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The Role of E-Governance on Corruption in East Asia & Pacific: A Panel Data Analysis

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ABSTRACT

This study seeks to assess the influence of e-governance on corruption and the various aspects of governance quality within the East Asia and Pacific region. This research employs the CS-ARDL model to evaluate the short- and long-term impacts of e-governance, political stability, regulatory quality, Voice and accountability, and the legal environment on governance indicators, particularly corruption. The results confirm that e-governance influences improvements in transparency and accountability, thereby highlighting the issue of corruption. The primary determinants of governance effectiveness encompass political stability, regulatory quality, and Voice and accountability. Political stability is observed to facilitate reforms and not hinder innovation. Regularity, quality, Voice, and accountability foster a governance environment that mitigates corrupt practices. Economic growth and population size also affect the infection rate, though their impact is less significant than that of poverty rates. It is recommended that policymakers enhance e-governance structures, establish robust legal and regulatory frameworks, and augment citizen voice and accountability. Additional research may explore the variations in e-governance effectiveness in addressing corruption across different sectors, the impact of e-governance on Governance in various countries, and the potential applications of advanced technologies like blockchain. The evidence provides practical guidance for policymakers in the World Bank's East Asia and Pacific region by delineating methods through which e-governance and institutional change can enhance Governance and mitigate corruption.

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1. Introduction

Corruption is a common vice that affects economic growth, Governance and the public's confidence in institutions worldwide. The situation presents great challenges to governments, particularly those in East Asia and the Pacific, given that they come with contrasting governance structures and levels of development. Corruption not only skews the distribution of public resources, but it also undermines the credibility of agencies belonging to the government. As the foregoing reveals, policymakers have shifted their attention to e-governance to address the effects of this vice. E-governance, as the provision of government services with the help of digital media and management of public resources, can potentially improve the quality of Governance. One of e-governance's strengths is that it reduces the possibility of corruption because many procedures require less face-to-face contact with an officer or bureaucrat.Literature and empirical evidence relating to the effectiveness of e-governance in addressing corruption have received much interest in academics and policy-making. Literature reviews also note that it has the possibility of reducing corrupt practices because of an increase in government transparency. For example, Seiam and Salman (2024) examined how e-governance influences corruption among

110 nations from 2003 to 2021 and showed a negative correlation between them. In their works, they stress how crucial it has become to provide appropriate online public service, promote digital literacy, and support a strong telecommunication network to fight corruption. Also, Park and Kim (2019) focused on 214 countries, where they prove that e-governance decreases corruption, particularly when the legal environment is also effectively developed. They stress the mediating impact of the rule of law on the relevance of e-governance for anti-corruption.

However, some studies mentioned above have tentatively addressed the research questions with some positive assumptions that e-governance reduces corruption, which seems contingent on socioeconomic and governance factors. This creates a peculiar relationship in the region due to the diversities in governance capacity, economic development and digital infrastructure in East Asia and the Pacific. Often cited models for e-governance – Singapore and South Korea – are amongst the least corrupt nations on the planet. For instance, South Korea has successfully eradicated bureaucratic corruption through cross-department interconnected e-government services such as the 'Open Government Partnership'. On the other hand, countries such as Myanmar and Papua New Guinea, with relatively limited and weak digital foundations and governance capability in the region, are still grappling with corruption issues. Such a contrast illustrates the key concept of the work, that is, the role of context in evaluating the efficiency of e-governance as an anti-corruption measure. This paper aims to establish the effect of e-governance on corruption in East Asia and the Pacific region through panel data analysis. COC, VAA, PS, ROL, RQ, GE, GDP, and POP are the underlying Governance and socioeconomic indices used in the analysis. These variables can be used to analyse the complex correlation between e-governance and corruption. The index of Control of Corruption (COC) is the primary dependent variable and reflects the degree to which the public power is rorted for the private benefit. Dummy variables include Voice and Accountability (VAA), which describes Governance within a country and Rule of Law (ROL), which also relates to Governance in a country. At the same time, the growth of Gross Domestic Product (GDP) and Population Density (POP) provide the necessary socioeconomic background to the study.

