

THE DIGITAL GAP BETWEEN THE INDUSTRIALIZED COUNTRIES AND THE LESS DEVELOPED (LDC) ONES: THE TRANSITION TOWARD A KNOWLEDGEABLE SOCIETY IN LATIN AMERICA

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ABSTRACT

In Latin America the proliferation of regional and multilateral agreements with integration as a purpose have generated a high flow of goods, services, and investments among these countries. From the economic perspective, the outcome is trade and, therefore stimulus to economic growth. Information technology is a relevant parameter in this endeavor. The 'digital gap' between industrialized and LDC is greater than the 'standard of living' between them. The uneven distribution of wealth among and within countries, and the lack of communication infrastructure and computer based power, situate them at transitional stage within the framework of 'knowledge-based society'.

Keywords : Latin America, digital gap, knowledge-based society, less developed countries, Internet, e-commerce, telecommunications

INTRODUCTION

The decade of the 50's marks the point in history in which the idea of treaties and agreements was seminal for the development of regional and multilateral pacts such as the Treaty of Rome in 1957. The latter was rectified by the Maastricht Treaty, which established the European Community (EC). More certain in the last decade, an increased stream of regionalism sentiment has been present (3).

All these agreements that contribute to free trade within a reasonable period of time have the approval of the Marrakesh Agreement which exercises a vast influence in their proliferation. The last mentioned signed in 1994 established the World Trade Organization (WTO) (7).

In Latin America, regional as well as multilateral integration schemes have a predominant role within integration agreements. Good representations of the above include MERCOSUR: Brazil, Argentina, Uruguay and Paraguay. The Andean Community (AC) is composed of Bolivia, Ecuador, Colombia, Peru, and Venezuela and the Group of Three (G3): Colombia, Mexico, and Venezuela. These organizations have the intent to establish, among other components, free trade areas, customs unions, common markets, and economic unions; all covenants that, in the future, may evolve into a political union (9).

Under the scheme of regional integration, a high flow of goods, services, and investments among the countries will be originated primarily under the format of foreign direct investments (FDIs). From the economic perspective, the outcome is trade and, therefore, stimulus to economic growth. By the year 2000, Latin America's regional agreements AC and MERCOSUR, without considering other regional pacts with Chile have a potential market of 310 million consumers (11). Chile's contribution alone is 15.2 million potential customers. It should be emphasized that

the AC countries will have, by the period 2000-2005, an average increase in population rate of 17.98 per thousand while MERCOSUR will have 13.96 and Chile 11.8 per thousand increases respectively (12).

The research literature concurs in the importance of technology as main factor imbedded in the productivity equation. The “digital gap” between industrialized countries and less developed countries (LDC) is greater than the one built by economic indicators such as productivity; and socio-economic ones like ‘standard of living’. In March 2000, the number of users on the Internet was approximately 304 million. The United States of America and Canada have 45%, Europe 27%, The Asia-Pacific region 23%, and Africa and the Middle East 1.5%. Latin America and the Caribbean hold 8% of the world population, but only 3.5% of Internet users and less than 1% of the global e-commerce. Although in the year 1999, a noticeable increase in Internet host computers was extant. The growth rate has been the highest in the world, and the number of users is 14 fold within the 1995 to 1999 period (10).

It has been stated that contrary to popular perception, the Internet revolution represents more of a challenge than an opportunity for many developing countries and the main factor is intellectual capital not scarce finance (8). These had created the notion that the Internet revolution would narrow the gap between the world’s rich and poor. The evidence shows that the opposite could happen and many developing countries are located on the wrong side of a widening knowledge gap if they do not act almost immediately.

The growth of e-commerce in the 1990s has occurred primarily by virtue of improvement in underlying technologies (4). Nevertheless, there are other factors associated with the developments, which include, but are not limited to the role and responsibilities of the public and private sectors in driving and sustaining infrastructure development. Currently businesses that transact on the Internet have had relevant cost reduction, and an increase on revenues. A high correlation does exist between the growth of benefit and the increase of businesses performing such transaction within the network (15). E-commerce has shown a rapid development in Latin America. Brazil reached 4 million users in 1999. This represents 50% of the interconnected population - Mexico with 18%, Argentina 12%, and Chile 4%. It is necessary to emphasize the fact that 80% of electronic commerce is realized within six realms: supermarkets, books, hardware and software, electronic equipment, music, and financial services (14).

