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The CSFs for the implementation of ERP systems and the potential impact on management control - a case study of the SCAEK company

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Abstract

Research Question: What are the critical success factors (CSFs) for implementing ERP systems, and how would a successful ERP implementation impact management control in one of the Algerian leading cement companies (SCAEK: Société des Ciments de Aïn El Kebira)?

Motivation: Identifying the main reasons of previous ERP implementation failure in the cement company of Ain El-Kebira. Also, determining the critical success factors for ERP implementation in the case study company. In addition, to explore the potential impact of the successful ERP implementation on management control function within the company.

Idea: By providing a literature review and a case study, this paper examines the failing experience of ERP implementation in an Algerian company, identifies the critical factors for future ERP implementation, and examines the possible impact that such a system (ERP) may bring for the management control (MC) function of the company.

Data: The data was collected from an Algerian well-known cement company.

Tools: The semi-structured interviews were used to collect the data, which were first audiotaped and then manually transcribed and summarized into the case study.

Findings: The study reveals that the main reasons behind the failure of ERP implementation in the case company align closely with challenges commonly discussed in the literature.

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These challenges highlight the need for a robust and well-structured set of CSFs for ERP implementation, some of these factors are already existing withing the company and are compatible with established research. However, the study emphasises the importance of considering the organizational culture when planning future implementations by SCAEK or similar Algerian companies. Furthermore, the study indicates that the expected impact of a successful ERP implementation on the management control function within the company is consistent with the findings reported in the literature.

Contribution: This research contributes to ERP implementation literature by investigating the ERP implementation experience of an Algerian company, specifically focusing on the failure of the ERP system and mapping it onto the CSFs identified in the literature. The study provides a comprehensive list of CSFs, which can serve as a guideline for researchers and practitioners working on ERP implementations in the Algerian context. Additionally, the paper examines the potential impact of ERP systems on the management control function in the company. While the study is based on a single case, it offers valuable insights that can inform future ERP implementations in similar Algerian companies. To enhance the generalizability of these findings, further research could analyse ERP implementation processes across multiple companies, allowing for broader conclusions and recommendations applicable to a wider range of organizations.

Keywords: Critical success factors (CSFs), Enterprise Resource Planning (ERP), management control, implementation.

JEL codes: M150/M410

1. Introduction

An article by Globe Newswire (2022) states that the global digital transformation market is projected to reach 2,038.9 billion USD by 2028. Over recent decades, information technology (IT) have rapidly evolved, driving significant changes in the business environment (Rom & Rohde, 2006). As a result, companies are compelled to keep pace with these rapid advances in IT to maintain their competitiveness. In the accounting field, innovations such as cloud accounting, cryptocurrencies, and blockchain are reshaping the profession's future (Pasquarosa, 2023; Bellucci *et al*., 2022).

Real-time, accurate information is critical for decision-making in today's competitive market, making Enterprise Resource Planning systems (ERPs) vital for companies (Garcıa-Sanchez & Perez-Bernal, 2007). Luther (2024) predicts that the ERP market will reach $96 billion by 2032 and 50% of companies are acquiring, upgrading, or planning to update ERP systems soon. However, ERP implementations remain among the most complex, costly, and challenging IT projects (Zouine, 2020; Gargeya & Brady, 2005; Meyssonnier & Pourtier, 2004)

The literature emphasizes the importance of identifying potential problems, developing solutions, and addressing factors influencing ERP project's success (El-

Baz *et al*., 2023; Stone & Zhang, 2021; Jagoda & Samaranayake, 2017). Many researchers have provided valuable insight into the ERP implementation process and clearly identified a variety of critical factors that affect the success of the project (Stone & Zhang, 2021; Amid *et al*., 2012). Also, a number of studies discuss the impact of the successfully implemented ERP system on an organization's functions, particularly, the management control function.

While general insights into ERP implementation challenges, critical success factors (CSFs) and managerial and organizational changes driven by ERP systems in Algeria do exist (Belkacem & Merzoug, 2021; Zouaghi & Laghouag, 2016; Slimani & Boukrif, 2016), in-depth analyses of ERP-related failures, CSFs, and their impact on management control remain limited.

We seek through this research to explore the failed ERP implementation reasons of a leading Algerian company- the Cement company of Ain El Kebira (SCAEK)- in light of the insight gained from the literature in addition to conducting semi-structured interviews with key staff of the company. Besides, our study seeks to provide a framework for guiding a successful implementation of ERP system in the case study company and to identify the areas of improvement that a successful ERP implementation may bring to the management control in this company.
Thus, we aim to answer the following research questions: What are the critical success factors (CSFs) for implementing ERP systems, and how would a successful ERP implementation impact management control in one of the Algerian leading cement companies (SCAEK: Société des Ciments de Aïn El Kebira)?
The remainder of this paper is structured as follow; the next section examines a literature review on the ERP systems, their implementation failure, the CSFs for the ERP implementation and the impact that ERP systems bring to the management control. Following this, the research method is discussed. Next the case study is presented, continuing with the discussion section, and finally, summarizing the key findings into the conclusion.

2. Literature review

2.1 ERP-Overview

Enterprise Resource Planning (ERP) systems are module-based, customizable, and integrated IT applications that aim to optimize organizations' business processes, minimize information redundancy, and enhance information integrity. They are also considered as Information Systems (ISs) that support most aspects of an organization's information needs by offering a single repository and based on best business practices (Alaskari *et al*., 2021; Reix *et al.*, 2016; Davenport, 1998). These systems have become a cornerstone of competitive business strategy (Stone & Zhang, 2021). They are supposed to provide companies with greater management

flexibility, enhanced productivity, and improved business process and decision-making (El-Baz *et al*., 2023; Qachar & Nacer, 2023; Mahraz *et al*., 2020), by providing capacity for better data analysis and improved organisational performance and efficiency (Abejo, 2023) .

Major commercial ERP systems, such as SAP, Oracle ERP, and Microsoft Dynamics, were developed to streamline and integrate business processes across organisations (Richardson *et al.*, 2021)**.** At present, the dominant player in the large system arena is SAP (Gelinas *et al*., 2018). An organization might adopt the core modules offered by an ERP vendor or might combine modules from various vendors in order to create an IS that better meets its needs (best-of-breed approach). In addition, organizations might adopt specialized industry and complementary modules to extend the system functionality, such as Customer Relationship Management (CRM) and Supply Chain Management (SCM). (Gelinas *et al*., 2018).

By the early 1990s, ERP systems had been experiencing accelerated development, aiming to realize the information age's wildest dreams of the unified and coherent IS (Reix *et al*., 2016; Davenport, 1998). They are considered the generalization and extension of Manufacturing Resource Planning (MRP) systems, as they expanded the scope of the integrated software to encompass the entire organization (El-Baz *et al*., 2023; Reix *et al*., 2016; Meyssonnier & Pourtier, 2004; Al-Mashari *et al*., 2003; Edwards, 2001). Originally, ERP systems were targeted to large manufacturing organizations, but they are becoming more useful to any type of organization (Gelinas *et al*., 2018; Glenn, 2008). Currently, ERP developers are also experimenting with shifting traditional software models to cloud-based systems for better configuring resources such as networks and data storage (Sunmola & Lawrence, 2024).

The introduction to ERP can be done either by Big Bang implementation – the integration of an ERP system of all modules across the entire organization simultaneously (Khanna & Arneja, 2012) or by gradually increasing the number of modules and entities implemented (Meyssonnier & Pourtier, 2006; Dechow *et al*., 2006).

Moreover, ERPs remain among the most advanced, popular, and important implementations in the corporate use of IT (Alaskari et al., 2021; Zouine, 2020; Granlund & Malmi, 2002; Davenport, 1998). Their market statistics show the move toward increased usage and global demand, and 50% of companies are acquiring, upgrading, or planning to update their ERP systems (Luther, 2024).These systems have significantly improved how organisations meet their information needs and requirements by enabling efficient data integration, real-time reporting, and better decision-making capabilities (Alaskari *et al*., 2021; Mahraz *et al*., 2020; Meyssonnier & Pourtier, 2004)

Furthermore, the implementation of ERP systems is typically a costly, complex, and time-consuming endeavour, requiring significant organisational commitment and a clear vision for success (Johansson & Byström, 2024; Alaskari *et al*., 2021; Gargeya & Brady, 2005; Granlund & Malmi, 2002; Davenport, 1998). For instance, companies often invest hundreds of millions of dollars and several years to fully integrate ERP solutions (Stone & Zhang, 2021; Bingi *et al*., 1999). Gargeya and Brady (2005) claim that the costs of ERP implementation are incurred in three areas: software, hardware, and people; however, the people cost is the most expensive area. The purchase cost of the ERP is only the tip of the iceberg, since the overall implementation cost is from opt to ten times the price of the ERP system (Qachar & Nacer, 2023; Meyssonnier & Pourtier, 2004). Also, companies may spend up to three times as much money on consultants as they do on the system itself (Fui-Hoon Nah *et al.*, 2001).

