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Original Article

Regime Types and Their Influence on Digital Government Development

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Abstract: *Information and communication technology advancements have increased potential to change how the government interacts with the public, which has improved governance. Digital Government has been developed particularly in democratic countries, but over time the gap between democratic and non-democratic countries has narrowed. Authoritarian regimes may use e-government to legitimate the political regime among their citizens and the international community. The goal of this study is to determine whether the kind of political regime (democratic, hybrid, or authoritarian) is a potential determinant of e-government and how each regime type affects the possibility of having a high or very high e-government development. A binary logit model was estimated using panel data covering the years 2003 to 2020 from 149 different nations. The findings imply that authoritarian and hybrid regimes are less likely than democratic regimes to have high and very high levels of e-government development, and that this chance is smaller in authoritarian than hybrid regimes compared with democracies. The results also suggest that higher human development, government effectiveness, and internet diffusion increase the chance of having higher e-government development.*

Keywords: *E-Government; Political Regime Type; Logit Model.*
JEL Classification: H110; P160; C250

I. INTRODUCTION

Governments all across the world have embraced information and communication technologies (ICT) to boost performance. The COVID epidemic has highlighted the value of digital government and compelled individuals to use e-government services, both of which are being changed by digitalization (Faroqi et al., 2020). E-government refers to the application of information and communication technology to raise the level of information and services that governments provide to the public. E-government is anticipated to improve good governance by establishing transparent, accountable, and inclusive organisations (United Nations (UN), 2020).

Previous literature reveals key determinants of digital government, including economic factors, the level of human and technological development (Kim, 2007; Pérez-Morote et al., 2020; Rodríguez Domínguez et al., 2011; Rose, 2005; Stier, 2015; West, 2005), and political factors, namely the regime type (Azad et al., 2010; Cho and Rethemeyer, 2022; Kneuer and Harnisch, 2016; Maerz, 2016; Stier, 2015; Gulati et al., 2014).

Several studies highlight that the political regime is an important determinant of e-government and that its development is higher in democracies. Cho and Rethemeyer (2022) consider that democratic and non-democratic government have different drivers to develop e-government. Democratic governments use ICT to "deepen democracy and ensure representation and citizen engagement" (Clift, 2004, p. 1). Nevertheless, for Stier (2015, p. 270) "while the innovation-friendly environment of democracies was the primary political source of e-government development, autocracies are catching up in order to enhance pro-regime activism on the internet and legitimize their rule by improving economic performance".

Governments are more and more aware of the importance of digital government, and while there is a "persistent positive global trend towards higher levels of e-government development" (UN, 2020, p. 4), in the last years more countries are moving to an authoritarian regime than to a democratic regime (International IDEA, 2021). And authoritarian regimes, like democracies, are likely aware of the potential of e-government namely to legitimate their position with citizens of their country and externally, as there are international comparisons of e-government rankings. Nevertheless, concerning political determinants, the results of some studies are somewhat contradictory. Some studies report that e-government development is higher in more democratic societies (Azad et al., 2010; Bussell, 2011; Gulati and Yates, 2011; Gulati et al., 2012; Kim, 2007; Rose, 2005), others reveal insignificant results between democracy and e-government (Bussell, 2011; Lee et al., 2011; Moon et al., 2005; Rodríguez Domínguez et al., 2011; West, 2005), and others found a negative relationship (Gulati et al., 2014), which justifies the need for further research in this area.

The goal of this study is to determine whether the type of political regime affects the level of development of digital government and whether the likelihood of having higher levels of e-government varies by type of political regime.

This paper has several contributions. First, instead of an indicator of the state of democratization, this investigation uses the classification of the political regime as autocratic, hybrid and democratic to account for the effects of each regime type on e-government development. Second, this study uses a logistic regression model which is a procedure that can be used for classification. In this case, countries are classified in high and very high e-government development against countries with very low and low e-government. And finally, it was considered a multidimensional approach, incorporating social, technological and institutional factors that may influence e-government.

The essay is structured as follows: Section 2 analyses prior research on political and other factors that influence e-government. The approach, hypothesis, and data are presented in Section 3. The results are presented and discussed in Section 4. Section 5 presents conclusions to round out the essay.

