

E-Government and Government Support for the Digital Economy in Latin America and the Caribbean

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ABSTRACT

In today's world all countries, both developed and developing, digitalization processes are rising rapidly. They concern both state organizations and private companies and the public. Digitalization has an impact on the welfare of the population, the economic development of the country and its global competitiveness. Almost all countries in the LAC region have created their own programs, plans and strategies for the development of the digital economy. The article provides a will comparative characteristic of the state's approaches and digitalization achievements in LAC. It is shown that the virtual space is developing dynamically; the number of users is steadily growing, on the other hand, the infrastructure of the LAC Internet remains poorly developed. In almost all countries, public services are being transferred to the Internet, which provide many advantages in the future. Behavioral research has shown a positive relationship between the development of state support and the development of the digital economy. Leading countries invest 20% of their GDP in training and innovation, which makes them leaders. LAC has good prospects in terms of Internet development and digitalization of the economy, but it must use them correctly and in time.

Keywords: *digital economy, e-government, digitalization, Latin America, public policy, LAC=Latin America and the Caribbean*

1. INTRODUCTION

According to world statistics, LAC is a region with a dynamic developing virtual platform. In the new millennium, the region ranked fourth in terms of the number of Internet users (and still ranks this place): 18 million people [1].

In an era where almost, any product can be found, purchased, and delivered using a mobile phone or computer, the digital divide between business and government organizations can create serious problems. Today with almost all the governments and regions of the world, they have a current digital agenda, in LAC countries the governments of almost all the countries in the region are promoting the introduction of digital technologies and aim to put information technology at the service of citizens. Currently, 73% of LAC countries have a digital government strategy and plan. The region ranks third after Europe and the United States in terms of the average amount of time a user spends on the Internet per month is 21.1 hours on social networks and other pages. Among all the most social countries in LAC and with the highest average daily time on the Internet in 2019 is Brazil with 3.75 hours a day in the next place, Colombia with 3.6 hours in third place, Argentina with 3.45 hours in fifth place, Mexico with 3.16 hours in eighth place [2]. Raúl Katz, Argentine administration consultant, member of the International Telecommunication Society, said:

“Regulators and market policies, in collaboration with the private sector, must do three efforts: 1) increase the availability of Internet access broadband; 2) promoting the spread of digital literacy in educational programs and offering training; and 3) develop Internet content that is appropriate, useful and attractive to the population” [3]. It can be assumed that if the governments of the LAC countries that actively participate in, stimulate and support innovation and digital transformation projects in various areas of the economy, these countries could have a change in the economic situation. In addition, countries that have great government support and a short and long-term digital development plan show economic growth in the country, increasing its GDP and increasing its global competitiveness.

According to the Global Competitiveness Index, developed by the World Economic Forum, only 3 countries in the region of LAC are among the 50 most competitive countries in the world, it is difficult to be a competitive country when many steps and documents are required to create a company or register a property, which in many cases takes months to achieve. It is no coincidence that countries like Singapore or Sweden, which saw the opportunity to transform their public sector with new technologies and digitalization of processes, are currently in the top 10 countries in the world in terms of competitiveness. This article will allow us to consider the relationship between government policies for the development of the digital economy in Latin American countries, and also the digitization of government in LAC.