Regardless, being adopted by the majority of organizations worldwide, the stories of ERP implementation failures are widely discussed in the literature (Johansson & Byström, 2024; Abejo, 2023; El-Baz *et al*., 2023; Chakravorty *et al.*, 2016; Gargeya & Brady, 2005; Wong *et al*., 2005; Barker & Frolick, 2003; Davenport, 1998).

2.2 ERP Implementation Failure

Despite the popularity of ERP systems, along with numerous successful implementations, there is a significant body of evidence indicating that many ERP projects end in failure (Johansson & Byström, 2024; Chakravorty *et al*., 2016; Sar & Garg, 2012; Pan *et al*., 2008; Gargeya & Brady, 2005; Wong *et al.*, 2005; Davenport, 1998).

Major organizations, including Nike, Dell, Apple, Hershey, Mobile Europe, FoxMeyer, and Whirlpool, have encountered significant challenges with their ERP implementations (El-Baz *et al*., 2023; Wong *et al*., 2005; Barker & Frolick, 2003; Davenport, 1998). For instance, FoxMeyer Drug argues that its system was a contributing factor to its bankruptcy, Mobile Europe spent hundreds of millions of dollars only to abandon its system, and Dell computer found that its system would not fit its new decentralized management system (Davenport, 1998).

More recent examples further highlight the challenges of ERP implementation. For instance, Lidl abandoned a €500 million SAP implementation in 2018 after seven years due to compatibility issues with its business processes and Revlon faced significant disruptions in the same year after its SAP rollout, which led to supply chain breakdowns and legal challenges (Salazar-Fierro *et al.*, 2023).

Further, the failure rate of ERP implementation remains high and has been widely cited in the literature as organisations fail with implementation more often than they

succeed (Johansson & Byström, 2024; Stone & Zhang, 2021; Sar & Garg, 2012). According to Luther (2024), data collected over the lasts years on ERP implementation show that 50% fail the first time and 50% of companies experience operational disruption when they go live.

Accordingly, the failure of an ERP implementation has been judged as an instance where the implementation does not achieve a sufficient return on investment (ROI) as identified in the project approval phase (Sar & Garg, 2012; Wong *et al*., 2005). However, failures can also be defined in other terms, such as exceeding the budget, lagging behind the projected schedule, and failing to meet expectations (Sar & Garg, 2012). This failure is mainly due to the insufficiency and the absence of specific prerequisites necessary to the success of the ERP implementation (Mahraz *et al*., 2020).

The critical factors for failure (CFFs) are identified as key areas where things must go wrong in order for the ERP implementation achieve a high level of failure (Sar & Garg, 2012). For this reason, a lack of understanding of these factors by researchers and practitioners can lead to tragic outcomes for the ERP undertaking (Barker & Frolick, 2003).

While some blame the enormous technical challenges of rolling out ERP for implementation failures, they are not the main reason ERP systems fail. Instead, most ERP failures are attributed to business and people issues (Abejo, 2023; Ranjan *et al*., 2016; Pan *et al*., 2008; Davenport, 1998). The mismatch between ERP and the organization could be the main reason causing the implementation failure *(Wong et al*., 2005). In the same vein, Davenport (1998) states that the logic of an ERP system may conflict with the logic of the business, and either the implementation will fail, wasting vast sums of money and causing a great deal of disruption, or the system will weaken important sources of competitive advantage.

In addition, with the lack of proper planning, project definition, and organization (Stone & Zhang, 2021; Barker & Frolick, 2003), the absence of well-handled change management and inadequate training (Stone & Zhang, 2021; Ranjan *et al*., 2016), and without the right people to implement, use, and maintain its functionality, the ERP project is worthless, and it is sure to fail (Barker & Frolick, 2003).

In summary, there are numerous factors that can influence the failure or success of ERP implementation; however, failure can be avoided when considering the lessons to be learned from past cases (Stone & Zhang, 2021; Mahraz *et al*., 2020).

2.3 ERP Implementation Success and CSFs

Successfully implemented ERP systems will significantly enhance organizational performance and survival by streamlining business processes, implementing best practices, boosting productivity and effectiveness, enhancing customer satisfaction,

reducing inefficient spending and inventory turn-around time, and improving competitive advantage and operational excellence (El-Baz *et al*., 2023; Ranjan *et al*., 2016; Garcıa-Sanchez & Perez-Bernal, 2007; Seng Woo, 2007; Gargeya & Brady, 2005; Barker & Frolick, 2003).

Saini *et al.* (2013) identify the project completion in budget and time frame, alongside high business benefits realization, as parameters for determining the success of an ERP implementation. However, the success of ERP implementation does not come easily (Gargeya & Brady, 2005; Al-Mashari *et al.*, 2003) and it is reported that three-quarters of ERP projects were considered to be unsuccessful by the implementing organizations (Mahraz *et al.*, 2019). Therefore, careful consideration and profound understanding of a list of CSFs is needed to ensure successful ERP implementation, foster optimal operational efficiency, and contribute to a smooth achivement of ERP benefits (Kusumawardhana & Yaziji, 2024; Zouine, 2020; Bingi et al., 1999; Holland & Light, 1999).

Rockart (1979) was the first founder of a research method designed specifically to elicit CSFs. They are defined as the limited number of areas in which satisfactory results will ensure successful competitive performance for the organization. In parallel, within the ERP context, Holland and Light (1999) define a list of CSFs as factors needed to ensure a successful ERP project. They are particularly useful as they provide clear insight and guidance on where to focus special consideration, resources, and continual attention in planning for successful project implementation (Mahraz *et al.*, 2019). Further, the CSFs serve as guidelines for managers to take proactive measures in areas that could influence the outcome of ERP implementation projects (El-Baz *et al*., 2023).

A considerable amount of research has been conducted globally to identify a wide range of CSFs for implementing ERP systems (Stone & Zhang, 2021; Mahraz *et al*., 2020; Saini *et al*., 2013). Nonetheless, despite the diversity of CSFs explored in these studies, certain factors are commonly stated by different authors and from various perspectives (Abejo, 2023). For instance, Holland and Light (1999) classify the CSFs into strategic and tactical factors among business vision, existing legacy system evaluation, top management support, and communication. Moreover, Bingi *et al.* (1999) provide a framework for the major issues that must be addressed when dealing with ERP implementation, including top management support, business process reengineering (BPR), the selection and the management of ERP consultants, and training employees.

Along with that, several studies address the CSFs in ERP implementation by categorizing them into respective phases in the ERP lifecycle (Ijaz *et al*., 2014; Loh & Koh, 2004; Fui-Hoon Nah *et al.*, 2001). Also, a number of studies group the most important factors that influence the implementation process into human, technological, and organizational factors (Zouine, 2020; Saini et al., 2013; Garcıa-Sanchez & Perez-Bernal, 2007).

Therefore, regarding the present study, a list of eleven CSFs for the ERP implementation has emerged from reviewing the literature in this area (Appendix A shows the list of CSFs associated with the reviewed studies). Due to the terminological differences around CSF names that exist in the literature, similar factors were grouped together under a comprehensive list. This approach helped us avoid redundancies and highlight the essential elements critical to ERP implementation success.

2.4 The impact of ERP systems on management control

Strong organizational changes can be expected from the ERP implementation (Zouine, 2020; Mawadia et al., 2016; Granlund & Malmi, 2002) due to increased centralization of system coordination and homogenization of control practices.

Since ERP systems provide integrated, up-to-date, and shareable information in real-time, they claim to enhance the effectiveness of management control in firms (Rahardja, 2023; Rathore & Oza, 2017; Dechow *et al*., 2006). Likewise, Granlund and Malmi (2002) show that with the introduction of ERP systems, the increased access to data may improve management control and faster information flows may allow more timely management control to be conducted than before the era of ERP systems.

Early studies exploring the impact of ERP system implementation on management control suggest that the expected impact on management control practices is minor (Granlund & Mouritsen, 2003; Scapens & Jazayeri, 2003; Granlund & Malmi, 2002).

On the other hand, several modern studies claim that the implementation of ERP systems has the potential to change the management control practices significantly (Hammouch, 2024; Rahardja, 2023; Spraakman *et al*., 2021; Mawadia *et al*., 2016; Granlund *et al*., 2013; Kanellou & Spathis, 2013; Chapman & Kihn , 2009; Meyssonnier & Pourtier, 2006).

