

# TRANSFORMING PUBLIC SECTOR OPERATIONS WITH ENTERPRISE RESOURCE PLANNING: OPPORTUNITIES, CHALLENGES, AND BEST PRACTICES

Grace Theresia Pontoh \*, Aini Indrijawati \*,  
Arga Bhayangkara Handayanto \*\*, Rahmawansyah Andi Tahang \*\*\*,  
Try Sutriani Supardi \*\*\*\*

\* Accounting Department, Hasanuddin University, Makassar, Indonesia

\*\* Corresponding author, Ministry of Finance of Republic of Indonesia, Directorate General of Taxes, Jakarta, Indonesia  
Contact details: Ministry of Finance of Republic of Indonesia, Directorate General of Taxes, Gatot Subroto Street, Kavling 40-42,  
Jakarta 12190, Indonesia

\*\*\* Ministry of Finance of Republic of Indonesia, Directorate General of Taxes, Jakarta, Indonesia

\*\*\*\* Halmahera Tengah Regency Inspectorate, Maluku Utara, Indonesia



## Abstract

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The public sector has long been criticized because the private sector is often considered more advanced and efficient in achieving its goals. Technological improvements in the public sector are needed to provide benefits to the wider community, one of which is by adopting systems used by advanced companies such as enterprise resource planning (ERP) systems. The purpose of this research is to provide insight into how ERP systems can be used to provide improvements in the public sector. This article uses a systematic literature review to synthesize the benefits and challenges and provides examples of best practices for implementing an ERP system in the public sector. The results show that ERP stands as an essential technical solution to achieve accountability and transparency in the public sector. The public and private sectors differ in the accessibility and disposal possibilities of resources, thus to overcome these challenges, the public sector needs to be guided by the implementation of best practices. The relatively low number of available Scopus-indexed research articles that focus on ERP in the public sector shows that the ERP literature has not developed well in the public sector.

**Keywords:** ERP Software, Enterprise Resource Planning, Public Sector Organizations, Systematic Literature Review

**Authors' individual contribution:** Conceptualization — G.T.P.; Methodology — G.T.P., A.I., A.B.H., R.A.T., and T.S.S.; Validation — G.T.P. and A.I.; Formal Analysis — G.T.P., A.B.H., R.A.T., and T.S.S.; Investigation — G.T.P., A.B.H., R.A.T., and T.S.S.; Resources — G.T.P. and A.I.; Data Curation — G.T.P., R.A.T., and T.S.S.; Writing — Original Draft — A.B.H., R.A.T., and T.S.S.; Writing — Review & Editing — G.T.P.; Visualization — A.B.H.; Supervision — G.T.P.; Project Administration — A.I. and A.B.H.

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## 1. INTRODUCTION

An unprecedented global pandemic struck the planet at the start of 2020 (World Health Organization [WHO], 2020). Travel and mobility limitations put in place by governments worldwide to stop the spread of the virus have contributed to the profound shifts that economies throughout the world have been experiencing (Donthu & Gustafsson, 2020). The quantity of jobs available and how we work have both been significantly impacted by the COVID-19 epidemic (Koch et al., 2021).

For organizations in the public sector, this transition presents a significant challenge. The inefficiency of the public sector has long been questioned (David et al., 2000; Fernandez et al., 2017; Gortzis, 2010; Thoenig, 2013). Public sector organizations have been known for their rigidity, lack of effective accountability, bureaucracy, and general underperformance. Public sector organizations must struggle to quickly adjust to new working methods that were not often used or explored before the pandemic. The challenge of transformation and the requirement for effective and economical services, information, and knowledge through information and communication technologies are faced by the entire world. Given the prevailing worldwide trends emphasizing cost reductions and the implementation of fiscal measures aimed at reducing spending by public organizations, there has been a notable shift in attention toward the cost aspect of performance in these entities. It is important to acknowledge that the evaluation of total performance should incorporate both cost performance and quality performance, encompassing process, outcome, and customer experience (Bialas et al., 2023). Information and communication technology advancements have created an array of opportunities for public sector enterprises to offer services that are effective and timely. Adopting cutting-edge business systems like enterprise resource planning (ERP) systems is one way the government is responding to pressure to reform and innovate service delivery systems from this issue (Bekiaris & Markogiannopoulou, 2023; Zainol et al., 2017).

The initial use of ERP was to help manufacturing companies (Klaus et al., 2000; Fernandez et al., 2017). The advantages of deploying an ERP system have been identified in prior studies, particularly in the private sector, and include rapid data processing, greater integration, up-to-date information, elevated employee engagement, better governance, and transparency, in addition to lower operational expenses. To deliver better services and more effective governance by government organizations and agencies, ERP systems are the foundational investment in the information technology (IT) infrastructure necessary to enable e-government (Raymond et al., 2006). According to Bekiaris and Markogiannopoulou (2023), governments facing severe financial difficulties have undertaken accounting modernization initiatives, which often involve the adoption of contemporary IT and ERP systems, as well as the optimization of internal operational procedures. The government must enhance knowledge regarding the significance of ERP systems (Bialas et al., 2023).

Therefore, given the possible advantages of adopting ERP and the associated risks, it is

unsurprising that the application of ERP has garnered significant interest from scholars in academia. However, much of this research has been undertaken in the setting of the private sector, whereas published research on ERP in the public sector is fairly limited (Roztocki et al., 2023; Alkrajji et al., 2022). Furthermore, the existing studies that do exist are characterized by fragmentation, incompleteness, and inconsistency (do Céu Alves & Matos, 2013). According to Kumar et al. (2003), there may be limitations in the applicability of research findings from the commercial sector to the public sector. Projects in the government sector exhibit distinct characteristics when compared to those in the private sector (Alkrajji et al., 2022), among others, a significant distinction between the public and private sectors lies in the accessibility and disposal possibilities of resources (Roztocki et al., 2023).

Based on this background, our goal is to pinpoint, map out, and summarize the ways that ERP systems might be applied to enhance operations in the public sector. Particularly regarding the advantages of establishing an ERP system in the public sector, exploring those issues, and presenting examples of best practices for efficient ERP deployment in the public sector. The findings of our study will assist scholars conducting empirical research, particularly in determining the advantages, difficulties, and best practices of ERP in the public sector based on high-caliber research from numerous nations. Furthermore, we believe that this study will contribute to a better understanding of ERP and public sector organizations. Before choosing to implement ERP software, practical fields can use this article as a resource for planning and risk mitigation.

The subsequent sections of this work are organized in the following manner. Section 2 provides a comprehensive literature review on ERP in the public sector. This includes a precise description of the ERP, and public sector and a concise evaluation of the existing state ERP research within this sector. Subsequently, Section 3 will elucidate our research methodology. Section 4, will present the findings of this paper and discussion of our investigation's findings in Section 5. Section 6 provides conclusions and a summary of our contribution to the current body of knowledge and suggests some potential directions for further research.

## 2. LITERATURE REVIEW

### 2.1. Enterprise resource planning

ERP is an indispensable information management technology utilized by organizations of varying sizes, including both large enterprises and small to medium-sized enterprises (SMEs), in the current era of intense commercial competitiveness (Al-Amin et al., 2023). The use of this particular collection of business tools has been recognized as efficacious in various aspects of organizational operations, including product creation, accounting, inventory management, procurement, production, planning, human resource management, material management, sales, and marketing. ERP accounting systems play a crucial role in streamlining the integration of accounting and budgetary data, as well as

the generation of associated reports, by consolidating them into a centralized database. This centralized database enables the retrieval of information from different places within an organization (Dechow & Mouritsen, 2005).