II. LITERATURE REVIEW

E-government, in the words of the World Bank, is "government agencies' use of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that can transform relationships with citizens, businesses, and other arms of government" (UN, 2018, p. 220). E-government is described as "the process of connecting citizens digitally to their government so that they may access information and services offered by government agencies" by Lau et al. (2008, p. 89). These technologies allow for the electronic interchange of information and services between governments, enterprises, and other governmental entities (Castro and Lopes, 2022).

E-government can promote a better delivery of government services to citizens (Kim, 2007; Knox and Janenova, 2019; UN, 2018); better communication between governments and citizens (Bannister and Connolly, 2011; Curtis, 2019; Van Veenstra et al., 2011; Vicente and Novo, 2014) improved interactions with business and industry (UN, 2018); support government transparency (Abu-Shanab et al., 2013; Elbahnasawy, 2014; Faroqi et al., 2020; Knox and Janenova, 2019); promote efficiency by reducing waste (Kneur and Harnisch, 2016; Nam, 2019); make the contact with citizens more inclusive (Gulati et al., 2014); facilitate public consultation on government Information (Lee et al., 2011); increase citizens' political participation (Lollar, 2006); improve trust in government (Knox and Janenova, 2019; Pérez-Morote et al., 2020). Twizeyimana and Andersson (2019) summarise a number of public values of e-government based on a review of the literature. These include: improved public services, increased administrative effectiveness, Open Government capabilities, increased ethical behaviour and professionalism, increased trust and confidence in government, and increased social value and well-being.

Since the middle of the 1990s e-government has been widespread around the world, either in developed and developing countries, democracies and authoritarian regimes, although with different intensities, and this has stirred up the interest in its main driving forces. The political regime is one of the determinants of e-government development identified in the literature (Azad et al., 2010; Gulati et al., 2014; Kneuer and Harnisch, 2016; Maerz, 2016; Stier, 2015).

One line of thought suggests that democratic governments tend to promote access to ICT more than authoritarian regimes (Bussell, 2011; Corrales and Westhoff, 2006). E-government is a technique to encourage information flows between citizens and governments. Democracy demands informed citizens and high levels of effective citizen participation in the political process. (Watson and Mundy, 2001). Democratic governments use ICT to "deepen democracy and ensure representation and citizen engagement" (Clift, 2004, p. 1). These governments are usually more inclusive, which can be achieved by e-government, namely to boost the number of voters in their favour since they are subject to competitive elections (Bussell, 2011; Gulati et al., 2014; Kneuer and Harnisch, 2016). According to this perspective, the adoption of new technology may pose a challenge to political freedom-restraining autocratic regimes (North, 1990). According to Weber (1968), one of the most important goals of the state is to calm society. In authoritarian regimes, one way to accomplish this is through limiting information available to society (Corrales and Westhoff, 2006). Accordingly, attempts to advance digital government have primarily been linked to democratic regimes (Maerz, 2016; Dias, 2020), and a "less democratic government is less likely to advance e-government because the government might not support transparent and interactive relationship with citizens." (Moon et al., 2005, p. 4).

While some studies report that e-government development is higher in more democratic societies (Azad et al., 2010; Bussell, 2011; Gulati and Yates, 2011; Gulati et al., 2012; Kim, 2007; Rose, 2005), others reveal insignificant results between democracy and e-government (Bussell, 2011; Lee et *al*., 2011; Moon *et al*., 2005; Rodríguez Domínguez *et al*., 2011; West, 2005) or a negative impact (Gulati *et al*., 2014). Bussell (2011) discovered a statistically substantial beneficial impact or an insignificant impact of the type of political regime, depending on the e-government indicator. These findings "suggest that the path to e-government leverages different strategies depending on a nation's political structure, and those countries where there

is less democracy may be using e-government to maintain the status quo," according to Gulati et al. (2014) research. They also found no relationship between democracy and e-participation. (p. 526).

In fact, according to another school of thinking, authoritarian governments could benefit greatly from the rise of e-government (Kneuer and Harnisch, 2016; Rød and Weidmann, 2015). As Bussell (2011, p. 268) refers, the choice of having higher levels of digital government depends on the "interest and incentives of political elites" and either democratic or non-democratic regimes potentially benefit from e-government development.

Several studies reinforce the idea that non-democratic regimes are committed to digital government development to promote and legitimate their regimes (Göbel, 2013; Johnson and Kolko, 2010; Maerz, 2016; Stier, 2015), either internally or externally. E-government can be established "as a response to globalisation pressures and to demonstrate modernity and legitimacy to the international community," according to Maerz (2016). (p. 727).

