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Neglected Dimensions of Success: A PRISMA Systematic Review of Non-Technical Critical Success Factors in IIS Implementation

Dini Idzni Izatri*, Mudjahidin

FT-EIC, Department of Information System, Sepuluh Nopember Institute of Technology, Surabaya
Jl. Chemical Engineering, Keputih, Sukolilo District, Surabaya, East Java, Indonesia
Email: [1,*]izatrid@gmail.com, [2]mudjahidin@its.ac.id
Correspondence Author Email: izatrid@gmail.com
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Abstrak−The success of Integrated Information Systems (IIS) implementation largely depends on the identification and application of Critical Success Factors (CSFs). While numerous studies have addressed CSFs, existing literature often overlooks contextual and non-technical dimensions such as cultural and environmental factors. This study presents a systematic literature review (SLR) guided by the PRISMA protocol to identify the most frequently discussed CSFs and uncover underexplored factors in IIS implementation. A total of 148 articles were retrieved from five major academic databases, with 30 meeting the inclusion criteria after a rigorous screening process. Thematic analysis revealed that top management support, project management, change management, and system quality are the most frequently cited CSFs. A simple bibliometric analysis reveals a significant research disparity: 80% of studies (24 out of 30) focus on technical-managerial factors, while a mere 20% (6 out of 30) address non-technical dimensions like organizational culture and external regulations. Furthermore, the higher education sector is critically underrepresented, accounting for only 6.7% (2 out of 30) of the reviewed literature, despite its unique complexities. This study's primary contribution is the empirical confirmation of this "non-technical gap." Practically, these findings serve as a critical alert for university leaders and project managers, recommending a strategic shift from purely technical oversight to allocating dedicated resources for managing cultural resistance and engaging academic stakeholders throughout the implementation lifecycle to ensure sustainable success.

Keywords: Integrated Information Systems; Critical Success Factors; Systematic Literature Review; PRISMA Methodology; Cultural Factors; Higher Education

1. INTRODUCTION

In an era of increasingly complex digital transformation, organizations including higher education institutions are under growing pressure to integrate various functions and business processes into a coordinated and efficient system. Integrated Information Systems (IIS) have emerged as a strategic solution to support inter-unit connectivity, enabling real-time information exchange through a unified technological platform[1]. The implementation of IIS offers significant benefits, such as improved operational efficiency, data-driven decision-making, and enhanced cross-departmental collaboration. However, many organizations still face failure in their implementation efforts due to the poor management of critical elements essential to system success. In particular, the context of higher education institutions presents an even greater challenge, with some studies confirming that failure rates are even higher than in other industrial sectors [2]. In Indonesia, a study of information systems projects found that only 27% of projects could be considered fully successful, while the rest experienced serious problems or were canceled [3]. These failures are often not caused by the technology itself, but rather by poor management of the critical elements that are essential to the system's success.

The success of IIS implementation is largely determined by Critical Success Factors (CSFs) key elements that directly contribute to the effectiveness and sustainability of information system projects. CSFs span technical, managerial, and organizational dimensions, all of which must be strategically managed to mitigate the risk of system failure [4], [5]. A primary challenge in IIS implementation is the lack of a comprehensive understanding of CSFs, especially within higher education institutions, which are characterized by complex internal bureaucracies and a high degree of resistance to technological change. In this study, higher education institutions are defined globally as formal academic organizations that provide university-level education or its equivalent (college, university, polytechnic), with characteristics of complex internal bureaucracy, facultative autonomy, and relatively high levels of resistance to technology. While numerous studies have identified essential factors such as top management support, project management, and system quality, most prior research has predominantly emphasized technical and formalistic aspects [2], [6], [7], [8], overlooking social, cultural, and environmental factors that are contextually relevant to organizations.

Over the past five years, several related studies have examined the adoption of technology and information systems across industrial, public, and educational sectors. For example, Gupta and Yadav [9] employed the Technology Acceptance Model (TAM) to emphasize the importance of ease of use, infrastructure support, and training as key success factors in ICT adoption within educational institutions. However, this study is limited to an individual behavioral approach and does not examine organizational structure or institutional culture more broadly. In the public sector, Hammad et al[10] proposed a conceptual ERP success model incorporating system quality, user engagement, and environmental factors, but not targeting the education sector. Similarly, Al-Okaily et al [11] applied a multidimensional evaluation approach to ERP success using indicators such as information quality, system quality, and user satisfaction, but this study does not integrate elements of organizational culture.