ERP is a comprehensive software solution that facilitates the smooth integration of various business functions and enables seamless information exchange throughout the entire organization that encompasses a wide range of data, including financial and accounting information, human resource information, supply chain information, and customer information (Klaus et al., 2000; Davenport, 2000; Scapens & Jazayeri, 2003). Using a common database and shared management reporting capabilities, ERP applications assist firms in managing business activities across company lines, facilitating a reduction in processing time, seamless integration of real-time information across all functional domains, and enhancing quality assurance inside the organization (Monk & Wagner, 2012; Scapens & Jazayeri, 2003; Al-Amin et al., 2023). To provide a comprehensive perspective of business from a single information architecture and IT, an ERP system integrates and regulates a whole range of activities and operations (Seres et al., 2019).

ERP should not be regarded as a standalone creation of software products. The utilization of contemporary business tools has been facilitated by the progression of the first software advances that were employed inside the industry from 1950 to 1980. The present condition of ERP can be understood as an evolved and integrated iteration of material requirement planning (MRP) (1950), MRP II (1970), and computer-integrated manufacturing (CIM) (1980) (Klaus et al., 2000). The current iteration of ERP systems has evolved through a series of incremental enhancements, incorporating additional features and extensions such as advanced planning and scheduling (APS), e-business solutions, customer relationship management (CRM), and supply chain management (SCM) (Al-Amin et al., 2023). The emergence and advancement of ERP systems have been driven by the copiousness and intricacy of information and workflow within industries, to facilitate company processes and administration. The rapid advancement of information technologies and their integration into management systems has prompted the industry to enhance contemporary versions of ERP systems with updated features, including expanded functionality.

The emergence of high-speed data transmission, encompassing both wired and wireless (5G) internet, has facilitated increased prospects for industrial communication and cyber-physical systems. The level of interconnectedness within the organization has experienced significant growth, prompting the organization to consider expanding its business collaborations with other organizations through the implementation of a network-based business system (Alsharari, 2021; Carlsson-Wall et al., 2022; Damali et al., 2021). The concept of cloud computing remains a promising and dynamic framework for the advancement of ERP systems. This is due to the shift away from on-premises data storage, which allows for greater customization and convenient server access irrespective of temporal and geographical constraints (Al-Amin et al., 2023). The proliferation and advancement of portable devices and wireless internet have facilitated

the adoption of ERP services via smartphones and tablet computers, which operate on both iOS and Android platforms and require an active internet connection. Recent studies involve the development and proposition of an Android-based mobile ERP in Pakistan (Muhammad et al., 2020).

Numerous companies that focus on this market offer ERP software. Among these, SAP, Microsoft, Lawson, Baan, JD Edwards, Oracle, and PeopleSoft are the leading ERP providers. ERP software can be set up to meet the various needs of users in the majority of economic sectors (Klaus et al., 2000).

## 2.2. The public sector

The public sector plays a crucial role in the economy since it is dedicated to serving the general public by providing essential societal infrastructure (Fernandez et al., 2017). Various government agencies, businesses, and other legal or business entities that are owned by the government and subject to popular control make up the public sector, employed to uphold a system of justice, law, and social organization to defend individual liberties, offer safety and stability, and give the country direction (Pynes, 2009). The primary role of the government is to actively shape its surroundings rather than passively conforming to them. The field of public administration is influenced by societal visions and political projects. Hence, it is argued by Thoenig (2013) that organizations responsible for managing public affairs ought to be perceived and understood as institutions, rather than just instruments. Public services encompass a range of essential societal functions, including but not limited to national defense, law enforcement, public transportation, public education, public health care, and physical infrastructure. These infrastructural elements encompass public roads, water supply systems, electrical grids, and telecommunications networks. Additionally, public services encompass the administrative functions of the government itself (Roztocki et al., 2023).

A significant distinction between the public and private sectors lies in the accessibility and disposal possibilities of resources. The private sector has comparatively fewer restrictions and regulations when it comes to acquiring and utilizing financial resources. Furthermore, within the realm of the public sector, the procurement of extensive information systems is conducted through a public tender procedure. This entails the meticulous specification of the system requirements, hence limiting the degree of flexibility during the subsequent implementation phase (Roztocki et al., 2023).

Although public organizations tend to avoid embracing innovation because conforming to established norms and practice enhances their political legitimacy and the social reputation of their members (Thoenig, 2013), to deliver better services and provide greater financial management transparency, the government has started taking a number of steps to increase the quality and accountability of government agencies and their personnel (Fernandez et al., 2018). According to Karwan and Markland (2006), IT used in conjunction with a unified set of service operating ideas is the mechanism that permits simultaneous success on different dimensions in the public sector. The use

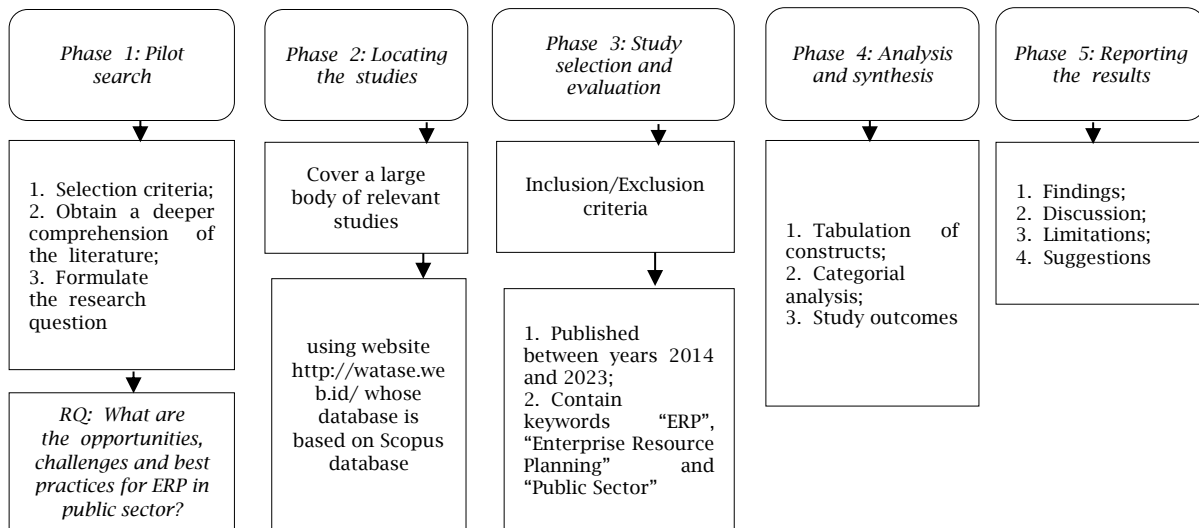
of IT is a key factor in several advancements, including enhanced production, social services, and employment prospects (Allameh et al., 2011).

### 3. RESEARCH METHODOLOGY

This study employed the systematic literature review (SLR) approach of qualitative research. A systematic literature review is “a systematic and transparent method of gathering, synthesizing, and evaluating

the findings of studies on a particular topic or question”, according to Sweet and Moynihan (2007). The SLR method involves a series of steps for collecting, evaluating, and synthesizing relevant information from various literature sources related to the topic or issue under discussion. The research methodology used in this study adheres to guidelines outlined by Denyer and Tranfield (2009) to conduct the SLR process, which consists of five stages or phases.