ERP systems are considered a great tool for management control, significantly reducing routine tasks by eliminating constraints in information collection and storage (Spraakman *et al*., 2021; Rouissi, 2020; Rathore & Oza, 2017; Meyssonnier & Pourtier, 2006).

According to Kanellou and Spathis (2013), with the assistance of ERP systems, data are gathered and processed easier and more quickly and provide a greater degree of flexibility for the accounting department, including management control. Furthermore, automating routine and administrative tasks through ERP systems, particularly by eliminating data collection and manual entries, is considered one of ERP's main contributions to management control (Hammouch, 2024; Rouissi, 2020).

Additionally, ERP technology does not entirely transform traditional or modern management control practices (Weerasekara & Gooneratne, 2023; Spraakman *et al*., 2018; Scapens & Jazayeri, 2003). However, it has the potential to significantly improve and streamline these practices, enhancing their accuracy, timeliness, efficiency, and effectiveness (Weerasekara & Gooneratne, 2023; Spraakman *et al.*, 2018; Rathore & Oza, 2017; Granlund, 2007). Again, Granlund (2009) states that ERPs may have a significant impact on management control as they change the way in which business operations are designed and how activities can be calculated and accounted for.

ERP systems led also to an undeniable step towards the harmonization and refinement of budget information (Rouissi, 2020), enabling rapid updates, automatic dashboard modifications, and faster feedback procedures (Meyssonnier & Pourtier, 2006), and providing flexible and forward-looking information (Weerasekara & Gooneratne, 2023). Similarly, Zouine (2020) considers ERP as a management tool that can improve budgeting and reporting processes through easing the exchange of data and information.

Modern ERP systems, with their extensive data storage, computational power, and analysis tools, facilitate in-depth analysis and predictive capabilities for management control, enabling a better understanding of financial data (Hammouch, 2024; Spraakman *et al*., 2021). Moreover, the integration of Business Intelligence (BI) tools into ERP systems significantly enhances data analytics by bridging transactional efficiency with strategic planning (Hammouch, 2024; Spraakman *et al*., 2021; Rathore & Oza, 2017; Mawadia *et al*., 2016; Rom & Rohde, 2006).

Furthermore, ERP systems constitute an important technological infrastructure for management control that can be seen as a massive management control package integrating various accounting and non-accounting systems (Teittinen et al., 2013; Granlund, 2007). Also, traditional performance measures and financial information used pre-ERP by management controllers are maintained, but their scope is enlarged with transactional measures and non-financial information (Weerasekara & Gooneratne, 2023; Spraakman *et al*., 2018).

ERP systems enable drilling down from financial figures to non-financial information, offering granular insights and explanations of performance measures, including the drivers of financial revenue (Spraakman *et al*., 2018). This capability supports the development of a strategic management control system (MCS) aligned with the Balanced Scorecard's (BSC) four perspectives: financial, customer, internal processes, and learning and growth, facilitating business unit monitoring and assessing organizational progress against strategic goals (Spraakman *et al.*, 2021; Appelbaum *et al*., 2017; Edwards, 2001). Despite this, the configuration of tools like BSC and Activity-Based Costing (ABC) into an ERP system poses several difficulties due to the ERP system's complexity (Weerasekara & Gooneratne, 2023).

Likewise, the ERP systems lead to a shift from the traditional role of controllers to a more strategic role (Mawadia *et al*., 2016). Due to the facilitative features of ERP systems such as automatic report generation, the attention of controllers is devoted from information collection and recording to forecasting and analysis (Weerasekara & Gooneratne, 2023; Meyssonnier & Pourtier, 2006). Therefore, ERP systems are perceived to drive a role change of management controllers from bean-counters to business analysts and management advisors, enabling them to explore data in-depth and concentrate on more strategic analysis and key performance indicators' (KPIs) interpretation (Hammouch, 2024; Weerasekara & Gooneratne, 2023; Granlund, 2009; Meyssonnier & Pourtier, 2006; Scapens & Jazayeri, 2003). In addition, ERP implementation requires management controllers to take on responsibilities related to system maintenance and development, further expanding their role beyond traditional accounting tasks (Gallad *et al*., 2020; Mawadia *et al*., 2016).

Nevertheless, controllers in an ERP environment can add value if they understand the business, the processes, and the ERP system (Spraakman *et al.*, 2021). This requires them to expand their skill set, encompassing skills in IT, presentation, interpersonal, and communication (Weerasekara & Gooneratne, 2023; Appelbaum *et al*., 2017).

ERP systems also facilitate faster and more effective decision-making by providing controllers with accurate and real-time information (Hammouch, 2024; Weerasekara & Gooneratne, 2023; Spraakman *et al.*, 2018; Rathore & Oza, 2017). This enables them to offer informed recommendations to managers (Hammouch, 2024; Nguyen *et al*., 2020), ultimately enhancing overall organizational performance (Fauzi, 2021).

In addition, the main expected benefits of ERP in management control are enabling the strategic vision, implementing standards worldwide in the organization, and enabling transparency in controlling (Teittinen *et al*., 2013). In contrast, these effects and others could be observed in the short, medium, and long term (Granlund, 2009). Certain effects are observable immediately, but others may take effect only after years of experienced use and system development (Fauzi, 2021; Granlund, 2009).

3 Research methodology

A multimethod approach was used to enhance the credibility of the research findings. This approach consists of a literature review and a case study. An extensive literature review was conducted through exploring and analysing several seminal and recent studies in the research variables areas. However, despite the growing body of knowledge in the ERP systems' implementation and their organizational impact area, in-depth analyses specifically targeting the influence of ERP systems on business processes and functions in Algerian organizations are limited. Furthermore, studies investigating the causes of ERP implementation failures, the CSFs, and the impact they may bring to management control in the Algerian context remain relatively moderate.

This study also employs a qualitative case study approach, regarded as the most appropriate methodology given the nature of the research questions posed. Benbasat *et al.* (1987) claim that case study research is a viable information systems research strategy and that it is an appropriate way to research an area in which few previous research has been carried out. Also, Yin (2009) affirms that the case studies are the preferred method when the focus is on a contemporary phenomenon within a real-life context.

Furthermore, the multi-faceted and amorphous nature of ERP systems allows individual case studies to be examined from various perspectives within a "bounded system" (Spraakman *et al.*, 2018). Additionally, qualitative research enables a deep exploration of organizational complexities, allowing researchers to focus on nuanced aspects of interest (Parker, 2012), which quantitative studies often cannot achieve at this level of detail. Accordingly, the use of a case study approach will enable the clarification of the research variables and place them into the problematic context while also allowing researchers to gather real-life insight that can serve as a foundation for developing quantitative questionnaires in our future studies.

3.1 Case Study Selection

The Cement Company of Ain El-Kebira was selected for the case study due to its prior experience with a failed ERP implementation. This company presents a valuable context for understanding the reasons behind ERP failure, the CSFs for successful implementation, and the potential impact of ERP on MC functions.

3.2 Data collection and analysis

The data was collected through semi-structured interviews with seven key company members, directly involved with the ERP implementation project and/or management control activities. The participants included the Chief Financial Officer (CFO), Management Controller (MC), Chief Information Officer (CIO), Chief Human Resources Officer (CHRO), Training Manager (TM), Internal Auditor, and an IT specialist. These individuals were selected based on their expertise, direct involvement in the ERP initiative, and their capacity to provide valuable insights into the reasons for the project's failure, critical success factors for future ERP implementations, and the system's potential impact on management control.

This diverse group was carefully chosen to ensure a well-rounded understanding of the challenges and opportunities surrounding ERP implementation within the company. Interviews took place in April 2024, lasting between 30 and 90 minutes, and were conducted in a setting that allowed participants to share their experiences candidly. Table 1 provides further details about the interviewees and their roles and level of involvement in the ERP project.

Table 1. Interviewees details

No	Position	Department	Role in the ERP project	Level of involvement	Duration
1	*CFO*	Finance and Accounting	Member of the steering committee	Directly involved	**75**
2	*MC*	Audit and Control	Project team leader (executive committee)	Directly involved	**90**
3	*CIO*	Information Technology	Member of the steering committee	Directly involved	**40**
4	*CHRO*	Human Resources	Member of the project team	Partially involved	**30**
5	*TM*	Human Resources	Functional specialist	Partially involved	**30**
6	*IT specialist*	Information Technology	Technical specialist	Directly involved	**35**
7	*IA*	Audit and Control	Functional specialist	Partially involved	**60**

Source: authors' work

The semi-structured interview is an exploratory interview used most often in social sciences for qualitative research purposes. It generally follows a guide that is devised prior to interview, and it is focused on a core topic to provide a general structure (Magaldi & Berler, 2020). Regarding this study, the semi-structured interviews were centred around the themes representing the various key concepts of our research (ERP implementation failure, CSFs, the impact of ERP on MC). An interview guide consisting of about 41 questions was formulated in a flexible way to direct the interview toward the central research topics and allow for dialogue to emerge between the interviewer and the interviewees. The questions in our guide are clearly worded and concise, not leading, and presented in open-ended format. Also, they are based on the theoretical insights gained in the literature review. Appendix B provides further details about our interview guide, including the themes and specific questions addressed during the interviews.