Authoritarian governments may also adopt e-government programmes to raise the level of service delivery, but Bussell (2011) argues that this does not imply that information will be freely accessible. They can transmit "their bureaucratic capacity while not increasing democratic freedoms" through digital administration, according to Bussell (2011, p. 270). According to Smorgunov (2021), it "became intermediaries of unilateral influences of the authorities" in the case of Russia. (p. 18).

Maerz (2016) found that there are differences between them in how they use e-government to legitimise authoritarianism in a study of some post-Soviet authoritarian regimes to analyse how different types of authoritarian regimes (in the sense of non-democratic regimes) use it. The establishment of e-government is prioritised by non-competitive authoritarian regimes (Turkmenistan and Uzbekistan) above gaining internal legitimacy in competitive regimes (Kazakhstan and Russia) by providing online services to aid their citizens. The growth of e-government in post-Soviet nations was examined by Knox and Janenova (2019), who recommended that these nations "select legacy issues of pervasive bureaucratic processes and corruption to persuade international development agencies that e-government is a panacea when, in reality, there is research evidence of significant failures" (pp. 600-601). The authors came to the conclusion that digital government is limited to a small number of public services, with poor quality and low citizen participation, and to the concern of promoting an image of a progressive state to the international community by using Kazakhstan as a case study—a country with an authoritarian regime and a leader in e-government development in Central Asia.

The literature reveals other key determinants of digital government such as economic, social, organizational and technological (Kim, 2007).

The development of e-government is also influenced by the standard of the civil service and public services. E-government is offered more widely in nations with competent public sector governance (Kim, 2007; Gulati et al., 2014). According to Duho et al. (2020), increased accountability results in a citizen-centered provision of government services and actions.

The Internet is a network of networks upon which e-government is based. It is also acknowledged that nations with a lot of internet users may have better ICT policy development, which can encourage e-government (Ingrams et al., 2020; Lee et al., 2011; Rose, 2005). If the degree of internet diffusion is higher, more people can access the government websites and are more demanding for a more developed digital government.

The effectiveness of e-government can be greatly influenced by the level of human development. People with more education have a better chance to understand the functioning of digital government and engage effectively with it (Pérez-Morote et al., 2020). The desire to participate more actively in public affairs and the demand for public services and information are typically positively correlated with factors like education and money (Ingrams et al., 2020).

III. RESEARCH METHODOLOGY

The goal of this inquiry is to determine whether the degree of democracy (or the type of political system) affects the growth of e-government. For 149 countries between 2003 and 2020, the empirical study of the effects of political regime types on the growth of e-government is explored (Annex A). To associate the likelihood of having high or very high e-government development with many relevant determinants, a logistic regression model is created.

The United Nations' e-Government Development Index, which gauges public administrations' willingness and ability to employ ICT to provide public services, serves as a proxy for e-government. It is a weighted average of the normalised scores for the three most crucial aspects of e-government: the Online Service Index, which quantifies the range and calibre of online services; the Telecommunication Infrastructure Index, which gauges the stage of telecommunication infrastructure development; and the Human Capital Index. Higher scores indicate better e-government development (UN, 2018). The scale spans from zero to one. The UN Department of Economic and Social Affairs provided the data (UNDESA).

The UN (2020) classifies countries according to the score of the e-government development Index in low (between 0.00 to 0.25), middle (between 0.25 to 0.50), high (between 0.50 to 0.75) and very high (between 0.75 to 1.00). Based in this classification a binary variable was defined – eGovbin– to mark when a country has a high or very high e-government development, defined as:

$$eGovbin_i = \begin{cases} 1 \quad if\ eGov_i \geq 0.50 \\ \\ 0 \quad if\ eGov_i < 0.50 \end{cases} \qquad \forall i \qquad [2]$$

The logit model is expressed by:

$$ln\left(\frac{\mu_i}{1-\mu_i}\right) = \beta_0 + \beta_1 Regime\ type_i + \sum_j \beta_j X_{j_i} \qquad \forall i \qquad [3]$$

Where $\mu_i = P(eGov_i = 1) = P(eGov_i \geq 0.50)$ is the probability of a country i having high or very high values of the e-government Development Index and $\frac{\mu_i}{1-\mu_i}$ is the ratio of the probability of a country to have high or very high e-government development to the probability that e-government development will be low or middle (the odds ratio).