1.1. Related work

The World Bank [4] defines e-government as the use of information technology to improve business processes and service delivery by government departments and other government entities. E-government is about the opportunity to provide cost-effective services to the private sector, to enhance governance through improved access to accurate information and transparent, responsive, and democratic institutions [5]. The state governments are more conscious and concerned about citizens' active engagement in the procedure and implementation of e-government projects, to assist in achieving democratic society, and improving the performance of the country's administrative institutions, and enables transactions between concerned groups (citizens and businesses) and the government through multiple channels [6]. Dunleavy describes this trend as "digital-era governance", which is perceived as critical for the emergence of post-new public management governance this "offers a perhaps unique opportunity to create self-sustaining change, in a broad range of closely connected technological, organizational, cultural, and social effects" [7]. This change has been a major contributor to economic growth [8]. As "a broad range of economic activities that include using digitized information and knowledge as the key factor of production, modern information networks as an important activity space, and the effective use of information and communication technology (ICT) as an important driver of productivity growth and economic structural optimization" [9]. The age, education, and broadband are three variables for access at home that significantly influence citizens' adoption of the Government Gateway [10]. The business models have changed in the process of transformation in the digital economy as e-business, everyday people has communication through social media and transformed offering e-government services [11]. Intelligent products, connectivity, and big data analytics are expected to be disruptive for companies' business strategies and operational execution [12]. When it comes to digital technology, industrial companies become active investors [13].

In the United Nations e-Government Readiness 2018 report on LAC, the region managed to place five countries in the top 50 for the first time in history, with Uruguay as the flagship in 34th position. However, the average rating of the group is not so encouraging: still, 12 countries in the region remain below the 100 positions. According to a study recently published by the inter-American Development Bank, less than 30 % of all formalities can be completed completely online, and only 7% of LAC citizens have completed their last online procedures with the government, in other words: governments and citizens still suffer from a syndrome of paper documents or certificates. Mauricio Agudelo, an expert from (CAF) 2018, wrote these efforts to create a regional market digital driven by the needs of each country; therefore, there were not enough incentives for effective regional integration throughout LAC, as each country faces different situations [14]. The situation in many developing countries is

changing very quickly; the spread of information technology cannot be stopped. The population is rapidly being incorporated into digital processes, which determines good prospects for the LAC region [15].

In Russia, economic transformations occur and develop fast, but criteria reflecting the quality [16]. It is generally regarded as a type of economy based on digital information. To be more specific, a digital economy promotes the circulation of commodities and the development of the service industry by means of the exchange of digital information and online trade [17].

1.2. Our Contribution

LAC countries, is in the process and transition of digitization. This article provides a comparative analysis of the current state of digitization in the countries of the LAC, compares government programs and digital development strategies. In addition, the study showed that investments in digital infrastructure are a factor in the development of countries and that the training and education of the population, Internet access, broadband, etc., are positively correlated with the development of electronic government and state support. E-government can reduce the number of hours citizens need to complete their procedures and documents and gradually eliminate bureaucracy, doing it easier and faster, thus increasing public confidence in their government. In this way, state support for digitization in LAC will allow them to reach a new level of development for the population.

1.3. Paper Structure

The rest of the paper represents a comparative description of current state support for the digital economy in the countries of the LAC region and the actual situation of digitization in the countries of LAC. The basis of the study was the analysis of studies by Russian and foreign authors; in order to carry out this analysis, the comparison of socioeconomic indicators and the digitization plans of the governments of several LAC countries was used, in addition to the use of sources such as the World Bank, Statista and other open sources. As a final part, the conclusions are formulated using the generalization method.

2. BACKGROUND

2.1. Findings

Digitization is occurring worldwide, in both developed and developing countries, this digitization opens new opportunities for economic growth, as well as for solving social and economic problems in the country [18]. The basis for digitization is the information technology and, to

a greater extent, internet access. Internet users in LAC represent 10% of all users on the global net [19]. The largest number of Internet users is concentrated in the largest countries in the region such as Brazil, Mexico, Argentina, Colombia and Peru (Table 1), which is

explained by the demographic indicators of these countries.

In table 1. compares the percentage of internet users in LAC countries and GDP per worker in LAC; It is identified that the higher the GDP, the greater the access to the Internet.

Table 1 Percentage of Internet users in LAC countries and GDP per worker in LAC.