The literature has captured how e-governance fights corruption well. According to Bertot, Jaeger and Grimes (2010), transparency is promoted by e-governance in the sense that the extent of the openness of the government and, consequently, the level of discretion that may be vested in the government officers is significantly reduced. In their study, ICTs were described as helping create an environment in which accountability is easily promoted. Also, Elbahnasawy (2014) also established that internet adoption and e-governance remove corruption by enhancing outside supervision and decreasing corruption. These findings support Krishnan, Teo and Lim (2013), who established that the maturity of digital Governance is inversely proportional to corruption levels and underlines the relationship between e-governance maturity and governance reforms. The lack of adequate implementation of e-governance raises different issues; although e-governance has proved its effectiveness in fighting corruption, effectiveness is not equal in different regions. These initiatives include attributes such as political risk, regulatory capacity, and government efficiency, which may shape these initiatives' results. Andersen (2009) observed that an efficient institutional environment guarantees the success of e-governance initiatives. This shows that in nations with a poor system of Governance, e-governance may not be adequate in the war on corruption. Adam (2020) also pointed out that ICT development and institutional quality can moderate the e-governance relationship in Africa because e-governance is the most effective where a country possesses a high level of ICT development and institutional quality. In East Asia and Pacific countries, these contextual factors are highly sensitive. It was found that the higher the political stability index and the quality of regulation in a country, the more effectively it is possible to use e-governance tools for anti-corruption activities. For instance, the Philippines has developed positive measures, including the Anti–Red Tape Act and Electronic Transparency Platform, that will help simplify government procedures with high levels of layer accountability. On the other hand, the Cambodian and Lao case studies demonstrate that unstable governance environments threaten e-governance reforms. This divergence thus calls for country-specific intervention in developing e-governance systems.

Another layer of socioeconomic factors affecting the connection between e-governance and corruption in East Asia and the Pacific region has been identified. The two phenomena, such as economic growth and urbanization, that have taken place in most countries, especially developing countries such as China and Indonesia are seen as a double-edged sword. On the

other hand, these trends have resulted in tendencies towards investments in the communication infrastructure and the development of e-governance. They have also opened new opportunities for corruption, especially in construction and public procurement. It is, therefore, important to understand how e-governance influences or influences these other broader socioeconomic factors within the region to develop the right strategies to fight corruption. This research aims to establish this literature review by investigating the nature and extent of e-governance and corruption in East Asia and the Pacific region. However, compared with the global or cross-regional studies, there is a lack of sufficient regional-specific studies that focus on these issues that individual regions are confronting or may confront. As a result, this research can be useful for policymakers and practitioners interested in increasing the overall governance integrity in the e-governance context by identifying the key roles of e-governance and governance quality alongside socioeconomic factors. Therefore, it can be concluded that e-governance has immense scope for curbing corruption in East Asia and the Pacific. However, it depends on important factors, such as governance capacity, political stability, and the country's socioeconomic environment. Therefore, through a detailed panel data analysis, this study seeks to extend the understanding of these dynamics to provide valuable inputs into the development of specific e-governance intervention strategies. Therefore, the conclusion of this study has significant implications for increasing transparency and accountability and fostering sustainable development of the region.

