

SECTION: ICT AND GOVERNANCE

**VOICE AND ACCOUNTABILITY AND INFORMATION TECHNOLOGY
FOR LATIN AMERICA**

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ABSTRACT: By using conglomerate analysis, discriminate analysis and ANOVA analysis, this article aims to evaluate whether or not there are differences in the levels in which digital technology is being implemented between Latin American countries and their main business partners (China, the United States and Canada). The article also aims to evaluate if such differences could impact levels of Voice and Accountability. In the empirical study, two clusters of countries were formed, and the results obtained prove that first cluster has incorporated digital technology into society in a more decisive manner and the second not. Also, for the first cluster, its levels of Voice and Accountability are higher than in those comprising the second cluster, which has a lesser degree of incorporation of both variables. The authors conclude that the incorporation of digital technology into society can make a difference in the way citizens participate (Voice) and take a more demanding role (Accountability).

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1. Introduction

Governance has become one of the most hotly-debated topics in the public discourse. The term refers to the processes of interaction and decision-making between the actors involved in a collective problem, and the result of these interactions leads to the creation, reinforcement, or reproduction of social norms and institutions (Hufty, 2011). Governance also refers to citizenship (Prasad, 2013), signifying the way in which diverse agents are part of the decision-making process (Duit & Galaz, 2008). Finally, governance implies certain values and principles, and amongst these are Voice and Accountability, both of which form part of the study.

Governance is a collective process, and thus effective communication is a key factor in its practice. It is difficult to reach an agreement if there are no channels or means to include the actors involved (Keay & Zhao, 2018). Therefore, the level and quality of the information technology employed by each country is of significant importance in the dialogue (CLAD, 2007). This article aims to study the existing relationship between ICT (Information and Communications Technology) in the social context (E-social) in Latin America, and the level of governance related to Voice and Accountability (WGI). The statistical evidence shows that there are national variances in E-social implementation in Latin America, with some countries having made more progress than others.

In order to analyze E-social implementation and Voice and Accountability, a conglomerate analysis was undertaken in part 1 of the study in order to identify whether or not the region could be divided into clusters of countries according to the implementation-level of ICT for public purposes (E-social). As a result of this analysis, two clusters were formed. In part 2, an ANOVA analysis was conducted on the two clusters related to Voice and Accountability as defined by the Worldwide Governance Indicators (WGI) of the World Bank.

The findings demonstrate there is a difference between Voice and Accountability levels between both country clusters. In conclusion, the authors can state that countries that have implemented ICT strategies for improving E-social are more willing to participate in public discussions relating to Voice and Accountability.

2. Literature review

2.1. Governance

Governance refers to the way that decisions affecting all interested parties are taken (Monteiro, Do Rosário, & Meuleman, 2018). The number of participants increases in accordance with the social relevance of the topic (Palanisamy, 2004), with agents as diverse as civil society, mass media and the public and private sectors forming part of the decision-making process. The level of participation by each of these agents generally differs however (Graham, Amos, & Plumptre, 2003). For public issues, it is considered that participation must come from civil society since citizenship is the foundation of the state. However, in Latin America, it is common to find situations where government takes highly-discrete decisions or where the private sector has more power than the domestic governments (Vargas, 2004). In some countries the military is considered a fifth agent, one which can take the place of the public, private and social sector (Quintero, 2017) and one which leaves no space for the involvement of civil society in public issues. In countries where the military is not involved in public issues, governance also provides a mechanism whereby citizens can question formal governmental systems (Gómez, 2015).

According to the Governance and Sustainable Human Development report of the United Nations Development Program (Graham, Amos, & Plumptre, 2003), five basic principles for good governance can be observed.

These principles (Table 1, Appendix) refer to concepts that decision-makers can implement to facilitate process implementation and increase transparency and accountability. In

addition, ICT could offer new communication channels in order to improve the relationship between all interested parties and become an integral part of the decision-making process (Mehdi, 2010).

2.2. Electronic government as a means of citizen participation

Electronic government refers to the implementation, development and application of information and communication technology (ICT) in order to make government processes more efficient, improve the functioning of the public sector and optimize the intersectional relationship between the services that the state provides its citizens (Quintero, Sulbaran, & Peña, 2014). According to the World Bank (2014), electronic government is the use of ICT by government agencies with the purpose of modifying, transforming and evolving the relationship they have with citizens, the private sector and other public agents.

The implementation of electronic government is considered an opportunity for countries to improve public-sector processes (Asu, Patrick, Park, & Adjei, 2018). Thanks to electronic government, a closer relationship between citizens and their government is created. This relationship is framed by elements that foster transparency, accountability and the flow of information between both public and private agents (Rodríguez, Batlle, & Ayerbe, 2007).