Number of internet users in LAC countries (in millions)			Value added by the services industry to the gross domestic product (GDP) per worker in LAC in 2018, by country or territory (in U.S. dollars)
Internet users 2018, by country		% users	Services value added to GDP per worker 2018, by country
Brazil	210.8	69%	21,149.8
Mexico	89	67%	24,994.5
Argentina	44.68	58%	17192.4
Colombia	49.46	69%	13,564.6
Peru	32.55	73%	10,691.7
Venezuela	32.38	72%	No dates
Chile	18.19	82%	26,423
Ecuador	16.86	81%	10,475.7
Guatemala	11.54	65%	9,580.2
Bolivia	11.25	43.90%	5,052.6
Paraguay	6.89	65%	8,565.6
Honduras	4.1	36%	6,808.4
El Salvador	3.8	26.50%	8,498.5
Costa Rica	3.76	74%	21,691.3
Nicaragua	3.1	62.20%	4,030.7
Uruguay	3.46	78%	26,968.1
Panama	2.63	57.78%	24,312.2
Barbados	0.26	82%	32,502.7
Trinidad and Tobago	0.7556	77%	23,573.5
Cuba	2.89	25.20%	17,098.2
Dominican Republic	4.04	37.50%	14,172.5
Suriname	0.568	33%	13,312.9
Belize	0.06	15%	10,183.9
Jamaica	1.01	35%	9,922
Haiti	2.03	18.50%	856.6
Guyana	0.78	35%	8,262.7

Source: created by the author, Statistica / World Bank/ OECD / Internet World Stats. In this figure, the proportion of Internet users of the entire population of the region is 65% as of June 30, 2019. The leader is Argentina (Fig. 1.).

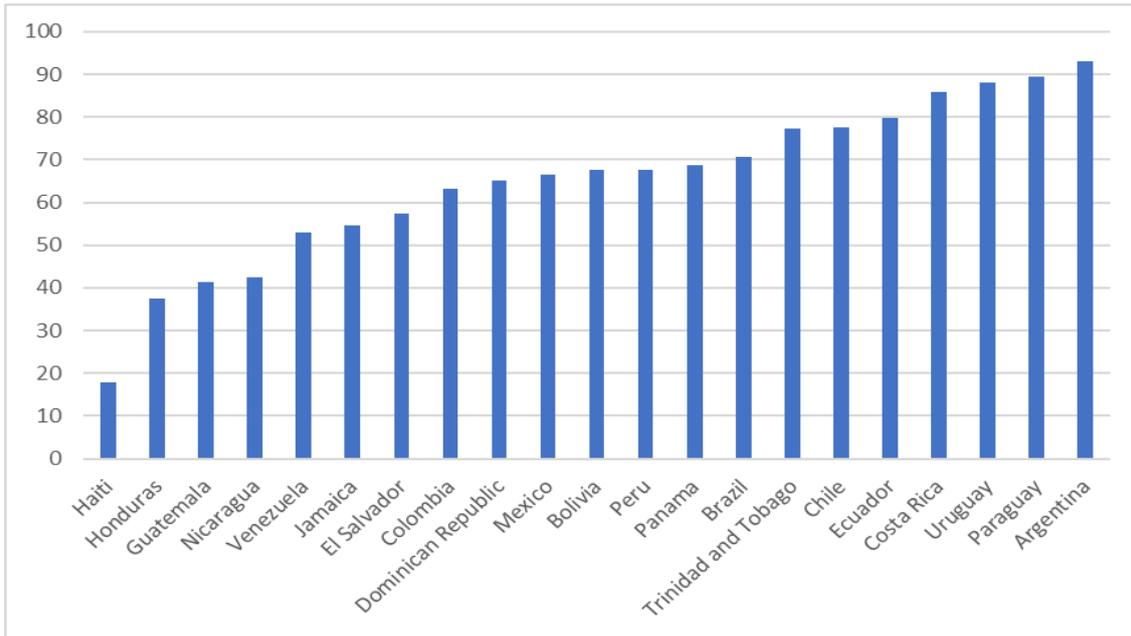


Figure 1 Latin America and Caribbean - internet penetration 2019, by country, %

Source: built according to www.internetworldstats.com

Households that have access to the internet, mainly through broadband or through smart-phones, tablets, mobile phones.