Figure 1. Systematic literature review research process



Source: Processed data, 2023.

#### 3.1. Phase 1: Pilot research and formulating a research question

The first step in this research is conducting a pilot search to conduct initial searches, identifying relevant literature and information sources related to the research topic. The pilot search is performed to gain a better understanding of how ERP could influence public sector organizations's operations, as well as opportunities, challenges, and best practices based on existing literature. Next, the author determines relevant keywords related to the research topic, such as “ERP”, “Enterprise Resource Planning” and “Public Sector” to compile literature from electronic databases, primarily the Scopus database. The research question represents the main question in the research that is to be answered through the research process. This question should be clear, specific, and relevant to the predetermined research topic. The research question serves as a guiding principle that directs the research and forms the basis for formulating hypotheses or research objectives to be tested and examined. In this study, the focus is on opportunities, challenges, and best practices of ERP in the public sector.

#### 3.2. Phase 2: Locating studies

To find relevant studies, a selection process is conducted from various available data sources. For this research, a database that provided broad access to various literature related to the research question, namely Watase Uake was chosen. Watase Uake

focuses on the Scopus database and includes various other databases such as Elsevier, Emerald, Taylor, and others. The keywords used in the search string included “ERP”, “Enterprise Resource Planning” and “Public Sector”. A specific search protocol was then applied when exploring the Watase Uake database, with a focus on relevant research variables.

#### 3.3. Phase 3: Study selection and evaluation

The search resulted in 161 relevant articles. Each article was evaluated using inclusion and exclusion criteria, where the articles had to be published between the years 2014 and 2023. The evaluation process involved three stages of elimination: removing duplicate articles (14 articles), excluding articles outside the publication year range (86 articles), and excluding articles not ranked in Q1, Q2, Q3, and Q4 in the Scopus database (4 articles). Subsequently, in the screening stage, further elimination was conducted. The remaining 57 full-text articles were evaluated for inclusion in the qualitative synthesis after the initial screening. A decision is made based on eligibility requirements. Based on our research goals, inclusion or exclusion criteria were established to identify opportunities, challenges, and best practices for ERP adoption in the public sector. As a result, 24 articles were found to have the related keywords in their titles and abstracts but do not discuss topics relevant to this research, for example, caused by different ERP abbreviations (Electronic Road Pricing, Event-Related Potentials, Emergency Response Plans, etc). The second elimination was performed on articles

that lacked available data, resulting in a total of 4 articles being excluded. Consequently, in the final analysis stage, 29 articles that met the criteria and passed the elimination stages were identified. These articles will be analyzed and synthesized to obtain answers to the previously proposed research question. The elimination process will be presented in Figure 2 below.

### 3.4. Phase 4: Analysis and synthesis

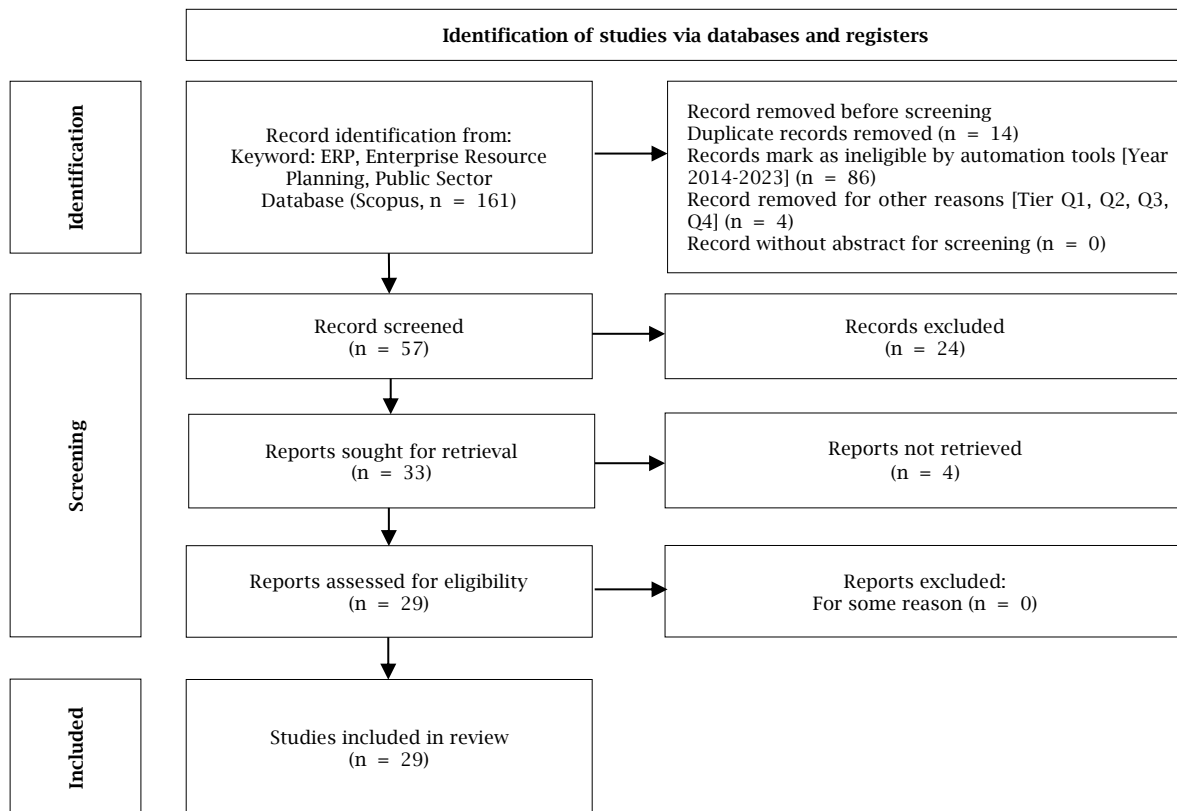
By analyzing the 29 articles and extracting data, this research gained an understanding of opportunities, challenges, and best practices of ERP in the public sector. Various relationships between ERP and public sector or government organizations from numerous countries are synthesized. Additionally, the researchers conducted a bibliometric analysis to evaluate the trends in this topic's development. Some aspects

analyzed in the bibliometric analysis included the number of articles published in the last 10 years and the distribution of articles based on countries.

### 3.5. Phase 5: Reporting the results

The results of the study are presented in the form of tables, and discussions that are consistent with the research conducted by Siddaway et al. (2018). The detailed information presented includes search strategies, inclusion and exclusion criteria, study selection process, quality assessment, data extraction, and data synthesis. The analysis of the findings is then conveyed through a report or scientific article that contains comprehensive and structured information about the opportunities, challenges, and best practices of ERP in the public sector.

Figure 2. Preferred reporting items for systematic review and meta-analyses



Source: Generate from Watase Uake Tools, based on PRISMA 2020 reporting.

The Preferred Reporting Items for Systematic Review and Meta-analyses (PRISMA) suggested by Moher et al. (2009) were used in the current SLR investigation. PRISMA is a guide for transparently, objectively, and explicitly reporting systematic reviews. PRISMA was initially created for research in the healthcare industry, but it has since been widely used in business and marketing (Siddaway et al., 2018; ter Huurne et al., 2017). The PRISMA process also controls the information flow in four stages: identification, screening, eligibility, and inclusion.