The semi-structured interviews were first recorded with the permission of the respondents, then transcribed verbatim in a set of electronic documents, and finally analysed and summarized into the case study.

In addition to the literature review, analysing the case study's findings enables our study to propose a list of the CSFs for ERP implementation in the Cement Company of Ain Elkebira. This list and the findings generated through the qualitative approach will be integrated into future confirmatory quantitative studies. It is also expected that the list of CSFs will serve as a valuable reference for future studies investigating ERP implementation in the Algerian context.

Additionally, the second part of the study discusses the potential impacts that a successful ERP implementation would bring to the MC function in the Cement Company of Ain Elkebira, based on, first, reviewing the literature in the area, and then, analysing the data gathered around the topic from the semi-structured interviews.

4 Case study

4.1 Profile of the case study

In the early 1970s, the National Company of Building Materials in Algeria launched an extensive investment program aimed at improving the legacy lines of the French company Lafarge, as well as constructing new cement production lines, including the Cement Company of Ain El-Kebira (SCAEK: La Société des Cements de Ain El-Kebira). Initially SCAEK operated as one of the subsidiaries of the Regional Enterprise of the Eastern Cement (REEC), that underwent a significant restructuring in 1998 to optimize its operations.

With the dissolution of the REEC group and the formulation of the GICA group in November 2009, SCAEK became one of the GICA's 23 subsidiaries. The GICA group, which is wholly owned by the government, holds 100% of SCAEK capital, amounting to 200,000,000 DZD.

SCAEK boasts two production lines with a combined capacity of 3,000,000 tons of cement per year (SCAEK, 2018).

4.2 The experience of ERP implementation in SCAEK

The information presented in this section is analysed and summarized from semi-structured interviews with seven key personnel from various departments of the Cement Company of Ain El-Kebira.

By 2017, the GICA group, to which the company belongs, issued the decision to implement an Enterprise Resource Planning (ERP) system. GICA undertook its ERP implementation for several reasons. The primary goal was to enhance its e-business by automating, streamlining, and standardizing the processes across the group. This initiative aimed to reduce data redundancy, improve information availability, and strengthen the internal control and governance systems. Furthermore, GICA sought to reduce inventory costs by virtually centralizing inventories among subsidiaries with similar consumption patterns (such as the spare parts used by the 14 cement subsidiaries). The group also aimed to centralize its treasury through cash pooling and, most importantly, improve the accounts consolidation process, which was done manually using Excel spreadsheets. However, the primary motivation for GICA's ERP implementation was to increase profitability.

The decision involves implementing the ERP system across all 23 subsidiaries of the group. SCAEK was one of the five companies chosen to lead and spearhead this implementation. The GICA Group announced a call for tenders to select the most suitable ERP system from various vendors, including SAP, Oracle, and Microsoft.

After a thorough evaluation, Microsoft Dynamics 365 F&O emerged as the top choice. This decision was driven by several factors: its lower costs, greater ease of use compared to SAP, the availability of a consolidation module, and its seamless compatibility with the MS Office suite. The implementation phase for the ERP system was planned to last 52 months across each company within the group.

Since the group is wholly state-owned and the Algerian market lacks integration companies, higher authorities mandated the exclusion of foreign integrators, requiring collaboration with a national firm instead. The group appointed CETIC, a national information technology and communication firm, to serve as a third-party facilitator during the implementation process. While CETIC has extensive experience in IT and communication, this project represents its first venture into a project of this specific complexity and scale. This appointment underscores the group's confidence in CETIC's capabilities as a national firm and its commitment to ensuring the successful implementation of the Microsoft Dynamics 365 F&O ERP system.

To effectively plan and execute the project activities, the group has formed a steering committee dedicated to overseeing the ERP implementation. This committee consisted of the leaders of executive committees (project teams) from the pilot subsidiaries selected to lead the implementation as well as technical and functional executives. Additionally, a president has been appointed to the steering committee to facilitate communication and coordination among the executive committees, ensuring improved collaboration and efficiency.

The executive committees deriving from the steering committee were tasked with the on-ground execution of the ERP implementation. In the SCAEK company, the executive committee or the project team consists of the project leader (Management Controller), who is responsible for overall project management and ensuring alignment of implementation procedures. Moreover, a representative from each function has been selected to join the team. These team members have been chosen for their exceptional skills and extensive knowledge in their respective fields.

The project team was in charge of the evaluation of the company legacy systems in order to determine the amount of change needed and assess the possibility of integrating the ERP with the legacy ISs. For instance, Coswin, a partly integrated system in the company, consists of three modules: procurement, inventory management, and maintenance. The maintenance module was scheduled to be integrated into the Microsoft Dynamics ERP system. Also, one of the key tasks of the project teams across the group was to standardize and unify the chart of accounts and inventory for all subsidiaries operating within the same industry (for instance: Cement companies). Additionally, they are responsible for organising workshops and training sessions to raise awareness about the ERP system, its objectives, and the associated organisational changes among employees.

However, the implementation process was prematurely abandoned by the group, and the reasons to stop such an endeavour are still completely unclear for the company.

5. Results and discussion

5.1 Reasons for ERP Implementation Failure

In this qualitative study, we aim to identify the reasons behind the implementation failure in the cement company, specifically the halt in the ERP implementation process, which Besson (1999) defines as a type of failure. To achieve this, we conducted interviews with key personnel, including members of the steering committee, the ERP project team leader, executive committee members, and several company executives. The following elements outlines the reasons for failure as articulated by the interviewees.

The right vendor selection

Despite the high ranking of the selected system and the consensus among several interviewees that were carefully chosen, particularly for the system compatibility with the MS Office suite, others view the vendor selection as a main driver of the failure. One interviewee argued that Microsoft Dynamics is not commonly used by leading, highly reputed cement companies. Additionally, he asserted that the system might not be compatible with all subsidiaries, which operate in different industries, stating that:

"Regardless of its high ranking among other alternatives, the selected software may be incompatible with the company activity".

An IT specialist also stated that the project contract with the vendor was not thoroughly reviewed, which may have contributed to the failure. The group acquired a significant number of licenses for its subsidiaries; however, implementation did not commence immediately after the contract was signed. Instead, it was delayed for an extended period, preventing the group from benefiting from the system's upgraded version. By the time implementation was set to begin, the acquired version had expired, and the vendor could not upgrade the licenses to the next version due to the large number of licenses involved and the high associated costs.

The executive committee (project team) composition

Despite selecting skilled and experienced company staff as team members, the project team's size, particularly the number of IT specialists, may have contributed to its failure. Several interviewees mentioned that a well-known Algerian company, which successfully implemented its ERP system, hired 150 IT specialists, whereas SCAEK has only 3. The company's CFO stated:

"In order to successfully undertake such a complex project, the company has to increase its IT staff".

The external consultant selection

Another point raised by the interviewees is that the consulting firm selected did not meet the company's needs, as it was imposed by the group to act as a third-party integrator. Moreover, this firm lacked experience in ERP implementation and had limited direct communication with the company's project team, creating additional obstacles.

Project planning

Although the company conducted extensive planning, the project is viewed as insufficient by the majority of interviewees. One interviewee noted that the decision to implement the ERP system was driven by a desire to follow industry trends rather than a clear understanding of the group's needs. At the time the decision was made, the group had not fully identified or understood its requirements for the ERP implementation. While the steering committee gradually defined some needs, they failed to consider the specific requirements of each subsidiary. As a result, the project planning did not adequately address the needs of each company in addition to the absence of a measurement system for evaluating the effectiveness of project planning.

Change resistance

Although the implementation process halted at an early stage, respondents strongly anticipate that resistance to change would be a major obstacle if the process were to continue. However, they believe this resistance could be managed through effective communication, comprehensive user training, and ongoing support.

Additionally, interviewees perceive the centralization of strategic decision-making by the GICA group as a significant constraint that limits the company's flexibility and responsiveness during the implementation process, particularly when addressing associated issues and anomalies. They argue that decisions were made by the parent company without adequately considering the specific needs of each subsidiary.

Regardless of the reasons for ERP implementation failure identified by the interviewees at SCAEK, some factors remain unclear even to the company's own members. They believe that the true reasons for halting the project are known only at the parent company level.

