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Can Digital Transformation Reduce Government Corruption? A Meta-Analysis

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Abstract

This meta-analysis examines the potential of digital transformation in reducing government corruption by synthesizing findings from 17 empirical studies published in the last five years. Using the PRISMA protocol, a comprehensive literature search was conducted, and studies were screened for eligibility. The meta-analysis revealed a substantial negative correlation between corruption and digitalization/e-government, with an overall effect size of -0.93 (95% CI: -1.18 to -0.68) based on the Random Effects Model. The results suggest that higher levels of digital transformation are associated with lower levels of corruption. However, the study also highlights the complex and context-dependent nature of this relationship, as cultural, economic, and institutional factors can moderate the impact of digitalization on corruption. The findings underscore the importance of investing in digital infrastructure, promoting digital literacy, and fostering ethical governance practices to effectively combat corruption through digital transformation.

Keywords: Corruption; Digitization; Meta-Analysis; Correlation.

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1. Introduction

Digital transformation or e-government has emerged as a powerful tool in the fight against corruption, revolutionizing the way organizations and governments operate. E-government has been touted as a powerful tool in combating corruption across various sectors. In this article, we will delve into a meta-analysis to explore the potential of digital transformation in reducing corruption. By examining the intersection of technology and governance, we aim to uncover the ways in which digital tools and strategies can be harnessed to promote transparency, accountability, and integrity in the fight against corruption (Karinda et al., 2023) The fusion of technology with governance has opened up new avenues for promoting transparency, accountability, and integrity in various sectors. By leveraging digital transformation, organizations and policymakers can not only detect and prevent corrupt practices but also foster a culture of ethical conduct and compliance (Le, 2022). This shift towards digitization not only streamlines processes but also empowers stakeholders to actively participate in anti-corruption efforts, ultimately leading to a more accountable and trustworthy ecosystem (Кубатко et al., 2023). This process involves the integration of technology into various aspects of an organization, resulting in increased efficiency and transparency. With the use of digital tools, corrupt practices can be easily identified and prevented. For instance, the E-government Development Index (EGDI) and its components, including the Online Service Index (OSI) and Telecommunication Infrastructure Index (TII), have been inversely correlated with corruption perceptions (Seiam & Salman, 2024b). In the same vein, the reduction of direct interactions between citizens and officials can be achieved through digital transformation in local administrative bodies, thereby reducing the potential for corrupt practices (Mawla & Halim, 2023). This suggests that higher levels of e-government development are associated with lower levels of corruption. Moreover, digital transformation helps to establish a culture of accountability and responsibility within an organization, making it more reliable and ethical (De Haes et al., 2020). Nevertheless, the impact of corruption on Domestic Resource Mobilization (DRM) in developing countries can be mitigated through the process of automation (Jalloh & Jackson, 2023). Through the digitalization of government initiatives, technological advancements can be employed to enhance sustainability and transparency in the public sector.

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E-governance enables citizens to effectively monitor government actions, thereby increasing transparency and accountability. In order to mitigate corruption threats within the public service, it is essential to implement contemporary automated systems and facilitate interdepartmental information exchange (Bhandari, 2024b). Additionally, the influence of digitalization and technology on corruption is mitigated by cultural and economic factors (Sokolov, 2023). This highlights the significant role of digital transformation in promoting anti-corruption efforts and cultivating a more ethical and reliable ecosystem. The study examines various empirical research findings to uncover the ways in which digitalization can serve as a powerful mechanism for detecting and preventing corrupt practices. Through a comprehensive analysis, the article aims to provide insights into the relationship between digitalization and corruption, highlighting the importance of adopting digital tools to foster a more transparent and accountable governance system.

The EGDI is commonly employed to assess the comprehensive development of e-government services inside a nation. It encompasses sub-indices such as the Online Service Index, Telecommunications Infrastructure Index, and Human Capital Index to assess effect size. The CPI is a commonly utilized metric for assessing perceived levels of public sector corruption across various nations. It is frequently utilized alongside e-government indices to examine the correlation between e-government and corruption.