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Further, Ahmadzadeh et al [12] developed a QFD-based model to prioritize ERP CSFs by integrating organizational agility as a key enabler. Their findings highlight the importance of flexibility in responding to change throughout the implementation process. Meanwhile, Ali et al. [13] used action research to explore cultural challenges in ERP implementation in the Middle Eastern oil and gas sector, but these findings have not been widely referenced in the education sector. Their study emphasized the role of cultural resistance and the need for adaptive communication strategies to drive successful system adoption. In addition, Almajali et al.[14] highlighted the importance of strategic alignment between IT and business as a critical success factor for ERP implementation in the Jordanian public sector, emphasizing that local context and institutional pressures significantly influence system effectiveness, but without discussing the role of academic actors or institutional frameworks in higher education. An analysis of these studies shows that although their contributions are significant, the majority still focus on technical and structural factors and do not explore the social, cultural and regulatory elements within the organization. Despite these significant contributions, there are still critical gaps in the literature regarding contextual and unexplored CSFs, particularly in the implementation of IIS in higher education institutions. These limitations indicate a gap in the literature regarding the comprehensive mapping of CSFs, particularly relevant to the complexity of higher education institutions. Previous studies tend to generalize the industrial approach without considering the adaptive needs of the education sector, which has unique characteristics such as facultative autonomy, faculty resistance, and decentralized decision-making processes.

.To address these issues, this study employed a Systematic Literature Review (SLR) approach guided by PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). This approach was chosen because it provides transparency and a systematic structure in the literature review process, as well as reducing selection bias through four stages: identification, screening, due diligence, and inclusion. This method is considered superior to conventional narrative analysis because it allows for process replication and quantitative approaches such as bibliometric mapping. With this approach, the study is expected to yield more accurate and comprehensive findings regarding the dominance and representation of CSFs in IIS implementation. Specifically, the main objectives of this study are: (1) to identify the most frequently appearing critical success factors (CSFs) in IIS implementation literature; and (2) to explore underrepresented success factors, particularly those related to the social, cultural, and environmental dimensions of organizations in higher education institutions. The theoretical contribution of this study lies in mapping CSF research trends and emphasizing the importance of integrating contextual factors into the evaluation of IIS success models. From a practical perspective, the results of this study can serve as a guide for policy makers and project information managers in academic environments to design more relevant, participatory, and sustainable strategy implementations.

2. RESEARCH METHODOLOGY

This study employed a Systematic Literature Review (SLR) approach as the primary method to address the research questions and respond to the lack of contextual factor integration in existing studies on the success of Integrated Information Systems (IIS) implementation. The research process began with the formulation of specific objectives and research questions, focusing on the identification of dominant Critical Success Factors (CSFs) and the exploration of less-discussed success factors in the current literature. The next stage involved the development of a structured literature search strategy, which included the definition of relevant keywords, inclusion and exclusion criteria, and the selection of five reputable academic databases to ensure broad and relevant coverage. Literature searching was conducted systematically, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, which divide the process into four main stages: identification, screening, eligibility assessment, and final inclusion. Subsequently, a qualitative data analysis was conducted using thematic analysis. All selected articles were systematically coded to identify recurring themes and patterns related to CSFs in IIS implementation. This method enabled the researchers to uncover both frequently discussed factors in the literature. The application of this method was validated through internal validation using researcher triangulation, to ensure consistency, objectivity, and reliability of the analysis outcomes. Through this structured and transparent process, the study not only provides a comprehensive synthesis of previous research but also generates a well-defined research gap map, which serves as a foundation for future research agendas. PRISMA was chosen because it provides a standardized framework that is transparent and structured to minimize selection bias, increase research replicability, and ensure traceability in the review process[15]. Compared to other SLR methods, PRISMA is considered superior in screening the literature objectively and purposefully, especially in studies that aim to explore gaps and representativeness of themes in previous research. The use of the PRISMA approach in the context of this study allows for more accurate identification of dominant trends and underrepresented dimensions.