5.2 Comparison of CSFs with Company Factors

Despite these failure reasons, the company also possesses several success factors that align with the critical success factors (CSFs) discussed in the literature. To successfully implement the ERP system in the future, SCAEK needs to maintain these factors and adopt any that are currently missing. Table 2 provides a comparison between the CSFs list derived from the literature and the available factors within the company.

Table 2. A comparison of the CSFs identified in the LR with the SCAEK factors

CSFs (Literature Review)	CSFs in SCAEK
1. *Business vision and plan*	✓ Business vision and plan
2. *Legacy systems evaluation*	✓ Legacy systems evaluation
3. *Right vendor and ERP strategy selection*	✗ Mismatch between the vendor and the company
4. *Project planning and management*	✗ Insufficient project planning
5. *Top management support*	✓ Top management support
6. *Project team composition*	✗ Understaffed project team
7. *Business process reengineering and minimum customization*	✓ Planned to reengineer business processes
8. *Communication and change management*	✓ Communication and change management
9. *Training and education*	✓ Training and education
10. *Organizational culture*	✓ Organizational culture
11. *System integration*	✓ System integration

Source: authors' work

Among the factors aligned with the critical success factors (CSFs) identified in the literature is the alignment between the company's strategy and vision with the IT vision embedded in the ERP system, particularly in their shared objectives of optimizing company costs and increasing profitability.

Furthermore, the evaluation of the legacy system was a major focus during the company's planning phase, aimed at identifying the required changes and assessing the feasibility of integrating existing systems with the new ERP system. This evaluation concluded that the company should retain its maintenance module from the Coswin system and integrate it with the ERP system.

Another key factor highlighted by all interviewees was the commitment of top management. They noted that the company's top management was deeply committed to the ERP project, providing essential support and allocating the necessary resources.

The respondents view BPR as essential for fully leveraging the best practices embedded in the ERP system. However, they emphasize that the company must adopt only those practices that comply with Algerian law and align with the organizational culture. As one interviewee noted:
"Wage calculation in Germany differs from that in Algeria, so we need to consider this when reengineering business processes and adopting best practices".

Communication was identified by all interviewees as a key success factor. Although the project was eventually discontinued, they confirmed that the project team conducted initial workshops for the executive members and had plans to implement a comprehensive change management program. This program was to include training, education, and sensitization for all company employees. Despite these efforts, the project was terminated prematurely.

The primary contributors to the project's failure, previously discussed, include a mismatch between the system and the company, poor selection of consultants, insufficient planning, an understaffed project team, centralized decision-making, and other unclear factors.

5.3 The potential impact of the successful ERP implementation on Management Control (MC) in SCAEK

The management control function at the Cement Company of Ain El-kebira is integrated within the audit and control department. It interacts extensively with all departments, especially finance and accounting, production, and maintenance, as they serve as primary data sources. This function is managed by a single individual who is responsible for core tasks, including data collection and recording, budget forecasting, target setting, and activity monitoring. The controller is also responsible for the projection and performance analysis using the traditional dashboards.

Although a business intelligence (BI) tool like Microsoft Power BI is available in the company and could significantly enhance business analysis, the controller indicated that Microsoft Excel is the only system he uses to perform his tasks.

Regarding the potential impact of implementing an ERP system on management control, all interviewees unanimously agreed that the introduction of an ERP system would undoubtedly streamline all aspects of the management control function. They also view the ERP system as a powerful tool that would significantly enhance the effectiveness of management control.

The interviewees highlighted several probable effects of the ERP system on management control, including the elimination of data collection and recording constraints, which are currently time-consuming and tiring tasks for the controller. With the introduction of the ERP system, data will be entered into the system only once and will then be readily accessible to the controller at any time.

The respondents also suggested that one of the main benefits of implementing an ERP system would be a highly efficient problem diagnosis and reconciliation process for management control. Moreover, the timely and accurate information provided by the unified ERP database is seen as a key factor in enhancing forecasting systems and enabling rapid, automatic budget adjustments.

Furthermore, it is anticipated that a successful ERP implementation in the SCAEK company will devote the controller time and effort to more strategic tasks by focusing on data analysis and providing advice to decision-makers in order to optimize the company's performance. As the management controller noted:

"With an ERP system, I can dedicate more time to analysing data and advising management, ultimately contributing to better decision-making and organizational performance."

6. Conclusion

The primary goal of this study was to propose a list of critical success factors for ERP implementation tailored to the SCAEK company and similar Algerian organizations. Through a literature review and an analysis of SCAEK's experience, the research identified key failure reasons, such as insufficient planning, understaffed project teams, inadequate consultant selection, and vendor mismatch, which align with global findings (El-Baz *et al*., 2023; Mahraz *et al*., 2020; Gargeya & Brady, 2005; Barker & Frolick, 2003; Davenport, 1998).

Despite these challenges, SCAEK possesses several CSFs, including top management support, a clear business vision, and a thorough evaluation of legacy systems, indicating potential for successful ERP implementation.

To build on this potential, the study recommends that SCAEK carefully select a vendor that aligns with the company's specific requirements, conduct extensive planning supported by an appropriate measurement system, and increase the project team size by incorporating additional IT personnel. It also emphasizes the importance of choosing a consultant who can seamlessly integrate with the internal project team, implementing a comprehensive change management program that includes training, education, and sensitization, and adopting a requirement-based decision-making approach to enhance flexibility and adaptability.

The study further highlights the need of contextualising global best practices to suit regional and cultural specificities. A successful ERP system is expected to transform the management control function, shifting the controller's role from traditional tasks to strategic data analysis and assisting decision-making, as supported by both the literature and employees' interviews.
This research contributes to the literature by addressing the gap in ERP studies focused on Algerian companies, offering practical insights for ERP implementation in Algerian organisations and developing countries with similar economic and cultural characteristics, emphasizing planning, vendor selection, and change management. Additionally, while focused on SCAEK, these findings provide a foundation for future comparative and quantitative studies, offering strategies to refine ERP implementation processes and improve outcomes in similar contexts.

However, this study has several limitations. First, the case study is based on a single organisation, which limits the generalizability of the results to other companies or industries. However, while the results may be applicable to similar companies, they cannot be directly extended to organizations with different contexts and

characteristics. This limitation is common in case study research, where findings are often specific to the "bounded system" being studied (Spraakman *et al*., 2018).

Additionally, although seven key personnel were interviewed, the sample size is relatively small. This may restrict the diversity of perspectives that could have been gathered from a larger group. Finally, the lack of quantitative validation means the findings are not statistically tested, and future research will be needed to confirm the applicability of the CSFs and their impact across other organizations.

While these limitations are important, they do not undermine the value of the study's insights. The chosen case study approach was appropriate for exploring the complexities of ERP implementation in the specific context of the SCAEK company. Despite these limitations, the qualitative data gathered provides valuable insights that contribute to understanding ERP implementation challenges in the Algerian context, and these findings can inform future studies, including confirmatory quantitative research.

References

Abejo, M.C. (2023) "Enterprise resource planning system implementation framework for selected state universities", *International Journal of Computing Sciences Research*, vol. 7: 2450-2477.

Alaskari, O., Pinedo-Cuenca, R., & Ahmad, M. M. (2021) "Framework for implementation of enterprise resource planning (ERP) systems in small and medium enterprises (SMEs): A case study", *Procedia Manufacturing*, vol. 55: 424-430.

Al-Mashari, M., Al-Mudimigh, A., & Zairi, M. (2003) "Enterprise resource planning: A taxonomy of critical success factors", *European Journal of Potential Research*, vol. 146, no. 2: 352-364.

Amid, A., Moalagh, M., & Ravasan, A. Z. (2012) "Identification and classification of ERP critical failure factors in Iranian industries", *Information Systems*, vol. 37, no. 3: 227-237.

Appelbaum, D., Kogan, A., Vasarhelyi, M., & Yan, Z. (2017) "Impact of business analytics and enterprise systems on managerial accounting", *International Journal of Accounting Information Systems*, vol. 25: 29-44.

Barker, T., & Frolick, M. N. (2003) "ERP implementation failure - a case study", *Information Systems Management*, vol. 20, no. 4: 43-49.

Belkacem, B.I., & Merzoug, S. (2021) "Implementation of enterprise resources planning by Algerian companies: Case study", *Journal of the Développements Policies and the Prospective Studies*, vol. 6, no. 2: 417-433.

Bellucci, M., Bianchi, D.C., & Manetti, G. (2022) "Blockchain in accounting practice and research: Systematic literature review", *Meditari Accountancy Research*, vol. 30, no. 7: 121-146.

Bingi, P., Sharma, M.K., & Godla, J.K. (1999) "Critical issues affecting ERP implementation", *Information Systems Management*, 7-14.