1.1. Research problem and design of the study

While several research suggests that e-government reduces corruption, perspectives differ(Castro & Lopes, 2023; Poufinas et al., 2023; Sadik-Zada et al., 2022). The lack of statistical support for this link in other research suggests that a meta-analysis is necessary to reconcile these contradictory results(Arayankalam et al., 2021; Hartani et al., 2020; Pham, 2020; Tubanambazi & Ruvuna, 2021). According to Castro and Lopes' (Castro & Lopes, 2023) analysis, e-government only starts to effectively reduce corruption when it reaches a particular threshold (EGDI of 0.39). Although not much research has been done on this threshold effect, it may be a useful topic for meta-analysis(Rahman Ahmed Abdel Rahman, 2022; Suardi, 2021). According to certain research, there is no statistically significant correlation between e-government and corruption(Avotra et al., 2021; Kalesnikaite et al., 2023). This suggests that more reliable statistical techniques, such meta-analysis, are required to understand these links (Li et al., 2021). The development of e-government services is represented by the independent variable EGDI, and perceived levels of corruption is represented by the dependent variable CPI. Determine the correlation coefficient between the EGDI and CPI for every research. This functions as the meta-analysis's effect size, enabling the synthesis of findings from many research. By using statistical tests such as the Q-test or I2 statistic to assess the heterogeneity of the correlation coefficients, this study will assist in determining whether sampling error or other factors are to blame for the variability in effect sizes. The correlation coefficients should be combined into a single summary effect size using meta-analytic approaches. This will offer a more thorough comprehension of the general relationship between the EGDI and CPI. A clearer and more thorough knowledge of the relationship between the growth of e-government and the perception of corruption can be obtained from the meta-analysis by addressing these research gaps and using correlation as the effect size.

2. Methods

The meta-analysis procedure entails the integration of the results of numerous individual studies to determine an average or overall effect magnitude (Stanley, 2001). The regression is also employed to clarify the varying sized effect observed in different studies. The comparison of effect measures within as well as between studies is feasible. The meta-analysis adheres to the widely recognized PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol. PRISMA provides an organized approach that includes formulating the research question, identifying and searching for studies, categorizing the selected studies, and reporting the findings. The main research question addressed is: Can digitalization effectively mitigate government corruption? Therefore, this meta-analysis focuses exclusively on empirical studies that explore the relationship between digitalization and corruption, (see Figure 1).

2.1. Data Collection

The scientific literature from the past five years in the areas of digitalization and corruption is comprehensively summarized in the database (see the Excel files included with this article). The selection procedure for the study is depicted in the PRISMA flow diagram. Initially, 57 studies were retrieved from database searching, and another 20 records were obtained from other sources, leading to a total of 77 studies. After the removal of redundant articles, 40 unique studies remained. The exclusion of 16 studies that were not found in Google Scholar and Scopus, which are essential databases for this study, was the result of the screening for relevance of these records. Subsequently, the

eligibility of the remaining 24 documents was evaluated in full-text form. Seven of these full-text articles were excluded from the study because they did not provide reported correlation values, which are essential for the analysis. The EGDI is frequently employed to evaluate the overall advancement of e-government services within a country. It includes sub-indices such as the Online Service Index, Telecommunications Infrastructure Index, and Human Capital Index. The CPI is a widely employed tool for evaluating perceived levels of public sector corruption in different countries. It is often employed in conjunction with e-government indices to analyze the relationship between e-government and corruption.