In Latin America, where the relationship between government and citizens is not always close, the public sector is haunted by the spectra of corruption, impunity, unfairness, lack of inclusion and social injustice. Electronic government can be a way of improving the interaction between different social, public, and private agents, fostering citizen participation in government decision-making (Rana, Dwivendi, Williams, & Weerakkody, 2015).

However, to develop efficient electronic government, a minimum technological infrastructure is required for both domestic and international relationships. The growth of connectivity and the use of and access to ICTs leads to improved economic and social progress at national level, as well improved competitiveness (Spirakis, Spirakis, & Nikolopoulos, 2010).

2.3. Connectivity and its relationship with national competitiveness

According to the World Economic Forum (WEF, 2016), digitalization, access, use and development of ICTs at a national level provides citizens with improved access to basic services. This in turn impacts economic growth and leads to improvements in the quality of life. The Networked Readiness Index (NRI) measures the capacity for ICT exploitation and how it can be utilized to improve competitiveness and wellbeing at national level. However, NRI includes not only access to and use of ICTs but also digital resources and skills. It helps to identify the impact of information and communication technologies in the development and growth of nations and to compare the differences between a given groups of countries (WEF, 2016).

The connectivity index however seems to prove some unfairness factors that had not been previously considered, such as those related to internet access, education, digital literacy

and economic ability to access technology, as well as the reduced possibility for groups disadvantaged in these areas to use digital platforms to actively participate with their governments (Aguaded, 2002). The technological or digital divide is not just restricted to the use of ICTs, but also impacts the development of citizenship (Ramírez, 2011).

NRI measures the way in which nations take advantage of the opportunities that are generated by ICT (WEF, 2016), and is also related to the competitiveness relationship that a country has the capacity to reach when compared to other countries in the same region. In order to determine this factor, the NRI analyses the environment of the country, the attitude of the interest-group towards ICTs, and the effective use and social implementation of technology.

It must be clearly stated that the economic power of a nation does not necessarily reflect the level and social impact of ICT. Real improvements in IT connectivity will depend on the innovational purposes to which digital technology is put in new, technology-based business models (Coria, Pérez, Mendoza, & Martínez, 2011). For example, countries like Japan are being left behind by other nations such as Finland, Sweden or Singapore. The latter countries punch above their weight in terms of digital economic impact by utilizing the significant demand for digital products and services from a broad-based and ever-expanding network of digital consumers. Unfortunately for Latin America, where largely production-based economies are the norm, industrial power does not seem to play a key role in the new international economy (WEF, 2016).

Commerce and economy are not the only areas affected by ICT: these technologies generate a social dynamic that fosters citizenship and develops and regulates how citizens relate to government. These new dynamics improve not only the way in which a government interacts with its citizens but also improves national competitiveness on the international stage.

3. Methodology

3.1. Reference framework

The Global Information Technology Report published by the WEF (WEF, 2016) outlines the role that ICTs play in the development of nations, with six core principles, each comprised of 10 pillars, and 53 individual indicators (Table 2, Appendix). The NRI Index is defined using this information and is employed to measure the opportunities available to any given nation in the Fourth Industrial Revolution. This article analyses the pillar 10 (E-social) which reviews the impact of ICT in society. Pillar 10 is comprised of four sections, which are as follows: 1) impact of ICTs on access to basic services, 1-7 (best); 2) internet access in schools, 1-7 (best); 3) ICT use and government efficiency, 1-7 (best); and 4) E-Participation Index, 0-1 (best).

From the 53 indicators that form part of this index, more than half the sources are from international organisations such as the International Telecommunication Union, the World Bank, the United Nations Organisation for Education, Science and Culture as well as other United Nations agencies. In the 2016 version, the Global Information Technology Report

included data from 139 countries, which confirms its use as a reliable source of data for the study (WEF, 2016).

Further to the above, the WGI (Worldwide Governance Indicator) is an index which includes a group of dimensions that measure the way in which authority is executed within a country. It includes information on the recruiting, development and government replacement processes in more than 200 countries. The WGI represents the creation and implementation of strong policies, respect for citizens and the rule of law, and the interaction between public, economic and social institutions (The World Bank, The Worldwide Governance Indicators Project, 2016). The Indicator is comprised of six distinct dimensions: Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law and Control of Corruption. The information for these dimensions is drawn from data gathered by companies, citizens, non-governmental organizations, international organizations and country experts on government, industry and development subjects (The World Bank, The Worldwide Governance Indicators Project, 2016).