Chakravorty, S.S., Dulaney, R. E., & Franza, R. M. (2016) "ERP implementation failures: A case study and analysis", *International Journal of Business Information Systems*, vol. 21, no. 2: 462-476.

Chapman, C.S., & Kihn, L.-A. (2009) "Information system integration, enabling control and performance", *Accounting, Organizations and Society*, vol. 34, no. 2: 151-169.

Davenport, T.H. (1998) "Putting the Enterprise into the Enterprise System", *Harvard Business Review*, 121-131.

Davenport, T.H. (2000). *Mission Critical: Realizing the promise of Enterprise Systems*, Boston: Harvard Business School Press.

Dechow, N., Granlund, M., & Mouritsen, J. (2006) "Management control of complex organization: Relationship between management accounting and information technology", *Handbook of Management Accounting Research*, vol. 2: 625-640.

Edwards, J.B. (2001) "ERP, balanced scorecard, and IT: How do they fit together?", *Journal of Corporate Accounting & Finance*, vol. 12, no. 5: 3-12.

El-Baz, K.A., El-Midany, T.T., Ghattas, M.S., & AbouEleaz, M. A. (2023) "The Impact of enterprise resource planning (ERP) implementation on performance of firms: A case to support production process improvement", *Mansoura Engineering Journal*, vol. 48, no.6: 1-12.

Fauzi, T.H. (2021) "Impact of enterprise resource planning systems on management control systems and firm performance", *Uncertain Supply Chain Management*, 745-754.

Gallad, Y., Rigar, S.M., & El Idrissi, R. (2020) "Les effets d'implémentation des ERP sur l'évolution des pratiques du contrôle de gestion : Etat de l'art et perspectives", *Revue Internationale des Sciences de Gestion*, vol. 3, no. 1: 815-830.

Garcıa-Sanchez, N., & Perez-Bernal, L. E. (2007) "Determination of critical success factors in implementing an ERP system: A field study in Mexican enterprises", *Information Technology for Development*, vol. 13, no. 3: 293-309.

Gargeya, B.V., & Brady, C. (2005) "Success and failure factors of adopting SAP in ERP system implementation", *Business Process Management Journal*, vol. 11, no. 5: 501-516.

Gelinas, J.U., Dull, R., Wheeler, P., & Hill, K.S. (2018) *Accounting Information Systems* (11 ed.), Boston: Cengage Learning.

Glenn, G. (2008) *Enterprise Resource Planning-100 Success Secrets*, Brisbane: Emereo Pty Limited.

Globe Newswire (2022) "Global Digital Transformation Market - Markets N Research Analysis", *Markets N Research*. Available at: https://www.globenewswire.com/en/news-release/2022/12/06/2568510/0/en/Global-Digital-Transformation-Market-to-Reach-USD-2038-9-Billion-by-2028-at-a-22-80-CAGR-Markets-N-Research-Analysis-Outlook-Leaders-Report-Trends-Forecast-Segmentation-Growth-Rate.html

Granlund, M. (2007) "On the interface between management accounting and modern information technology – A literature review and some empirical evidence", *30th Annual Congress of the EAA*, Lisbon, Portugal.

Granlund, M. (2009) "On the interface between accounting and modern information technology", *Turku School of Economics*. Available on-line at: https://www.utupub.fi/bitstream/handle/10024/96597/Ae13_2009.pdf?sequence=2

Granlund, M. (2011) "Extending AIS research to management accounting and control issues: A research note", *International Journal of Accounting Information Systems*, vol. 12, no. 1: 3-19.

Granlund, M., & Malmi, T. (2002) "Moderate impact of ERPS on management accounting: a lag or permanent outcome", *Management Accounting Research*, vol. 13, no. 3: 299-321.

Granlund, M., & Mouritsen, J. (2003) "Special section on management control and new information technologies", *European Accounting Review*, vol. 12, no. 1: 77-83.

Granlund, M., Mouritsen, J., & Vaassen, E. (2013) "On the relations between modern information technology, decision making and management control", *International Journal of Accounting Information Systems*, vol. 14, no. 4: 275-277.

Hammouch, H. (2024) "Enhancing management control through ERP systems: A comprehensive literature review", *iRASD Journal of Management*, vol. 6, no. 3, 125-133.

Holland, C.P., & Light, B. (1999) "A critical success factors model for ERP implementation", *IEEE Software*, vol. 16, no.3: 30-36.

Ijaz, A., Malik, R.K., & Lodhi, R.N. (2014) "A qualitative study of the critical success factors of ERP system-A case study approach", *International Conference on Industrial Engineering and Operations Management*, Bali, Indonesia, pp: 2556-2566.

Jagoda, K., & Samaranayake, P. (2017) "An integrated framework for ERP system implementation", *International Journal of Accounting & Information Management*, vol. 25, no. 1: 91-109.

Jarrar, Y.F., Al-Mudimigh, A., & Zairi, M. (2000) "ERP implementation critical success factors- the role and impact of business process management", *2000 IEEE International Conference on Management Innovation and Technology*, ICMIT 2000, pp: 122-127, Singapore: IEEE.

Johansson, B., & Byström, M. (2024) "The role of organizational culture in ERP implementation – The case of replacing an old ERP in a retail organization", *CENTERIS – International Conference on ENTERprise Information Systems / ProjMAN-International Conference on Project MANagement / HCist – International Conference on Health and Social Care Information Systems and Technologies 2023*, pp: 1911-1918, Elsevier B.V.

Kanellou, A., & Spathis, C. (2013) "Accounting benefits and satisfaction in an ERP environment", *International Journal of Accounting Information Systems*, vol. 14, no. 3: 209-234.

Khanna, K., & Arneja, G.P. (2012) "Choosing an appropriate ERP implementation strategy", *IOSR Journal of Engineering*, vol. 2, no. 3: 478-483.

Kiran, T.S., & Reddy, A.V. (2019) "Critical success factors of ERP implementation in SMEs", *Journal of Project Management*, vol. 8, no. 2: 267-280.

Kusumawardhana, R.H., & Yaziji, W. (2024) "Identifying critical success factors (CSF) in ERP implementation using AHP: A case study of a social insurance company in Indonesia", *Journal of Cases on Information Technology*, vol. 26, no. 1:1-20.

Lin, X. (2021) "Exploratory study on key influencing factors of successful implementation of ERP system based on the perspective of grounded theory", *Journal of Physics*, 1-11.

Loh, T., & Koh, S. C. (2004) "Critical elements for a successful enterprise resource planning implementation in small-and medium-sized enterprises", *International Journal of Production Research*, vol. 24, no. 17: 3433-3455.

Luther, D. (2024) "ERP statistics and trends", *Oracle NetSuite*. Available on-line at: https://www.netsuite.com/portal/resource/articles/erp/erp-statistics.shtml (Retrieved November 12, 2024).

Magaldi, D., & Berler, M. (2020) "Semi-structured interviews", In *Encyclopedia of Personality and Individual Differences*, pp: 4825-4830, Rochester: Springer.

Mahraz, M.-I., Benabbou, L., & Berrado, A. (2019) "Success factors for ERP implementation: a systematic literature review", *International Conference on Industrial Engineering and Operations Management*, pp: 415-429, Bangkok: IEOM Society International.

Mahraz, M.-I., Benabbou, L., & Berrado, A. (2020) "A compilation and analysis of critical success factors for the ERP implementation", *International Journal of Enterprise Information Systems*, vol. 16, no. 2 :107-133.

Mawadia, A., Chapellier, P., & Eggrickx, A. (2016) "ERP et profil d'activités du controleur de gestion: Une évolution par paliers?", *Management & Avenir*, no. 87: 125-149.

Meyssonnier, F., & Pourtier, F. (2004) "ERP, changement organisationnel et contrôle de gestion", *Normes et Mondialisation*, Available on-line at Hal open science: https://shs.hal.science/halshs-00594030

Meyssonnier, F., & Pourtier, F. (2006) "Les ERP changent-ils le contrôle de gestion?", *Association Francophone de Comptabilité | Comptabilité - Contrôle - Audit*, 45-64.

Fui-Hoon Nah, F.F.-H., Lee-Shang Lau, J.L.-S., & Kuang, J. (2001) "Critical factors for successful implementation of enterprise systems", *Business Process Management Journal*, vol. 7, no. 3: 285-296.

Nguyen, T.H., Do, M.T., & Vu, Q.T. (2020) "Relationship between accounting benefits and ERP user satisfaction in the context of the fourth industrial revolution", *International Journal of Scientific Research and Management*, 1615-1625.

Pan, G., Hackney, R., & Pan, S. L. (2008) "Information systems implementation failure: Insights from prism", *International Journal of Information Management*, vol. 28, no. 4: 259-269.