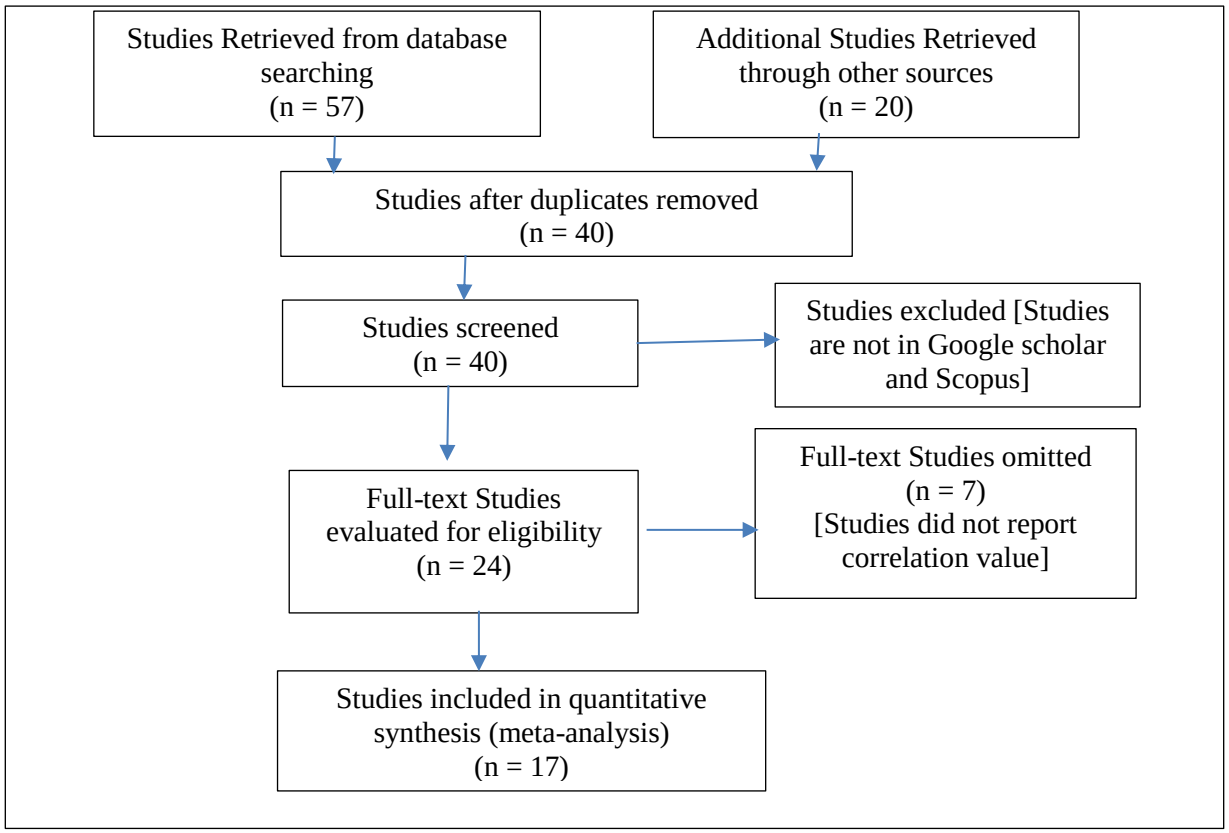

Figure 1. Meta-Analysis Procedure

3. Result and Discussions

3.1. Result

The mean effect size must be determined by converting the estimates into a uniform measure, as each effect is determined from distinct samples. In order to generate the mean effect size, Fisher's z scale is implemented. The horizontal line represents the 95% confidence interval (CI), while each black square on the left side of the forest plot represents the point that indicates of the effect size for each of the 16 studies. The forest plot of the meta-analysis indicates a substantial negative correlation between corruption and digitalization, with a total effect size of -0.93 and a confidence interval that spans from -1.18 to -0.68 as evidenced by the Random Effects Model (RE Model) located at the base of the table.

The random effects model's overall combined effect size of -0.93 suggests the absence of any overlap between the confidence interval and zero, as well as the presence of a substantial negative effect. Despite the fact that Study 14's discovery is an anomaly in comparison to the generally detrimental effects observed in other studies, the confidence interval's exceeding zero indicates that the study's conclusion is not statistically significant. The negative Fisher's Z-scores indicate a significant negative correlation between corruption and digitalization. The confidence intervals for selected studies are quite broad, which implies a higher degree of uncertainty regarding the true magnitude of the effect.

This suggests that further research may be necessary to confirm the findings of these investigations.