## 4. RESULTS AND DISCUSSION

### 4.1. Utilizing enterprise resource planning to transform activities in the public sector: Benefits and opportunities

The development of methods for public sector data management has grown to be a top priority. This is mostly because of intense pressure from top executives who, by accessing relevant data, are in charge of making decisions that have an impact on the lives of numerous individuals (Choudrie et al., 2017; John, 2023). Due to their social obligations, complicated legislative frameworks, and higher

public expectations, public sector firms have distinctive cultures and face numerous problems. Governments all across the world started experimenting with different types of reform in the early 1980s. Several of these initiatives make an effort to translate the fundamental principles of management from the commercial sector to the public sector. The development of methods for public sector data management has grown to be a top priority. This is mostly because of intense pressure from top executives who, by accessing relevant data, are in charge of making decisions that have an impact on the lives of numerous individuals (John, 2023). The term “new public management” (NPM) might be used to describe this kind of transformation (Fernandez et al., 2017). The NPM is a public sector reform designed to closely resemble private sector methods. Adopting the ERP system is one of these improvements to bring about beneficial transformations and “socioeconomic improvements through locally situated action” thanks to the backing of international non-governmental organizations (Choudrie et al., 2017).

ERP software is an essential technical solution for government organizations and the broader public sector (Bekiaris & Markogiannopoulou, 2023). According to statistics, the relative benefit that ERP holds for 19.7% and 25.5%, respectively, is that it provides users with dependable data and data access. With this accomplishment, ERP is now able to automate repetitive procedures and centralize the company’s information database, simplifying corporate processes (John, 2023). The implementation of IT reforms, often known as e-government, has the potential to contribute to socio-economic development through the promotion of enhanced openness, resulting in a reduction in corrupt practices. Additionally, e-government can facilitate a greater level of political oversight over public administration (Bekiaris & Markogiannopoulou, 2023; Roztock et al., 2023). According to Alkhodary et al. (2023), e-government has a positive impact on employee engagement, social and environmental impact, and innovation and creativity in company performance. Non-technical, external factors such as the transition to accrual-based International Public Sector Accounting Standards (IPSAS) are also significant factors. It is not just an accounting change but it entails changes in all aspects of government. The transition affects not only public sector parties but also accounting and financial practices. This drives the transformation of government organizations that require broader financial reporting and budgetary surveillance (Bekiaris & Markogiannopoulou, 2023).

Fernandez et al. (2017) research on the deployment of ERP systems in public sector organizations found that ERP implementation improved customer service and led to higher financial performance. To increase financial and customer performance, other public sector organizations should deploy integrated systems like ERP, according to the survey’s conclusions. Fernandez et al. (2017) findings demonstrate that the ePBT (<https://epbtonline.gov.my>) system’s application in local government organizations has a favorable effect on such organizations’ performance, demonstrating the successful adoption of a good system by public sector organizations. The technology successfully offers a platform for

more interactive customer service, boosts response to customers, improves service quality through direct customer input, and subsequently decreases the number of customer complaints. Because of its significant advantages, including staff and IT cost savings, improved inventory control, and cash management, ERP deployment is regarded as effective (Alsharari, 2017). Among others, the most common module used in public sector organizations is the ERP system’s HRM module, which served as the foundation for numerous operations carried out by user organizations. It served as a tool for managing an organization’s internal operations as well as providing services to outside customers such as payrolls or legal entities such as tax reporting (Mozaffar & Panteli, 2022).

Carlsson-Wall et al. (2022) studied management accountants’ opinions about using Cloud ERP (CERP) at the local and national levels. The central management accountant appears to have welcomed CERP’s presence because they believed that the uniformity and convergence brought about by the CERP structure resulted in less paperwork, reduced the possibility of errors in consolidated reports, and required fewer resources so they could perform deeper analysis activities. However, the local management accountant experienced the exact opposite situation. The way the CERP system was created and who managed it were their key concerns. Local management accountants face difficulties in meeting the varying needs of various managers and business units due to the less flexible characteristics of CERP systems offered by external providers, such as limited customization (Carlsson-Wall et al., 2022; Chang et al., 2019).

#### 4.2. Implementing enterprise resource planning in the public sector: Challenges

The failure rate of ERP deployment is still relatively high (Malik & Khan, 2020). Despite the inherent benefits and features of ERP systems, some challenges and issues arise from their implementation. These can range from organizational, procedural, and behavioral changes that occur during the ERP installation process to problems that arise during the system’s implementation itself (Escobar-Rodriguez et al., 2014). The introduction of ERP systems necessitates significant organizational transformations that are characterized by inherent risks and inflexibility. The presence of robust connections and interdependencies among database components and various business activities gives rise to numerous risks (Shafi et al., 2019).

Although the majority of previous research proves IT-enabled process management strategies lead to improved efficiency and effectiveness inside organizations, some specific cases say otherwise. John (2023) found that the observability and relative advantage of the ERP enable it to manage data accessibility and reliability, but not accuracy. The investigation found that ERP cannot accurately manage data and it has been discovered that none of the five ERP features significantly improves data management while ERP gives users access to customer data, it is unable to deliver precise information that would support informed decision-making. This is because the ERP adopted by the organization studied is incompatible with its current systems, which forces its users to rely on

improbable information to meet organizational objectives (John, 2023).

The most challenging problems are management problems (Althonayan & Althonayan, 2017). Management problems include challenges with task performance and a lack of integration that makes it challenging to communicate with other platforms because organizations solve problems using their prior knowledge and experience, which might hinder innovation and new learning and increase the risk of knowledge stagnation (Nandi & Vakkayil, 2018). According to the findings of Althonayan and Althonayan (2017), purchasing ERP systems forced institutions into intricate implementation agreements with both the ERP and system integration partners. One of these cases has been researched by Escobar-Rodriguez et al. (2014) in which organization, technically speaking, the ERP system was successfully established; nonetheless, the organization's power structure prevented the system from being used to its full potential. It is critical to recognize that a large portion of professionals still see these technologies as proprietary and will not readily share information. Information is therefore still used to support the power structures that the organization has in place, and as a result, some users appear to be far less satisfied with how well the system is working than others. This issue would arise not just in the implementation phase but also in any migration procedure that calls for further information integration (Escobar-Rodriguez et al., 2014).

#### 4.3. Best practices for public sector enterprise resource planning implementation

Public sector organizations are not allowed to commence implementation projects with just rudimentary planning and subsequently modify expectations and resource allocations as the project progresses. The entire process of public tender is subject to public scrutiny, and it is imperative to meticulously document the selection of vendors. Public sector entities typically face restrictions in their vendor selection process, as they are normally required to consider only those vendors that have participated in the public tender (Roztocki et al., 2023). This limitation significantly narrows down the available alternatives for public sector organizations.

Althonayan and Althonayan (2017) highlighted six crucial success criteria for high-stakeholder performance: recognizing resistance to change, making the required modifications, receiving effective management support, scheduling intense training sessions, and improving the system and service quality. Similar to this, Abu Madi et al. (2022), discovered 14 crucial success criteria that were determined by taking into account both research findings and a review of related literature. Change management, training, and education are critical success factors (CSFs) among these elements. The biggest issue throughout the ERP deployment phase was also identified by both as reluctance to change. According to Roztocki et al. (2023), there are six factors that influence the implementation of enterprise systems in the public sector: 1) political leadership, 2) employee motivation, 3) government regulation, 4) vendor quality, 5) financial resources, and 6) the commercial foundation. The reliance on

consultants as implementation partners is rising quickly as a result of the high level of product-specific and business capabilities required for ERP deployment. Instead of investing in and developing those abilities internally, many businesses have opted to outsource them. In the pre-implementation stage of the ERP project, appropriateness, management support, change-specific efficacy, and personal valence are determinants for implementation success (Harun & Mansor, 2019).