2. Literature review

The present literature review on the impact of e-governance on corruption has made significant progress compared to the traditional study that set the groundwork for later empirical studies. Bertot, Jaeger and Grimes (2010) emphasized the potential that may come from the use of information and communication technologies (ICTs) in improving the openness of the government and, as a result, removing some of the chances of corruption because government operations become more visible. They brought attention to how technology, in particular social media and other related platforms, could be utilized to improve government accountability and involve the public. E-governance and the reduction of corruption were the subjects of one of the first empirical studies by Shim and Eom (2008), which established a positive and causal relationship. According to the findings of their investigation, establishing suitable governance structures was of utmost significance in getting the most possible benefits from digital governance. Andersen (2009) provided additional development of this concept by describing how effectively utilising information and communication technology (ICT) in teaching and learning environments integrated into efficient institutional settings might dramatically drop corruption indices. This was supported by Mistry and Jalal (2012), who noted that while e-government programs offered the potential to reduce instances of corruption, this largely depended on the level of political stability and regulatory quality in the country in question: in other words, technology could not, in the context of e-government, provide the answer on its own. These recurring themes were also noticed in the following research conducted by Elbahnasawy (2014), who demonstrated that the prevalence of rent-seeking actions decreases in proportion to the amount of attention that is paid to activities that are caused by the usage of the internet.

Beginning in the middle of the 2010s, this research was further developed. One example of such an analysis is a study conducted in the middle of 2013 by Krishnan, Teo and Lim (2013). In this study, they investigated the relationship between the maturity of e-governance and the quality of Governance. They found that it is essential to have long-term investments in digital government capabilities to maintain the anti-corruption impacts. Some works, such as Heeks and Stanforth (2015), pointed out that although e-governance was widely accepted, insufficient attention had been paid to the specifics of local institutional environments. This was particularly true in the developing world, where technological governance disconnections could be detrimental rather than beneficial (Ahmed, Azhar, & Mohammad, 2024). Over the following decade, research conducted by Aladwani (2016) was conducted to investigate regions such as the Middle East to understand how e-governance could bring about the necessary change in public attitude towards governance and counteract corruption. Similarly, Mendoza, Lim and Lopez (2018) highlighted the efficacy of electronic procurement systems in the Philippines. In this country, the procurement process in government agencies and ministries was efficiently automated, and the amount of corruption that occurred was significantly reduced due to the restriction of human discretionary powers.Park and Kim (2019) found a relationship between e-governance and corruption. Other scholars subsequently established this association. Additionally, Smith, Ackah-Baidoo and van Dijk (2020) have provided further elaboration on this

concept in African contexts, demonstrating how e-procurement significantly minimizes instances of corruption. Cho and Choi (2021); Wang (2022), investigated further how e-governance can combat both petty and grand corruption. However, the effectiveness of this ability varies depending on the context of the country's political and economic environment (Bhatti & Khan, 2023). The findings that Jones and Ko (2023) present are more recent and pertain to how digital government services have altered the expectations of citizens and their assessments of the extent of corruption inside the government. Seiam and Salman (2024); Suardi (2021) present the findings of the most recent empirical data from Asia. These findings indicate that the growth and development of e-governance are increasingly associated with decreasing perceptions of corruption. This highlights the significance of continuously developing and modernizing e-governance solutions to meet the requirements of emerging instances of Governance.

3. Data and Methodology

This study utilizes panel data from 2003 to 2023 for a sample of 27 countries in the East Asia and Pacific region: This involves Australia, Brunei Darussalam, Cambodia, China, Fiji, Indonesia, Japan, Kiribati, Korea, Rep., Lao PDR, Malaysia, Marshall Islands, Micronesia, Fed. Sts., Mongolia, Myanmar, Nauru, New Zealand, Palau, Papua New Guinea, Philippines, Samoa, Singapore, Solomon Islands, Thailand, Timor Leste, Tonga, Tuvalu and Vanuatu. The variables used herein are extracted from the governance indicators, macroeconomic factors, and demographic data that are thought to affect the region's corruption.

Control of corruption = f(E-government development index, Voice, and accountability, Political stability, the rule of law, Regulatory quality, Government effectiveness, GDP per Capita, Population Density) (1)

Control of corruption is the dependent variable and the independent variables include the e-government development index, Voice and accountability, Political stability, the rule of law, Regulatory quality, Government effectiveness, GDP per Capita, and Population Density. Variables description is given in Table 1.

