

Optimizing Organizational Performance through E-Government Implementation: The Moderating Effect of Learning Organizations

Optimizing
Organizational
Performance

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191

ABSTRACT

Public sector organizations face increasing pressure to improve service quality, efficiency, and accountability through digital transformation. This study analyzes the effect of e-government implementation on organizational performance and examines the role of learning organizations as a moderating variable. E-government is a key strategy to improve public service effectiveness, work efficiency, transparency, and accountability. Its success depends on the organization's ability to foster an adaptive and innovative learning environment. Using a quantitative survey of public sector institutions and Structural Equation Modeling (SEM), the study finds that e-government implementation has a positive but insignificant effect on organizational performance. Learning organizations, however, significantly improve performance. When acting as a moderator, learning organizations weaken the relationship between e-government and performance and show no significant effect. This indicates that organizational learning has not been fully integrated into e-government efforts, limiting its impact on digital transformation effectiveness. The study emphasizes that strengthening organizational learning capacity and aligning it with e-government strategies is essential to enhancing performance.

Keywords: E-Government Implementation, Learning Organization, Organizational Performance, Public Sector.

Submitted:
November 29, 2025

Revised:
January 20, 2026

Accepted:
January 26, 2026

Published Online:
January 31, 2026

INTRODUCTION

The development of information and communication technology has brought significant changes in organizational governance, including in higher education institutions (Mangundu, 2023). Abdelilah et al. (2024) show that higher education institutions have begun to adopt Information and Communication Technologies (ICT) governance as part of organizational governance to respond to demands for efficiency and transparency. ICT has revolutionized how humans interact, work, learn, and do business without spatial and temporal constraints. Higher education institutions must adapt to globalization and digitalization dynamics through e-government implementation as an instrument of transparent, effective, and efficient digital governance. E-government in higher education supports administrative systems, decision-making, and service quality improvement. Studies explore how e-government services affect institutional performance through information quality, interactivity, and web functionality, impacting administrative efficiency and user satisfaction (Alshammari et al., 2025). E-government platforms manage educational and research activities, including digital archives, research indicator visualization, and integrated management (Tsolakidis et al., 2022). Onia (2025) examines how e-governance improves transparency, efficiency, accountability, and community outreach in non-academic and administrative services. Research also examines ICT governance practices in universities facing resource challenges, showing

JIMKES

Jurnal Ilmiah Manajemen
Kesatuan
Vol. 14 No. 1, 2026
pp. 191-202
IBI Kesatuan
ISSN 2337 – 7860
E-ISSN 2721 – 169X
DOI: 10.37641/jimkes.v14i1.4850

that ICT adoption influences decision-making and service management processes, impacting internal institutional governance.

Several studies indicate that despite the development of e-government systems, their impact on organizational performance remains insignificant (Hussein et al., 2016). For instance, Nurdin et al (2011) show that e-government practices do not significantly affect organizational performance and identify various organizational barriers, such as culture, structure, control systems, integration, and adaptability, that hinder effective implementation. This raises a key question: why do significant e-government investments sometimes fail to improve organizational performance. Technology alone is insufficient; organizational factors such as adaptability, employee engagement, incentives, process integration, and internal communication are critical (Saleh et al., 2021). Additionally, internal resistance and challenges, especially in developing countries with limited ICT infrastructure or inconsistent management support, often prevent e-government from delivering optimal benefits (Alfiani et al., 2024).

To enhance e-government's impact on organizational performance, organizational readiness as a learning organization is crucial. A learning organization continuously learns, embraces innovation, and transforms knowledge into actions that improve performance (Kim et al., 2017; Andayani et al., 2022). Studies show its importance in digital transformation: Pedraja and Rodriguez (2025) highlight knowledge management, dynamic capabilities, and continuous feedback as key for university performance; Meshari et al. (2021) find that learning organization principles improve research and knowledge outcomes; and Kelder et al. (2025) show that authentic leadership fostering a learning culture strengthens digital capabilities for optimal IT use. Thus, successful e-government implementation requires a strong learning organization culture.

