

## The Influence of Electronic Participation and Economic Level on Corruption Perception: Country Data Analysis

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### Abstract

*Using data from 2020 and 2022 reports of the United Nations E-Government Knowledge Base, Transparency International, and the World Bank, this study developed and tested an empirical model using logistic regression analysis. Specifically, the study tested the hypotheses on the perceived influence of electronic participation and economic level on a given country's level of corruption against its null hypothesis. The study results affirm that corruption decreases as e-participation increases. Moreover, the model tested the penalty imposed on the economic level of a country's corruption perception index, with the results indicating a drop in the corruption index for non-highly developed countries. Implicitly, promoting e-participation is one of the ways of reducing corruption at the country. However, the biggest challenge to e-participation include the factor variables of cultural orientations among others. Overall, the research paper argues that promoting e-participation has a direct impact on the success of anti-corruption efforts as attested by its empirical evidence on the relationship between e-participation and corruption perception considering the economic status of countries.*

**Keywords:** e-participation, corruption, logistic regression analysis, economic development

### Introduction

Corruption is a complex phenomenon with various definitions (Luna-Pla & Nicolás-Carlock, 2020; Tyburski, Egan, & Schneider, 2020; Antonyan & Polyakov, 2022; Harnois & Gagnon, 2022). The common thread in these numerous definitions is corruption constituting the abuse of public power for private gain. Curbing corruption is difficult because it comes in different shapes, forms, and scales, and can be either monetary and non-monetary. Common forms of corruption include bribery and favouritism (Jamshed & Jalal, 2012; Weißmüller & De Waele, 2022). Moreover, corruption is one of the major challenges to accelerating economic growth and improving the living standards of citizens around the world (Sohel, 2010). Usually, corruption threatens development by reducing investment while increasing inequality. In fact, corruption ranks as the second most important problem in developing countries after crime (Pew Research Center, 2014). Meanwhile, the 2011 World Bank Guide identifies corruption as the main development problem because it deprives those in need of what rightfully belongs to them (Courtney, 2014). Corruption also impedes investment because it acts like an exorbitant tax on investment (Mlambo, Mubecua, Mpanza, & Mlambo, 2019; Achim, 2017) capable of crippling any envisaged capital gains. Indeed, in a corrupt country, an investor can encounter more investment problems than one doing so in a relatively less corrupt country. Furthermore, corruption can stagnate or slow economic growth down in addition to preventing improvements

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in quality of life, especially for the rural poor. As a result, corrupt countries end up losing more GDP points per annum than less corrupt countries. Significantly, graft also has a negative impact on good governance (Salihu, 2022), which can erode a nation's base for attaining development success. Such corruption can cut tax revenues by up to 50% (Amoh & Ali-Nakyea, 2019; Hall, Lopez, Murray, & O'Hare, 2022), hence depriving governments of the much-needed tax revenues for development. As a global problem, corruption severely affects many developing countries due to a lack of accountability and transparency in both public and private sectors (Ali, 2013). The corruption problem is so pernicious in some countries that various policies and strict laws in place to curb corruption by especially promoting transparency and accountability have failed to stamp it out (Ahmad, Naser, & Shebiab, 2013; Lourenço & Costa, 2007; Waheduzzaman & Khandaker, 2022; Kuipers, 2022).

Even in exceptional cases where corruption can incidentally emerge as a positive problem (Egger & Winner, 2005; Carden & Verdon, 2010), it "disproportionately harms the poor by diverting funds earmarked for development, undermining a government's ability to provide basic services, promoting inequality and injustice, and discouraging foreign investment and aid" (Sohel, 2010). In fact, a society where corruption is prevalent faces economic inefficiencies and uncertainties in the economic environment, hence further exerting undue pressure on the poor segments of society (UNDP, 2008). Corruption also limits economic development (Spyromitros & Panagiotidis, 2022; Gründler & Potrafke, 2019). One study found a high correlation (0.8) between a low level of corruption and a high gross domestic product per capita (Parlindungan, Africano, & Elizabeth, 2017). In this regard, corruption is not only one of the main causes of poverty but also an obstacle to overcoming poverty (Kuipers, 2022; Aracil, Gómez-Bengoechea, & Moreno-de-Tejada, 2022). Ultimately, combating corruption poses challenges such as cultural issues that may support minimally and low demand for accountability that could undermine anti-corruption efforts and make it doubly difficult to make graft charges stick in courts. Other challenges include weaknesses in state institutions, the complex nature of corruption itself, corruption thriving in secrecy, and it is also being transnational in nature (Development Policy Centre, 2014). Although some scholars argue that corruption can speed up some processes, this claim has attracted criticism (Azfer, Lee, & Swamy, 2001) because it can deliberately lower the speed of services to attract even more bribes (Bardhan, 1997).