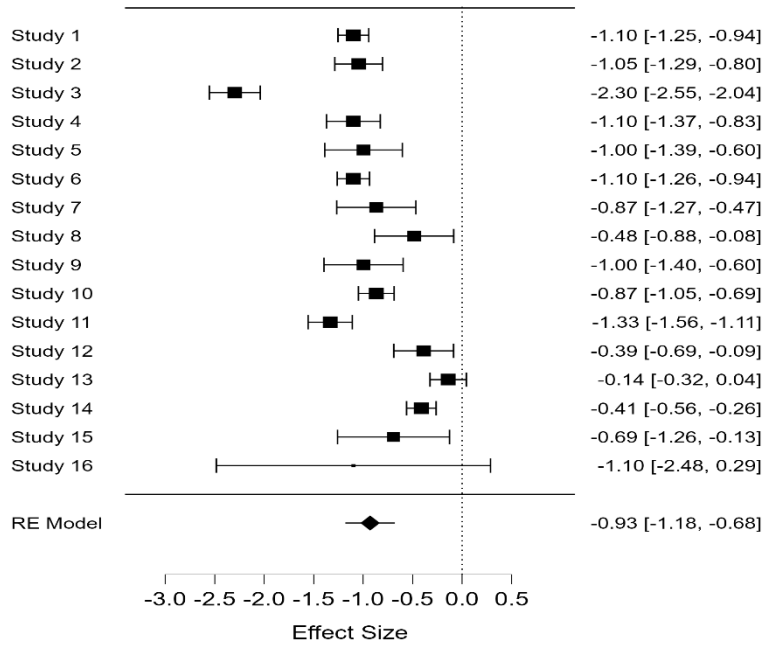

Figure 2.

Table 1. Fixed and Random Effects

	Q	df	p
Omnibus test of Model Coefficients	53.696	1	< .001
Residual Heterogeneity	266.053	15	< .001

Note. *p* -values are approximate.
Note. Maximum Likelihood method is used.

Table 2. Coefficients

	Estimate	Standard Error	z	p
Intercept	-0.929	0.127	-7.328	< .001

Note. Wald test.

Table 3. Residual Heterogeneity Estimates

	Estimate
τ^2	0.223
τ	0.473
I^2 (%)	93.722
H^2	15.930

The Q-test is implemented (Table 1) to assess the heterogeneity of effect sizes in order to determine whether a fixed-effects or random-effects model is more appropriate for meta-analysis. It is evident from the Q-test that a null hypothesis may be rejected ($Q = 53.696$; $p < 0.001$). The model does not account for the significant variability that the Test of Residual Heterogeneity indicates, as evidenced by a Q-value of 266.053 and a p-value of <.001. The majority of the heterogeneity in the effects that were detected among studies is due to varying true effects, rather than sampling error, as demonstrated by the I^2 value of 93.72% (Table 3). The random-effects model is preferred because it provides a lower probability estimate of the effect size than the fixed-effects model, as evidenced by the latter's significant amount of heterogeneity.

The presence of significant heterogeneity is suggested by $H^2 = 15.930$ and $\tau^2 = 0.223$, which demonstrate the variance

among the random effects. In both the residual heterogeneity tests and the model coefficients (Table 2), the significant p-values confirm the model's accuracy and the existence of inexplicable variability.

3.2. Discussion

In recent years, e-government is being recognized as a very efficient tool for improving transparency and addressing corruption in developing nations, as evidenced by a growing body of research. (Choi, 2014;) E-government involves using digital tools to manage public administration, which can make government operations more transparent, accountable, and efficient, thereby reducing opportunities for corruption (Linhartova, 2017). Studies have shown that e-government initiatives in countries like Ghana are negatively correlated with corruption, primarily due to increased transparency, although factors like education, gender, and age do not significantly affect this relationship.

Research indicates a strong positive relationship between the development of the digital economy and economic development in countries like China, Japan, South Korea, Brunei, and Cambodia, suggesting that digital advancements can foster growth (Li & Gospodarik, 2021). Increasingly, digital technologies such as artificial intelligence (AI) and large-scale data analysis are being employed to enhance global efforts in preventing corruption worldwide by identifying anomalies and minimizing human intervention in decision-making processes (Bota-Avram, 2023). In ECOWAS countries, a 1% rise in the number of Internet users results in a 0.05% to 0.06% improvement in corruption control, highlighting the role of Internet adoption in reducing corruption (Tsouli, 2023).