A strong learning culture enhances officials' ability to innovate, adapt to technological changes, and optimize digital systems in public services. Alqarni et al. (2023) found that Electronic Human Resource Management (E-HRM) systems reinforce the impact of learning organizations and organizational agility on performance, while other studies show that digital transformation strengthens the link between intellectual capital, organizational learning, and performance. Therefore, in higher education, examining the role of learning organizations as a moderator between e-government and institutional performance is crucial.

This study addresses three main questions. First, how does e-government implementation affect higher education organizational performance. Second, how can the adoption of a learning organization support more effective governance and improve performance. Third, can a learning organization act as a moderator that strengthens the relationship between e-government and organizational performance. Accordingly, this study aims to analyze the effect of e-government on higher education performance, evaluate the role of learning organizations in enhancing governance, and examine their moderating function in the e-government–performance relationship. Thus, the study assesses both the direct impact of digital governance and the reinforcing role of a continuous learning culture in achieving institutional performance.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

The Effect of E-Government on Organizational Performance

Theories on the application of Information and Communication Technology (ICT) in public administration and organizational governance emphasize transparency, service efficiency, accountability, bureaucratic digitization, and e-government maturity models. Othman et al. (2020) and Ameen et al. (2024) analyze how e-governance influences the quality of education and human resource development in higher education, highlighting the role of ICT in enhancing institutional efficiency and preparing human resources to compete both locally and globally. This demonstrates that effective implementation of electronic governance can significantly improve administrative processes, academic management, and overall institutional performance (Ahmad et al., 2025).

Building on this, Butt et al. (2024) develop a comprehensive framework for successful e-governance in higher education institutions. Their framework identifies critical supporting factors, including leadership, institutional policies, staff training, infrastructure readiness, and user-friendly technological systems, which are essential for ensuring that e-government initiatives are implemented effectively. This framework is particularly useful for understanding the conditions under which e-government can succeed and for identifying potential moderating factors that influence its impact on organizational performance.

In measuring e-government, Papadomichelaki and Mentzas (2012) propose several key indicators that capture the quality and effectiveness of digital governance. These include ease of use, such as website navigation, personalization, and technical efficiency; trust, encompassing privacy and security; interaction environment functionality, which supports user engagement and form submission; reliability, including accessibility and system availability; content quality and information display; and citizen support, emphasizing interactivity and responsiveness. These indicators provide a comprehensive approach to evaluating e-government effectiveness and its potential to enhance institutional performance in higher education.

H1: E-government has a positive effect on organizational performance.

The Effect of Learning Organization on Organizational Performance

The theory of organizations that continuously learn, develop themselves, transfer knowledge, and innovate. Often associated with Senge's (1990) theory, which is the fifth discipline, and Watkins and Marsick's (2003) dimensions of learning organizations. It was found that knowledge performance mediates the relationship between learning organizations and financial performance. Habtoor et al. (2020) and Andini and Wahyoedi (2025) provide a theoretical basis for the direct relationship between learning organizations and performance, and encourage the use of moderator/mediator variables. Choi and Chandler (2020) analyze the dimensions of learning organizations (organizational culture, knowledge management, organizational memory, dynamic capabilities, etc.) and how they contribute to innovation and institutional performance in universities.

Useful for the theory section on learning organizations and how higher education organizations can measure their performance through innovation. The measurement of learning organizations uses indicators proposed by Alegre and Chiva (2008). Experimentation refers to the extent to which organizations conduct experiments and try new approaches as part of the learning process. Risk-taking reflects the willingness to engage in innovation, including tolerance for failure and uncertainty. Interaction with the external environment describes how organizations actively engage with external stakeholders such as customers, suppliers, research institutions, markets, and external technologies to learn and adapt. Dialogue involves open communication among organizational members through the exchange of ideas, discussions, and collective reflection. Participative decision making refers to the involvement of members in providing input and participating in both strategic and implementation-related decisions.

H2: Learning organization has a positive effect on organizational performance.