Broadband is the fastest and most convenient way to connect to the network, but it requires investment and government support. In 2018, the largest number of broadband internet users are Uruguay and Argentina, the smallest countries in Latin America, Honduras, and Nicaragua (Fig. 2).

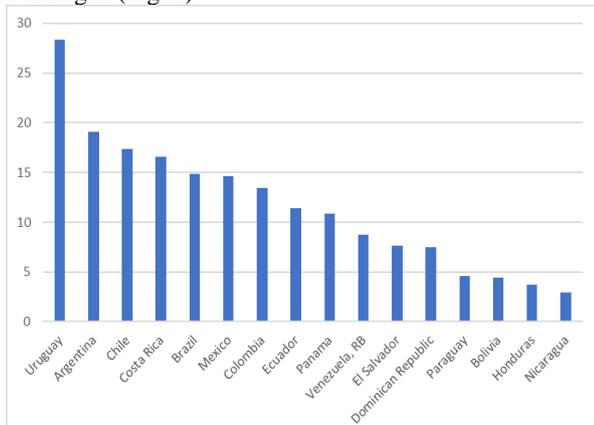


Fig.2. Fixed broadband subscriptions (per 100 people) on Latin America and the Caribbean, 2018

Source: built according to the world bank <https://data.worldbank.org/>

In most developing countries, the engine of growth in the number of Internet users is mobile communications, which is increasing rapidly due to its easy access and low cost. Costa Rica is the leader in the number of people with

mobile phone use (Fig. 3). Within the five leading countries they have changed slightly compared to broadband users; Brazil is not inside and El Salvador is in third place.

Figure 3 Mobile cellular subscriptions on Latin America and Caribbean (per 100 people)

Source: built according to the World Bank <https://data.worldbank.org/>

The leading countries in LAC are Argentina, Uruguay, Costa Rica, and Chile, in digitalization, they have the largest number of users with internet access, as a consequence they have a higher consumption of services given by a digital economy. The countries lagging behind in this indicator are Nicaragua, Honduras, Venezuela, Bolivia. On the other hand, Chile, Argentina, Uruguay, and Costa Rica belong to the group of leading countries in terms of preparing the infrastructure base for the transition to a digital economy. The countries lagging behind in this indicator are: Haiti, Nicaragua, Honduras, Venezuela [15]. According to the online portal Statista, the proportion of Internet users among young people in LAC is very high: in Brazil - 98%, Chile - 96%, Argentina - 92%, Ecuador - 90%, Peru - 84%, Mexico - 83%. Therefore, it can be argued that the young generation in LAC countries behaves more freely in the Internet environment, which will undoubtedly give results in the coming years. The situation of digital transformation in LAC governments that officials acquire new skills. The successful countries in e-government have invested in human talent in areas less common to the public sector, such as systems engineering, data science, or artificial intelligence. Ideally, almost all government services are transferred online, procedures should be simple, and in the region,

state procedures remain cumbersome and complex. On average, it takes 5.4 hours to complete a process (Fig. 4), and 25% of them require more than three trips to a government agency to complete a process. This bureaucratic entanglement becomes as damaging as silent corruption: 29% of LAC people admit that they paid some kind of bribe to complete the public hearing. The civil demand and the needs of the population is the best digital catalyst, to achieve this there must be a digital transformation of the state and be supported by companies and society as a whole. Another point to see digitization in the government is how many hours does each citizen needs to complete a process.