The efficacy of e-government in reducing corruption can vary based on economic indicators such as GDP per capita and economic freedom, with more developed economies seeing greater benefits from these initiatives (Rahman, 2022). Cultural factors like individualism, aversion to uncertainty, outlook on the future, and participating versus restraint also play crucial roles in how digitalization and technology impact corruption levels, suggesting that cultural and economic characteristics must be considered when implementing anti-corruption strategies (Surovičová et al., 2022a).

Despite the potential benefits, the relationship between digital transformation and corruption is complex and non-linear, with some studies indicating that the benefits of digitalization may vary at different stages of development (Poufinas et al., 2023). In South Asian countries, incomplete digitalization limits the potential benefits of e-governance, showing that the level of digitalization and political stability are critical factors in determining the usefulness of e-government in controlling exploitation (Alam et al., 2023). Additionally, while digital technologies can enhance anti-corruption efforts, the success of these technologies depends on the institutional readiness of authorities, overcoming digital inequality, and the development of information competence (Bhandari, 2024).

Overall, e-government and digital technologies have significant potential to reduce corruption by enhancing transparency, accountability, and efficiency in public administration. The findings from these studies collectively suggest that the digital economy plays a pivotal role in reducing corruption perceptions by fostering a more transparent and accountable governance framework. However, it is crucial to acknowledge the non-linear and context-specific nature of this relationship, as emphasized by Zhang et al. (2020). Specifically, they discovered an inverted U-shaped association between the growth of the digital economy and emission levels, suggesting that the advantages of digitalization may vary depending on the stage of development. Additionally, it is indicated that better governance quality is linked to reduced perceptions of bureaucratic corruption, further reinforcing the importance of robust institutional frameworks in combating corruption (Seiam & Salman, 2024). The success of these technologies, however, depends on the institutional willingness of authorities, overcoming digital inequality, and the development of information competence (Komissarova & Latkov, 2023).

4. Conclusions

In conclusion, this meta-analysis has shown that digital transformation has the potential to significantly reduce government corruption by promoting transparency, accountability, and ethical behavior through the integration of technology and governance. Through a thorough literature review and analysis of case studies, it is evident that countries that have implemented digital tools and systems have seen a decrease in corrupt practices (Zaoui & Souissi, 2020). However, challenges and limitations such as lack of infrastructure, technological readiness and digital literacy should be addressed to fully leverage the benefits of digital transformation (Rey et al., 2024). While it can enhance transparency and accountability to some extent, corruption is a deeply rooted issue that often involves human behavior and motivations that technology may not be able to fully address (Xiao et al., 2022). Simply digitizing processes and data may not necessarily eliminate corrupt practices, as individuals can still find ways to manipulate digital systems for personal gain. Moreover, the implementation of advanced technologies like data analytics and artificial intelligence may

face challenges such as data privacy concerns, algorithmic biases, and the potential for misuse by those in power (Merhi, 2022). In order to guarantee that digital transformations function as enablers rather than vulnerabilities in the battle against corruption, it is essential to achieve a harmonious equilibrium between ethical governance practices and technological innovation (Manita et al., 2023). To effectively combat government corruption, policy recommendations such as investing in digital infrastructure and promoting digital literacy among stakeholders should be considered.

This meta-analysis presents strong evidence that digital transformation can be an effective tool in mitigating government corruption. Through the incorporation of technology into many areas of governance, digital transformation has the potential to improve transparency, accountability, and efficiency, consequently reducing the likelihood of corrupt activities. The primary contributions of this work are such as, measuring the inverse relationship between digitalization and corruption: The meta-analysis demonstrates a significant impact size of -0.93, demonstrating a strong correlation between increased levels of digital transformation and decreased levels of corruption. Emphasizing the intricate and situation-dependent character of the relationship: The study highlights that the influence of digitalization on corruption might differ based on cultural, economic, and institutional aspects, yet the overall impact is substantial.