System success and implementation success are two distinct domains in two distinct ERP project implementation phases. A project is deemed successful if it is finished on schedule and budget; nevertheless, users define success as task improvement and project ease of use. However, it is important to begin with the appropriate ERP suite that operates within the anticipated bounds, apply it following the predetermined goals, and conclude with the ERP investment's financial returns (Malik & Khan, 2020). The summary of our findings regarding best practices for successful ERP implementation is as follows.

*Internal communication:* When implementing ERP, top management should make the appropriate timing decision. Once implementation is determined, select the suitable ERP package and the best vendor to carry out that package. Establish reasonable deadlines and a clear scope for the project. Engage key stakeholders and business process experts early on in the ERP initiative. Align the KPIs of the project team with the requirements of the project. The highest level of management should assess the project's performance and supply all resources feasible (Liu et al., 2018; Malik & Khan, 2020). At the organizational level, management can create rules that will encourage staff members to contribute to the effective adoption of new technology by using the technology acceptance model at organization level (TAMO) to facilitate adoption (Mohapatra et al., 2015). Emphasis on process and fact management, staff growth and involvement, learning, innovation and creativity, performance and customer happiness, leadership and particular priorities, and social responsibility (Ahmad et al., 2023).

*Detailed project plan:* ERP systems with relative advantage and observational qualities will be able to handle data in the public sector by gaining access to trustworthy data. Given the significance of data management in the public sector, public organizations ought to make certain that methodological measures are thoroughly examined before being put into practice to improve the attainment of their goals (John, 2023). Selecting the right suppliers is crucial; look for more seasoned consultants with experience working abroad and assess candidates before hiring. Early in the process, and in a timely manner, the vendor and consultant should be involved. A client-side team member should establish positive relationships and trust with the vendor(s) to benefit from their talents and make appropriate use of them to learn and explore new things. Over time, vendor dependency should be reduced (Malik & Khan, 2020).

*Focus on organizational alignment:* The alignment of the ERP system with organizational goals enhances performance inside the organization. The effectiveness of the interaction reflects the favorable user perceptions of the ERP system, which enhances productivity on an individual and team

level (Zouine & Fenies, 2014). ERP implementation is a significant change that affects all aspects of business operations. Gain the ERP team's trust by demonstrating that the new system will benefit them and will not interfere with their authority or ability to do their jobs (Malik & Khan, 2020). Employees might need to adjust their daily schedules. Workers must refocus their attention from their individual tasks to the organization as a whole. It is therefore crucial that they comprehend the consequences of the ERP for the organization as well as the new business process model (Esteves, 2014).

*Ongoing project management:* A project manager ought to be a powerful individual with strong project management abilities. Create a thorough project plan with a budget, schedule, and scope that are all clearly stated. The project manager must create a solid team that has complete authority, and then use the presence of vendors and consultants to their fullest potential (Coelho et al., 2016). Handle disputes, control hazards, and maintain strict oversight via daily log meetings. The project manager is responsible for making sure the system is thoroughly tested and that all necessary functionalities are implemented (Malik & Khan, 2020). Establish an excellent support center with a full-time employee dedicated to answering user questions. The ERP support center should be established during the ERP deployment phase. This will improve end-user satisfaction with ERP support by assisting in the creation of training manuals and support recommendations for these issues (Esteves, 2014).

*Training:* Regarding ERP training, there is a growing consensus that the most important training is not technological but rather focuses on developing the ability to understand the information flow that underpins the business. This includes training not only on how to use the new system but also on new processes and how to understand how the system is integrated — that is, how the work of one employee affects the work of others. Self-directed training, computer-based learning, simulation, on-the-job training (OJT), and CD-ROM learning (Malik & Khan, 2020). A mix of consultants and internal users serve as trainers on the team; external trainers are more concerned with teaching users how to use the program than they are with teaching them about your specific business practices. Therefore, by teaching employees not only how to use the software but also how to utilize it in the particular company context, a hybrid team consisting of internal users and external trainers may help to tailor the ERP training course to their needs. Last, establish mechanisms for training evaluation. The main goals of training evaluation are to: measure the effectiveness of training programs, improve their design, assist in the selection of training methods, justify training costs, and evaluate the program's quality and effect on the company (Esteves, 2014).

*Institutionalizing and configuring software:* From a management accounting role all the way out into the organization, sophisticated systems must be matched and tailored to the needs of the organization and its purpose (Bredmar & Melin, 2021). Using the customized ERP system rather than a generic version during the training process allows end users to have more time to adjust to the new ERP system, avoiding many initial doubts and mistakes. The new

ERP is parameterized according to organizational needs and looks like the ERP that end users will work on after the go-live phase (Esteves, 2014). Business process optimization is required; extensive modification should be avoided. Clarity in the current business procedures is essential to achieving this goal. Better new procedures will be developed as a result of better existing process documentation. The domain specialists should appropriately gather the requirements, and efforts should be made to switch to best practices. By attending to all integration points, the system needs to be thoroughly tested (Malik & Khan, 2020).

*Quality control and testing:* Focus groups facilitated by a diverse mix of personnel with varying experiences can shed light on participants' attitudes and perspectives while also allowing for a study of real-world interactions with ERP systems. Essential drivers that can be utilized to evaluate post-implementation activities and gauge effectiveness were identified by this study. The research's conclusions will help senior management, information technology personnel, and system users better comprehend ERP systems (Abu Ghazaleh et al., 2019).

*Organizational readiness:* Organizational readiness affects the success of ERP deployment (Shakkah et al., 2016). Public organizations will be in a better position to prepare their employees, managers, change agents, and leadership through focused change management efforts and targeted communications as a result of this readiness assessment. A concentrated change management approach may foster in employees a desire for a shift towards continuous improvement, in addition to assisting them in accepting the changes necessary for the new system and business process transformation. From the results of the readiness assessment, it is important to concentrate on the individuals who will be crucial in securing acceptance of the effects linked to the impending technological project (Napier et al., 2017).

## 5. DISCUSSION

According to institutional theory, organizations encounter comparable external influences, including regulative, normative, and cognitive forces. The theory of institutional organization places its emphasis on the concept of institutional isomorphism, which serves to elucidate the phenomenon of organizational homogeneity and the process by which organizations tend to resemble their competitors (Kraft & Furlong, 2015). The implementation of best governance practices can sometimes result in governments adopting seemingly efficient solutions that may not accurately reflect their true level of effectiveness. Additionally, governments may lack the necessary maturity to effectively manage the responsibilities associated with new mechanisms due to preexisting deficiencies within their systems.

These institutional isomorphisms among governments have been discussed by many previous researchers such as Andrews et al. (2017). One pertinent issue on isomorphic mimicry pertains to capability traps, it has been postulated that the adoption of the same IT/ERP vendors as those with high accounting maturity, is driven by institutional isomorphism. This is done to facilitate the implementation of accrual accounting.



The assumption that central governments may imitate each other due to normative pressures associated with the transition to accrual accounting and the adoption of the IPSAS has been researched by Bekiaris and Markogiannopoulou (2023).

