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The Impact of Critical Success Factors on E-Public Procurement Processes

Razeehsadat Aboutalebi[1,*], Mohammad Aghdasi[1], Bakhtiar Ostadi[1]

[1] Department of Industrial and Systems Engineering, Tarbiat Modares University, Tehran, Iran; razieh.aboutalebi@modares.ac.ir; aghdasim@modares.ac.ir; bostadi@modares.ac.ir.

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Abstract

The procurement process encompasses the stages from identifying requirements to delivering purchased goods or services to the customer, and any improvement in this process can impact business performance and the entire supply chain. The management of procurement processes in public sector enterprises involves guidelines and procedures regulated by the government to procure goods and services. Electronic procurement technology provides a mechanism for oversight and acquisition in the procurement process, creating transparency that facilitates monitoring. In this context, identifying Critical Success Factors (CSF) for implementing e-government processes is the focus of this research, as neglecting these factors can adversely affect the continuity of initiatives, activities, and, ultimately, impactful processes.

This study aims to establish a connection between key performance indicators of electronic procurement in the public sector and electronic procurement operational processes at the government level, which will be useful for stakeholders in the field of electronic public procurement. Scientific documents published between 2000 and 2024 were reviewed. After thoroughly examining the collected studies, content analysis of the documents, and structured and semi-structured interviews, significant results were extracted, demonstrating the relationship between CSF and the operational processes of electronic procurement in the public sector.

Keywords: Business process management, Electronic public procurement, Electronic procurement processes, Critical success factor.

1 | Introduction

The procurement process spans from identifying requirements to delivering purchased goods or services to customers. Any improvements in this process can significantly impact business performance and the entire supply chain. Public procurement business process management involves government-established guidelines

Corresponding Author: razieh.aboutalebi@modares.ac.ir

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and procedures for acquiring goods and services. Internet-based procurement processes are referred to as e-procurement.

Public procurement transactions have multiple stages and are particularly vulnerable to corruption and financial misconduct due to conflicts of interest between the public and private sectors. Given the importance of government transactions in public sector economics and the vulnerability of various procurement stages, maintaining integrity and preventing threats to public procurement requires optimized principles and mechanisms for managing government financial resources from planning to expenditure [1].

Successful implementation of e-procurement processes in governments depends on factors influencing overall performance. Identifying these key factors and existing challenges is essential for improving public e-procurement systems. A thorough examination of these factors enables more effective implementation in government institutions, ultimately enhancing public services and citizen satisfaction.

This study examines influential factors affecting the public sector's successful implementation of e-procurement processes. The main research objectives are to identify Critical Success Factors (CSF) for implementing key e-procurement processes in the public sector and to establish relationships between these factors and operational e-procurement processes.

2 | Research Method

This study adopts a combined method of library and documentary research, focusing on analyzing and reviewing some of the most important existing studies in the literature as well as examining several case studies. The research background, objectives, and key questions were defined in the first stage after determining the subject. Subsequently, approximately 180 scientific documents were reviewed using a systematic approach, including articles published in reputable journals and databases, conference papers, and related theses between 2000 and 2024. In the next stage, about 50 studies were analyzed in more detail. Search keywords included business process management, public e-procurement, CSF, and related concepts. Criteria were also set for selecting and screening these studies. The selected studies were evaluated regarding citation count, scientific quality, and relevance to the research topic. Finally, after categorization, a deeper analysis was performed on them, and key results were extracted.

3 | Identification and Classification of Critical Success Factors

This section identifies CSF through library research, detailed analysis of collected studies, content analysis of documents, synthesis of factors introduced in articles, and field studies of operational.

Cases, including Iran's e-procurement system. The basic method for identifying these factors follows the approach introduced by Rockart [2], which emphasizes understanding the organization and interviewee objectives, extracting CSFs and criteria, and helping managers understand their information needs.

In research conducted by Mavidis and Folinas [3], CSF were classified based on the MIT90s framework as a practical tool for business models. This framework examines environmental factors from five perspectives that emerge as valuable information in any business and must be coordinated to achieve greater efficiency. The framework proposed by Rockart and Morton [4] presents a conceptual model of technology effects where all functional components of organizational strategy, people and roles, management processes, organizational structure, and collaborative culture must be balanced with technology.

According to Mavidis and Folinas [3], these five components are project strategy, people, management processes, structure, and information systems. The current research will use these components as the framework for CSF in government e-procurement.

The developed classification in this study includes factors affecting the success of government e-procurement. To identify these factors, articles on e-procurement success factors were reviewed. The outcome of this study was the identification and introduction of more than 47 different factors in aggregate. Finally, by merging and

combining common and similar factors on the one hand and eliminating irrelevant factors on the other, the results are presented in *Table 1*.

Table 1. Developed critical success factors in government e-procurement.