Variables such as economic development, political stability, and technology maturity can impact the efficacy of digital transformation in addressing corruption. Recognizing obstacles and constraints: The study acknowledges that the mere act of digitizing procedures may not completely eradicate corrupt practices, since individuals might still discover methods to exploit digital systems. In addition, the adoption of cutting-edge technology like as data analytics and artificial intelligence may encounter obstacles with data privacy, algorithmic biases, and potential abuse by individuals in positions of authority. Offering policy suggestions: To maximize the advantages of digital transformation in combating corruption, the report recommends allocating resources towards digital infrastructure, encouraging stakeholders to develop digital literacy, and cultivating ethical governance practices. Attaining equilibrium between technological advancement and ethical oversight is essential for the effective utilization of digital transformation as a catalyst in combating corruption. To summarize, this meta-analysis highlights the considerable capacity of digital transformation to address government corruption. The report presents a thorough analysis of existing research findings, which serves as a foundation for future investigations and policy measures. These efforts aim to utilize digital resources in order to establish a governance structure that is more open, responsible, and ethical.

References

Arayankalam, J., Khan, A., & Krishnan, S. (2021). How to deal with corruption? Examining the roles of e-government maturity, government administrative effectiveness, and virtual social networks diffusion. *International Journal of Information Management*, *58*, 102203. https://doi.org/10.1016/j.ijinfomgt.2020.102203

Avotra, A. A. R. N., Chengang, Y., Sandra Marcelline, T. R., Asad, A., & Yingfei, Y. (2021). Examining the Impact of E-Government on Corporate Social Responsibility Performance: The Mediating Effect of Mandatory Corporate Social Responsibility Policy, Corruption, and Information and Communication Technologies Development During the COVID era. *Frontiers in Psychology*, *12*, 737100.

Alam, T., Aftab, M., Abbas, Z., Ugli, K. M. M., & Bokhari, S. a. A. (2023). Impact of E-Government Initiatives to Combat Corruption Mediating by Behavioral Intention: A Quantitative Analysis from Emerging Economies. *Sustainability*, *15*(3), 2694. https://doi.org/10.3390/su15032694

Bhandari, D. R. (2024). COVID-19 and role of data Science for Anti-Corruption. *Deleted Journal*, *1*(1), 16–24. https://doi.org/10.3126/ajois.v1i1.62937

Bota-Avram, C. (2023). Exploring the impact of digitalization and technology on corruption: evidence from cross-country panel data within a cultural-economic framework. *Kybernetes*. https://doi.org/10.1108/k-03-2023-0522

Castro, C., & Lopes, I. C. (2022). E-Government as a Tool in Controlling Corruption. *International Journal of Public Administration*, *46*(16), 1137–1150. https://doi.org/10.1080/01900692.2022.2076695

De Haes, S., Caluwe, L., Huygh, T., & Joshi, A. (2020). Governing digital transformation. In *Management for professionals*. https://doi.org/10.1007/978-3-030-30267-2

Ha, Le, Thanh. (2022). Accelerating Digital Transformation Implementation in the Fight Against Corruption?: Evidence From European Countries Before and During the COVID-19 Pandemic. *International Journal of Electronic Government Research*, doi: 10.4018/ijegr.298181https://doi.org/10.3389/fpsyg.2021.737100

Hartani, N. H., Cao, V. Q., & Nguyen, A. Q. (2020). REDUCING CORRUPTION THROUGH E-GOVERNMENT ADOPTION, INFORMATION AND COMMUNICATION TECHNOLOGY IN ASEAN COUNTRIES. *Journal of Security and Sustainability Issues*, *9*(M). https://doi.org/10.9770/jssi.2020.9.M(16)

Jalloh, T., & Jackson, E. A. (2023). The Moderating Effect of Digitalization on the Relationship between Corruption and Domestic Resource Mobilization: Evidence from Developing Countries. *Theoretical and Practical Research in Economic Fields*, *14*(2), 423. https://doi.org/10.14505/tpref.v14.2(28).20