Learning Organization as a Moderating Variable

The theory of how organizations measure success: productivity, efficiency, service quality, innovation, stakeholder satisfaction, and how internal and external factors influence it. According to Xu et al. (2022), organizational effectiveness refers to the ability to make the best use of available resources to achieve goals. Organizational performance is the degree of success of an organization in achieving its established goals (Otoo, 2024; Nasution et al., 2025). Organizational performance is a multidimensional construct consisting of several dimensions: financial performance, market performance, operational

performance, and stakeholder satisfaction/performance (Hamann and Schiemann 2021). The definition of organizational performance in Otoo (2019) involves organizational performance measured against visible results in efficiency, productivity, service quality, stakeholder satisfaction, and competitive advantage aspects. However, the research emphasizes that Human Resource Management (HRM) practices (training, selection, compensation, etc.) influence organizational performance through employee competence. Organizational performance uses indicators proposed by Akhtar and Sushil (2018), namely, strategic planning, strategic flexibility, strategy implementation, strategic performance measurement system design, information system flexibility, strategic performance measurement management issues, performance feedback, and learning.

A moderator variable is a variable that affects the strength or direction of the relationship between e-government and organizational performance. In other words, a moderator, such as a learning organization, can strengthen, weaken, or even reverse the effect of e-government on organizational performance (Holbert & Park, 2021). Including moderators helps clarify the boundary conditions of a causal relationship, making theoretical models more precise and realistic. When previous studies show inconsistent results between e-government and organizational performance, a learning organization can explain why the relationship is strong under certain conditions but weak or insignificant under others (Mazyed et al., 2025). By incorporating learning organization as a moderator, the effect of e-government on organizational performance is not universal but depends on specific organizational contexts and conditions, thereby deepening the theoretical understanding of how digital governance interacts with organizational learning to influence performance (Memon et al., 2019).

H3: Learning organization has a moderating positive effect on e-government and organizational performance.

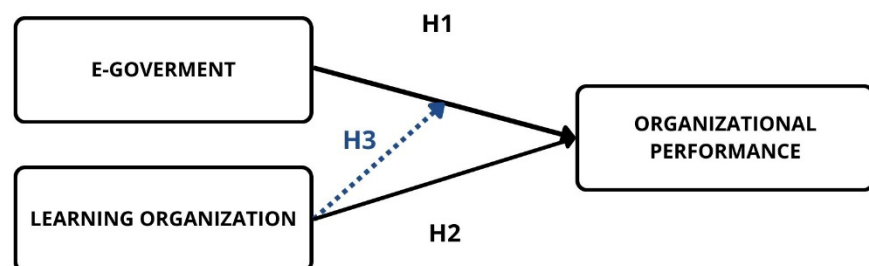


Figure 1. Conceptual Framework

The conceptual research framework that explains the connections between the study variables is shown in Figure 1. According to the model, e-government has a direct and favorable impact on organizational performance (H1), suggesting that putting digital government systems into place can increase organizational efficacy and efficiency. Furthermore, it is projected that the learning organization variable directly affects organizational performance (H2), indicating that organizations that consistently learn and adapt are more likely to attain superior performance results. Additionally, learning organization is suggested to function as a moderating variable that enhances the association between e-government and organizational performance (H3), suggesting that strong organizational learning practices enhance the effectiveness of e-government initiatives.

RESEARCH METHODS

This study uses a quantitative approach with an explanatory research design to examine the causal relationship between e-government (independent variable), higher education organizational performance (dependent variable), and learning organization as a moderator variable. The main analysis was conducted using composite-based Structural

Equation Modeling (SEM), namely PLS SEM, because the research objective was to predict relationships and test moderation models in a sample that was expected to be heterogeneous. The selection of PLS-SEM is supported by methodological literature that recommends PLS-SEM for research with a predictive focus, composite models, and when classical multivariate assumptions are not met (Hair et al. 2017) .

The study was conducted at University X, a private university chosen as the research sample. The study's population consisted of relevant academics who had participated in the university's accreditation procedure, including lecturers, educational/administrative staff, and unit leaders. Purposive sampling was the method employed, and the minimum requirements were to have worked for at least two years and to have participated in the campus accreditation process. The Hair et al. (2017) guidelines, which suggested five to ten times the number of indicators, were used to calculate the sample size. There were one hundred responders in this survey.