Tabe 1: Variables description

Variables	Description	Source
COC	Control of Corruption	WGI
E_GOV	E-Government Index	UN e-government survey
VAA	Voice and Accountability	WGI
PS	Political Stability and Absence of Violence/Terrorism	WGI
ROL	Rule of Law	WGI
RQ	Regulatory Quality	WGI
GE	Government Effectiveness	WGI
GDP	GDP growth	WDI
POP	Population density	WDI

3.1. Unit Root Tests

However, before we estimate the CS-ARDL model, the variables' order of integration or long memory properties needs to be checked. For this, we use first-generation unit root tests that have been advanced by Maddala and Wu (2002) in their empirical analysis. First-generation unit root test (Maddala & Wu, 2002): This test applies at the series level and involves cross-sectional independence. The test used in the study is the Maddala and Wu (2002) panel unit root test that enables the inclusion of cross-sectionally dependent data in the panel. The null hypothesis is that all the individual series have a unit root:

$$H_0 = \alpha_i = o \quad (2)$$

The test statistic for this procedure is computed as:

$$\hat{\lambda} = \frac{1}{N}\sum_{i=1}^{N} \hat{\lambda}_i \quad (3)$$

Where $\hat{\lambda}$ and $\hat{\lambda}_i$ represents each cross-section's individual unit root test statistics. Second-generation unit root test Pesaran (2007): This test is more robust and corrects for cross-sectional dependence on the countries in the panel. Pesaran (2007) proposes a cross-sectional augmented

IPS (CIPS) test for unit roots, which extends the conventional unit root test to account for interactions between cross-sections:

$$H_0 = \rho_i = o \tag{4}$$

Where unit root exits for the entire panel with cross sectional dependence.

The CIPS statistic is calculated as follows:

$$CIPS = \frac{1}{N}\sum_{i=1}^{N} \widehat{\rho_i} \tag{5}$$

Where ρ is the augmented Dickey-Fuller for each cross-section estimated coefficient, the second generation test enables estimation of the test statistic that can correct cross-sectional dependence and is suitable for the data in this study.

3.2. Cross-section dependence (CD) Test

Following the unit root tests, we engage the Cross-sectional dependence (CD) test, which tests for cross-sectional symptoms of dependence in the panel. Cross-sectional dependence is important because if such dependence exists, it would render standard panel estimators that assume independence across countries inappropriate. It is a popular approach for testing the cross-sectional dependence of panel data; hence, we employ the Pesaran (2004) CD test. The test statistic is computed as:

$$CD = \frac{T}{N}\sum_{i=1}^{N}\sum_{j=1}^{N} \hat{\epsilon}_{it}\hat{\epsilon}_{jt} \tag{6}$$

Where $\hat{\epsilon}_{it}\hat{\epsilon}_{jt}$ are the residuals from the estimated model for countries iii and jjj, respectively. The null hypothesis of the CD test is:

H_0: *No corss sectional Dependence*

A significant CD test statistic implies that cross-sectional dependence is present, justifying the use of the CS-ARDL model in subsequent analysis. CS-ARDL is the model called Cross-Sectional Auto Regressive Distributed Lag model. After confirming the variables' stationarity and handling the cross-sectional dependence test, we use the Cross-sectional Autoregressive Distributed Lag robust model to check dynamic causality between governance quality indicators and corruption control. The CS-ARDL model enables estimation both in the short and long run, where one can obtain results affected by cross-sectional dependence. The CS-ARDL model, as proposed by Pesaran et al. (1999) and Chudik et al. (2011), is formulated as follows:

$$\Delta Y_{it} = \mu_i + \varphi_i(Y_{it-1} - \beta_i X_{it-1} - \phi_{1i}\bar{Y}_{t-1} - \phi_{2i}\bar{X}_{t-1}) + \sum_{j=1}^{p-1}\lambda_{ij}\,\Delta Y_{it-j} + \sum_{j=0}^{q-1}\varsigma_{ij}\,\Delta X_{it-j} + \eta_{1i}\overline{\Delta Y_t} + \eta_{2i}\overline{\Delta X_t} + \epsilon_{it} \tag{7}$$