One of the reasons for corruption is information asymmetry (Syed, Kamal, Ullah, & Grima, 2022; Kurniawati & Achjari, 2022; Troisi & Alfano, 2023). Towards this end, developments in information and communication technology (ICT) can serve as means for combating corruption (Odilla, 2023; Ntemi & Mbamba, 2016). The shift in many countries around the world to conducting their government activities and business electronically to increase efficiency, effectiveness, and transparency (Ahmad, Naser, & Shebiab, 2013; Kouadio & Gakpa, 2022; Troisi & Alfano, 2023) has emerged as a game-changer in curbing information asymmetry. Consequently, the use of electronic systems has helped in many cases to reduce the need for physical interaction between officials and service recipients, which often creates conditions for corrupt officials to influence the process in their personal favour (Ahmad, Naser, & Shebiab, 2013). Even though e-government may be an important issue generally, the citizens' participation seems to be more important than just having ICT resources.

### **Statement of the Problem**

Corruption does not only hinder efficiency, effectiveness and transparency in many countries (Akpan-Obong, Trinh, Ayo, & Oni, 2022; Gouvea, Li, & Montoya, 2022; Kurniawati & Achjari, 2022) but also undermines the social, political and economic development of many countries (Achim, 2017; Amoh & Ali-Nakyea, 2019; Syed, Kamal, Ullah, & Grima, 2022). Indeed, many countries are reeling from the dire effects of this problem, prompting both governmental and non-governmental institutions striving to reduce the corruption scourge by finding appropriate means to carry out their activities graft-free (Hall, Lopez, Murray, & O'Hare, 2022; Luna-Pla & Nicolás-Carlock, 2020; Spyromitros & Panagiotidis, 2022). Much of the literature on corruption have focused on laws (Suhendi, Rohman, & Purwanto, 2020), perception (Choi & Song, 2020) and economic theories (Donou-Adonsou, Pradhan, & Basnet, 2022) largely separately. As such, a study combining the various theories due to the importance of e-participation in economic developments can help generate findings that can help make a difference, hence this research.

Even though empirical evidence attests to how ICT use has a negative impact on corruption (Bhattacharjee & Shrivastava, 2018; Serrat, 2017), this study focuses on the effect of e-participation and level of economic status on graft in the developing world's context. Generally, studies account for varying results indicating either no relationship or a weak link between the use of ICT and the level of corruption (Wescott, 2003). In addition, some studies suggest that investment in ICTs could trigger the rise in corruption (Charoensukmongkol & Moqbel, 2014; Gouvea, Li, & Montoya, 2022), positively or negatively (Uroos, Shabbir, Zahid, Yahya, & Abbasi, 2022). Moreover, citizens who are supposed to be served are not even aware of e-participation benefits (Abdulkareem, Abdulkareem, Ishola, & Akindele, 2022; Secinaro, Brescia, Iannaci, & Jonathan, 2022).

As one of the solutions to corruption problems, ICT's widespread application in various government activities could significantly reduce corruption. This prospect in ICT application is crucial since corruption tends to erode tax revenues, thus slowing down socio-economic development (Jahnke & Weisser, 2019; Rose-Ackerman & Palifka, 2016). Different countries have adopted various means for controlling and curbing corruption, with ICT application in conducting government activities emerging to be one of the foremost means for solving the corruption problem primarily because of its knack for enhancing efficiency and transparency. In this regard, the current study documents the influence of e-participations on corruption management. The study was limited to nationwide data analysis in its evaluation of e-participation in the country's fight against corruption. Even several studies including Ntemi and Mbamba (2016) and Zheng (2016), have been conducted nationwide, their analyses have used different tools. Moreover, there is a time lapse since those studies were conducted.