The assumption of normality is not a problem because PLS employs the bootstrapping procedure. Because PLS does not have a minimum sample size requirement, it can be employed in research with small samples. Normal distribution data is not necessary for PLS modeling because it is categorized as non-parametric (Husein, 2016). Data Instrument Testing (outer model analysis) is conducted to ensure that the items used are suitable for measurement (valid and reliable). This model establishes the correlation between latent variables and their indicators in the analysis. Convergent validity, discriminant validity, composite reliability, and Cronbach's alpha are examples of outer model indicators. The term "inner relation, structural model, and substantive theory" refers to structural model testing (inner model analysis), which uses R^2 , Q-square, and hypothesis testing (bootstrapping) to characterize the relationship between latent variables based on substantive theory. Moderating variable analysis, the main effect, or the direct association between the independent variable (X) and the dependent variable (Y), is examined using moderating effect testing, where the relationship between the two must be significant. The impact of the independent variable (X) and the moderating variable (Z) on the dependent variable (Y) can be tested simultaneously if it is significant.

RESULTS

In order to decide whether to accept or reject a hypothesis in a study, researchers usually look at a number of important statistical markers. These consist of t-statistics, p-values, and significance values between constructs, which collectively offer information about the robustness and consistency of the relationships under investigation. By evaluating these measures, one can determine if the observed effects are statistically significant or probably the result of chance, which helps choose whether to accept or reject the suggested hypothesis.

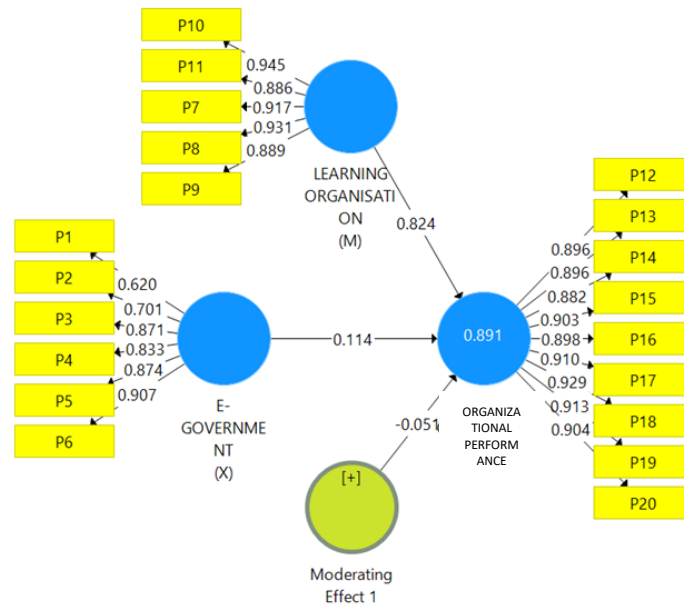


Figure 2. Convergent Validity

The measurement model is depicted in Figure 2, which also displays the Average Variance Extracted (AVE) values and the outer loadings of indicators for each construct. E-Government (X), Learning Organization (M), and Organizational Performance (Y) are the three primary elements of the model, together with a moderating influence. All indicators (P1–P6) for the e-government construct have outside loadings between 0.620 and 0.907, demonstrating sufficient indicator reliability. The AVE for e-government is 0.701, indicating that the concept accounts for more than 70% of the variance in its indicators.

For every indicator (P7–P11), the learning organization construct has high outer loadings, ranging from 0.886 to 0.945. Strong convergent validity is indicated by the AVE value of 0.891, which also confirms that the construct accounts for almost 89% of the variance in its indicators. Indicators P12–P20 for Organizational Performance show good reliability and convergent validity, with outer loadings ranging from 0.882 to 0.929 and an AVE of 0.891. Every construct satisfies the suggested criteria of AVE (>0.5) and outer loadings (>0.7), indicating that the measurement model has adequate indicator reliability and convergent validity.

Table 1. Discriminant Validity

Construct	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
E-Government	0.893	0.926	0.917	0.652
Organizational Performance	0.972	0.972	0.976	0.817
Learning	0.951	0.951	0.962	0.835
Moderator	0.979	1.000	0.978	0.625

The validity and reliability of each construct are displayed in Table 1. High internal consistency and dependable measurement are indicated by the Cronbach's Alpha, rho_A, and composite reliability values for e-government, organizational performance, learning, and moderator, all of which are above 0.7. Each construct captures enough variance from its indicators, as confirmed by the AVE values, which range from 0.625 to 0.835. Overall, these findings show that the measurement tools are valid for additional research and dependable.