Yit (COC) is the dependent variable, μ_i is the intercept, β_{it} is the slope coefficients of independent variables and lagged dependent variable. Xit (VAA, PS, ROL, RQ, GE, GDP, POP, E_GOV) is a vector of independent variables. Where φ_i, which is the error correction term (ECM), indicates an adjustment of short-run disequilibrium towards long-run equilibrium after an economic shock. $\bar{Y}_{t-1}$ and $\bar{X}_{t-1}$ provide a proxy for the unobserved factor in the long run, while $\overline{\Delta Y_t}$ and $\overline{\Delta X_t}$ provide a proxy for the unobserved factor in the short run in in equation 7. To determine the long-run cointegration and equilibrium among the dependent and independent variables, the CS-ARDL model is applied, whereas lagged terms are included to capture the short-run movement. Using the CS-ARDL model, this study can extend this exploration to analyze the effects of control of corruption on other governance indicators that exhibit both time and cross-sectional dependence. It estimates heterogeneity across the countries in the panel possible, beneficial for analyzing the sample of diverse East Asia and Pacific nations.

4. Results and Discussion

Summary statistics results are shown in table 2

Tabe 2: Summary Statistics

Variables	obs	means	std.	min	max
COC	588	0.081	0.946	-1.673	2.380
VAA	588	0.170	0.928	-2.233	1.688
PS	588	0.418	0.853	-2.196	1.599
ROL	588	0.211	0.902	-1.736	2.004
RQ	588	-0.084	0.963	-2.349	2.309
GE	588	0.062	0.959	-1.789	2.470
GDP	588	3.446	5.000	-22.185	31.726
POP	588	399.972	1342.848	1.595	7965.878
E_GOV	588	0.467	0.248	0.000	0.956

According to the Table 2, the study analysis of 28 countries in East Asia and the Pacific clearly shows the gaps between Governance, economy and population density in the region. Where governance indices are concerned, the average COC, VAA, PS, ROL, RQ GE and E_GOV all show moderate performance, with mean values near zero. Paradigm to this, the maximum of COC, which stands at 2.380, indicates that some countries have sound Governance, while the negative minimum of ROL indicates that some regions have governance challenges. The average GDP is 3.446 %, but below, you can see that it is distributed between -22.185%/ 31.726%, meaning that this area contains both – recessions and a highly active economy. POP also has a very low p-value; it implies that POP is different and has an average of 399.972 and a standard deviation of 1342.848, which reveals that the population from the study areas varies from less inhabited to more inhabited. In terms of overall mean, E_GOV has a moderate value of 0.467; these models, however, have a low standard deviation but significant variability that ranges between 0 and 0.956, demonstrated by the nations in these models the level of digital Governance that these nations developed. This information underscores elective variety in government structure, economic status, and demographic characteristics of the region.

Tabe 3: Correlation Matrix

Variables	COC	VAA	PS	ROL	RQ	GE	GDP	POP	E_GOV
COC	1								
VAA	0.546	1							
PS	0.620	0.613	1						
ROL	0.858	0.668	0.732	1					
RQ	0.820	0.306	0.340	0.750	1				
GE	0.845	0.286	0.381	0.782	0.932	1			
GDP	-0.207	-0.299	-0.278	-0.286	-0.130	-0.117	1		
POP	0.422	-0.035	0.209	0.338	0.421	0.443	0.041	1	
E_GOV	0.626	0.097	0.073	0.496	0.815	0.813	-0.014	0.301	1