Xj is the vector of the variables that can influence the level of e-government development and the choice of these variables was guided by previous empirical studies, namely government effectiveness, human development, and internet diffusion.

The first hypothesis in this study is based on this model and is derived from the paper's main goal:

H1. Compared to democracies, autocracies and hybrid regimes are less likely to have developed high or very high levels of e-government.

According to the literature review, we also hypothesized that:

H2. Countries with greater government effectiveness are more likely to have high or very high e-government development.

H3. High or extremely high e-government development is more likely to exist in nations with greater levels of human development.

H4. The possibility of having high or extremely high levels of e-government development grows with ICT diffusion.

The International Institute for Democracy and Electoral Assistance's (International IDEA) classification was used for the Regime type. The Global State of Democracy Indices are created by International IDEA and are broken down into five democratic qualities: Fundamental Rights (Access to Justice, Civil Liberties, Social Rights and Equality); Checks on Government (Effective Parliament, Judicial Independence, Media Integrity); Impartial Administration (Absence of Corruption, Predictable Enforcement); Participatory Engagement (Civil Society Participation, Electoral Participation, Direct Democracy, Local Democracy); and Representative Government (Clean Elections, Inclusive Suffrage, Free Political Parties, Elected Government).

The classification of the regime type is essentially based on the Representative Government attribute since it is the most important and least controversial component of democracy. “This attribute measures the integrity of elections, the inclusiveness of voting rights, the extent to which political parties are free to campaign for political office and the extent to which national representative government offices are filled through elections” (International IDEA, 2022). A country is classified as a democracy if has at least a score of 0.4 on the Representative Government attribute and has “minimally competitive multiparty elections for its legislature and executive” (International IDEA, 2022). “Authoritarian regimes include several subtypes of non-democracy, including one-party rule, military regimes, authoritarian monarchies and failed states or war-torn, conflict-ravaged countries without a centralized monopoly on the use of force. Political regimes that score below 0.4 on Representative Government and which do not have competitive elections are classified as non-democratic.” (International IDEA, 2022).

"Elements of democracy and authoritarianism" are combined in hybrid systems. When it comes to core political and civil rights, these [regimes] frequently adopt the formal features of democracy (while permitting little real competition for power) (International IDEA, 2018, p. 11). If a nation receives at least a 0.4 on the Representative Government scale but does not hold competitive elections, it is categorised as a hybrid system.

The term "Regime type" was thought to be a polytomous variable with three possible values: 1 for an authoritarian regime, 2 for a hybrid, and 3 for a democratic one.

The Worldwide Governance Indicators, created by Daniel Kaufmann and Aart Kraay, include a measure of government effectiveness that "captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies" (Kaufmann et al., 2010, p. 4). Estimate reports the nation's performance on the overall indicator in units of a standard normal distribution, i.e., between -2.5 and 2.5, where higher scores indicate better results. According to UNDP (2020), three important aspects of human development—a long and healthy life, knowledge, and a respectable standard of living—were represented by the Human Development Index (HDI). Higher numbers reflect greater human development, and the scale runs from 0 to 1. Internet usage as a percentage of the population served as a proxy for internet spread, and data were gathered from the World Bank's World Development Indicators.

IV. RESULTS AND DISCUSSION

Table 1 reports the descriptive statistics of the variables considered in the model. During 2003-2020, the e-Government Development Index has an average value of 0.4855, with the highest value observed in two democracies: Denmark (0.9758, in 2020) followed by the Republic of Korea (0.956, in 2020). The progress of digital government across the sample has been remarkable. In the sample, the E-Government Development Index has increased from an average of 0.39 in 2003 to 0.45 in 2010, 0.56 in 2018, and 0.61 in 2020, which is very similar to the averages in all the countries surveyed by the UN.