In the last five years, a number of studies have been carried out on e-government/participation and corruption. Zheng (2016) used data on e-government/e-participation and corruption but without examining the countries' respective economic status. Nam (2018) introduced mediating effects of national culture. Meanwhile, Máchová, Volejníková and Lněnička (2018) introduced indices - in time and dimensions into their study. The present study deviates from these studies by introducing another predictor variable - the economic status of the country. This variable addition is common in e-participation study; indeed, more variables such as religion are

continually being introduced (Suhendi, Rohman, & Purwanto, 2020) depending on the needs of respective studies.

## **Literature Review**

### **Definitions of ‘Participation’ and ‘E-Participation’**

Participation is one of the tools for fair deals and positive policy-making processes (Fedotova, Teixeira, & Alvelos, 2012). However, participation at the grassroots levels is usually lower than at the national level, which could lead to better performance for citizens. The different levels of participation are Manipulation, Therapy, Information, Consultation, Appeasement, Partnership, Delegated Power and Citizen Control (Lourenço & Costa, 2007).

‘E-participation’ stands for electronic participation, which refers to the degree or extent of use of data communication systems and other digital technologies such as the Internet and other web technologies to support the citizen participation in government and other activities such as policy-making, election, applying for services from governments and others. Kim and Lee (2012) define e-participation as the "voluntary participation and involvement of citizens in matters of public administration and public decision-making through the use of web-based applications provided by the government." E-participation supports digital interactions among citizens, employees, government/governmental agencies, and business/commerce. Also, e-participation improves information sharing, consultations and decision-making (UN, 2022). Usually, various indicators facilitate the measuring of e-participation (Kabanov, 2022; Choi & Song, 2020). The potential and innovative possibilities of ICTs also offer new and better ways of doing business to those who participate in the use of technology (Neupane, Soar, Vaidya, & Yong, 2014). As a result, e-participation seems to be one of the best options for territorial expansion when there is a high population, corruption practices stand in the way with associated risks in doing business (Asogwa, 2013).

Evidence supporting e-participation’s crucial role in the fight against corruption stems from most activities being amenable to automation and electronic execution (Bertot, Jaeger, & Grimes, 2012; Ntemi & Mbamba, 2016). As such, there was a need for a scientific study with empirical evidence to determine whether e-participation is one of the most effective methods for fighting corruption (Waheduzzaman & Khandaker, 2022; Adnan, Ghazali, & Othman, 2022). In similar vein, the e-government uses the Internet to improve performance (Tassabehji, 2010). As a result, many governments have adopted ICTs to enhance their operational effectiveness and efficiency (Bertot & Jaeger, 2010). In addition, the adoption of ICTs and, especially e-participation, has multiplier effects such as competitiveness (Mbamba, 2014) and other benefits.

### **Theoretical Framework**

This study was guided by both the Theory of Network Society (Castells, 2000) and the Theory of the Fraud Triangle (Cressey, 1972). The former theory states that the more the citizens are exposed to information, the more the control they would have over a range of activities (Castells, 2000). Indeed, Soper (2007) argues, based on the network society theory, that the more information citizens can access, the more the control they would have over their affairs. The theory further suggests that a more networked society is less prone to corruption than a less networked one (Yong Hyo & Byung-Dae, 2004). Among other aspects, network society can also benefit from electronic participation (Lin, 2022; Bhuiyan, 2010). Technology’s reduction

of face-to-face contact also reduces the chances of negotiation (Shareef, 2022; Kalesnikaite, Neshkova, & Ganapati, 2022). Moreover, whistle-blowers can immediately report incidents of corruption anonymously in a network where no physical presence is required. Such an atmosphere can make potentially corrupt officials aware that their behaviour can be exposed and reported, which discourages them from doing so (Adam & Fazekas, 2021; Shareef, 2022). Since developed countries are more connected than their developing counterparts, an increase in e-participation in developing countries could have a greater impact on reducing corruption levels than in developed countries where such usage have become an integral part of their *modus operandi*. The Theory of Network Society has already had wide application (Verona, Oliveira, da Cunha Hisse, & Campos, 2018).