Table 3 expressed the correlation of the variables and the resuutls shows the interdependency between governance, economic, and demographic factors in 28 East Asian and Pacific countries. Significant positive correlations exist among governance measures, including COC, ROL, RQ, and GE, suggesting that enhancements in one governance dimension are closely linked to progress in others (e.g., COC and ROL: 0.858, RQ and GE: 0.932). The results show a moderate positive relationship between VAA and COC ($r = 0.546$) and between VAA and PS ($r = 0.613$), proving that higher voice and accountability cause lower corruption and promote political stability. GDP has inverse relationships with many governance factors – COC (-0.207) and ROL (-0.286), whereby higher scores on the governance indicators are not invariably linked to greater economic growth in this sample. POP has a positive moderate correlation with COC and GE with correlation coefficients of 0.422 and 0.443, respectively; however, the correlation between POP and VAA is negative with a coefficient of -0.035. E_GOV has a fairly strong positive relationship with other governance indices like RQ = 0.815 ($p < 0.05$) and GE = 0.813 ($p < 0.05$), further proving the role of e-governance in augmenting institutional performance. The matrix reveals the interdependence of the governance factors and shows complex relationships between Governance, economic development and demographic challenges in the region.

Tabe 4: Unit Root Results

	First Generation (Maddala and Wu (1999))		Second Generation (Pesaran (2007))	
Variables	**Level**	**First Diff.**	**Level**	**First Diff.**
COC	0.000		0.012	
GDPG	0.000		0.000	
GE	0.113	0.000	0.000	0.000
POP	0.806		0.000	
PS	0.000		0.001	
ROL	0.001		0.000	
RQ	0.695	0.000	0.014	0.000
VAA	0.000		0.000	
E_GOV	0.892	0.000	0.942	0.002

According to the results of Tabe 4, the unit root tests carried out using the First Generation (Maddala and Wu, 1999) and Second Generation (Pesaran, 2007) techniques are explained to identify the stationary nature of the variables. COC, GDPG, PS, ROL, and VAA are stationary at the Maddala and Wu test levels with the p-value < 0.05, with no need for differencing. Nonetheless, it was discovered that GE, POP and RQ are non-stationary at levels (p-value > 0.05) but stationary when first-differenced, implying they are I(1). In the same regard, by the Pesaran test, GDPG, GE, PS, ROL and VAA are I (0), indicating that they are stationary at levels while COC, POP and RQ are I (1) but become I (0) after first difference. Of particular importance, COC is stationary according to both Maddala and Wu but non-stationary according to Pesaran; therefore, it should perhaps be best treated as non-stationary for caution. In general, these findings show that except for the variables tested above and as indicated in previous sections, most of the variables can be used directly in regression models, but variables such as POP, RQ, and GE should be differenced for accurate and efficient analysis. Therefore, considering the mixed evidence observed above, the panel data analysis should recommend using different methods of testing unit roots.

Tabe 5: Cross-Sectional Dependency Test

Variables	CD-test	p-value
COC	12.81	0.000
VAA	6.4	0.000
PS	3.13	0.002
ROL	7.27	0.000
RQ	18.89	0.000
GE	13.36	0.000
GDP	21.94	0.000
POP	40.37	0.000
E_GOV	65.720	0.000

The Cross-Sectional Dependency (CD) test results raise the issue of cross-sectional dependence of all variables in the dataset since most of the test statistics and p-values are 0.000. This means that the observations of the Control of Corruption (COC), Voice and Accountability (VAA), Political Stability and Absence of Violence (PS), Rule of Law (ROL), Regulatory Quality (RQ), Government Effectiveness (GE), GDP per capita real growth (GDP), and Population density (POP) are not cross Sectionally stationary across the 28 countries in East Asia and Pacific. These variables are, therefore, probably endogenous to the regional system and could be determined by regional factors such as trade, economic policies, governance structures or external shocks. Our robustness checks for cross-sectional dependence show that any analysis using standard panel data methods that do not allow for such correlation across cross-sections will likely yield erroneous results. Thus, using approaches that can eliminate this dependence, such as Common Correlated Effects (CCE) estimators or models with Driscoll-Kraay standard errors, is appropriate. These results show that Governance is closely linked to the socioeconomic factors within the region.

