
Quantitative	Sorheller et al. [42]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	10	Include	2018	Challenges
SLR	Gupta et al. [59]	Yes	N.A.	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Include	2018	Framework & Challenges
Quantitative	Zhao & Kirche [75]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	Include	2021	Framework & Challenges
LR	Lee et al. [38]	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	10	Include	2017	Challenges
LR	Chand et al. [46]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	Include	2017	Challenges
SLR	Tongsuksai et al. [21]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	Include	2018	Framework & Challenges
Case Study, Qualitative	Kimunen [79]	No	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	6	Include	2019	Framework & Challenges
LR	Rabaya & Graffi [59]	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	10	Include	2021	Framework & Challenges
Quantitative	Gupta et al. [36]	Yes	N.A.	No	No	Yes	N.A.	N.A.	Yes	Yes	Yes	No	6	Include	2019	Challenges
Case Study, Qualitative	Jiang & Wang [48]	No	Yes	Yes	Yes	Yes	N.A.	N.A.	Yes	No	Yes	Yes	6	Include	2024	Framework & Challenges
Case Study, Qualitative	Alsharari [32]	No	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	7	Include	2021	Framework & Challenges
Quantitative	Nandi & Kumar [57]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N.A.	Yes	Yes	9	Include	2016	Framework & Challenges
Quantitative, Qualitative	Mourane et al. [54]	N.A.	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	7	Include	2024	Framework & Challenges
Qualitative	Mpunga & Elbanna [49]	N.A.	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	7	Include	2019	Framework & Challenges
Book	Banks-Grasedyck et al. [69]	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	11	Include	2022	Framework & Challenges
Qualitative	Johansson et al. [60]	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	7	Include	2025	Framework
SLR	Elmonem et al. [34]	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	6	Include	2016	Challenges
LR, Qualitative	Hensschel et al. [37]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	9	Include	2019	Framework & Challenges
Quantitative, Qualitative	Alhmed & Alsakaf [63]	N.A.	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	6	Include	2025	Challenges
Case Study	Panaviotou et al. [75]	N.A.	N.A.	N.A.	Yes	N.A.	Yes	No	Yes	Yes	Yes	Yes	9	Include	2015	Framework
LR	May et al. [73]	Yes	Yes	Yes	Yes	Yes	N.A.	No	Yes	No	Yes	Yes	9	Include	2023	Framework & Challenges

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