On the other hand, the fraud triangle theory identifies three factors that could lead to fraud: pressure, opportunity, and rationalisation by the fraudster (Cressey, 1953). Pressure arises from an individual's motive or inclination to commit fraud whereas an opportunity to commit fraud is mainly abetted by largely ineffective control or management systems that enable a person to commit fraud in the organisation and, finally, rationalisation refers to self-denial of justifying a wrong simply because everyone is engaged in it (Cressey, 1953). In this regard, e-participation can be a spoiler by - to some extent - improving control and management systems and reduce the problem of corruption, particularly by undermining conditions that make Cressey's (1953) three factors flourish. On their part, Wolfe and Hermanson (2004) present four factors that account for the occurrence of fraud: pressure, opportunity, incentive and capability: "Opportunity opens the door to fraud, and incentive and rationalisation may tempt a person to do so provided has capability. However, the person must be able to recognise the open door as an opportunity and take advantage of it by passing through it repeatedly rather than just once" (p. 38). Overall, this theory has been well-tested (Schuchter & Levi, 2016; Parlindungan, Africano, & Elizabeth, 2017; Huang, Lin, Chiu, & Yen, 2016; Brown, Hays, & Stuebs Jr, 2016), regardless of some criticisms it has generated, primarily because it has worked in many cases (Huber, 2017), hence amenable to further application in other contexts as well.

### **Empirical Evidence**

Jamshed and Jalal (2012) investigated (i) whether there is a relationship between e-government and corruption, (ii) whether changes in ICT use are related to changes in corruption levels, and (iii) whether developed or developing countries benefit the most from greater use of ICT or e-Participation. Using regression models, Jamshed and Jalal (2012) demonstrated a relationship between e-government and the lowering of corruption levels and developing countries. This finding is consistent with other studies (Mauro, 1997; Shim & Eom, 2008) that have provided closely related results despite applying different methodologies. However, the present study uses more recent data than these earlier studies. Since the time these studies were conducted, ICTs have further evolved and corruption has become even much more complex and pernicious than ever before. In terms of time lapse, Jamshed and Jalal's (2012) study used data of up to 2010, hence a need for a study employing recent data.

Kaur and Kant (2012) identified e-government strategies, particularly e-government as an integral part of e-participation, can trim corruption. The study found that e-government plays an important role in fending off corruption. However, the study was equivocal on e-government not necessarily guaranteeing the end of corruption since it is not panacea to all forms of

corruption and associated problems. Other related studies (see, for example, Akpan-Obong, Trinh, Ayo, & Oni, 2022; Donou-Adonsou, Pradhan, & Basnet, 2022) established a relationship between the use of e-government and low corruption perception.

For ICT to make a difference and produce the desired effect, participation should be in the form of usage. In this regard, Welch, Hinnant and Moon (2005) found the use of government websites to be positively associated with satisfaction with e-government. Also, Feeney and Welch (2012) found that the US government is under pressure to facilitate e-participation to reap the benefits associated with its wide application. Using data from a nationwide survey of 850 government managers in 500 cities, Welch's (2012) study found that e-participation was related to managers' perceptions of outcomes. The study also found a correlation between the complexity of e-participation technology and perceived outcomes.

### **Conceptual Frameworks and Hypotheses**

Based on the two theories informing the study and empirical work review, the paper presents the conceptual framework showing a link between e-participation and anti-corruption initiatives. Based on the literature review, the study tested the following alternative hypotheses:

*H<sub>1</sub>: The level of e-participation positively influences the lowering of the level of corruption.*

*H<sub>2</sub>: The high economic status positively lowers the level of corruption.*

For this work, the predictor variables were the level of e-participation and economic status, whereas the response variable was the level of corruption for all the countries data were available.