Tabe 6: Short Run Results

Variables	Coef.	Std.	z	Prob.
Cons	-0.023	0.039	-0.600	0.551
L.D.	0.048	0.116	0.410	0.679
D.E_GOV	0.870	0.516	1.690	0.092
D.VAA	0.422	0.291	1.450	0.147

D.PS	-0.185	0.088	-2.100	0.036
D.ROL	0.239	0.125	1.910	0.056
D.RQ	0.211	0.117	1.800	0.073
D.GE	0.118	0.085	1.390	0.166
D.GDPG	0.006	0.005	1.190	0.234
D.POP	0.072	0.057	1.250	0.210
ECM	-0.952	0.116	-8.210	0.000

The results from the CS-ARDL model for the short-run show dynamism in the relationships of the variables. The political Stability and Absence of Violence/Terrorism (PS) variable is important and a preference for the coefficient's negativity because it indicates that instability reduces the dependent variable in the short run. ROL and RQ support the positive idea that strengthening the legal environment and improving the quality of regulations have a positive short-term effect on the result variable. The E-Government Index (E_GOV) benefits by focusing on digital governance and how it will help enhance outcomes. Other variables, such as VAA, GE, GDP growth, and POP, do not have any impact in the short run. The ECM coefficient is significantly negative and far from zero, proving that the adjustment process is strong and consistent. This means that markets are quickly brought back into equilibrium whenever there are shocks in the short run, onto which they gravitate in the long run. The ECM term's necessity proves the model's reliability and ability to identify the short-run dynamics and their relationship with long-run equilibrium.

Tabe 7: Long run Results

Variables	**Coef.**	**Std.**	**z**	**Prob.**
Cons	-0.026	0.042	-0.620	0.535
E-GOV	1.613	0.760	2.120	0.034
GDPG	0.012	0.006	1.850	0.064
GE	0.020	0.088	0.230	0.818
POP	0.197	0.114	1.740	0.083
PS	-0.292	0.159	-1.830	0.067
ROL	0.217	0.193	1.120	0.262
RQ	0.159	0.173	0.920	0.358
VAA	0.615	0.310	1.990	0.047

The research findings of the CS-ARDL supported the hypothesis that E-Government (E-GOV) positively impacts governance results. This indicates that through the implementation of e-government projects, Governance is strengthened by promoting more openness, encouraging the most effective delivery of services and minimizing chances of embezzlement. E-government increases citizens' ability to access services delivered by the government and increases transparency, accountability, and interaction between the government and the citizens. These conclusions can be attributed to Elbahnasawy (2014), who stresses that e-government results in increased governmental transparency because it eliminates bureaucratic bends, and Bertot, Jaeger and Grimes (2010), who outline this service as a means to enhance the citizen's loyalty and their engagement. The analysis also reveals that VAA has a robust influence on governance and has a positive value. This variable epitomises why political liberties should be safeguarded, citizens should be encouraged to be active political players, and media should be free. A consequent valency and an accountable body ensure that provinces check on their officials, report corrupt practices and demand revelation, enhancing Governance. Holding officials accountable for making their self-interest consistent with public interest is possible due to theoretical models such as the principal-agent theory. Bertot, Jaeger and Grimes (2010) cautioned that although the new technologies make it easier for governments to open up, transparency promotes accountability and minimises corruption. Similarly, Park and Kim (2019) established that improved voice and accountability elements cause improvement of governance trust, hence decreasing governance failure. The sign on the coefficient of Political Stability and Absence of Violence/Terrorism (PS) is negative and significant, meaning that political instability and violence are injurious to Governance. Consult the following requisites of the unstable political environment: The functioning of institutions is affected; trust in government institutions is undermined; and efficacy in Governance is reduced. In their study, Kaufmann, Kraay and Mastruzzi (2011) highlighted that political stability is conducive to good Governance, while political instability coupled with violence would normally lead to weak governance systems. This

inverse relationship explains that politics plays a crucial role, and to deliver good Governance, political stability is needed.