The purpose of this article is to evaluate these dimensions in order to ascertain whether or not a relationship exists between E-social (from the NRI Index) and Voice and Accountability (from the WGI Index) in the context of Latin America. Given the general lack of citizen participation in Latin American government, the ICT could be viewed as a bridge, linking and supporting the relationship between public, private and social sectors.

3.2. Empirical study and analysis

Hypothesis

Latin American countries and their most important commercial partners (Canada, China, and the United States) with a high level of E-social (from the NRI Index) also have a high level of Voice and Accountability (from the WGI Index). This could be ascribed to ICT supporting the relationship between the public, private, and social sectors, and which in turn affects the level of Voice and Accountability.

Conglomerate analysis

E-social is defined by the impact of technology on access to public services, the level of internet integration in the education system and the use of technology for government efficiency. When the statistics are evaluated, E-social is different in each of the two groups of countries. It should be noted that the other pillars of the NRI index do not appear to have any influence on the groups (Table 3, Appendix).

The E-social scale ranges from 1 to 7, with the highest score representing the most efficient E-social implementation. The E-social \bar{x} for the first group of countries is 5.0665, and for the second group is 3.5445 (Table 3, Appendix). It can therefore be concluded that, in the social context, the first group of countries is incorporating ICT more strategically than the second.

Based on conglomerate analysis, those countries showing the greatest differences in E-social implementation were divided into the following two groups: (Table 4, Appendix)

- *Group 1: Canada, Chile, China, Colombia, Costa Rica, Panama, the United States, Uruguay*
- *Group 2: Argentina, Bolivia, Brazil, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Paraguay, Peru, Venezuela*

Analysis of variance (ANOVA)

In the second step, an ANOVA test based on Voice and Accountability was carried out in the two clusters of countries in order to determine the level of variance between them (Table 4 and Table 5, Appendix).

The variance analysis demonstrated that there is a significant difference between both groups of countries, with Voice and Accountability ranging from -2.5 (for weak governance) to 2.5 (for strong governance). The first group of countries showed an average of .6013, with the second group showing an average of -.0519 (Table 6, Appendix). The statistical significance result is 0.041 (Table 7, Appendix). It can therefore be concluded that there is a difference between the two groups in respect of Voice and Accountability.

The statistical evidence confirms that the implementation of E-social in Latin America varies from country to country. The evidence further shows that one country cluster is making progress in the implementation of E-social and following the example of their most important economic partners (Canada, China, the United States), while the other Latin American country cluster is significantly slower at integrating ICT for social purposes.

Further to the above, differences can be observed in relation to Voice and Accountability levels between both country clusters. In other words, countries that have implemented ICT strategies for improving E-social are more willing to acknowledge the presence of Voice and Accountability in public issues.

Governance best-practice through ICT

Electronic governance not only signifies the use of tools to inform to citizens about public decisions, but it uses electronic communications technologies to improve the relationship between citizens and government (Pradana, Fanida, & Niswah, 2018). For example, according to the World Bank (2014), electronic governance implies the use of ICTs to change the way in which citizens and businesses interact with the government in order to foster citizen participation in decision-making, enhance transparency and accountability, improve access to information, and strengthen civil society.

Based on the previous results, Table 8 (Appendix) outlines some of the best electronic governance practices employed by the first group of countries (Canada, Chile, China, Colombia, Costa Rica, Panama, the United States and Uruguay). A review of these results could lead to the conclusion that voice and accountability and e-social are part of a sustainable international relationship. Countries where electronic governance practices are not widely employed in the social dimension and which do not have good governance

practices might endanger their international relationships (Jang, 2018). The second group of countries could be encouraged to adopt the good practices of the first group in terms of both E-social and Voice and Accountability.

Electronic governance brings new challenges for the nations and citizens that plan this new, participatory model: a model which is expected to create a more committed and interactive citizen-government relationship (Krishman, Teo, & Lymm, 2017). Even if national governments do find the aforementioned practices of interest, it is not possible to implement them universally. Some countries will find the difficulties attendant on ICT-platform implementation impossible to overcome, despite the desire to increase citizen certainty and confidence and improve political participation and citizen-government interaction (Smith & Smythe, 1999). In addition, digital barriers could be a limitation for this proposal (Petraiki, 2018), as the activities that both the United States and Uruguay implemented demonstrate the need for digital-access provision in order for participation to be guaranteed. This being the case, the United Nations, in its report *E-Government at the Crossroads* (UN, 2003) points out that in order to successfully implement digital governance, three conditions must be fulfilled: a basic technological infrastructure, human capital, and universal connectivity. It can be seen therefore that electronic governance is not only necessary for fomenting a better relationship between government and citizens, it is also a development issue.