Parker, L.D. (2012) "Qualitative management accounting research: Assessing deliverables and relevance", *Critical Perspectives on Accounting*, vol. 23, no. 1: 54-70.

Pasquarosa, N. (2023) "Embracing change: How technology is reshaping the future of accounting", *Forbes Technology Council*. Available on-line at: https://www.forbes.com/councils/forbestechcouncil/2023/07/28/embracing-change-how-technology-is-reshaping-the-future-of-accounting

SCAEK (2018) "Presentation De La Société Des Ciment De Ain El Kebira". Available on-line at: http://www.scaek.dz/Apropos

Qachar, A., & Nacer, H. (2023) "Critical success factors of ERP implementation: A literature review", *International Journal of Accounting, Finance, Auditing, Management and Economics*, 207-218.

Rahardja, U. (2023) "Implementation of enterprise resource planning (ERP) in Indonesia to increase the significant impact of management control systems", *APTISI Transactions on Management*, vol. 7, no. 2: 145-152.

Ranjan, S., Jha, V.K., & Pal, P. (2016) "Literature review on ERP implementation challenges", *International Journal of Business Information Systems*, vol. 21, no. 3: 388-402.

Rathore, S.D., & Oza, H.S. (2017) "A study on relationship between ERP implementation and management accounting practices", *International Journal of Advanced Research*, 808-820.

Reix, R., Fallery, B., Kalika, M., & Rowe, F. (2016) *Systèmes d'Information et Management* (7 ed.), Paris: Magnard-Vuibert.

Richardson, V.J., Chang, C.J., & Smith, R. (2021) *Accounting Information Systems*, New York: McGraw-Hill Education.

Rockart, J. (1979) "Chief executives define their own data needs", *Harvard Business Review*, 81-93.

Rom, A., & Rohde, C. (2006) "Enterprise resource planning systems, strategic enterprise management systems and management accounting A Danish study", *Journal of Enterprise Information Management*, vol. 19, no. 1: 50-66.

Rouissi, C. (2020) "The influence of the enterprise resource planning (ERP) on management controllers: A Study in the Tunisian Context", *International Journal of Business and Management*, vol. 15, no. 4: 25-35.

Saini, S., Nigam, S., & Misra, S.C. (2013) "Identifying success factors for implementation of ERP at Indian SMEs", *Journal of Modelling in Management*, vol. 8, no. 1: 103-122.

Salazar-Fierro, F.A., Guamán-Cupacán, B.R., León-Fernández, C.V., Pineda-Manosalvas, C. A., Reascos-Paredes, I. M., & Herrera-Quispe, J. A. (2023) "Failures in the implantation of enterprise IT Application: Case studies and their main causes", *Revista Colombiana de Computación*, vol. 24, no. 2: 1-11.

Sar, A., & Garg, P. (2012) "Analysis of critical failure factors in ERP implementation: an Indian experience", *International Journal of Business Information Systems*, vol. 11, no. 3: 360-378.

Scapens, R.W., & Jazayeri, M. (2003) "ERP systems and management accounting change: opportunities or impacts? A research note", *European Accounting Review*, vol. 12, no. 1: 201-233.

Seng Woo, H. (2007) "Critical success factors for implementing ERP: the case of Chinese electronics", *Journal of Manufacturing Technology Management*, vol. 18, no. 4: 431-442.

Slimani, R., & Boukrif, M. (2016) "Les changements organisationnels et managériaux induits par l'implantation d'un ERP : cas de l'entreprise ALCOST Bejaia", *Economie & Société*, no. 12: 97-115.

Spraakman, G., O'Grady, W., & Akroyd, C. (2018) "ERP systems and management accounting: new understandings through "nudging" in qualitative research", *Journal of Accounting & Organizational Change*, vol. 14, no. 2: 120-137.

Spraakman, G., Sanchez-Rodriguez, C., & Tuck-Riggs, C.A. (2021) "Data analytics by management accountants", *Qualitative Research in Accounting & Management*, vol. 18, no. 1: 127-147.

Stone, A.R., & Zhang, X. (2021) "Understanding success factors for ERP implementation: An integration of literature and experience", *Issues in Information Systems*, vol. 22, no. 2: 146-156.

Sunmola, F., & Lawrence, G.L. (2024) "Key success factors for integration of Blockchain and ERP systems: A systematic literature review", *Procedia Computer Science*, vol. 232: 775-782.

Teittinen, H., Pellinen, J., & Järvenpää, M. (2013) "ERP in action — Challenges and benefits for management control in SME context", *International Journal of Accounting Information System*, vol. 14, no. 4: 278-296.

Weerasekara, U., & Gooneratne, T. (2023) "Enterprise resource planning (ERP) system implementation in a manufacturing firm: Rationales, benefits, challenges and management accounting ramifications", *Accounting and Management Information Systems*, no. 1: 86-110.

Wong, A., Scarbough, H., Chau, P., & Davison, R. (2005) "Critical factors in ERP implementation", *9th Pacific Asia Conference on Information Systems: I.T. and Value Creation*, PACIS 2005, Bangkok, Thailand.

Xie, Y., Allen, C., & Ali, M. (2022) "Critical success factor based resource allocation in ERP implementation: A nonlinear programming model", *Heliyon*, vol. 8, no. 8: e10044.

Xue, Y., Liang, H., Boulton, W.R., & Snyder, C.A. (2005) "ERP implementation failures in China: Case studies with implications for ERP vendors", *International Journal of Production Economics*, vol. 97, no. 3: 279-295.

Zouaghi, I., & Laghouag, A. (2016) "Aligning key success factors to ERP implementation strategy: learning from a case study", *International Journal of Business Information Systems*, vol. 22, no. 1: 100-115.

Zouine, A. (2020) "Les facteurs clés de succéss dans la mise en oeuvre d'un ERP en controle de gestion: le courant structurationiste comme approach d'analyse", *Revue Française d'Economie et de Gestion*, vol. 1, no. 4: 209-230.

Zouine, A., & Fenies, P. (2014) "The critical success factors of the ERP system project: A meta-analysis methodology", *The Journal of Applied Business Research*, vol. 30, no. 5: 1407-1448.

Appendix A: A list for the CSFs for ERP implementation

	CSFs	Authors
1.	Business vision and plan: This factor is considered of concern since, the selected ERP could have very important capabilities, but they might exceed the organization's requirements. Therefore, an organization must outline a clear business vision with future strategy and benefits, costs, risks, timelines, and quantifiable objectives that can be achieved throughout the ERP project.	Qachar and Nacer (2023), Mahraz *et al.* (2020), Zouine and Fenies (2014), Sanchez and Bernal (2007), Loh and Koh (2004), Almashari *et al.* (2003), Fui-Hoon Nah *et al*. (2001), Holland and Light (1999).
2.	Legacy systems evaluation: This factor was found significant by a number of studies. Legacy systems are the existing business processes, organizational structure, culture, and IT. High complex legacy system requires a high extent of change. Otherwise, the evaluation of an organization legacy system helps in determining the nature and scale of probable problems and the amount of organizational change required to successfully implement an ERP and will delineate the starting point of the implementation.	Lin (2021), Kiran and Reddy (2019), Ijaz *et al.* (2014), Zouine and Fenies (2014), Saini *et al* (2013), Sanchez and Bernal (2007), Almashari *et al.* (2003), Fui-Hoon Nah *et al.* (2001), Holland and Light (1999).
3.	Right vendor and ERP strategy selection: ERP vendor presents an external expertise in the implementation process. The selection of a potential vendor from a pre-defined list as a critical stage in the implementation cycle. Also, selecting a suitable ERP is extremely important in determining the success of its implementation. Furthermore, an organization's propensity for change should influence the ERP strategy choice (implementing the system gradually or by the Big Bang approach). Equally as important, once an organization decides on an ERP strategy, it can consider the project management issues. While a well-designed and comprehensive implementation strategy provide guidance for successful ERP implementation.	El-Baz *et al.* (2023), Mahraz *et al.* (2020), Jagonda and Samaranayake (2017), Zouine and Fenies (2014), Saini *et al.* (2013), Sanchez and Bernal (2007), Almashari *et al.* (2003), Holland and Light (1999), Bingi *et al.* (1999).
4.	Project planning and management: Good project management is vital. Further, in order to guarantee a successful ERP implementation effective project management strategy and action plan should be in place, which includes a clear and well-defined performance measurement system with the specification of the individual steps required for the project implementation, and the development of work and resource plans, in addition to careful tracking the project's progress.	Qachar and Nacer (2023), Xie *et al*. (2022), Mahraz *et al.* (2020), Jagonda and Samaranayake (2017), Zouine and Fenies (2014), Saini *et al.* (2013), Sanchez and Bernal (2007), Seng Woo (2007), Gargeya and Brady (2005), Almashari *et al.* (2003), Fui-Hoon Nah *et al.* (2001), Jarrar *et al.* (2000), Holland and Light (1999).
5.	Top management support: Top management support is included in numerous studies as one of the most significant CSFs, and still at the top of ERP implementation success. It is defined as the willingness of top management to provide the	Abejo (2023), Stone and Zhang (2021), Mahraz *et al.* (2020), Jagonda and Samaranayake (2017), Zouine and Fenies (2014), Ijaz *et al.* (2014), Saini