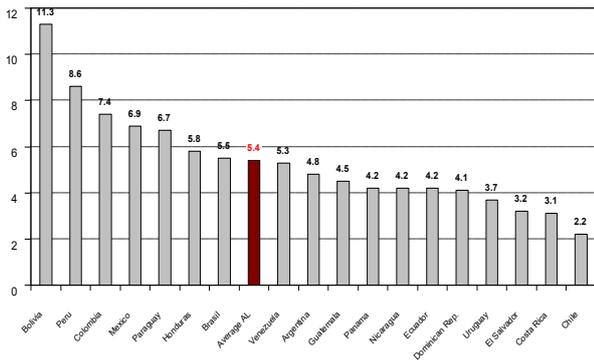
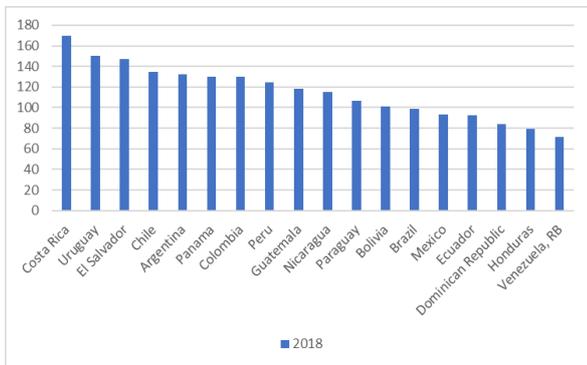


Figure 4 Average hours required to complete a process in Latin America for each country



Source: InterAmerican Development bank [20].

The average of LAC in the use of digital platforms to carry out a process in whole or in part electronically is 7%, the countries with the highest percentage of people who have completed an online process are Peru and Argentina, with the 12%; Chile 11%; Colombia, Mexico and Uruguay 10% [20]. According to experts, only 1% of the world's information is used. Connecting to the digital economy will allow governments to use the information to be more effective and transparent in their government. In other words, it will give states a second chance to restore citizens' trust and build governments that truly serve their citizens.

Government web sites and portals are quite popular with the LAC internet audience. According to com.Score, they are visited by approximately a third of internet users (61.2 million), while Brazil as the leader (34.7 million), after Mexico (7 million), Argentina (5.6 million) and Venezuela by a wide margin with (4.4 million). In many countries, they do not have a structural organization that has at least these three clear objectives: (1) connects with the maximum number of decision-making sectors, (2) Create coordination mechanisms with all relevant entities both within and outside the government, and (3) support for the implementation of the entire state apparatus. A recent study by IBD in a Central American country found that 97% of government departments do not have a budget to invest in projects that promote the digital agenda. However, initiatives in this area are beginning to have a significant impact on both citizens and businesses, and on the government itself.

In table 2 shows the digital plans of the LAC governments with the level of development of the population as well as the e-government index of each country and its income. Of the five countries with a low level of population development, only one of them has a digitization plan, the rest are in the process of developing one. Unlike what happens in countries with a high level of human development, everyone has a digital plan with clear objectives and goals for a period of five years. On the other hand, this coincides with the fact that the countries with the highest level of human development also lead the digitization rating and have high incomes.