Table 1: Descriptive statistics

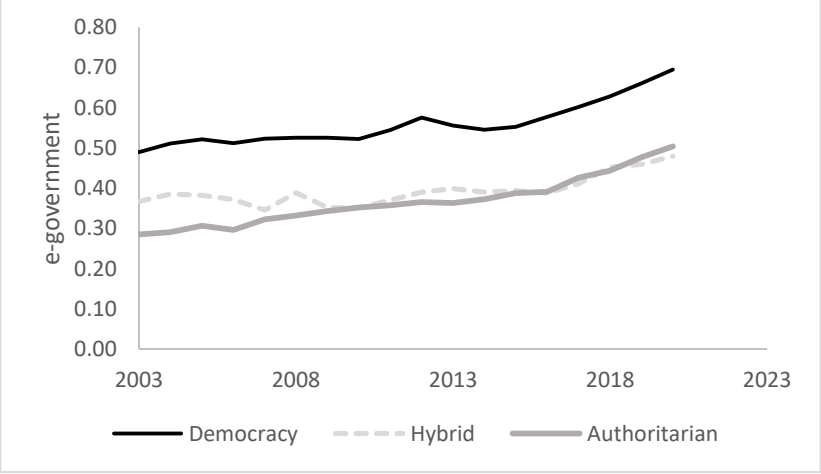
	Mean	Median	Standard deviation	Minimum	Maximum
e-Government Development Index	0.4855	0.4768	0.2217	0.0000	0.9758
Regime Type	2.36	3.00	0.864	1	3
Government effectiveness	-0.0349	-.2112	1.0038	-2.3077	2.4370
Human development	0.6855	0.7120	0.1671	0.2760	0.9570
Internet	37.0326	29.0350	31.2529	0.0000	100

Source: *Own calculations*

In the sample, in 2020, 24.8% of the countries have an authoritarian regime, 14.1% hybrid, and 61.1% a democratic regime. In the same year, more than 66% of the countries in the sample scored high or very high (above 0.50) in the E-Government Development Index, and among them the majority (74%) are democracies, and 18% have an authoritarian regime. All the countries with low scores on E-Government Development Index (under 0.25) are African, with authoritarian regimes (Eritrea and Chad), hybrid (The Central African Republic and Niger), and democracies (Guinea-Bissau).

Figure 1 displays the mean values of e-government by regime type in the period. A positive trend in digital government is observed, with a greater oscillation in values for hybrid regimes, and with an advantage for democracies. In democracies, the digital government increased from 0.49 to 0.69 from 2003 to 2020, in hybrids regimes from 0.37 to 0.48 and in autocracies from 0.29 to 0.5. A reduction in the gap between democracies and authoritarian regimes is also evident, as opposed to the gap between democracies and hybrid regimes, to the latter's disadvantage.

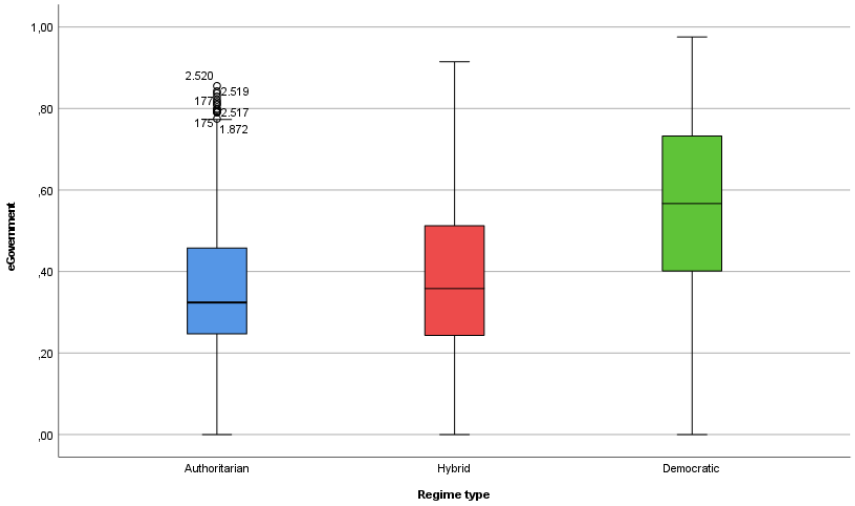
Figure 1: E-government average by regime type, 2003-2020



Source: *Own elaboration*

The distribution of the e-Government Development Index by regime type is shown in Figure 2. The E-Government Development Index's median score rises as we move from authoritarian to democratic nations. There are some outliers in authoritarian regimes that have very high levels of e-government development, such as Bahrain and the United Arab Emirates, even typically digital government development is less advanced in authoritarian and hybrid regimes than in democracies.

Figure 2: E-government by regime type, 2003-2020



Notes: The line in bold represents the median, framed between the 1st quartile (lower end of the box) and the 3rd quartile (upper end of the box). The lower and upper bars represent, respectively, the minimum and maximum of the distributions, and the circles are the outliers.