4. Research limitation

The empirical study based on just two international indexes (E-social and WGI). A more detailed study should be carried out in order to define the most important variables affecting Voice and Accountability in the public sphere. The effect of ICT on Voice and Accountability could be considered as being limited in scope. It would be valuable to analyze the most important strategies for each specific country and review how the actors participate in the public process.

5. Conclusion

Citizen participation refers to the way in which a population consents to and participates into government decision-making and actions (Serrano, 2015). In order for a high level of civic participation to be reached it is necessary for there to be an efficient mechanism for mediation between society and government, since those most impacted by government decisions must be considered (Sánchez & Muriel, 2007). Moreover, citizens have a greater commitment to society and greater approval of government when they are included in decisions which affect them. Promoting citizenship is relevant particularly in countries where civic participation in public decision-making is extremely low (Lindón, 2012).

Countries that implement strategic electronic governance practices are focused on reducing the digital gap, and this includes the need to improve connectivity levels, as well as digital access and education.

It is concluded that the incorporation of ICT affects the public sphere and influences how citizens participate and play a more active role in holding governments to account for their decision-making. The incorporation of digital technology for a better public sphere can make a significant difference on Latino America countries.

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Appendix

TABLE 1. BASIC PRINCIPLES FOR GOOD GOVERNANCE

PRINCIPLES	
1. Legitimacy and Voice	It is about the need to count on effective participation channels which can be accessed by everyone. Moreover, it is related to the need of consensus among all parties that are interested in the decisions to be taken.
2. Direction	This principle considers the need of a strategic vision based on the search of human development, understanding the historical, cultural and social complexity of the environment.
3. Performance	This principle considers the need for institutions at the service of its interest groups to act responsibly, and for those actions to be efficient and effective, that is, to produce real results using the resources in the best possible way.
4. Accountability	This principle states the need to consider two factors, accountability and transparency. Governance implies that decision-makers account for their processes and choices to the rest of the interest groups, as well as to state the processes or means through which they will make all the processed information available to everyone.
5. Fairness	The principle of fairness considers that everyone must be treated equally and fairly, counting on the same opportunities of expression and participation in the decision-making. This principle also includes equality before the law and the protection of human rights.

Source: Prepared by the authors based on Graham, Amos, & Plumptre (2003).

TABLE 2. NRI INDICATORS

A. Environment sub-index	1. Political and regulatory environment
	2. Business and innovation environment
B. Readiness sub-index	3. Infrastructure
	4. Affordability
	5. Skills
C. Usage sub-index	6. Individual usage
	7. Business usage
	8. Government usage
D. Impact sub-index	9. Economic impacts
	10. Social impacts (*)

Source: Prepared by the authors on the basis of World Economic Forum Report (WEF, 2016).

TABLE 3. CREATED GROUPS (CLUSTERS)
 DUE TO DIFFERENCES IN THE NRI (10: SOCIAL IMPACT)

Cluster number cases		
1	Valid	Canada
		Chile
		China
		Colombia
		Costa Rica
		Panama
		United States
		Uruguay
2	Valid	Argentina
		Bolivia
		Brazil
		Dominican Republic
		Ecuador
		El Salvador
		Guatemala
		Guyana
		Haiti
		Honduras
		Jamaica
		Mexico
		Nicaragua
		Paraguay
		Peru
		Venezuela

Source: Prepared by the authors on the basis of World Economic Forum Report (WEF, 2016).

TABLE 4. SOCIAL IMPACT MEASURES OF BOTH
 COUNTRY CLUSTERS

Number of cluster cases	10th pillar: Social impacts
1	5.0665
2	3.5445
Total	4.0518

Source: Prepared by the authors on the basis of World Economic Forum Report (WEF, 2016).

TABLE 5. VOICE AND ACCOUNTABILITY INDEX

	COUNTRIES	VOICE AND ACCOUNTABILITY INDEX
Cluster 1	Canada	1.38
	Chile	1.00
	China	-1.62
	Colombia	.10
	Costa Rica	1.14
	Panama	0.53
	United States	1.10
	Uruguay	1.18
Cluster 2	Argentina	0.54
	Bolivia	0.01
	Brazil	0.47
	Dominica	0.19
	Ecuador	-0.25
	El Salvador	0.28
	Guatemala	-0.29
	Guyana	0.30
	Haiti	-0.73
	Honduras	-0.43
	Jamaica	0.69
	Mexico	-0.09
	Nicaragua	-0.63
	Paraguay	-0.04
	Peru	0.28
	Venezuela	-1.13

Source: Voice and Accountability Factor of the Worldwide Governance Indicators (WGI) (The World Bank, The Worldwide Governance Indicators Project, 2016).