Table 2 Latin American Plans Government Digitization

Human Development Index - World Forum Economy	Latin America and the Caribbean	Digital Plan	EGDI E-government Development Index 2018
Countries with a very high level of human development			
44	Chile	<p style="text-align: center;">Plan «Digital Agenda 2020»</p> <p>Increase the digital infrastructure in the country to create smart industries, in addition to a plan that identifies six areas in which artificial intelligence can be incorporated, this action plan is called: "National Telecommunications Infrastructure Plan for the country».</p>	<p style="text-align: center;">42</p> <p>EGDI 0.7350 High income</p>
47	Argentina	<p style="text-align: center;">«National Digital Inclusion Plan»</p> <p>The plan seeks to guarantee that each Argentine has the opportunity to access technology and use it for personal growth. There are 369,221 people qualified for a digital transition.</p>	<p style="text-align: center;">43</p> <p>EGDI 0.7335 Upper middle income</p>
55	Uruguay	<p style="text-align: center;">«Agenda Uruguay Digital 2020 -Transforming with equity»</p> <p>It includes several priority initiatives aimed at promoting the digital transformation of the country in an inclusive and sustainable way through the rational use of technology. This is due to the fact that more and more Uruguayans can take full advantage of information and internet access to increase knowledge in an environment of equal opportunities.</p>	<p style="text-align: center;">34</p> <p>EGDI 0.7858 High income</p>
63	Costa Rica	<p style="text-align: center;">«Costa Rica- towards the first digital economy in the region »</p> <p>In 2018, a digital action plan was implemented with the participation of key leaders and agents from the public, private and academic spheres, with the aim of uniting in a roadmap or plan that allows Costa Rica to become a dynamic digital economy. , transparent and promoter of the economic and social development of the nation.</p>	<p style="text-align: center;">56</p> <p>EGDI 0.7004 Upper middle income</p>
66	Panama	<p style="text-align: center;">Digital Government of Panama Enhancing the Digital Transformation of the Public Sector 2018-2022</p> <p>Its main objectives are: Development of a knowledge-based society as a means to reduce the digital divide; Universal broadband internet access and Development of electronic government services.</p>	<p style="text-align: center;">85</p> <p>EGDI 0.6092 Upper middle income</p>
69	Trinidad and Tobago	<p style="text-align: center;">«Trinidad and Tobago's National ICT Plan ICT Blueprint 2018 – 2022»</p> <p>Empowered People. Competitive Businesses. Transformational Government. The result is to create a plan with the needs and priorities of the government, companies and citizens, as well as regional commitments. and international of the country. The plan outlines the national ICT agenda, builds on the country's ICT achievements in the past and proclaims a bold vision for a future transformed with ICT and characterized by empowered people, competitive companies and a transformative government.</p>	<p style="text-align: center;">43</p> <p>EGDI 0.7350 High income</p>
74	Mexico	<p style="text-align: center;">Mexico digital MX</p> <p>A national digital strategy is an action plan that is being implemented to create a digital Mexico, in which technology and innovation contribute to achieving the country's great development objectives. Its main objectives are: digital transformation, digital economy, educational transformation, universal and effective healthcare, civic innovation and civic specialties.</p>	<p style="text-align: center;">64</p> <p>EGDI 0.6818 Upper middle income</p>
78	Venezuela	<p style="text-align: center;">Public policies for internet access in Venezuela 2000-2017</p> <p>The last published digital plan of the Venezuelan government was from 2000-2017.</p>	<p style="text-align: center;">106</p> <p>EGDI 0.5287 Upper middle income</p>
79	Brazil	<p style="text-align: center;">The Digital Government Strategy 2020-2021</p> <p>The digital transformation has two pillars: the digital transformation of the economy, in citizenship and the government. With this strategy, it seeks to transform all government institutions with: PDTIC Plans, Open Data Plans - PDAs and Information and Communications Security Plans.</p>	<p style="text-align: center;">44</p> <p>EGDI 0.7327 Upper middle income</p>
86	Ecuador	<p style="text-align: center;">National Electronic Government Plan 2018-2021</p> <p>It offers an inclusive, close to citizen, effective and efficient model, consistent with the state policy of the national government, which seeks greater participation and interaction between citizens and the state.</p>	<p style="text-align: center;">84</p> <p>EGDI 0.6129 Upper middle income</p>
89	Peru	<p style="text-align: center;">«Development plan of the information society in Peru»</p> <p>The state seeks to create an adequate telecommunications infrastructure that promotes public and private investment in order to stimulate competitiveness, universal access, and national integration. It should promote the development of backbone networks, expand the infrastructure of telecommunications services, and stimulate the development of new unattended areas.</p>	<p style="text-align: center;">77</p> <p>EGDI 0.6461 Upper middle income</p>