Karinda, K., Agustang, A., & Usman, A. (2023). Digital Government for Anti-Corruption: A Systematic Literature Review. *International Journal of Science and Society*, *5*(1), 199–219. https://doi.org/10.54783/ijsoc.v5i1.649

Kalesnikaite, V., Neshkova, M. I., & Ganapati, S. (2023). Parsing the impact of E-government on bureaucratic corruption. *Governance*, *36*(3), 827–842. https://doi.org/10.1111/gove.12707

Komissarova, E., & Latkov, A. (2023). Digitalization of the national economy as an objective basis for improving the effectiveness of anti-corruption policy. *Digital Models and Solutions*, *2*(4), 40–51. https://doi.org/10.29141/2949-477x-2023-2-4-4

Кубатко, О., Харченко, Д., Півень, В., & Литвиненко, Д. (2023). THE ROLE OF ECONOMIC AND DIGITAL FACTORS IN COMBATING CORRUPTION. *Ekonomìka Ta Suspìl'stvo*, *48*. https://doi.org/10.32782/2524-0072/2023-48-19

Li, R., & Gospodarik, C. G. (2021). The impact of digital economy on economic growth based on Pearson Correlation Test analysis. In *Lecture notes on data engineering and communications technologies* (pp. 19–27). https://doi.org/10.1007/978-981-16-5854-9_3

Li, S., Wei, W., & Ma, M. (2021). How Does E-Government Affect Corruption? Provincial Panel Evidence From China. *IEEE Access*, *9*, 94879–94888. https://doi.org/10.1109/ACCESS.2021.3093981

Manita, S. K., Khaghaany, H. H., & Mensah, I. B. (2023). Digital Technologies and Transformation of governance Processes: A study of Syddanmark Regional Council in Denmark. Journal of Public Policy & Governance, 7(3), 13–22. https://doi.org/10.53819/81018102t5224

Michael, Christopher, Moltz., Andrew, L., Morelock., Christopher, A., Simon. (2023). Perceptions of Civil Servant Corruption: A Cross-Country Analysis. *Public Integrity*, doi: 10.1080/10999922.2023.2262208

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for Systematic Reviews and Meta-Analyses: the PRISMA statement. *PLoS Medicine*, *6*(7), e1000097. https://doi.org/10.1371/journal.pmed.1000097

Merhi, M. I. (2022). The Effect of Digital Transformation on Corruption: A Global Analysis. *Pacific Asia Journal of the Association for Information Systems*, *14*, 42–58. https://doi.org/10.17705/1pais.14204

Poufinas, T., Laskareli, A., & Agiropoulos, C. (2023). Decreasing Corruption and Increasing Competitiveness through E-Government. *Theoretical Economics Letters*, *13*(02), 310–331. https://doi.org/10.4236/tel.2023.132020

Pham, T. N. (2020). The Role of E-Government In Fighting Against The Corruption: A Case Study Of Vietnam. *Quantitative Economics and Management Studies*, *1*(5), 335–345. https://doi.org/10.35877/454RI.qems198

Poufinas, T., Laskareli, A., & Agiropoulos, C. (2023). Decreasing Corruption and Increasing Competitiveness through E-Government. *Theoretical Economics Letters*, *13*(02), 310–331. https://doi.org/10.4236/tel.2023.132020

Purnamasari, P., Amran, N. a. B., Nu'man, A. H., Frendika, R., Nor, M. N. M., & Ismail, M. S. (2023). The relationship between the components of E-Government services towards corruption in Malaysia and Indonesia. *KnE Social Sciences*. https://doi.org/10.18502/kss.v8i18.14242

Rahman, A. R. a. A. (2022). Revisiting the Relationship between E-Government and Corruption: An Empirical Investigation. *Athens Journal of Social Sciences*, *10*(1), 79–94. https://doi.org/10.30958/ajss.10-1-5

Rey, W. P., Villaluz, A. C., & Rey, K. W. J. D. (2024). The Impact of Digital Transformation in the Philippines: A Study of the Key Drivers and Barriers. In *ICCMB '24: Proceedings of the 2024 7th International Conference on Computers in Management and Business*. https://doi.org/10.1145/3647782.3647799