Another ‘gap’ present in Latin America that has a great repercussion on the digital economy, is the one that could be defined by its components: socio-economics, and technology. Further, there is an uneven distribution of wealth between countries, and within them. A large price differential regarding telecommunications cost and coverage exists. There is fundamental lack of human resources, and managerial level staff with the expertise needed for an inevitable digital economy. The latter generates a negative impact on the development of such economy (1).

The governments of the region have accomplished basic strides so the mass population will have access to the Internet. Peru has created The Peruvian Scientific Network, known by its Spanish abbreviation, RCP. The network is composed of 1000 public centers that provide service to 40% of the network. In Argentina, the program argentina@internet.todos has approximately 1000 tele-centers located in low income and remote areas. Brazilian commercial banks are offering

free access to the Internet, and Costa Rica is one the first countries in the world that provides free e-mail to its citizens through estate agencies (10).

The position of the Latin American countries within the framework of a 'knowledge-based society' could be described as a transitional one. To acquire the objective of one, State intervention through laws and regulations, and furthermore, private and public actions will be essential in view of the peculiar contrasts in the region. It will be wearisome to expect the market forces alone to furnish the needed mechanisms. Also the implementation of adequate legal framework which determines the rules and regulations, not only for the suppliers of services, but to compensate power concentration generated by the technology in the hands of the industrialized countries, and multinational enterprise (MNE) are imperative (6).

The literature concurs that computer information systems is a function of various parameters and among them we could identify the ones related to communication and diffusion: cost of telephone service, and the structure and behavior of the market that compose the Internet services. There are least five relevant parameters in the market of information transmission that will be identifiable, which contribute to shape the Internet, 1) the carriers, 2) the access providers, 3) the service providers, 4) the content providers and 5) the end users. These schemes generate conflict and competition. International firms cover the first two levels, meanwhile the rest are national enterprises within country members of regional or multilateral agreements. (14).

One of the circumstances that is causing great impact in the realm of computing is convergence taking place with computing and telecommunications, because firms perceive the capabilities of combining the hegemony of computer based information and telecommunications networks (2). The rapid evolution of the Internet and Intranet extant play a preponderant role in this new array.

In the last decade, the telecommunication sector in Latin America has grown enormously. Privatization and the development of new technologies have performed a critical role in this process. During the decade of the 90s, 2/3 of the countries of the region totally or partially privatized the telecommunication domain. Uruguay and Costa Rica are examples of the fact that privatization is not sine qua non condition to modernize or acquire new technology - competition is. At the same time, the arrival of new technologies such as cellular telephones, and cable television has generated substantial changes in the sector. During 1990, 100,000 cellular telephones were in use; 3.5 million during 1995, increasing to 38 million in 1999. The case of Venezuela and Paraguay deserves special attention due to the fact that there are more cell phones than conventional ones (10).

In Latin America only 1/3 of all homes have telephone service. The growth and coverture of the telecommunication sector are functions of the regulatory framework in which they are developed, as well as the influence of the responsible regulatory agency. In many cases, monopolies have been created. During the '80s, 100 people were served by seven telephone lines in the region - Argentina 12, Chile 10, and Mexico 50 each (per 100). Installation of services took an average of 5 years, and repairs took 15 days. The last decade Argentina and Chile users ratio was increased to 22%. Moreover, Uruguay was increased to 27 for every 100. Other good indicators of improvement in the sector are the digitalization of the telephone

systems, an increase in the number of public telephones, and the improvement of repair time (10).

Social factors have to be taken in consideration regarding the infrastructure of telecommunications, 25% of the region population live on an income of \$1 a day. The access to the Internet services in absolute terms is less than the U.S. although it is prohibited to the great majority of the population due to poverty. Government involvement could provide a solution to the problem subsidizing services and the necessary hardware and software (14).