2.1 Literature Research Strategy

The keywords for this study were determined based on the main research focus, namely Critical Success Factors (CSFs) in the implementation of Integrated Information Systems (IIS). A combination of keywords was constructed using Boolean operators to broaden or narrow the scope of the search results. Boolean operators such

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as AND, OR, and NOT were employed to refine the search and ensure relevance. The defined keyword criteria included: "Critical Success Factors" AND "Integrated Information Systems"; "CSF" AND "IIS Implementation"; "Success Factors" AND "Information Systems Integration"; "Challenges" AND "Integrated Systems". The inclusion of the broader term "Success Factors" was intentional, aiming to capture preliminary studies that discuss system implementation success more generally before applying the screening process to identify studies specifically aligned with CSF frameworks. This approach was adopted to maximize the comprehensiveness of the initial search and avoid prematurely excluding potentially relevant literature. Moreover, the term "Success Factors" is frequently used interchangeably with "Critical Success Factors" in a variety of academic and industry contexts, especially in studies that explore implementation outcomes without explicitly using the CSF label. Including this term ensured that the search encompassed studies that may provide valuable insights into success dimensions relevant to IIS, even if they did not use standardized CSF terminology.

The process of literature identification and selection followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) workflow, which consists of four main phases. The first phase was Identification, in which initial searches were conducted across five selected academic databases ScienceDirect, Emerald Insight, Wiley, Taylor & Francis, and Springer using the predefined keyword combinations. Articles retrieved in this phase proceeded to the Screening stage. During screening, duplicate records were removed, followed by a review of article titles and abstracts to exclude studies that were clearly irrelevant to the research topic. Articles that passed this stage were then evaluated in the Eligibility phase, which involved full-text reading to ensure that each study met the predetermined inclusion criteria. Finally, studies that successfully passed all prior stages were categorized as Included and were integrated into the final analysis. The overall selection process including the number of articles retained or excluded at each stage is illustrated in detail in **Figure 1** (PRISMA flow diagram).

2.2 Inclusion and Exclusion

The next stage involved the application of inclusion and exclusion criteria to refine the literature selection and ensure the relevance and quality of the reviewed studies. The inclusion criteria define the conditions under which a study is considered eligible for inclusion in the systematic review, while the exclusion criteria determine the grounds on which studies are eliminated from the review process. **Table 1** describes the inclusion and exclusion criteria applied in this study.

Table 1. Inclusion and Exclusion criteria

Inclusion	Exclusion
Articles published in peer-reviewed academic journals	Non-peer-reviewed publications such as editorials, conference abstracts, or opinion pieces;
Studies published within the last ten years (2015–2024), to ensure the timeliness and relevance of findings	Studies outside organizational or institutional implementation contexts (e.g., personal software use, consumer apps)
Articles written in English	Articles not written in English
Studies that specifically discuss Critical Success Factors (CSFs) in the context of Integrated Information Systems (IIS) or related information systems implementation	Studies not focused on general information systems without addressing CSFs or system integration
Articles that present empirical findings or conceptual frameworks relevant to IIS implementation success.	Duplicate studies or those with insufficient methodological transparency

By applying these criteria systematically, the study aimed to build a high-quality and thematically coherent dataset of relevant literature for further analysis. The inclusion and exclusion criteria in this study were designed to ensure that the reviewed literature has thematic, methodological, and contextual relevance to the research objectives. Studies included in the analysis must be peer-reviewed scientific journal articles, published in English, and explicitly discuss Critical Success Factors (CSFs) in the context of Integrated Information Systems (IIS) implementation in an organizational or institutional environment. Meanwhile, non-scientific publications, conference reports, editorial opinions, or studies that do not discuss CSFs or are not related to integrated information systems, including the use of personal software or consumer applications, are excluded from this analysis. The last 10 years (2015–2024) were chosen to ensure that the analyzed results represent the latest technological developments and practices in IIS implementation. Since 2015, there has been a surge in the adoption of cloud-based technologies, cross-unit data integration, and modular ERP systems in the education and public sectors, which has caused a shift in the success factors of information system implementation[4], [16]. Moreover, this period represents a post-massive digital transformation era, including the impact of accelerated digitalization due to the COVID-19 pandemic, which has driven an increased need for flexible and integrated information systems in higher education institutions.

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2.3 Eligibility

The selection process, as illustrated in detail in Figure 1, resulted in a final set of 30 journal articles deemed most relevant to the research objectives. This curated body of literature formed the foundation for the analysis conducted in this study and was verified to fully meet all predefined inclusion and exclusion criteria. The selected articles represent research across various sectors including manufacturing, public organizations, small and medium enterprises (SMEs), and higher education offering a comprehensive perspective on the diverse critical success factors influencing IIS implementation. This rigorous selection process ensured that only high-quality, directly relevant studies were incorporated into this systematic literature review.