Source: *Own elaboration*

To analyse if there are statistically significant differences between the distribution of e-government with different regime types, it was used non-parametric statistical tests due to the unequal sample size. The independent-Samples Kruskal-Wallis (K-W) test ($\chi^2_{(2)} = 485.044$, p-value<0.0001) rejects the hypothesis that the distribution of e-government is the same across categories of Regime type. To understand these differences post-hoc tests were conducted. The pairwise comparisons of regime type reveal that there are statistically significant differences between e-government development in authoritarian and democratic regimes (K-W= -713,604, p-value=0.000), hybrid and democratic regimes (K-W= -593,304, p-value=0.0001), and hybrid and authoritarian regimes (K-W= -120,300, p-value=0.021) at a significant level of 5%, and when the significance values have been adjusted by the Bonferroni correction for multiple tests (control of type I error) the statistical differences between e-government in hybrid and authoritarian regimes are only significant at a 10% level of significance (K-W=-120,300, p-value=0.062).

Table 2 displays the findings of the bivariate correlation coefficients between the variables. The findings suggest a significant and favourable relationship between the growth of e-government and the Human Development Index, internet use, and the efficiency of the government. At a statistical significance threshold of 1%, the development of e-government has a positive link with democratic regimes and a negative correlation with authoritarian and hybrid regimes.

Table 2: Correlation Matrix

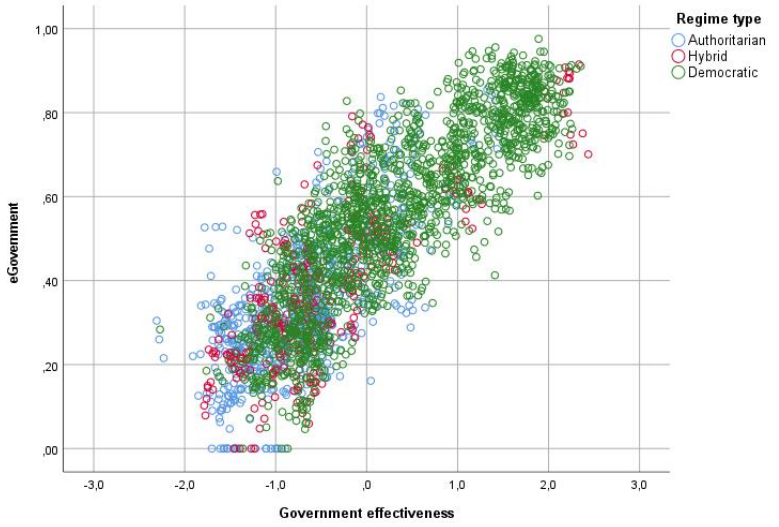
	EGov	**Demo-cratic**	**Hybrid**	**Autho-ritarian**	**Government effectiveness**	**Internet**	**Human development**
EGov	1,000						
Democratic	0,421**	1,000					
Hybrid	-0,162**	-0,477**	1,000				
Authoritarian	-0,346**	-0,752**	-0,220**	1,000			
Government effectiveness	0,853**	0,453**	-0,156**	-0,387**	1,000		
Internet	0,896**	0,340**	-0,126**	-0,286**	0,794**	1,000	
Human development	0,931**	0,412**	-0,176**	-0,325**	0,832**	0,849**	1,000

**. Correlation is significant at the 0.01 level (2-tailed).

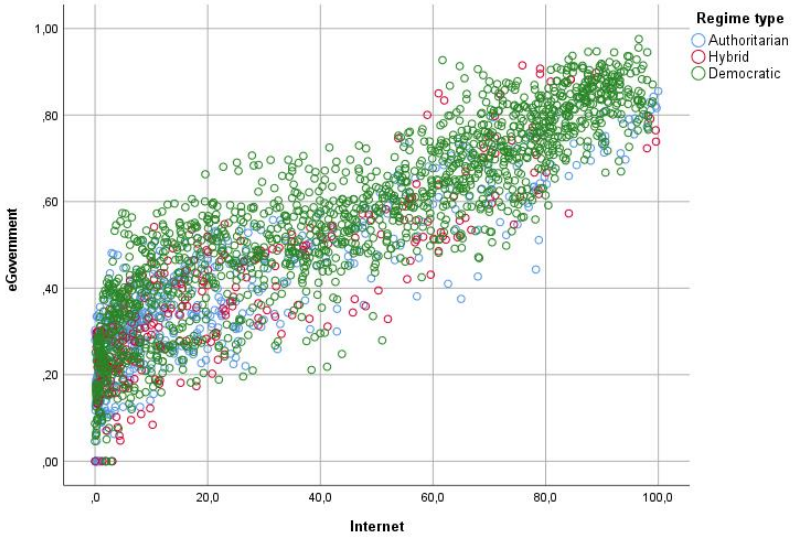
Source: *Own elaboration*

Scatterplots between e-government and the investigated factors aid in illustrating the pattern of the discovered correlations, which show a correlation between the internet, human development, and government efficacy (Figure 3 (a), (b), and (c), respectively).