However, Population Density (POP) positively and statistically significantly influences the Governance. The results show that higher population density yields superior governance outcomes because the higher the population density, the more demand for government facilities and engagement from the public. In crowded regions, people demand good Governance and improved service delivery due to close interaction with the leaders, thus achieving accountability. Following the above arguments, Ali, Hoque and Alam (2018) opined that high population density leads to better service delivery in public services, improving Governance. The findings reveal that economic development captured by GDPG positively influences governance, although the significance is low. Enhanced economic development escalates the improvement of Governance through an enhanced public resource base for institution building and service delivery. This finding corroborates with Barro (1996), who pointed out that there is an inward slope of this relationship between economic development and institutional quality. While economic development progresses, governments can increase the expenditure on governance reforms and correspondingly enhance the quality of general governance. In sum, to explain the efficiency of the outcomes of governance, the improved factor loads concern digital governance (E-GOV), political freedoms (VAA), and political stability (PS). Also, population density greatly impacts Governance through the population density index – POP, While gross domestic product growth has a similar impact through the GDP growth index – GDPG. These findings logically correlate with prior scholarly works, emphasising that institutional quality political stability and active involvement of citizens effectively can eliminate corruption in the countries.

5. Conclusion

In this study, we integrate e-governance and different facets of governance quality to explain corruption in the East Asia and Pacific region. More precisely, the study aims to gain systematic knowledge of potential links between certain determinants of Governance, namely, political stability, regulatory quality, Voice and accountability, and legal structure, and the results of Governance with special emphasis on the role of corruption. Unlike general or comparative analysis, where many more studies of the corresponding type exist, this study focuses on the East Asia and Pacific Countries and their peculiarities and analyses how e-governance systems help enhance governance integrity. These results offer practical implications for policymakers and practitioners who seek to build knowledge about the quality of Governance and how it may be improved in the region by subjecting these reforms to empirical analysis. The study also shows that e-governance has an effective and positive influence in minimizing corrupt practices by improving on issues such as transparency and accountability. Further, the analysis reveals that political stability, regulatory quality and Voice and accountability significantly affect governance outcomes. Therefore, for the successful implementation of reform geared towards achieving good governance, there must be political stability, but at the same time, there must be changes that bring stability to new reforms that can bring about what is right in society. Regulatory quality ensures that the policies and regulations are well-written, non-arbitrary, and well-implemented, curtailing corrupt practices. Several ways help to reduce corruption: Voice and accountability for citizens to press public officials into account. In addition, a country's rate of economic progress and its population impact governance in a special way.

Accordingly, the development of e-governance initiatives, which will enhance access to public information and increase transparency, should be given particular focus by policymakers. Furthermore, the government's legal and regulatory instruments must be enhanced to serve as disincentive to corruption and promote accountability. It is always a fine line for politicians – the populace needs stability yet often requires changes in these structures. Further, correcting the bureaucratic rigidities and engaging the citizens through transparency through the Open Data and Response to Grievances System will also improve the governance results and minimize regional corruption. As for further study, the structure of the paper offers numerous possibilities to extend the research. The identified influence of e-governance on corruption in one or another sector could be förurthered in the field where the level of corruption is higher. The potential issues for future research are as follows: Further, cross-sectional studies involving spatial econometric models might also explore how specific governance reform in a certain country could alter the other adjoining countries to instigate a near regional policy harmonization. Other research questions that should be taken up in the future include the extent to which the gains from the application of e-governance are sustainable and how emerging technologies like

Blockchain and Artificial Intelligence can support e-governance's goals of increasing transparency and accountability in governance systems. Lastly, more specific examples of countries and districts where e-governance has been successfully implemented could be of great use and offer best practices for countries in the region that seek to upgrade their governance standards and decrease corruption.

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