### **Research Methodology**

The study used a positivist research approach to further analysis of secondary data. The secondary data in use was not only available but also came from reliable and credible sources. The study also set out to cover a broad-based geographical area, which might not be feasible with primary data. Subsequently, the secondary data used in this study was not intended for a specific user group but, instead, had a universal feel with the tools used to collect clearly known even if it were used for later analysis or compatibility. In this regard, the United Nations E-Government Knowledgebase, Transparency International and the World Bank served as credible data sources. The population for this study included data analysed using country data, with 2020 and 2022 e-participation and corruption level indices as the sample for this work. The data was obtained from the United Nations e-participation indices (UN, 2022), World Bank economic status (high, high middle, low middle- and low-income countries) and Transparency International corruption levels (Transparency International, 2022). The sample generated from these indices helped to determine the extent of e-participation in most countries where anti-corruption practices could be useful. As it was difficult to analyse data from all the countries in the world due to the lack of information, only countries whose data were available and accessible featured in this study. The main tool used for data analysis was regression analysis. Regression analysis is a statistical tool for studying relationships between variables. Several other researchers have applied this logistic regression analysis method (Jamshed & Jalal, 2012; Chowdhury, 2004) albeit using different years for their data input.

## Results and Discussion

### Sample Characteristics

The data was obtained and tested from different countries of the world considering their indices: Corruption Perception Index (CPI), E-Participation Index (EPI) and Income Level for the years 2020 and 2022. The 2022 data analysis is covered in the analysis part whereas the 2020 is presented in the appendix. As e-participation is provided once in two years, that is whereby the year 2021 has been left out. The score of a country or area on CPI indicates the perceived level of corruption in the public sector on a 0 (very corrupt) to 100 (very clean) scale. EPI was presented on a scale ranging from 0.000 (low e-participation) to 1.000 (high e-participation). Economic status was divided into four groups: High (H), High Medium (HM), Low Medium (LM), and Low (L). A country gets a value of 1 if it belongs to the group and 0 if it does not. Table 1 presents the sample characteristics for the three indicators for 2022 whereas for 2020, as already pointed out, the data are presented in the Appendix. Table 1 indicates the values of the means for EPI and CPI, with the sample contained almost evenly distributed countries in the four categories (L, LM, UM, H):

**Table 1: Sample Characteristics**

	<i>CPI score</i> 2022	<i>EPI score</i> 2022
Mean	42.766	0.463
Standard Error	1.400	0.020
Median	39	0.4318
Mode	36	0.25
Standard Deviation	18.518	0.258
Sample Variance	342.916	0.067
Kurtosis	-0.383	-0.968
Skewness	0.656	0.217
Range	78	1
Minimum	12	0
Maximum	90	1
Count	175	175

Source: Data Analysis (2021)

Since it was hypothesised that EPI and economic status can be used to predict CPI, Table 2 shows the summarised results of the logistic regression analysis indicating the influence of EPI and economic status on CPI. The correlation coefficient  $r$  in Table 2 provides the measure of the predictive quality of EPI on CPI. In this study, a value of above 0.800 for all the countries combined indicates good predictive quality for CPI. The adjusted  $r$ -squared value is almost two-thirds and is, generally, acceptable. Based on the adjusted  $r$ -squared value, the data suggest that there is a strong correlation between EPI and CPI. Table 2 also shows that the resultant logistic regression model fits well with the data used for all the income levels whether combined or

done by respective income groups. Table 3 further shows that the models created are better than competing models in making predictions, that is, the results have not necessarily occurred by chance.

**Table 2: Predictive ability of the model**

<i>Regression Statistics</i>	
Multiple R	0.8273
R Square	0.6844
Adjusted R Square	0.6770
Standard Error	10.5248
Observations	175

a. Predictors: (Constant), HM, EPI, LM, L  
 b. Dependent Variable: CPI

**Table 3: Strength of the model – ANOVA**

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	4	40,836.14	10,209.04	92.16	0.0000
Residual	170	18,831.25	110.77		
Total	174	59,667.39			

a. Predictors: (Constant), HM, EPI, LM, L  
 b. Dependent Variable: CPI

**Hypotheses Testing: EPI on CPI**

Table 4 shows unstandardised coefficients, which indicate how much the CPI varies with an EPI and economic statuses when all other predictor variables are held constants. The unstandardised coefficient  $\beta_1$  for EPI is significant ( $\beta_1$  is 17.861,  $p < 0.0001$ ). For low-income countries, the study found a reduction of nearly 32% ( $p < 0.0001$ ), low middle-income countries 26% ( $p < 0.0001$ ) and upper-middle income countries 23% ( $p < 0.0001$ ). However, there is no reduction for high-income countries.