	CSFs	Authors
	necessary resources, authority, and power for the project success. Additionally, top management needs to identify the project as a top priority, and must consider the strategic implications of implementing an ERP.	*et al.* (2013), Seng Woo (2007), Sanchez and Bernal (2007), Gargeya and Brady (2005), Loh and Koh (2004), Almashari *et al*. (2003), Fui-Hoon Nah *et al.* (2001), Jarrar *et al*. (2000), Bingi *et al*. (1999), Holland and Light (1999).
6.	Project team composition: Carefully finding and selecting the top-notch people and retaining them through the implementation is a major challenge. Along with, the ERP team should consist of the best people in the company, have a mix of consultants and internal staff and must be cross- functional to ensure diverse expertise. As the success of ERP projects heavily depends on the skills, abilities, and experiences of the team members, selecting the right team is critical.	Qachar and Nacer (2023), El-Baz *et al.* (2023), Stone and Zhang (2021), Mahraz *et al.* (2020), Jagonda and Samaranayake (2017), Zouine and Fenies (2014), Ijaz *et al*. (2014), Saini *et al.* (2013), Seng Woo (2007), Sanchez and Bernal (2007), Gargeya and Brady (2005), Loh and Koh (2004), Fui-Hoon Nah *et al.* (2001), Jarrar *et al.* (2000), Bingi *et al*. (1999), Holland and Light (1999)
7.	Business process reengineering and minimum customization: This factor recognizes the critical role of mapping between business processes and the ERP standard processes during the implementation. Implementing an ERP involves reengineering the existing business processes to the best business standards (best practices). Whereas, minimum customization is needed in order to preserve superior quality and efficiency, reduce errors, and take the advantage of newer versions.	Kusumawardhana and Yaziji (2024), Mahraz *et al.* (2019), Jagonda and Samaranayake (2017), Zouine and Fenies (2014), Ijaz *et al*. (2014), Saini *et al.* (2013), Seng Woo (2007), Sanchez and Bernal (2007), Gargeya and Brady (2005), Loh and Koh (2004), Fui-Hoon Nah *et al.* (2001), Jarrar *et al.* (2000), Bingi *et al*. (1999), Holland and Light (1999).
8.	Communication and change management: Employee resistance to change is a major challenge during ERP implementation. To address this, organizations can implement an extensive change management program that anticipates and manages changes effectively. Open and effective communication is also a critical success factor for ERP projects. Certainly, communication is essential for creating approval and widespread understandability and acceptance of ERP, mainly, between business and IT staff. Additionally, communication serves as a tool to announce, explain, and prepare employees while mitigating and managing resistance to change.	Kusumawardhana and Yaziji (2024), Abejo (2023), Mahraz *et al* (2020), Jagonda and Samaranayake (2017), Zouine and Fenies (2014), Ijaz *et al*. (2014), Saini *et al.* (2013), Seng Woo (2007), Sanchez and Bernal (2007), Loh and Koh (2004), Almashari *et al*. (2003), Fui-Hoon Nah *et al.* (2001), Jarrar *et al*. (2000), Holland and Light (1999).
9.	Training and education: Proper training and education are essential for successful ERP implementations as inadequate end-user preparation can lead to drastic consequences. Yet, adequate	Qachar and Nacer (2023), Abejo (2023), Stone and Zhang (2021), Mahraz *et al.* (2020), Jagonda and Samaranayake

CSFs	Authors
training can help increase success for ERP system. Moreover, regarding the extreme complexity of ERP, training and updating employees is one of the most challenging tasks in ERP implementation. Therefore, companies must provide continuous training opportunities to meet the changing needs.	(2017), Zouine and Fenies (2014), Ijaz *et al*. (2014), Saini *et al*. (2013), Seng Woo (2007), Sanchez and Bernal (2007), Gargeya and Brady (2005), Loh and Koh (2004), Almashari *et al.* (2003), Fui-Hoon Nah *et al.* (2001), Jarrar *et al*. (2000), Bingi *et al*. (1999), Holland and Light (1999).
10. Organizational culture: The impact of cultural differences between developed and developing countries on ERP implementation has drawn significant attention from IS researchers. An organization should have a strong corporate identity that is open to change, with its unique context understood through its organizational culture. While cultural and structural changes should be carefully managed with an emphasis on quality, strong computing ability and a strong willingness to accept new technology.	Johansson and Byström (2024), Ijaz *et al*. (2014), Zouine and Fenies (2014), Seng Woo (2007), Xue *et al*. (2005), Loh and Koh (2004), Almashari *et al*. (2003), Fui-Hoon Nah *et al.* (2001).
11. System integration: In view of "no single application can do everything an organization need", organizations have to use other specialized software that best meet their unique needs. Therefore, it is crucial to ensure that the ERP system is compatible with existing systems so the system integration can be carried out effectively. ERP serves as a backbone and all other software are botted on to it, using a third-party software called middleware.	Kusumawardhana and Yaziji (2024), Jagonda and Samaranayake (2017), Zouine and Fenies (2014), Saini *et al*. (2013), Loh and Koh (2004), Almashari *et al*. (2003), Fui-Hoon Nah *et al.* (2001), Bingi *et al*. (1999).

Source: authors' work

Appendix B: The interview guide

Themes	Questions	Authors
ERP implementation failure	1. What motivated the company to implement an ERP system? 2. What was the scope of the ERP implementation? 3. What was the estimated timeline, actual duration, and total investment? 4. What challenges did the company face during the project? 5. Why did the company consider the project unsuccessful? 6. What were the reasons for project failure? 7. What was the impact of the misalignment between the company's culture and the system's culture on the project's failure?	

CSFs	8. What is the company's strategy? Is it clearly documented? 9. How does the company measure its goals? 10. Were the company's legacy systems (IT, operations, culture) assessed before the ERP implementation? 11. What are the IT systems used by the company to manage its functions? 12. How might they affect the ERP implementation? 13. Did the company plan to integrate its legacy systems with the ERP system? 14. How was the ERP vendor selected? 15. How did they support the company during implementation? 16. What was the project's plan prior to implementation? 17. How was the project's performance assessed and evaluated? 18. What is the role of senior management in the ERP project? 19. How committed was it to allocate the necessary resources for the project? 20. Was there a dedicated internal project team? 21. How were its members selected? 22. Did the company hire an external consultant for ERP implementation? 23. What services did they provide? 24. How familiar was the external consultant with the company's industry and operations? 25. Was the consultant experienced in the IS integration area? 26. How do you plan to adapt the business processes to the ERP system? 27. How did the company and its users react to this change? 28. What strategies were used to manage organizational change? 29. How was the ERP project communicated throughout the organization? 30. What kinds of training were planned or provided? 31. Which employee group have received or planned to receive training? 32. What was the methodology used for ERP implementation? 33. Was the ERP system planned to be integrated with other specialized software (e.g., CRM, SCM, SRM)?	El-Baz *et al.* (2023), Qachar and Nacer (2023), Mahraz *et al.* (2020), Jagonda and Samaranayake (2017), Ijaz *et al*. (2014), Zouine and Fenies (2014), Sanchez and Bernal (2007), Gargeya and Brady (2005), Loh and Koh (2004), Almashari *et al*. (2003), Nah *et al.* (2001), Holland and light (1999)

	34. What are the factors that you consider critical for the ERP implementation success in your company?	
The impact of ERP on MC	35. How does the organization perform management control? 36. What are the IT tools and systems are used? 37. What are the management control techniques used? 38. What is the role of IT in enhancing management control? 39. What is the impact that ERP may had on management control practices such as budgeting, reporting, and assisting decision-making? 40. How does ERP contribute to the speed and quality of problem diagnosis and providing solutions? 41. What are the effects the ERP may had on the structure of the management control function (e.g., staff reductions, task changes)	Weerasekara and Hammouch (2024), Gooneratne (2023), Fauzi (2021), Nguyen *et al.* (2020), Zouine (2020), Spraakman, O'Grady and Akroyd (2018), Rathore and Oza (2017), Couto *et al* (2016), Mawadia et al (2016), Rodriguez and Spraakman (2012), Granlund (2009), Meyssonnier et Pourtier (2006), Rom and Rohde (2006), Scapens and Jazayeri (2003), Davenport (1998).

Source: authors' work