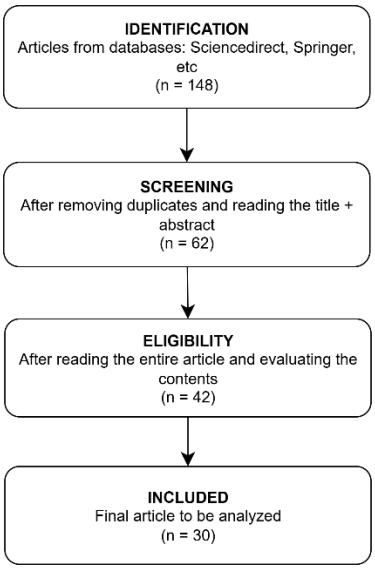

Figure 1. Selection process PRISMA based flow

Based on Figure 1, the identification stage, researchers conducted a literature search using five major academic databases: ScienceDirect, Emerald Insight, Wiley, Taylor & Francis, and Springer. This search, using predetermined keywords, yielded 148 potential articles relevant to the topic of Critical Success Factors (CSFs) in Integrated Information Systems (IIS) implementation. The next stage was screening, which involved removing duplicates and initially reviewing article titles and abstracts. Articles irrelevant to the organizational context or discussing non-integrated systems were eliminated, leaving 62 articles for further review. Eligibility was then assessed by thoroughly reading the contents of the 62 articles. This assessment aimed to evaluate the content's suitability to the predetermined inclusion criteria, such as explicit discussion of CSFs, relevance to the IIS implementation context, and clarity of methodology. From this evaluation, 42 articles were deemed to meet the initial requirements for inclusion in the analysis. The final stage, inclusion, yielded 30 articles selected, confirmed to have met all rigorous criteria. These articles covered a variety of sector contexts, including manufacturing, public organizations, small and medium enterprises (SMEs), and higher education.

3. RESULTS AND DISCUSSION

3.1 Results of The Literature Review

3.1.1 Research Focus of CSF IIS Implementation

The initial analysis focused on mapping the characteristics of the reviewed literature, particularly in terms of the implementation focus of Integrated Information Systems (IIS) across various sectors and organizational contexts. This sectoral distribution is essential for identifying areas that have been extensively studied and those that remain underrepresented in the existing body of research. **Table 2** below describes the distribution of research focus from CSF IIS implementation.

Table 2. Research Focus of CSF IIS Implementation

Research Focus	Reference
Manufacture	[8], [12], [13], [16], [17], [18], [19], [20], [21], [22]
Industries	[6], [9], [11], [14], [23], [24], [25], [26], [27], [28]
Public Organization	[10], [28], [29], [30], [31], [32]
SMEs	[7], [33]
Higher Education	[2], [34]

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Table 2 demonstrates that research on Critical Success Factors (CSFs) is predominantly concentrated in the manufacturing and general industry sectors, accounting for 20 out of the 30 reviewed articles. Public sector organizations also receive a moderate level of attention. In contrast, the higher education sector is represented by only two articles, quantitatively confirming the research gap within academic contexts that has been previously identified in this study. Following the mapping of sectoral focus in the literature, the subsequent analysis centers on the identification, frequency, and description of various CSFs discussed across the selected articles.

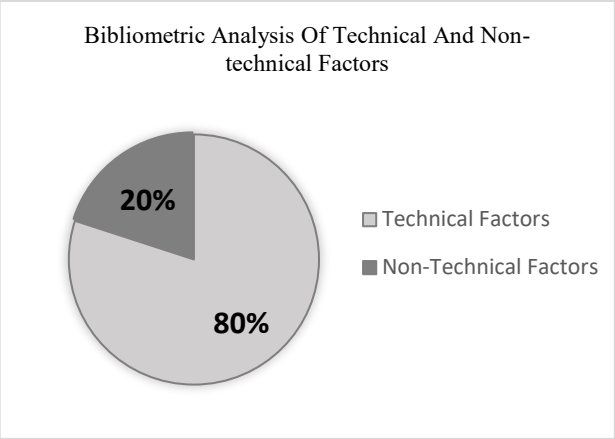

Figure 2. Bibliometric Analysis of Technical and Non-Technical Factors

Figure 2 illustrates a simple bibliometric analysis of the 30 selected articles. The results show that 24 out of 30 studies (80%) predominantly address technical and managerial success factors, such as system infrastructure, software quality, and project management. Only 6 articles (20%) explicitly address non-technical aspects such as organizational culture, and external regulations. This finding further emphasizes the importance of a deeper study of non-technical CSFs that have received less attention in the literature. This preliminary finding indicates a tendency in the literature to focus on measurable and standardized technical dimensions, while contextual and social factors still receive less attention. This reinforces the researcher's assumption that aspects of culture, institutional environment, and organizational dynamics have not been adequately integrated in the framework of evaluating the success of IIS implementation. In addition, the initial analysis also found that most of the studies focused on the industrial, manufacturing and public service sectors, while studies specifically addressing the higher education context are still relatively limited. These findings provide an initial foundation for the researcher to delve deeper into the research gaps relating to the representation of non-technical factors in the existing literature.