**Table 4: Regression Coefficients**

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t stat</i>	<i>p-value</i>	<i>lower 95%</i>	<i>upper 95%</i>
Intercept	53.094	3.293	16.121	0.000	46.593	59.596
EPI 2022	17.861	4.167	4.286	0.000	9.634	26.087
L	-31.569	3.202	-9.858	0.000	-37.890	-25.248
LM	-25.716	2.627	-9.788	0.000	-30.903	-20.530
UM	-22.789	2.308	-9.875	0.000	-27.344	-18.233

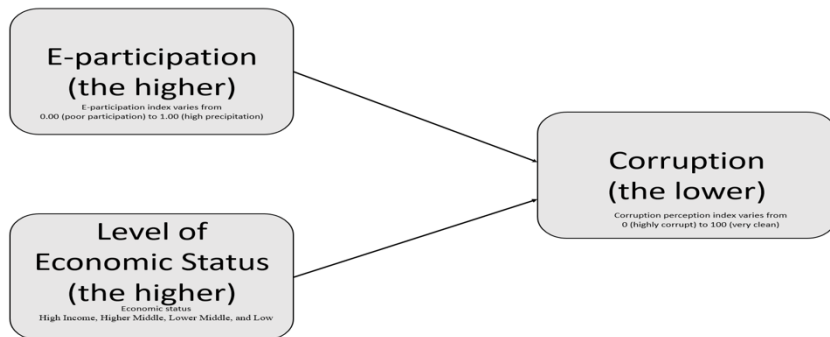
a. Predictors: (Constant), HM, EPI, LM, L  
 b. Dependent Variable: CPI

The null hypothesis states that e-participation has no bearing on the level of corruption level. Criteria for testing the hypothesis were provided that when the  $p$  value is less than 0.0001, the



decision is to reject the null hypothesis. The analysis of the results affirm that e-participation influences the corruption level. This analysis also shows that the e-participation status has implication for country’s corruption perception index.

The study results further confirm the role of economic status of country in influencing the country’s corruption index. Table 4 shows that the lower the level of economic status reduces the value of CPI. The model indicates a reduction of CPI by 31.569, 25.716 and 22.789 for low- developed countries, low-middle developed countries and higher middle developing countries, respectively. There appears to be no penalty for high developed countries. Table 4 further shows that the model predicts almost two-thirds of variations in CPI (adjusted r squared as presented in Table 3). The results could be summarised as in Figure 1.



Source: Created from Data Analysis

Figure 1: Relationship between e-participation and economic status and corruption perception

Nearly the same results were obtained for other years as well. The results from the analysis of the data for 2020, another year covered in the study, have been presented in the Appendix.

### Conclusion

The study aimed to establish empirically the influence of e-participation and economic status on a given country’s corruption level using countrywide data analysis. The research worked on the assumption that e-participation could serve as a means for reducing corruption. The study results further reveal a strong influence of e-participation on lowering corruption in countries, meaning the higher the level of e-participation, the lower the corruption level. E-participation can also improve the performance of governments and reduce service provider discretion that can be a fertile ground for fuelling corruption. Thus, the government and other organs should invest in e-participation to reduce corruption levels prevailing in the respective country. In this regard, governments ought to treat e-participation as a one of key strategies for corruption reduction. In fact, e-participation increases openness by maintaining detailed data and processes involved in service provision. Also, e-participation standardises the process and, hence, little discretions. Furthermore, there is a need to develop and effect e-participation. The level of a country’s economic status (low, low-middle, high-middle, or high income) also affects the corruption level. Equally important is for countries to invest in enhancing economic statuses of those countries since lower economic status penalises those countries by making them more vulnerable to corruption practices.