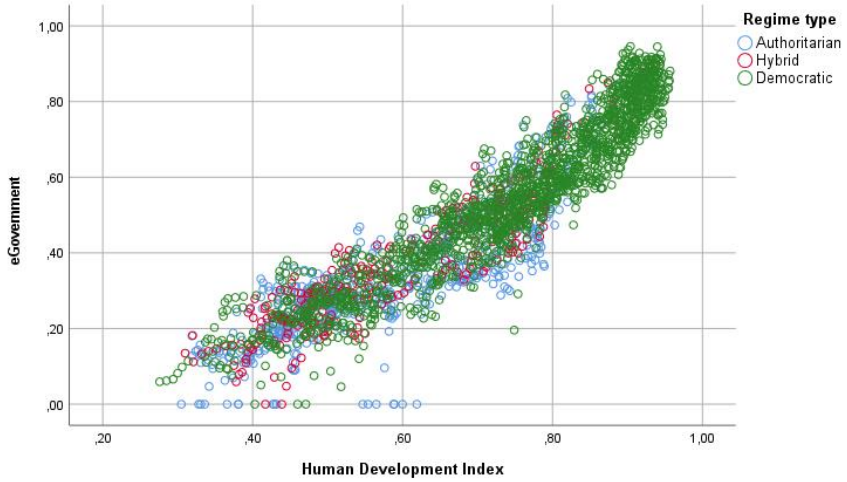
Figure 3: Scatterplot between e-Government Development Index and HDI (a), Government effectiveness (b), and Internet (c), highlighting the regime type.



(a)



(b)

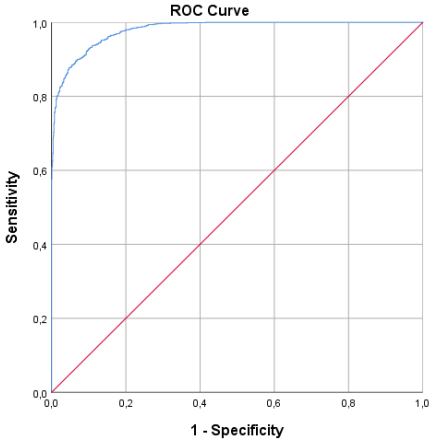


(c)

Source: *Own elaboration*

Table 3 reports the results of the binary logit model estimated by the Enter method. Results from the regression analysis, using the χ^2 Wald statistic of individual predictors in the model revealed that regime type is statistically significant at a significant level of 5%, and the other variables included are statistically significant at a 1% level. The Omnibus tests of model coefficients ($\chi^2_{(5)} = 2427.45$, p-value<0.0001), and the Hosmer-Lemeshow test ($\chi^2_{(8)} = 7.399$, p-value =0.494), suggest a good fit for the model. Good values were also obtained for the pseudo R^2 ($R^2_{\text{Cox \& Snell}} = 0.639$; $R^2_{\text{Nagelkerke}} = 0.853$). The model correctly classifies the outcome for 91.3% of the cases which is higher than 25% of the proportional percentage of correct classifications by chance (53.5%), demonstrating the usefulness of the model for classifying new observations (Marôco, 2018). This model has an excellent sensitivity (90.5%) and specificity (91.9%), and an excellent discriminating capacity (ROC curve: AUC=0.980; p<0.001) (Marôco, 2018) (Figure 4), with a Youden´s index of 0.824.