Related Literature	CSFs	Proposed CSFs	Scott Morton Model Elements
Mavidis and Folinas [3]	Legitimacy of operations Clear definition of change objectives at the national level	Acceptance and penetration of e-procurement services among key stakeholders (Government agencies, suppliers, and contractors)	Project strategy
Pourkiani [5]	Acceptance and participation of e-procurement partners and suppliers		
Panda et al. [6]	Guidance of stakeholders to improve overall performance		
Mavidis and Folinas [3]	Allocation of sufficient budget for change implementation in education infrastructure and support resources	Financial resource management focuses on budget adequacy for infrastructure and support resources.	
Panda et al. [6]	Appropriate resource allocation		
Panda and Sahu [7]	Training and education		
Panda and Sahu [7] Panda et al. [6] Basheka et al. [8]	Top management support	Commitment and support of senior management in government e-procurement institutions	
Pourkiani [5]	Support and participation of senior government officials		
Pourkiani [5]	E-procurement implementation strategy	Development and implementation of effective strategies in government e-procurement	
Mavidis and Folinas [3]	Legitimacy of tasks Organizational restructuring	Efficient organizational structure with clear and formal responsibilities and authorities	Structure
Panda and Sahu [7] Panda et al. [6] Basheka et al. [8] Pourkiani [5]	Authentication and security	Appropriate frameworks and infrastructure for information and system security	Information systems
Panda and Sahu [7]	Technology standards	Establishment of managerial and technical standards to improve systems and enhance interoperability	
Panda et al. [6] Basheka et al. [8]	System integrity		
Mavidis and Folinas [3]	Data governance	Data management focuses on interoperability, integrity, security, and information quality.	

Table 1. Continued.

Related Literature	CSFs	Proposed CSFs	Scott Morton Model Elements
Pourkiani [5]	Utilization of elite personnel	Recruitment and development of elite human resources and enhancement of their capabilities	People
Panda et al. [7]	Management and training of e-procurement human resources		
Panda and Sahu [7] Panda et al. [6]	Investment in knowledge capital		
Pourkiani [5] Panda et al. [6]	Recruitment and training of end-users	Developing a mindset for using government e-procurement services through training and promotion	
Basheka et al. [8]	Cultivating a culture of using government e-services		
Panda and Sahu [7] Panda et al. [6]	Stakeholder alignment	Implementation of a stakeholder relationship management system	
Basheka et al. [8]	Supplier alignment		
Mavidis and Folinas [3]	Legal reform management	Implementation of change management processes to identify and mitigate obstacles and risks	Management processes
Panda and Sahu [7] Panda et al. [6] Basheka et al. [8]	Change management		
Mavidis and Folinas [3] Panda et al. [6]	Business process reengineering	Risk-aware business process reengineering	
Panda and Sahu [7] Panda et al. [6] Basheka et al. [8]	Process reengineering		
Mavidis and Folinas [3] Panda et al. [6] Panda and sahu [7]	Project management and resource requirements planning	Project management structure development and resource requirements planning for efficient service delivery	
Basheka et al. [8]	Project management and case management		
Panda and Sahu [7] Panda et al. [6] Basheka et al. [8]	Performance measurement	Implementation of performance measurement systems aligned with key objectives	

4 | Government E-Procurement Processes

The fundamental processes in public procurement typically involve either a formal Request for Proposals (RFP) for consulting services or an Invitation to Tender (ITT) for goods and services. These are publicly issued through an electronic tendering platform, enabling potential suppliers to review documentation, submit responses, and receive evaluations [9]. The following processes have been identified through a literature review in this domain:

I. Electronic registration

II. Electronic notification

III. Electronic proposal submission

IV. Electronic signature

V. Electronic award notification

VI. Electronic contracting

VII. Electronic ordering

VIII. Electronic invoicing

IX. Electronic payment

5 | Impact of Critical Success Factors on Government E-Procurement Operational Processes

Table 2 demonstrates how CSFs influence key processes in this domain and maps them into a long-term technology roadmap. The proposed framework combines the CSF concept with the MIT90s framework to enhance understanding of how these factors interact with the efficiency of public e-procurement processes.

CSFs represent the determining factors for successful e-procurement implementation. Consequently, after establishing an optimal process model, a matrix can help categorize and analyze business processes according to these success elements. This approach identifies which specific processes or sub-processes each success element applies to, facilitating targeted improvements in government e-procurement operations.

Table 2. Critical success factors and their influence on e-public procurement processes.