Public sector performance evaluation lacks analogs for the concepts of “profitability” and “return on investment”. Adoption-related decisions appear to be primarily guided by the goals of accountability and transparency, influenced by the paradigm of new public management (Ada & Christiaens, 2017; Agasisti et al., 2018; Christensen et al., 2019; Gigli & Mariani, 2018; Nitzl et al., 2020). According to Stefanescu (2020), it appears that the majority of European Union (EU) countries have successfully achieved these goals by adopting accrual accounting in their accounting and budgetary reporting procedures. The incorporation of technology is a crucial component in the execution of any accrual accounting implementation project, wherein the management of the accounting workstream is conducted in conjunction with the IT workstream (Müller-Marqués Berger, 2019). The study conducted by Bekiaris and Markogiannopoulou (2023) examines the adoption of ERP systems within the EU at the central government level. They suggest that this shift towards accrual accounting creates an environment conducive to the potential adoption of IPSAS. The objective of implementing accrual accounting reform is to improve the availability of accurate and comprehensive information regarding public finance, as well as to establish a framework for better financial oversight of government operations (Lüder, 1992). The modernization of IT systems has been key to the implementation of accrual accounting, especially because ERP systems enabled the efficient enforcement of new standards by facilitating the automation of the production of financial statements (European Commission, 2018). ERP accounting systems play a crucial role in enabling and influencing the effectiveness of accounting reforms as well as facilitating the processes of integrating accounting and budgetary data and related reports into one central database, allowing information to be retrieved from various organizational positions (Wanderley & Cullen, 2013; Dechow & Mouritsen, 2005).

Drivers are significant factors that exert influence or contribute to the occurrence, advancement, development, alteration, or enhancement of a certain phenomenon. These drivers might encompass both technical and non-technical aspects. The former categorizes drivers into internal and external factors. The latter encompasses international standards, such as the IPSAS and the European Public Sector Accounting Standards (EPSAS), which serve as external mandates for ensuring adherence to fiscal regulations or benchmarks. ERP systems encompass an external technology driver (The World Bank, Public Sector Accounting and Reporting Program, 2021). In terms of technical drivers, according to do Céu Alves and Matos (2013), when asked about the primary drivers behind adopting ERP systems, respondents from the public and private sectors gave the same justifications. There are no inherent limitations in the administration of public organizations that would hinder their adoption of

contemporary management practices and integrated information systems commonly employed in the private sector. While the performance indicators and incentives may exhibit variations, the fundamental business processes remain mostly consistent with those observed in the private sector. The necessity for precise and punctual management information within the public sector aligns with that of the commercial sector.

ERP implementation in the public sector is a challenging endeavor that become progressively intricate (Jayawickrama & Yapa, 2013). The complexity of current work structures such as protocols and bureaucracy in satisfying ERP requirements is the biggest obstacle to ERP implementation in public sector firms (Fernandez et al., 2018). Several studies have indicated that the implementation of ERP systems exceeded budgetary expectations due to organizations neglecting to consider certain implementation costs that are not directly associated with software vendors which can be attributed to inadequate planning considerations (Yen Teoh & Pan, 2008). These costs include project management, organizational change management, and hardware upgrades (Alkrajji et al., 2022; Dong et al., 2009). This explains why so many ERP installs fail, as the technical expertise of the consultant and the business expertise of the user may occasionally conflict during the implementation stage (Dittrich et al., 2010).

Because they serve the public interest and should therefore be subject to public scrutiny, improvements to transparency and accountability in the public sector should be a larger concern than in private organizations (Schneider et al., 2018). Multiple authors have reached a consensus regarding the factors that contribute to the successful implementation of enterprise systems. These factors include top management support, effective project and change management, clear goals and missions, sound knowledge and competences within project teams, effective communication, and solid training (Al-Amin et al., 2023; Alhalboosi et al., 2021; Markus et al., 2000). However, it is worth noting that certain studies have highlighted the varying importance of these factors in the public sector compared to the private sector (do Céu Alves & Matos, 2013; Gabryelczyk & Roztock, 2017; Seres et al., 2019).

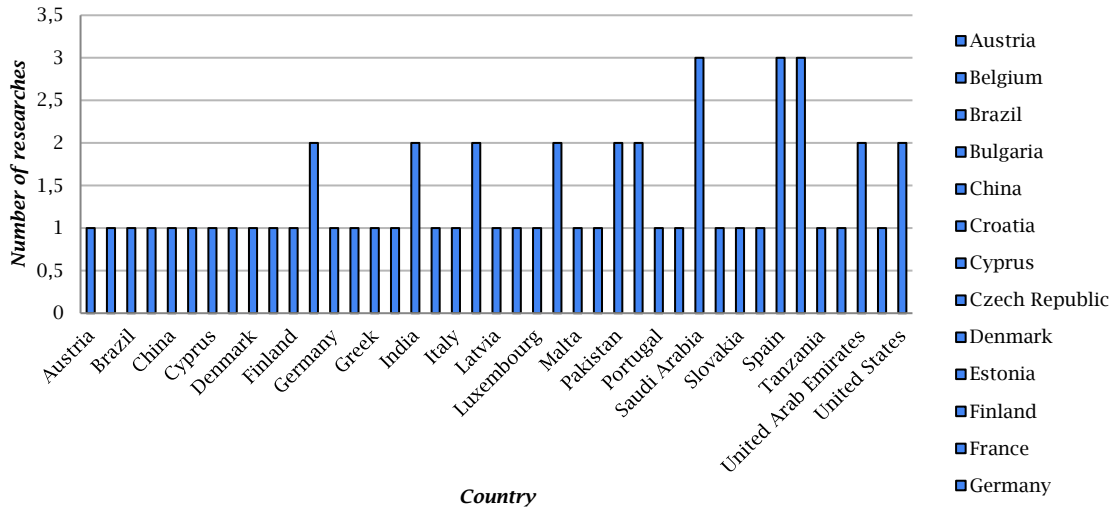
Top management support and commitment are widely recognized as a critical component of organizational preparedness in numerous studies on IT adoption. This support is essential for securing sufficient resources and addressing the inherent hurdles and resistance to change inside the organization (Marei et al., 2021). The anticipated outcomes of endeavors to enhance technical readiness can only be achieved if they are integrated into a culture of learning and ongoing improvement within an organization that demonstrates organizational readiness (Durrani et al., 2012). Organizational readiness is a significant component examined in numerous studies on technology adoption. It pertains to the internal capacity of an organization to embrace and integrate new technologies (Zhen et al., 2021).

Based on the research location of the referenced articles used in this study, research in industrialized nations typically focuses on ERP development in the public sector, for instance by

leveraging cloud-based ERP and cloud computing (Alsharari, 2017; Carlsson-Wall et al., 2022; Damali et al., 2021). Research in developing nations, on the other hand, frequently focuses on the factors that influence, have an impact on, and/or factors

that present barriers to the adoption of ERP in the public sector. The referenced articles used in this study are mapped by locations in Figure 3 and Figure 4 below.