3.1.2 Success factors for IIS implementation

Based on a systematic review of the 30 selected studies, this research successfully identified a range of Critical Success Factors (CSFs) that influence the implementation of Integrated Information Systems (IIS). Further analysis revealed that the frequency of each CSF's appearance varied across the literature, indicating that some factors are considered more fundamental or universally recognized than others in contributing to successful IIS implementation.

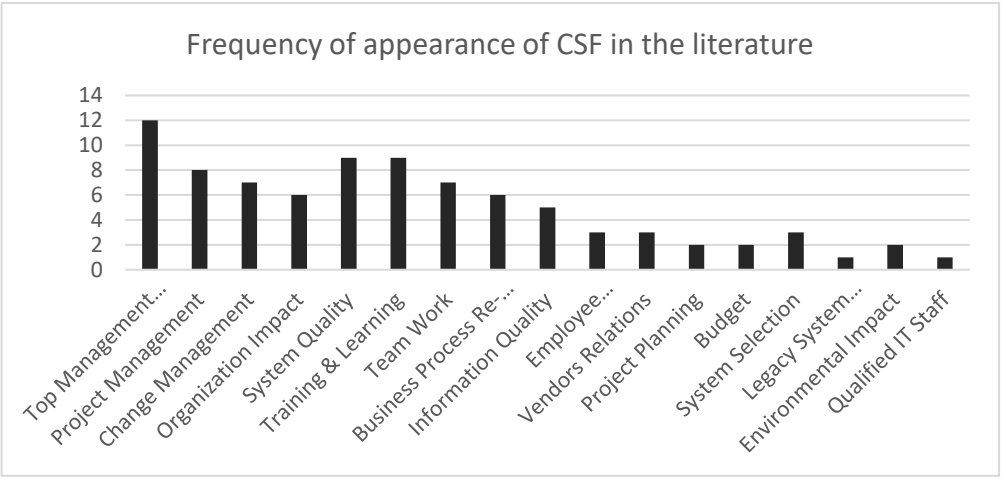

Figure 3. Frequency of appearance of CSF in the literature

As illustrated in Figure 3, top management support emerges as the most fundamental factor, identified in 12 out of the 30 articles. The next group of dominant factors includes system quality and training & learning, each

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highlighted in 9 studies. Interestingly, managerial process-oriented factors such as project management (7 studies) and change management (6 studies) appear with nearly the same frequency as human collaboration-oriented factors like teamwork (7 studies). This pattern indicates a balanced emphasis across the literature on leadership, technical quality, and human resource readiness as the three core pillars of successful IIS implementation. To provide a more comprehensive understanding of the definitions and significance of the most frequently cited factors, Table 3 presents a synthesized summary derived from the 30 reviewed studies.