Raul, Gouvea., Shih-hua, Li., Manuel, (MJR), Montoya. (2022). Does transitioning to a digital economy imply lower levels of corruption? *Thunderbird International Business Review*, doi: 10.1002/tie.22265

Rob, Kim, Marjerison., Andrea, Gatto. (2024). Public sector digitalization, corruption, and sustainability in the developing world: A scoping review. *Sustainable Development*, doi: 10.1002/sd.2900

Sadik-Zada, E. R., Gatto, A., & Niftiyev, I. (2022). E-government and petty corruption in public sector service delivery. *Technology Analysis & Strategic Management*, 1–17. https://doi.org/10.1080/09537325.2022.2067037

Seiam, D. A., & Salman, D. (2024). Examining the global influence of e-governance on corruption: a panel data analysis. *Future Business Journal*, *10*(1). https://doi.org/10.1186/s43093-024-00319-3

Sokolov, M. S. (2023). PREVENTION OF CORRUPTION THROUGH DIGITAL AND INFORMATION TECHNOLOGIES. *LEGAL ORDER. History Theory Practice*, *39*(4), 184–192. https://doi.org/10.47475/2311-696x-2023-39-4-184-192

Stanley, T. (2001). Wheat From Chaff: Meta-Analysis as Quantitative Literature Review. *Journal of Economic Perspectives.* 15. 131-150. https://doi.org/10.1257/jep.15.3.131.

Surovičová, A., Bozhenko, V., Boyko, A., & Petrenko, K. (2022). ASSESSMENT OF TRANSMISSION EFFECTS BETWEEN "CORRUPTION-DIGITIZATION-ECONOMIC GROWTH." *Financial and Credit Activity Problems of Theory and Practice*, *3*(44), 132–140. https://doi.org/10.55643/fcaptp.3.44.2022.3797

Suardi, I. (2021). E-Government, Governance and Corruption in Asian countries. *Emerging Markets : Business and Management Studies Journal*, *8*(2), 137–150. https://doi.org/10.33555/embm.v8i2.180

Thomas, Poufinas., Charalampos, Agiropoulos. (2023). Decreasing Corruption and Increasing Competitiveness through E-Government. *Theoretical Economics Letters*, doi: 10.4236/tel.2023.132020

Tsouli, D. (2023). Internet Adoption, Digital Divide, and Corruption: Evidence from ECOWAS Countries. *Scientific Annals of Economics and Business*, *70*(2), 185–202. https://doi.org/10.47743/saeb-2023-0023

Tubanambazi, M. F., & Ruvuna, E. (2021). MODELING THE IMPACTS OF E-GOVERNMENT SERVICES ON CORRUPTION REDUCTION IN RWANDA: A CASE EVIDENCE FROM NYAMASHEKE DISTRICT, RWANDA. *European Journal of Social Sciences Studies*, *6*(2). https://doi.org/10.46827/ejsss.v6i2.1036

Victoria, Bozhenko., Kirill, Petrenko. (2022). Best practices in the use of digital technologies and artificial intelligence to fight corruption. Вісник Сумського державного університету, doi: 10.21272/1817-9215.2022.2-6

Xiao, J., Han, L., & Zhang, H. (2022). Exploring Driving Factors of Digital Transformation among Local Governments: Foundations for Smart City Construction in China. *Sustainability*, *14*(22), 14980. https://doi.org/10.3390/su142214980

Z.X., Zhang., Hua, Zhong., Jing, Li., Shengzhen, Ding. (2024). Digital Economy and Carbon Emission Intensity：A Cross-country Study. doi: 10.21203/rs.3.rs-3922657/v1

Zhao, X., & Xu, H. D. (2015). E-Government and Corruption: A Longitudinal Analysis of Countries. *International Journal of Public Administration*, *38*(6), 410–421. https://doi.org/10.1080/01900692.2014.942736

Zaoui, F., & Souissi, N. (2020). Roadmap for digital transformation: A literature review. *Procedia Computer Science*, 175, 621-628.