Core e-Processes											
Payment	**Invoice**	**Ordering**	**Contract**	**Awarding**	**Evaluating**	**Attestation**	**Tendering**	**Noticing**	**Registration**	**Critical Success Factors**	
×	×	×	×	×	×	×	×	×	×	Acceptance and penetration of e-procurement services among key stakeholders (Government agencies, suppliers, and contractors)	Project Strategy
×	×	×	×	×	×	×	×	×	×	Appropriate frameworks and infrastructure for information and system security	Information Systems
×	×	×	×	×	×	×	×	×	×	Establishment of managerial and technical standards to improve systems and enhance interoperability	
×	×	×	×	×	×	×	×	×	×	Data management focuses on interoperability, integrity, security, and information quality.	
×	×	×	×	×	×	×	×	×	×	Developing a mindset for using government e-procurement services through training and promotion	People
×	×	×	×	×	×	×	×	×	×	Implementation of a stakeholder relationship management system	
×	×	×	×	×	×	×	×	×	×	Implementation of change management processes to identify and mitigate obstacles and risks	Management Processes
×	×	×	×	×	×	×	×	×	×	Risk-Aware Business Process Reengineering	
×	×	×	×	×	×	×	×	×	×	Implementation of Performance Measurement Systems Aligned with Key Objectives	

6 | Conclusion

This research has guided the identification and analysis of CSFs in implementing government e-procurement processes by linking these factors with key e-procurement operations. The results show that aligning CSFs with core e-procurement processes enables the development of a comprehensive and practical framework for better managing these processes. This framework helps identify strengths and weaknesses in e-procurement systems and serves as a tool for clarifying interactions between CSFs and processes.

Moreover, as a comprehensive and systematic strategy, this framework can significantly improve transparency, reduce risks, and increase the efficiency of e-procurement processes, thereby enhancing financial integrity and public trust in government transactions.

Identifying and analyzing existing risks in government e-procurement processes is particularly important for improving them in the future. This analysis should be conducted using valid and recognized frameworks in scientific literature to systematically examine and categorize risks, leading to a more precise analysis of existing challenges and opportunities.

Additionally, designing and presenting a framework that specifies the relationship between e-procurement processes, CSFs, and identified risks can help managers make informed decisions and improve process efficiency. This framework should include a precise process system or model that covers more detailed levels of actions and activities. Such an approach enables more accurate process management and reduces operational risks.

Furthermore, identifying and analyzing key stakeholders is also particularly important. Understanding the requirements and expectations of these groups can help optimize processes and better align with various demands. Consequently, these measures can reduce risks, increase transparency, improve efficiency in using government resources, and strengthen public trust in government procurement processes. These actions can maximize opportunities and minimize challenges in e-procurement processes.

Conflicts of Interest

The authors declare that they have no conflicts of interest. This means the work was conducted independently, without any sponsorship, financial support, or influence from commercial entities, institutions, or organizations that might benefit from the research results. The authors confirm that they did not receive any grants or funding that could influence or bias the outcomes or interpretations of this study. None of the authors have personal or professional relationships with companies, industry partners, or other stakeholders with a vested interest in the findings. This helps to ensure that the research was conducted impartially and that the study's results and interpretations remain objective.

References

[1] Tajarlou, R., & Ghorbany Darabad, B. (2016). Integrity in public procurement. *Journal of researches energy law studies*, *2*(1), 85–120. https://doi.org/10.22059/jrels.2016.61022

[2] Rockart, J. F. (1979). Chief executives define their own data needs. *Harvard business review*, *57*(2), 81–93. https://europepmc.org/article/med/10297607

[3] Mavidis, A., & Folinas, D. (2022). From public E-procurement 3.0 to E-procurement 4.0; A critical literature review. *Sustainability*, *14*(18). https://doi.org/10.3390/su141811252

[4] Rockart, J. F., & Morton, M. S. (1984). Implications of changes in information technology for corporate strategy. *Interfaces*, *14*(1), 84–95. https://doi.org/10.1287/inte.14.1.84

[5] Pourkiani, F. (2011). *Extraction and ranking of factors affecting the implementation of electronic procurement in organizations (Case study: The Islamic Republic of Iran railway company)*. [Thesis]. (**In Persian**).

[6] Panda, P., Sahu, G. P., & Gupta, B. (2019). E-government procurement implementation in India: Evolving decision parameters for project success. *International journal of business information systems*, *31*(3), 414–454. https://doi.org/10.1504/IJBIS.2019.101119

[7] Panda, D., & Sahu, G. P. (2012). *E-Procurement implementation: Critical analysis of success factors' impact on project outcome*. https://dx.doi.org/10.2139/ssrn.2019575

[8] Basheka, B. C., Oluka, P. N., & Mugurusi, G. (2012). Adopting new approaches for public procurement efficiency: Critical success factors (CSFs) for the implementation of e-procurement in Uganda's public sector. *International journal of procurement management*, *5*(6), 712–732. https://doi.org/10.1504/IJPM.2012.049711

[9] Caldwell, N., & Bakker, E. (2017). Procurement process in the public sector: An international perspective. In *International handbook of public procurement* (pp. 427–442). Routledge. https://doi.org/10.4324/9781315092539-22