Figure 3. Number of researches by the country



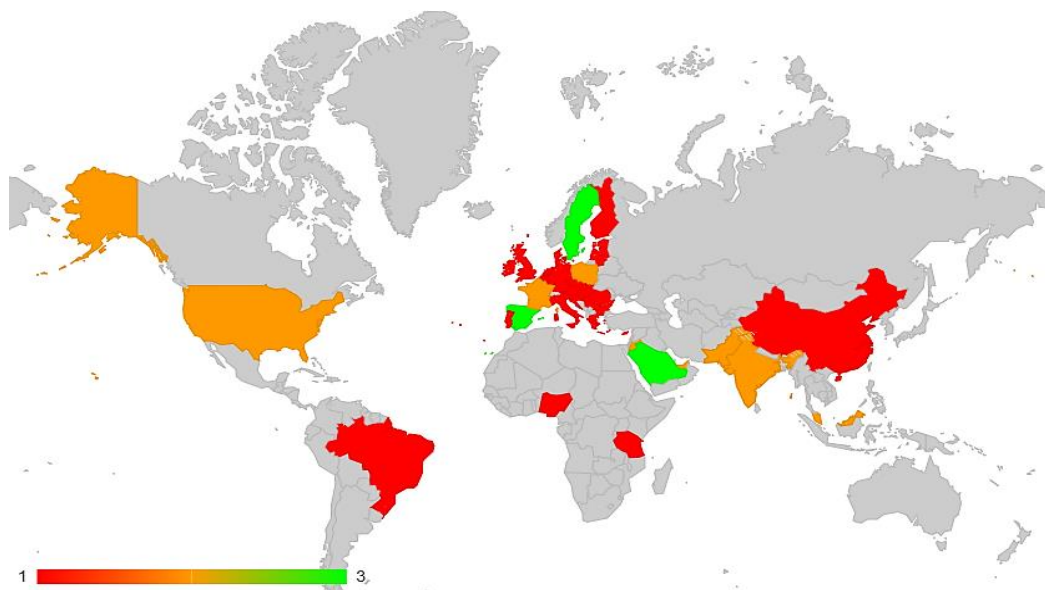
Source: Authors' elaboration using Google Sheets.

These findings are in accordance with Al-Mashari et al. (2006) findings that only several studies have brought attention to the limited amount of research on the implementation of ERP systems in developing countries. Most of the existing research has primarily focused on private firms in developed economies, neglecting the unique challenges faced by such projects in developing countries.

In addition to being relevant to the subject, it should be highlighted that China and Brazil, as emerging nations and the places of our reference articles' research, have a significant disparity

between their public service and e-governance development indices. This discrepancy is intriguing because it shows that while the government has been successful in implementing the information and technology mentioned in the relatively high e-government index, the public services represented in the public service index rank relatively low. Research on information technology in public sector organizations, including one on ERP in public sector organizations, is expected to be sparked as a result of this.

Figure 4. Geo chart of the number of researches by the country

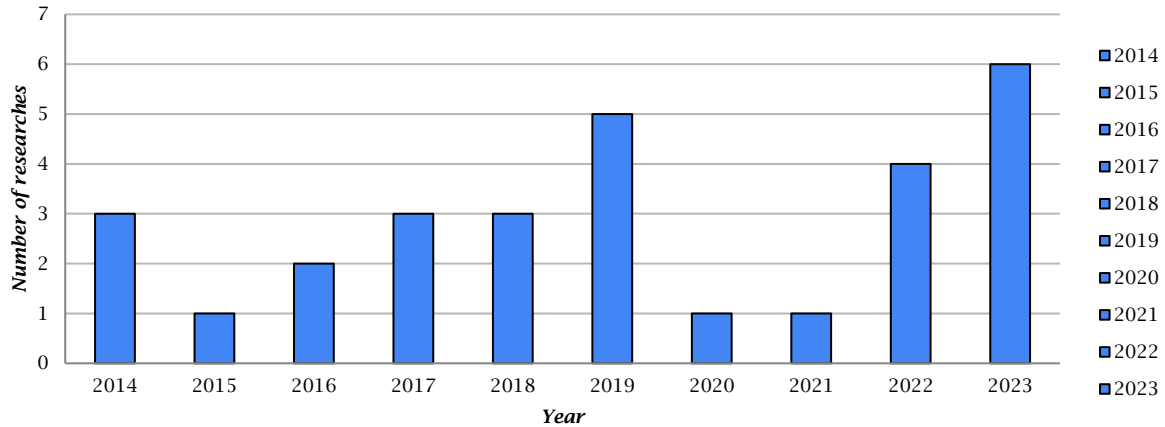


Source: Authors' elaboration using Google Sheets

The Chinese state is an example of the pattern of positive and intriguing interactions between the public sector, in this instance the government and the business sector. The Chinese government is aware of how crucial information technology is to a long-term sustainable economy. In this regard, public sector organizations and the government actively shape their surroundings rather than

passively conforming to them. The Chinese government has implemented a number of laws and policies to promote software development since the 1980s. Additionally, the Chinese government offers businesses an affordable budget so they can utilize ERP. Our conjecture was also supported by Wang and Hwang's (2021) research.

Figure 5. Number of researches by year of publication



Source: Authors' elaboration using Google Sheets

Figure 5 shows us although the number of researches fluctuates, the number of researches is still steadily increasing. This attests that ERP implementation in the public sector is a prominent and enticing topic, but still in its early stage. These findings are consistent with Alkraihi et al. (2022) whose research on ERP that particularly examines the government sector is limited in availability.

## 6. CONCLUSION

ERP deployments can be regarded as mechanisms for the transformation of business practices, particularly in the context of government institutions and public sector organizations. ERP projects in the public sector face unique challenges that require specific skills and competencies. Unlike the private sector, the public sector has to comply with strict regulations, policies, and standards that govern the acquisition and use of ERP systems. These include transparency, accountability, ethics, security, and accessibility requirements that may affect the scope, budget, timeline, and quality of the project. Additionally, the public sector has to deal with multiple stakeholders, such as government agencies, citizens, vendors, and auditors, who have different expectations and interests in the project. ERP contract managers in the public sector need to balance these diverse and sometimes conflicting demands while ensuring that the project delivers the intended outcomes and benefits.

ERP systems are the result of escalating competition in the domestic and international markets. ERP systems have recently transformed the way businesses conduct their daily operations. Vertical, lateral, or spread deployment within the business are all benefits of ERP, which improves an organization's capacity to acquire more information in greater detail and in real time.

Researchers from numerous fields have proposed intensive information use as a strategy of control so that knowledge is easily accessible. By providing information, supervisors may stay informed about operations. The introduction of software not only involves technological advancements but also necessitates concurrent modifications in the organizational and operational aspects of government across all domains.

The benefits and opportunities of ERP implementation are almost limitless. ERP stands as an essential technical solution to achieve accountability and transparency, enhancing audit and financial performance management, and a crucial component in the execution of any accrual accounting implementation project. Public sector organizations that adopted ERP have improved customer service and led to higher financial performance with additional contributions to socio-economic development through the promotion of enhanced openness, resulting in a reduction in corrupt practices.

The development of an ERP system is typically guided by the implementation of best practices inside organizations. However, it is important to note that the suitability of an ERP system may vary depending on the specific business processes of each organization, to avoid capability traps in isomorphic mimicry. From several examples of best practices, we found things that need to be of particular concern to prospective ERP software adopters in the public sector for the efficiency of the ERP adoption process. Despite this, there are still challenges to implementing ERP systems in the public sector, such as the need for change management and the need to adapt the system to suit unique organizational needs. It also needs to be emphasized that public sector organizations are not allowed to commence implementation projects with

just rudimentary planning and subsequently modify expectations and resource allocations as the project progresses. A significant distinction between the public and private sectors lies in the accessibility and disposal possibilities of resources. The private sector has comparatively fewer restrictions and regulations when it comes to acquiring and utilizing financial resources.