Table 3 Success factors for IIS implementation

Success Factors	Description	Reference
Top Management Support	Several studies highlight the critical role of top management support in establishing the vision and strategic direction for IIS implementation. When top management prioritizes the implementation project, it strengthens organizational commitment to the required changes. In the absence of such support, IIS projects often stall or fail due to a lack of resources or unresolved organizational barriers.	[2], [6], [7], [8], [12], [16], [20], [22], [25], [28], [29], [33]
Project Management	Effective project management is consistently emphasized as a key determinant of successful integrated system implementation. This begins with comprehensive planning that outlines project scope, budget, timeline, and resource allocation. Strong planning allows early identification of potential risks and minimizes disruptions from unexpected changes. Moreover, a core responsibility of project management is ensuring coordinated communication among various stakeholders, including technical teams, end users, and vendors. This coordination helps resolve issues efficiently before they impede implementation progress.	[2], [7], [18], [20], [22], [25], [27]
Change Management	Change management plays a vital role in ensuring successful IIS implementation, as new technologies often trigger employee resistance. Employees may feel anxious about substantial changes to their workflows. Robust change management involves raising awareness about the benefits of the new system, offering adequate training, and providing technical support throughout the transition period. This helps reduce resistance and builds user confidence.	[2], [7], [20], [22], [24], [25]
Organization Impact	Organizational impact refers to the structural, role-based, and cultural changes that occur as a result of IIS implementation. The system often transforms how decisions are made and how daily operations are executed. The success of implementation depends on the organization's ability to adapt to these shifts, which may include departmental restructuring, redefinition of individual responsibilities, or even broader organizational culture changes.	[9], [11], [19], [23], [26], [27]
System Quality	System quality is one of the most frequently cited technical success factors in IIS implementation. It refers to the system's stability, usability, and alignment with the specific needs of the organization. A high-quality system should be reliable, user-friendly, and performance-optimized. Poor system quality such as frequent downtime or non-intuitive interfaces can undermine user trust and hinder system adoption.	[2], [6], [10], [11], [14], [28], [30], [31], [34]
Training & Learning	Effective training and continuous learning for end users are essential to ensure that they possess the knowledge and skills required to use the new system effectively. Training should not be limited to the initial implementation phase; it must be ongoing, particularly when new features are introduced or business processes change. Training programs should be tailored to the diverse needs and technical proficiency levels of users from different departments.	[2], [8], [12], [14], [16], [20], [29], [30], [32]
Team Work	Teamwork is a significant enabler of IIS success. It is crucial to foster cross-functional collaboration throughout the implementation process. IIS projects typically involve multiple departments including IT, human resources, and finance. Strong teamwork ensures that each department's needs are considered and facilitates collective problem-solving during implementation.	[6], [7], [8], [13], [20], [30], [32]
Business Process Re-Engineering	BPR is necessary because IIS implementation often requires adjustments to existing business processes. Legacy processes may not align well with the capabilities of the new system and must be redesigned accordingly. Effective BPR enhances efficiency, eliminates redundancies, and aligns workflows with the system's functionalities, thereby maximizing value creation.	[2], [16], [21], [22], [26], [27]

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Success Factors	Description	Reference
Information Quality	The quality of information produced by the system is a key factor in organizational decision-making and overall IIS success. Information must be accurate, relevant, and timely. Decision-making processes heavily depend on the quality of data generated by the system. Poor or mismanaged data can diminish user trust, reduce productivity, and lead to suboptimal decisions.	[2], [11], [14], [30], [34]

In addition to the core success factors previously discussed, this review also identified several supporting factors that, although mentioned less frequently, play a critical role in specific implementation contexts. For instance, based on the explanation in Table 3, vendor relationships can significantly influence the success of system customization to meet the unique needs of an organization. Similarly, employee commitment and the availability of qualified IT staff are crucial for ensuring long-term system adoption and sustainability. While these factors appear less frequently in the literature, they often serve as decisive elements that determine the success or failure of IIS implementation in certain cases. A detailed explanation of each supporting factor, along with the corresponding studies that identified them, is presented in Table 4.

Table 4. Supporting Factors

Success Factors	Description	Reference
Employee Commitment	Employee commitment to the implementation of new systems is a critical success factor. Employees who support technological change tend to adapt more easily and contribute positively to the success of IIS implementation.	[12], [25]
Vendors Relations	Strong relationships with technology vendors play a key role in successful IIS implementation. Cooperative vendors can offer tailored solutions through system customization, aligning more closely with the organization's operational needs.	[2], [21], [33]
Project Planning	Detailed project planning is essential to ensure success. All implementation aspects including scheduling, resource allocation, and risk mitigation strategies must be carefully designed. Good planning helps identify potential problems early and reduces delays.	[25]
Budget	Adequate budgeting is essential to ensure that all phases of IIS implementation proceed without financial constraints. The budget should cover software licenses, hardware, training, and technical support. Poor financial planning can lead to delays or project failure.	[2], [17]
System Selection	Choosing a system that aligns with the organization's specific needs is a fundamental determinant of success. The selected system must match the organization's scale, business processes, and long-term goals. A misaligned system can create integration and usability challenges.	[2], [19], [29]
Legacy System Knowledge	Understanding legacy systems is crucial for a smooth transition to the new IIS. In some cases, old systems are partially retained and must be integrated with the new system. Knowledge of how both systems interact is vital for successful implementation.	[6]
Environmental Impact	The environmental impact of IIS implementation is becoming increasingly important, particularly for organizations aiming to operate sustainably. Factors such as energy efficiency and electronic waste reduction may influence system design and adoption.	[7], [19]
Qualified IT Staff	The availability of skilled IT personnel is essential to ensure smooth implementation. Experienced IT staff are needed to manage installation, maintenance, and system operations. A lack of qualified staff can result in significant technical disruptions.	[2]