TABLE 6. AVERAGE OF BOTH THE CLUSTERS OF COUNTRIES BASED ON VOICE AND ACCOUNTABILITY INDEX

	N	AVERAGE
Countries with high Voice and Accountability Index	8	.6013
Countries with low Voice and Accountability Index	16	-.0519
Total	24	.1658

Source: Voice and Accountability Factor of the WGI (The World Bank, The Worldwide Governance Indicators Project, 2016).

TABLE 7. ANOVA STUDY IN BOTH CLUSTERS OF COUNTRIES
 WITH THE VOICE AND ACCOUNTABILITY INDEX

ANOVA. Voice and Accountability Index					
	Sum of squares	df	Mean Squares	F	Sig.
Between groups	2.275	1	2.275	4.719	.041
Within groups	10.606	22	.482		
Total	12.881	23			

Source: Voice and Accountability Factor of the Worldwide Governance Indicators (WGI). (The World Bank, The Worldwide Governance Indicators Project, 2016).

TABLE 8. ELECTRONIC GOVERNANCE GOOD PRACTICES

COUNTRY	PRACTICES
Canada	The Canadian government took advantage of the electronic government in order to put all its services together in a platform that has an order and a logic sense, as well as a system that recognizes users to avoid interruptions within the site. It has worked on improving federal government visibility online through the idea that it is an access to the whole government and encouraging citizens on the importance and advantages of interacting through virtual media. It has worked on personnel training to reach a personalized service that allows for the solving of complex problems.
Chile	Chile has based the development of its electronic government under the principles of social justice, at the same time looking for a way of improving citizens' participation in the government's actions. On the other hand, the use of technology for government matters has allowed it to go beyond administrative changes and establish long-term policies on matters of social relevance in which citizenship participate.
China	Since 2001, the government has been accelerating the implementation pace and usage of information and communication technologies to improve the efficacy and efficiency of the administration. Reforms have been made to broaden the capacity of the central government to receive users, creating institutional mechanisms that aim at integrating and sharing electronic government applications among the provinces and the local governments. This becomes especially useful to citizens who live in less developed provinces or that do not count on central government offices.
Colombia	Colombia launched the GEL (<i>Gobierno en Línea</i> - online government) strategy that has the objective of achieving that the public and private entities, which comply with public functions, offer their services through electronic media, foster empowerment and the collaboration with the citizens of the government, improve public entities' management through the incorporation of information and communication technology and guarantee the safety and privacy of such information.
Costa Rica	The electronic government of the country is regulated by a combination of policies managed by the Presidency from an Interinstitutional Commission of Digital Government. The idea of counting on only one entity is to provide certain standardization to different administrative processes, which offers certainty to the users in the different platforms.
Panama	Panama signed participation agreements with technology companies such as Huawei to foster the technological development of the region and their government. Moreover, Panama has tendered different information systems for register systems, electronic signature and other diligences. Panama launched, with the support of some electronic governments, the programme Paperless Panama, creating digital kiosks to perform administrative paperwork as well to get in contact with state entities and to give opinions on government matters.
United States	From the work performed by the administrations of Clinton, Bush and Obama, United States citizens have the capacity of accessing multiple electronic participation media that range from electronic voting, services related to health care, tax declaration and much more governmental information that was not available

TABLE 8. ELECTRONIC GOVERNANCE GOOD PRACTICES

COUNTRY	PRACTICES
	before. This created a more transparent and responsible face for the government. After many years of vertical models, when citizens saw electronic government as an advisory board, Today, a more participative image has been developed, where the flow of information is multidirectional creating cyber-security. To achieve this, it is necessary to provide universal access and the generalized use of technology as a rule
Uruguay	Uruguay has launched modernization projects and access to technology for its citizens, taking into consideration that these points are key to the development of the country. It is pointed out that we cannot talk about social and economic development if the institutions have not been modernized. Today, this drive has accomplished that 600 of the 1400 administrative processes of the central government could be started online and 400 could be carried out completely electronically. This government aimed at reducing the digital breach with the modernization of its cities and the education system that currently has Internet all over the country.

Source: Prepared by the authors on the basis of The World Bank (2007, 2017), Roy (2008), West (2008), OECD (2016), Singh (2016), Colombia Digital (2017).