90	Colombia	Institutional Strategic Plan 3 MINTIC - 2019-2024 Achieve the digitization of all sectors at the national level by 50%, through a digital platform to improve social welfare and increase the country's productivity, innovation and competitiveness.	61 EGDI 0.6871 Upper middle income
94	Dominican Republic	«Digital Agenda of the Dominican Republic 2016-2020» The main development themes for the coming years focus on various strategic areas in: infrastructure and internet access; electronic government and digital services; human capital; productive development and innovation.	95 EGDI 0.5726 Upper middle income
97	Jamaica	-----	118 EGDI 0.4697 Upper middle income
106	Belize	-----	132 EGDI 0.4115 Upper middle income
110	Paraguay	Digital transformation: A connected country, a Competitive Paraguay. Digital Government + Connectivity + Digital Economy It seeks to become a modern nation with fewer face-to-face procedures and more through digital platforms. Related schools, health services, police stations and community facilities. Greater transparency in government; faster internet at a lower price; new opportunities for all citizens.	108 EGDI 0.5255 Upper middle income
Countries with an average level of human development			
118	Bolivia	E-Government Plan 2015-2020 (Bolivia) They emphasize the need to change the state's attitude towards technology and, in particular, towards information and communication technologies.	103 EGDI 0.5307 Lower middle income
121	Salvador	-----	100 EGDI 0.5469 Lower middle income
124	Nicaragua	-----	129 EGDI 0.4233 Lower middle income
127	Guatemala	-----	113 EGDI 0.4974 Lower middle income
133	Honduras	In 2015, a digitization plan was implemented, which has not been updated, and in September 2018, the first agreement was signed to support the digitization of companies.	123 EGDI 0.4477 Lower middle income
168	Haiti	-----	163 EGDI 0.3047 low income

Source: created by author, UN, e-government and UNPAC

*E-Government Development Index (EGDI). [21] The data shows that the countries with the highest development in their population also have a high index of e-government and have high or upper-middle incomes, and they also have a digitization plan that allows them to achieve their objectives.

Countries with a low level of development in their populations have a very low level of e-government, and their incomes are low or medium income. In many cases, the creation of a specialized agency and a ministerial plan was decisive, but we understand that the most successful reforms are those that quickly affect the daily lives of citizens. For example, Mexico and Colombia with the creation of digital programs for public attention. These reforms, due to their visibility, not only led to an immediate improvement in citizen service, but also created

the necessary political space for other more structural reforms. The study showed that in Nicaragua, Guatemala, Guyana, Grenadines, Granada, Guyana, Nevis, Panama, El Salvador, Ecuador, the digital economy is just beginning to develop or is completely absent

2.2 Results

Latin America is currently in a period of transition towards the full development of the "information society". As in any transit, there are contradictions. On the one hand, the virtual space is developing dynamically, the number of users is constantly growing and, on the other hand, the Internet infrastructure continues to be underdeveloped. If we consider that the country's digitization is a state policy and not a government project, the digitization strategy will be successful, so it is necessary to establish clear priorities and responsibilities for all participants in the state's digital ecosystem, although investment in projects remains limited.

One of the most important points for adapting Latin America to the digital revolution is preparing citizens for new jobs and short-term changes; more effectively formulate industry and education, and in the long run, they should be designed using a digitization plan. Leading countries have included in their plans measures such as improving communication between universities, companies and the government; improve the quality of data and its use (big-data); expansion of Internet access and use of technology, etc. If Latin America does not do this and stays away from digitization and technology, it will lose competitiveness and it will be very difficult to recover it. Leading countries invest 20% of their GDP in training and innovation, which makes them leaders.

3. CONCLUSION

This article shows a positive relationship between government support and the development of the digital economy; this offers great opportunities both politically, socially and economically. It increases trust in governments, promotes transparency, and saves money and time for citizens and administrative areas of government.

The LAC region has a great future in terms of the digital economy, but they are more likely to be more developed by the leading countries, so LAC must find the fastest way to adapt to them.

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