An in-depth analysis of the identified success factors reveals the existence of an interdependent ecosystem, in which the successful implementation of Integrated Information Systems (IIS) is not the result of a single element, but rather the orchestration of several key dimensions. At the core of this ecosystem lies Top Management Support, which provides the strategic vision, prioritization, and essential resources needed to initiate and sustain the implementation process. This support is operationalized through effective Project Management, which ensures that planning, scheduling, and cross-functional coordination are executed smoothly. However, even the most well-structured plans may encounter obstacles without proactive Change Management, which plays a vital role in addressing the human aspects of transformation raising awareness, fostering acceptance, and mitigating resistance to new technologies. Ultimately, success at the user level is determined by the synergy between technical quality and human capability. High System Quality delivers a reliable and stable technological platform, while Training and Learning initiatives equip users with the necessary skills and confidence to engage with the system effectively.

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This alignment between organizational leadership, operational execution, and user empowerment forms the foundation of sustainable and impactful IIS adoption.

3.2 Discussion

3.2.1 Summary of Key Findings

Based on the literature review and subsequent analysis, several key conclusions can be drawn regarding Critical Success Factors (CSFs) in the implementation of Integrated Information Systems (IIS), as well as the identification of underexplored research gaps. The synthesis of the selected studies reveals a prevailing emphasis on technical and managerial factors, with comparatively limited attention given to socio-cultural dimensions, regulatory environments, and external relationships such as vendor engagement. Furthermore, most studies were concentrated in the industrial and public sector contexts, while the higher education sector was represented in only two studies. This indicates a notable gap in the literature and highlights an opportunity for future research to explore the unique challenges and contextual factors influencing IIS implementation in academic institutions.

3.2.2 Discussion of esearch Findings

Based on the review of 30 selected studies, this research identified nine Critical Success Factors (CSFs) that are most frequently discussed in the implementation of Integrated Information Systems (IIS). These include top management support, project management, change management, system quality, organizational impact, training & learning, teamwork, business process re-engineering, and information quality. These factors are largely technical and managerial in nature, forming a foundational framework commonly associated with the success of information system projects across various sectors. Top management support appeared in 12 of the 30 studies, underscoring the importance of leadership commitment and strategic prioritization in driving successful system adoption. System quality and training & learning were also frequently cited due to their direct relationship with system usability and user effectiveness. Other factors, such as project management and teamwork, were linked to cross-unit coordination and managing the transitional phases of system implementation. However, it is noteworthy that the dominant focus of these factors tends to be technical and structural. Many studies emphasized the role of infrastructure, formal processes, and technical competencies, while often overlooking social or cultural dynamics within organizations. This raises a critical question about the balance of dimensions in achieving successful IIS implementation, which is further discussed in the following section.

Despite the extensive understanding of technical and managerial aspects, this study also reveals that several non-technical dimensions remain underexplored. Factors such as cultural aspects, regulatory or environmental impact, vendor relations, and employee commitment were mentioned in only a small subset of the literature and were rarely treated as central elements. For example, organizational culture was explicitly discussed in only 2 out of 30 articles, and the higher education sector was represented in just 2 studies (approximately 6.7%). This suggests that several important dimensions have been largely neglected in the academic discourse. Cultural factors, in particular, play a vital role in the success of IIS implementation, as each organization possesses a unique set of values, communication patterns, and operational norms. The ability to adapt to new cultural conditions which may arise from the introduction of integrated systems is critical for long-term success. Moreover, environmental elements such as government regulations, market conditions, and external stakeholder pressures also exert substantial influence on implementation outcomes.