Table 2. Adjusted R-Square Model

Metric	Value
R Square	0.891
Adjusted R-Square	0.887

Table 2 shows that the percentage of variance in the affected variable (endogenous) that the influencing variable (exogenous) can account for is known as the R-Squared value. The Adjusted R-Square Model value is 0.887, indicating that the exogenous variable's ability to explain Y is 88.7% (large or strong). This indicates that the E-government variable and learning organization have a large or strong ability to explain marketing performance, at 88.7%, with the remaining 11.3% coming from the influence of other independent variables that are unaffected in this study.

Table 3 and Figure 3 show that e-government (X) has a positive impact on organizational performance (Y) with a path coefficient of 0.114. However, this effect is not statistically significant because the p-value is 0.083, indicating that e-government implementation alone might not be enough to significantly improve performance. However, with a path coefficient of 0.824 and a p-value of 0.000, the existence of a learning organization (M) demonstrates a strong and statistically significant positive influence on organizational performance, indicating that companies that actively encourage learning, knowledge sharing, and adaptability typically achieve higher levels of performance.

Table 3. Path Coefficients

Relationship	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T-Statistic	P-Value
E-Government (X) → Organizational Performance (Y)	0.114	0.119	0.066	1.739	0.083
Learning Organisation (M) → Organizational Performance (Y)	0.824	0.816	0.060	13.637	0.000
Moderating Effect 1 → Organizational Performance (Y)	-0.051	-0.041	0.047	1.095	0.274

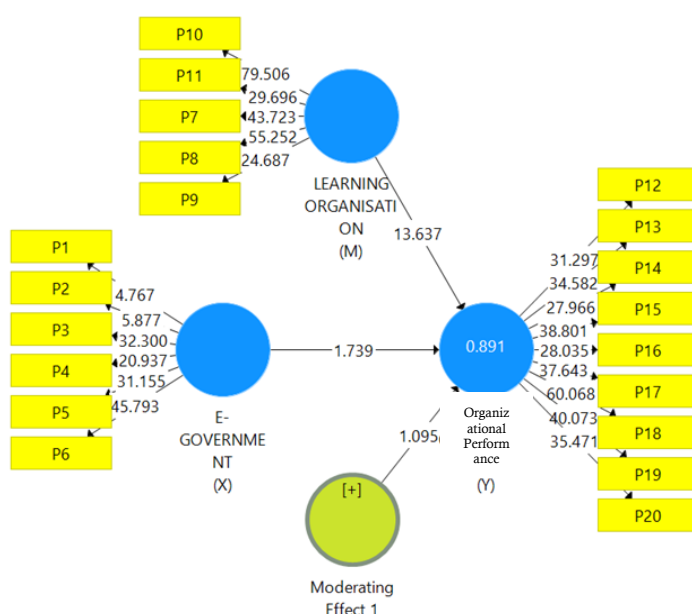


Figure 3. Moderated Regression Analysis

Additionally, to investigate if the relationship between e-government and learning organizations influences organizational performance, a moderated regression analysis

was carried out. The moderating impact is not statistically significant and does not significantly increase or decrease the link between the independent and dependent variables, according to the results, which reveal a negative coefficient of -0.051 with a p-value of 0.274. These results imply that while e-government and other technological initiatives may have some advantages, cultivating a learning-oriented culture is far more important for enhancing organizational performance, and learning's moderating role does not substantially change this relationship.

DISCUSSION

The results of this study indicate that learning organizations have a positive but statistically insignificant effect on the performance of higher education institutions. This suggests that while learning organizations have the potential to enhance knowledge capabilities, collaboration, and innovation, their impact on performance is not yet strong or immediate in the context of this study. This finding contrasts with prior literature, which emphasizes that a strong organizational learning culture, including knowledge sharing, team learning, and individual capacity building, is closely associated with improved organizational performance (Ju et al., 2021). Similarly, research has shown a clear positive relationship between learning organization practices and institutional performance. However, consistent with the study by Erbo et al. (2025), this study also finds that organizational learning alone may not always translate into significant performance improvements, highlighting that context and implementation nuances are critical.