The results from the systematic literature review show that the ERP literature has not developed well in the public sector. So far, both the adoption and research of ERP systems are still more dominant in the private sector. This is evident from the relatively low number of available high-quality research articles that focus on ERP in the public sector. Also, by examining the trend of research articles published by year, it can safely be concluded that research on ERP in the public sector is still increasing by the numbers, signaling that this is an appealing and prominent topic.

From a theoretical implication perspective, this study offers adequate details to develop a comprehensive plan of action for a project to enhance a public organization into a process-aligned enterprise using ERP. From a practical implications viewpoint, this study will help provide a new picture to potential adopters of ERP software in the public sector, especially regarding the benefits they will get as recorded in the literature, mitigating the risk from challenges and referring to best practices to make better and more efficient decisions.

We realize that this study has limitations, such as sample limitations, where to search, and the sample time range used. Another limitation of this study is the scope of the case study. Future studies may develop the number of samples and research methods used. We also suggest further research related to public sector opportunities, especially in developing countries so it will provide more assurance and become a follow-up development of this research.

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## APPENDIX

Table A.1. List of articles used in the systematic literature review (Part 1)

No.	Source	Title	Journal	Quartile	Citation	Country	Region
1	John (2023)	Does ERP make a difference in public sector organisations' data management? Lessons from the Ministry of Lands, Housing and Human Settlements Development in Tanzania	<i>African Geographical Review</i>	Q2	0	Tanzania	Africa
2	Roztock et al. (2023)	Enterprise systems in the public sector: Driving forces and a conceptual framework	<i>Information Systems Management</i>	Q1	1	Poland	Europe
3	Bialas et al. (2023)	Digitalization of the healthcare supply chain through the adoption of enterprise resource planning (ERP) systems in hospitals: An empirical study on influencing factors and cost performance	<i>Sustainability</i>	Q1	1	Greece	Europe
4	Alkhodary et al. (2023)	Examining the impact of e-governance on the performance of corporations: A case study of companies in Jordan	<i>Information Sciences Letters</i>	Q2	0	Jordan	Middle East
5	Ahmad et al. (2023)	TQM practices and ERP system to enhance the UAE DP world innovative work behavior through innovation culture: A review	<i>Quality — Access to Success</i>	Q3	0	United Arab Emirates	Middle East
6	Alkrajji et al. (2022)	The perspective of national ERP vendors in achieving ERP project success in government organisations: A case of Saudi Arabia	<i>Enterprise Information Systems</i>	Q1	4	Saudi Arabia	Middle East
7	Abu Madi et al. (2024)	Spotting the critical success factors of enterprise resource planning implementation in the context of public higher education sector	<i>International Journal of Public Administration</i>	Q2	2	Jordan	Middle East
8	Carlsson-Wall et al. (2022)	Exploring the implications of cloud-based enterprise resource planning systems for public sector management accountants	<i>Financial Accountability and Management</i>	Q1	15	Sweden	Europe
9	Mozaffar and Panteli (2022)	The online community knowledge flows: Distance and direction	<i>European Journal of Information Systems</i>	Q1	6	United Kingdom	Europe
10	Bredmar and Melin (2021)	The intertwined functions of advanced information systems and management control practice in a municipal context	<i>Business Systems Research</i>	Q3	1	Sweden	Europe
11	Malik and Khan (2020)	Analysis of ERP implementation to develop a strategy for its success in developing countries	<i>Production Planning and Control</i>	Q1	15	Pakistan	South Asia
12	Chang et al. (2019)	An empirical study on factors affecting switching intention to cloud enterprise resource planning: A comparison between public and private clouds	<i>Journal of Global Information Management</i>	Q2	6	China	East Asia
13	Abu Ghazaleh et al. (2019)	Promoting successful ERP post-implementation: A case study	<i>Journal of Systems and Information Technology</i>	Q2	6	United Arab Emirates	Middle East
14	Shafi et al. (2019)	Measuring performance through enterprise resource planning system implementation	<i>IEEE Access</i>	Q1	6	Pakistan	South Asia
15	Seres et al. (2019)	Critical success factors in ERP system adoption: Comparative analysis of the private and the public sector	<i>E a M: Ekonomie a Management</i>	Q2	5	Serbia	Balkan
16	Harun and Mansor (2019)	Individual readiness for change in the pre-implementation phase of campus enterprise resource planning (ERP) project in Malaysian Public University	<i>International Journal of Advanced Computer Science and Applications</i>	Q3	3	Malaysia	Southeast Asia
17	Nandi and Vakkayil (2018)	Absorptive capacity and ERP assimilation: The influence of company ownership	<i>Business Process Management Journal</i>	Q1	9	India	South Asia



**Table A.1.** List of articles used in the systematic literature review (Part 2)

<b>No.</b>	<b>Source</b>	<b>Title</b>	<b>Journal</b>	<b>Quartile</b>	<b>Citation</b>	<b>Country</b>	<b>Region</b>
18	Liu et al. (2018)	The relationship between information systems (IS) assets, organizational capabilities, and is-enabled absorptive capacity in U.S. State information technology departments	<i>Communications of the Association for Information Systems</i>	Q2	5	United States	North America
19	Althonayan and Althonayan (2017)	E-government system evaluation: The case of users' performance using ERP systems in higher education	<i>Transforming Government: People, Process and Policy</i>	Q2	16	Saudi Arabia	Middle East
20	Choudrie et al. (2017)	Implementing E-government in Lagos State: Understanding the impact of cultural perceptions and working practices	<i>Government Information Quarterly</i>	Q1	17	Nigeria	West Africa
21	Napier et al. (2017)	Preparing for transformational change: A framework for assessing organisational change readiness	<i>International Journal of Human Resources Development and Management</i>	Q3	9	United States	North America
22	Coelho et al. (2016)	The client-consultant relationship in ERP implementation in government: Exploring the dynamic between power and knowledge	<i>Information Polity</i>	Q1	3	Brazil	South America
23	Shakkah et al. (2016)	An investigation study on optimizing enterprise resource planning (ERP) implementation in emerging public university: Al Baha University case study	<i>International Journal of Electrical and Computer Engineering</i>	Q2	6	Saudi Arabia	Middle East
24	Mohapatra et al. (2015)	Study of motivational factors post-implementing ERP (SAP) solutions in National Aluminium Company Limited extending the technology acceptance model at organisation level (TAMO)	<i>International Journal of Management and Enterprise Development</i>	Q4	15	India	South Asia
25	Esteves (2014)	An empirical identification and categorisation of training best practices for ERP implementation projects	<i>Enterprise Information Systems</i>	Q1	23	Spain	Europe
26	Escobar-Rodriguez et al. (2014)	Technical and organisational aspects in enterprise resource planning systems implementation: Lessons from a Spanish public hospital	<i>Enterprise Information Systems</i>	Q1	9	Spain	Europe
27	Fernandez et al. (2018)	An investigation of challenges in enterprise resource planning (ERP) Implementation: The case of public sector in Malaysia	<i>International Journal of Supply Chain Management</i>	Q3	20	Malaysia	Southeast Asia
28	Zouine and Fenies (2014)	The critical success factors of the ERP system project: A meta-analysis methodology	<i>Journal of Applied Business Research</i>	Q4	11	France	Europe
29	Bekiaris and Markogiannopoulou (2023)	Enterprise resource planning system reforms of European Union member states in association with central government accrual accounting and IPSAS adoption	<i>Journal of Public Budgeting, Accounting and Financial Management</i>	Q1	1	27 European countries	Europe