To date, literature that explicitly addresses external or environmental factors as part of the CSF framework remains scarce. The lack of exploration in these areas can be attributed to several reasons. First, contextual elements like culture and environment are difficult to quantify, making them less compatible with dominant survey-based or statistical research approaches. As a result, these studies often fail to capture the social and organizational dynamics that shape system adoption. Second, the prevailing focus in the literature has been on implementation efficiency, rather than on behavioral change and organizational adaptation despite the latter being essential for sustainable system use. Additionally, the higher education sector remains significantly underrepresented in CSF literature. Most CSF-related studies have concentrated on the industrial, manufacturing, and public sectors. Yet, academic institutions possess unique complexities, including intricate bureaucratic processes, decentralized governance structures, and distinct forms of resistance to digital transformation factors that differ significantly from those in industrial or public sector settings. This research imbalance makes it difficult to develop frameworks that are truly relevant and context-specific to academic environments. This imbalance highlights the need for more diverse methodological approaches, including qualitative studies, cross-cultural investigations, and in-depth sectoral research. Without sufficient attention to social, cultural, and environmental factors, the success of IIS implementation may be temporary and unsustainable in the long term.

3.2.3 Implications

3.2.3.1 Theoretical Implications

Theoretically, this study provides empirical confirmation of well-established Critical Success Factor (CSF) models. By identifying top management support, project management, and system quality as the most frequently

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discussed factors in the literature, the study reinforces the validity and continued relevance of traditional CSF frameworks in the context of modern information systems implementation. A more significant theoretical contribution lies in the study's identification of a "non-technical gap" in existing literature. These findings implicitly challenge scholars to go beyond technical and formalistic models that dominate current CSF discourse. The study calls for the development of new conceptual frameworks or synthesized models that explicitly integrate social, cultural, and contextual dimensions such as cultural norms and vendor relationships as core variables, rather than treating them as peripheral or residual factors. Moreover, by highlighting the underrepresentation of the higher education sector, this research opens a new theoretical frontier. It implies the necessity of developing context-specific CSF models that can account for the unique dynamics of academic institutions, such as complex internal bureaucracy and resistance to organizational change, which differ significantly from the characteristics of corporate environments.

3.2.3.2 Practical Implications

For practitioners, including project managers and CIOs, a key implication is the necessity of shifting from a purely technical focus to a more holistic implementation strategy. The findings emphasize that project success is not solely determined by timelines and budgets; it also hinges on the organization's ability to manage human factors effectively. Managers are encouraged to consciously allocate resources to change management initiatives, conduct continuous training and learning programs, and foster strong cross-functional teamwork to ensure system adoption and long-term sustainability. For leaders in universities and higher education institutions, the results indicate that directly adopting implementation models from industrial sectors may be ineffective or even risky. Instead, they must design strategies that take into account the complexity of academic bureaucracy, engage multiple stakeholder groups (including faculty, administrative staff, and students), and implement a more participatory and incremental change process to address the unique cultural resistance often present in academic environments.

4. CONCLUSION

This research confirms that the successful implementation of Integrated Information Systems (IIS) is a multifaceted phenomenon that is not only influenced by technical and managerial factors, but also strongly influenced by social, cultural, and contextual dimensions that have so far received less attention. The review found that non-technical aspects such as organizational culture and external environmental pressures were only discussed in 6 out of 30 articles, whereas in the context of higher education, resistance to system change, lack of participatory leadership, and complex bureaucracy are often the main causes of IIS adoption failure. As a concrete example, resistance within universities may take the form of a refusal to adapt syllabuses to fit the new system as it is perceived to add to the administrative burden, while the fragmented organizational culture between faculties (silos) hinders data integration which is the main goal of IIS. This is in line with a study by Madi et al.[2] shows that the lack of involvement of academic staff in the technology decision-making process is a major inhibiting factor. Similarly, a study by Abugabah [34] evaluating the impact of ERP in higher education, indirectly highlights that failure of adoption by users due to non-technical factors will result in low system impact. Even outside the education sector, a study by Ali et al.[13] on cultural challenges in the oil and gas sector confirmed that the cultural dimension is a universal hurdle in system implementation. However, there may still be relevant studies that have been missed due to the limited scope of the database, which only includes five primary sources, as well as the language limitation of only including English articles. Therefore, our understanding of the social and cultural aspects of IIS implementation remains limited to what is captured in the English-language literature. The authors acknowledge the possibility that non-English-language studies, such as those in Mandarin, Japanese, and other languages, may have explored the cultural dimension more deeply, particularly within their respective local contexts. This is due to the tendency of local researchers to highlight the social dynamics, cultural values, and institutional norms unique to their respective regions or countries, which are often overlooked or unrepresented in the global English-language literature. However, this exploration of the literature was not undertaken in this review and represents an important potential direction for further research. Despite some methodological limitations, this review has provided a robust and representative synthesis of the current literature and successfully highlighted the importance of managing non-technical factors as a key to the long-term success of IIS implementation in higher education institutions.

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