Regarding e-government, the findings show a positive effect on institutional performance. Higher education institutions that implement efficient, transparent, and responsive digital governance systems tend to experience improvements in administrative effectiveness and public services. These results align with prior research indicating that e-governance adoption by public sector employees positively impacts organizational performance and improves both administrative efficiency and service delivery (Congo & Choi, 2022; Khafka et al., 2024).

Interestingly, the moderating effect of e-government on the relationship between learning organizations and organizational performance was negative and statistically insignificant. While learning organizations alone enhance organizational adaptation and learning capacity, the introduction of e-government in this study context tends to weaken the positive influence of learning organizations, although not significantly. This may occur because digital transitions without a clear learning strategy can create a "knowledge vacuum," where employees are confused or overwhelmed by new technology, limiting the effectiveness of organizational learning (Choi & Chandler, 2020). Chatterjee et al. (2023) argue that the positive impact of learning organizations on performance often materializes through mediating factors, such as innovation and ICT capabilities, as well as supporting conditions, including digital leadership and HR readiness. Without these mediators, the implementation of e-government may not support and may even disrupt the learning processes necessary for performance improvement.

These findings highlight that while both learning organizations and e-government initiatives are important, their effectiveness depends on careful alignment and supporting mechanisms. Learning organizations are critical for leveraging digital governance initiatives, but e-government alone cannot strengthen performance unless accompanied by strategies that foster learning, knowledge sharing, and innovation. The benefits of this research cover theoretical, practical, and social aspects. This research is expected to enrich organizational management studies, particularly those related to e-government, learning organizations, and organizational performance, and to serve as a reference for further research in the development of educational organizational models that are adaptive to learning and digitization. The results of this research can be used as a reference for university leaders in designing strategies to strengthen e-government supported by learning organizations, as well as providing considerations for the government/policy makers in formulating the direction of e-government development in higher education,

and increasing the awareness of the academic community of the importance of learning culture and the use of IT. This research is expected to contribute to improving the quality of higher education services in Indonesia through more adaptive, transparent, and digitally-based governance.

CONCLUSION

This study finds that learning organizations have a positive but statistically insignificant effect on the performance of higher education institutions, while e-government implementation positively influences institutional outcomes. The moderating role of e-government was negative and not significant, indicating that digital governance alone does not necessarily strengthen and may temporarily reduce the contribution of learning organizations if not integrated with a clear learning strategy. These results highlight that both technological adoption and a learning-oriented culture are necessary, but their alignment and supporting mechanisms are crucial for enhancing organizational performance.

Higher education institutions should treat e-government as an integral part of the organizational learning culture, connecting academic, financial, research, and quality management systems. Enhancing the digital competencies of staff, lecturers, and leaders through training and workshops is essential to enable effective use of e-government for knowledge sharing, collaboration, and innovation. Institutions should also regularly monitor digital performance indicators such as service speed, system usage, and user satisfaction to assess progress and optimize both digital governance and learning culture initiatives.

This study has several limitations. It is based on a quantitative, cross-sectional design and a limited sample, which may reduce generalizability. It also focuses on a few key variables, excluding other potentially influential factors such as digital leadership, innovation capabilities, organizational agility, or trust in technology, which may affect performance outcomes. For future research, mixed-method approaches combining quantitative and qualitative analyses, such as interviews or case studies, are recommended to better understand the mechanisms of e-government and learning organization interactions. Researchers could include additional mediators or moderators to explore more complex pathways in digital transformation. Cross-institutional or cross-country studies can further test the generalizability of findings and provide insights into best practices for integrating e-government and organizational learning for improved institutional performance.

FUNDING STATEMENT: This research did not receive any specific grant from funding agencies in the public, commercial, or not - for - profit sectors.

CONFLICTS OF INTEREST: The author declares no conflict of interest.

DECLARATION OF GENERATIVE AI STATEMENT: During the preparation of this work the author(s) used ChatGPT, Grammarly, and Turnitin in order to assist with language refinement, grammar checking, and originality verification. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

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