The study also found a relationship between e-participation and corruption level. In this regard, the study findings are in line with both of the theories that informed the study: the network society theory and the fraud triangle model. The former theory states that the more citizens are exposed to the information available, the more the control they command on a number of activities much in line with the results obtained in this study since more e-participation engenders less corruption (Soper, 2007; Castells, 2000; Yong Hyo & Byung-Dae, 2004; Bhattacharjee & Shrivastava, 2018; Zheng, 2016; Ntemi & Mbamba, 2016). Implicitly, the e-participation has the potential of closing the doors for corruption.

Based on the analysis of the several national policies coupled with their fostering of e-participation, we managed to identify various successful user-based e-participation programmes. These include integrated and centralised portals that provide e-services sourced from various national agencies. This orientation and development enhance information sharing and ensure transparency of all government actions. Also, the government should also be informed about how e-participation can minimise the corruption, with the results peaking when all stakeholders grasps the intricacies of once coupled with their full e-participation and engagement. Considering the economics of crime that one can commit a crime if the probability of being caught is low and the associated returns are high, e-participation systems increase the chances of one being caught, hence lowering returns on investments in corruption and making graft rather unattractive. Furthermore, e-participations allow the self-service systems and removes the need for an agent. This research further supports several other studies (see, for example, Andersen & Rand, 2006; Andersen, 2008; Ionescu, 2013; Lupu & Lazăr, 2005; Bertot & Jaeger, 2010; Zhao & Xu, 2015; Shim & Eom, 2008)

### **Recommendations**

Claims to the effect that the application of ICT in the performance of government activities could help curb corruption prompted this study to analyse data on how e-participation influences the corruption level based on the countrywide data. The study results affirm that e-participation has a positive effect on lowering corruption levels. As this study has illustrated, the government needs to improve e-participation to curb corruption. Indeed, the government should ensure e-participations occurs in all areas of governance for corruption reduction and control to materialise. Furthermore, the study found that countries need to improve economic status for them to lower the corruption levels, which should be standard practice especially for developing countries seeking to tackle corruption in earnest.

### **Limitations and Suggestions for Future Research**

The presence of various ways of testing e-participation and corruption emerged to be a limitation in this study. In any case, e-participation is one potential component of strategies aimed to curb corruption; however, e-participation can also offer many other benefits. Thus, further research can examine the issue of transparency alongside other benefits accruing from e-participation such as cost-saving, citizen participation, social inclusion, and enhanced service delivery to determine areas in which e-participation makes the utmost impacts. Moreover, there is a need to study why e-participation influences varyingly influences the corruption based on economic status.

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**Appendix: Analysis for 2020 data***Descriptive Statistics*

	<i>CPI score 2020</i>	<i>EPI for 2020</i>
Mean	43.137	0.586
Standard Error	1.416	0.020
Median	40	0.6071
Mode	38	0.8571
Standard Deviation	18.728	0.263
Variance	350.740	0.069
Kurtosis	-0.386	-0.933
Skewness	0.634	-0.273
Range	76	1
Minimum	12	0
Maximum	88	1
Count	175	175

*Strength of the model*

<i>Regression Statistics</i>	
Multiple R	0.8189
R Square	0.6706
Adjusted R Square	0.6629
Standard Error	10.7517
Observations	175

*Robustness of the Model*

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	4	40,015.44	10,003.86	86.54	0.0000
Residual	170	19,651.95	115.60		
Total	174	59,667.39			

*Regression Analysis*

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>p-value</i>	<i>lower 95%</i>	<i>upper 95%</i>
Intercept	54.134	3.872	13.981	0.000	46.491	61.778
EPI 2020	13.826	4.266	3.241	0.001	5.404	22.248
L	-32.772	3.413	-9.603	0.000	-39.509	-26.035
LM	-27.435	2.648	-10.361	0.000	-32.662	-22.208
UM	-23.495	2.378	-9.879	0.000	-28.190	-18.801