United Nations' Economic and Social Council based on the decision 1999/281, resolved that the high level segment of the agenda for the year 2000 will be dedicated to "The Development and International Cooperation in the XXI Century: The Function of Information Technology in the Context of a World Economy Based in Knowledge". Therefore, representatives of Latin American and Caribbean Countries met in the town of Florianopolis, Santa Catarina, Brazil on June 20 to 21st. 2000; to issue the guide-lines to design and implement the necessary mechanism to move these countries into the 'knowledgeable society' (13).

The mechanism will be based on an agenda that will contain several public policies to increase the efficiency and equity during the transition to a knowledge-based society. These include, but are not limited to cost of telecommunication services, access to the digital network, and cost and accessibility to the computational structure. Education of the users at any level is necessary and access must be provided to the mass population with scarce financial resources to the information society. To reach the latter, the establishment of terminals in public places and community centers is necessary. All the above have to be performed within a legal framework that provides the needed elements to guarantee electronic transactions and therefore generates a large volume of trade using this media.

CONCLUSION

Driving Forces Model Figure 1, depicts the framework in which the virtual society evolved (5). The regional trading block already in place in Latin America will generate an expansion of business into global markets creating a global economy in which new standards for trade will be present which include, but is not limited to, electronic payments like e-cash, and electronic data interchange (EDI) among business located elsewhere. Due to economic and social factors in Latin America the role of regional governments to oversight this new arrangement is not only preponderant but could be controversial. Elements such as the amount of control to be adopted by the government, regulations, and privatization will be relevant to the development of the knowledge-based society within the legal framework - same as the education and exposure of the population to the new virtual society. Pertaining to the technology realm a component that will exert large influence is the volatility of the communication sector due to the availability of new technology and changes thereof. The workplace arrangements such as tele-work, computer-supported cooperative work (CSCW), among others described in the Model (Figure 1), are elements that will change the way business is done conventionally and will cause a great impact in social and cultural values within the context of society.

In summary, the above gives rise to the following questions that have direct relevance to the solution of how to close the existing digital gap:

- 1) Should the countries transact within the framework of regional and/or multilateral agreements to obtain the necessary endowment to develop the infrastructure required for a virtual society? If so, does this synergism contribute to dissipate the concentration of power originated by the technology in the hands of the industrialized countries and multinational enterprises?
- 2) What kind of agenda should be implemented to avoid the uneven distribution of wealth among countries, and within them that allows the creation of the necessary information technology infrastructure?