Figure 4: ROC curve of the logistic regression model



Source: *Own calculations*

Table 3: Results of the logit model estimation

Dependent variable: *eGovbin*

	Coefficient β	e^{β_i}	**Wald test**	**Std. Error**	**p-value**	
Constant	-15.591	0.000	146.668	1.287	0.000	***
Regime type			26.434		0.000	***
Regime type (a) (Authoritarian)	-1.086	0.338	25.477	0.215	0.000	***
Regime type (a) (Hybrid)	-0.543	0.581	4.121	0.268	0.042	**

Government effectiveness	0.910	2.485	22.820	0.191	0.000	***
Human development	19.938	455955446.155	119.986	1.820	0.000	***
Internet	0.044	1.045	77.089	0.005	0.000	***
Number of cases 'correctly predicted' = 2177 (91.3%) f(beta'x) at mean of independent vars = 0.499						

Notes: ** indicates that the z-statistic is significant at 5% and *** significant at 1%. (a) Reference category: Democratic regimes
Source: Own calculations

The regime type has a significant overall effect (χ^2_{Wald}=26,434; p-value=0.00) and in authoritarian regimes, the odds of having high or very high e-government development decrease by 66.2% ($(e^{\beta_i} - 1) * 100)$) compared with democracies. Also, in hybrid regimes, the chance of having a high or very high digital government decreases by 41.9% compared to democracies. The results support hypothesis 1 (H1) that e-government and democracy are closely related, and that authoritarian and hybrid regimes are less likely to promote e-government to high or very high levels, even though they may develop e-government initiatives. This is because the systems may not support transparency, accountability, improved interactions with business and industry, and citizen empowerment. Gulati and Yates (2011) also discovered that, in contrast to earlier studies that found this link to be insignificant, democratic regimes tended to give more government information and services online, and the indicator is statistically significant (West, 2005; Stier, 2015; Lee *et al*., 2011).

Government effectiveness is a significant predictor of e-government. If government effectiveness increases by 0.1 in the range of -2.5 to 2.5 the chance of having high and very high levels of digital government increases by 9.5%, which supports H2. Thus, governments with the concern of ensuring public services with quality-focused to citizens and to enhancing the accountability of their actions have a greater likelihood of having more e-government development. These findings are aligned with Azad et al. (2010), Mensah and Adams (2020), and Stier (2015), among others.

If human development increases by 0.01 points in the range 0-1, the likelihood of having higher levels of e-government increases by 22.06%, which supports our H3, and is consistent with the findings of Gulati and Yates (2011), and Pérez-Morote et al. (2020), among others. This indicator, which includes several dimensions of society and economy, such as access to education, life expectancy and a decent standard of living, has the highest impact on the likelihood of having high or very high e-government development.

Internet has a big impact on how e-government develops. A rise of 1 percentage point in internet usage increases the likelihood of having high or very high e-government development by 4.5%, indicating that it is an enabling force for digital government (which supports H2). Additionally, e-government and ICT dissemination were found to be positively correlated by Abdulkareem and Ramli (2021), Azad et al. (2010), and Moon et al. (2005).

V. CONCLUSION

With the advances of ICT, e-government has spread all over the world, although with different intensities and scopes of implementation. Digital government development is related to the interest and incentives of political elites and the regime type may influence that development. Thus, the goal of this work was to examine how the kind of regime affected the growth of e-government.

This research uses a logit model calculated for 149 countries in the years 2003 to 2020 to provide empirical support for the influence of regime type on the growth of digital government. This model makes it possible to categorise levels of e-government and makes it easier to understand how the evolution of e-government and the kind of regime relate to one another. Our findings indicate that the development of e-government across the countries is significantly influenced by all the factors taken into account. Our results support the hypothesis that autocracies and hybrid regimes are less likely than democracies to expand digital government to high or very high levels. The type of regime is an essential driver of e-government development. In other words, democracies are more likely than other types of governments to have higher degrees of e-government. As a result, nations that value electoral integrity, universal suffrage, open political parties, elected government, and competitive multiparty elections for their legislature and administration tend to place more of an emphasis on the advancement of e-government. At a time when there is almost a global struggle between autocracies and democracies, but where the autocrats face increasing resistance around the world, the transparency of information is fundamental.

Likewise, the diffusion of the internet, government effectiveness and human development enhance the likelihood of having high or very high levels of digital government.

Nevertheless, some autocracies score very high on e-government development (e.g. United Arab Emirates, Kazakhstan, Bahrain) and some democracies score very low (e.g. Guinea-Bissau, Liberia, Papua New Guinea). Thus, in a future investigation, it would be important to consider a more disaggregate level of regime type, to differentiate between weak democracies, mid-range performing, and high performing democracies, and to consider different types of autocracies. It is important to take into account additional factors relating to the institutional setting and the structure of the economy.

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