DRIVING FORCES

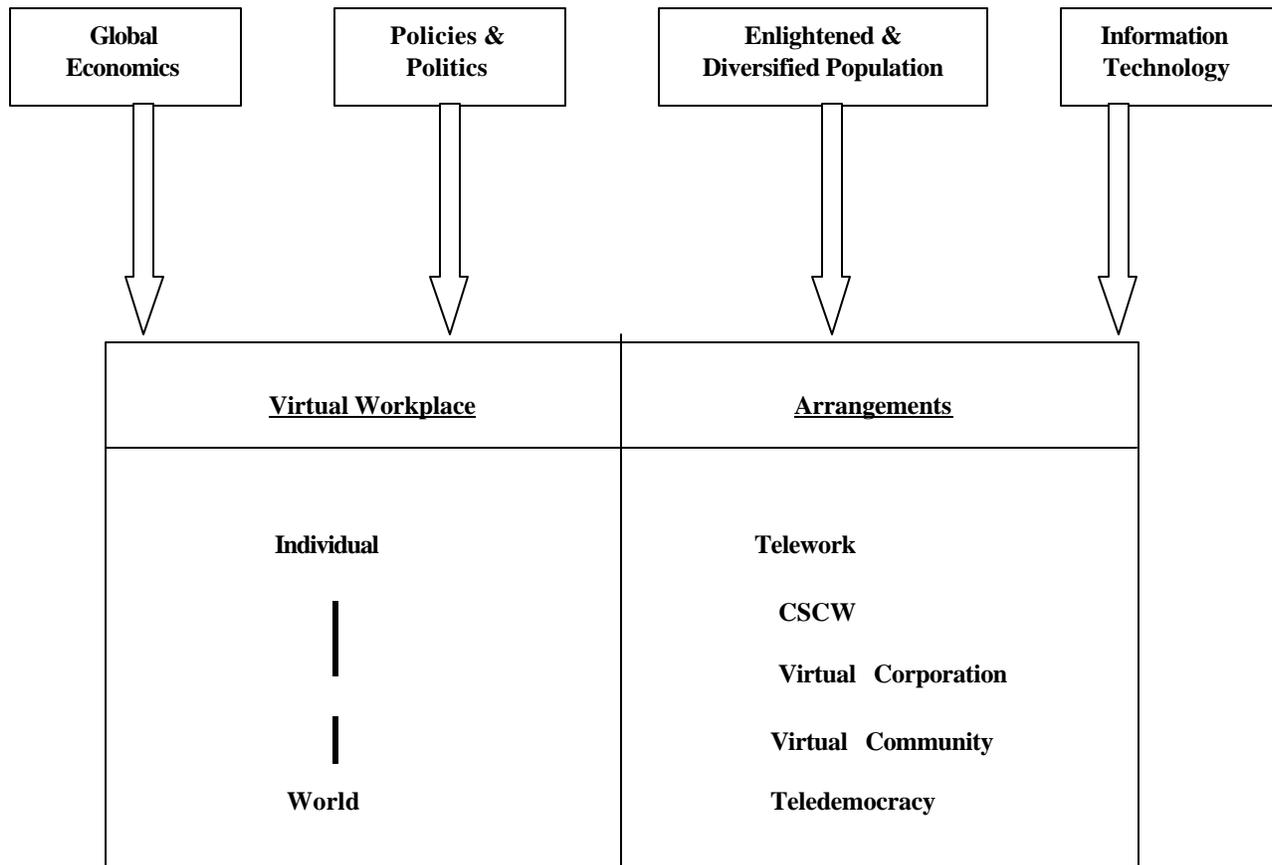


Figure 1.

REFERENCES

1. Applegate, L. M., McFarlan, F. W., & McKenney, J. L. (1999). Corporate Information Systems Management: Text and Cases. Fifth edition. New York: Irwin McGraw-Hill, 404-417.
2. Carr, H. H. & Snyder, C. A. (1997). The Management of Telecommunications: Business Solutions to Business Problems. New York: Irwin McGraw Hill, 680-682.
3. Hill, C. W. (1998). Global Business Today. First edition. New York: Irwing, McGraw-Hill, 237-243.
4. Huff, S. L., Wade, M., Parent, M., Schneberger, S., & Newson, P. (2000). Cases in Electronic Commerce. New York: Irwin McGraw-Hill, 62-63.
5. Igbaria, M. (1999). The driving forces in the virtual society. Communications of the ACM, Vol.42, No.12, December, 64-70.
6. Katz, J. & Ventura-Dias, V. (2000). America Latina y el Caribe en la Transicion Hacia Una Sociedad del Conocimiento. Una Agenda de Politicas Publicas. Informe, LC/L.1383/E, Junio, 1.
7. Keyzer, M. & Merbis, M. (1997). The record since the Marrakesh 1994 Agreement. De Economist, Vol.145, No.4, December, 599-611.
8. Persaud, A. (2000). The perils of neglecting the net. The Financial Times, London May 17, 15.
9. Secretaria de la Comunidad Andina (S.C.A.), Cooperacion Francesa y CEPAL. Multilateralismo y Regionalismo. Seminario efectuado en Santa Fe de Bogota, 26 de Mayo 1998, 1-2.
10. Union Internacional de Telecomunicaciones: UIT. (2000). Indicadores de Telecomunicaciones de las Americas 2000. Resumen Ejecutivo, Abril, 1-22.
11. UN-CEPAL (Comision Economica Para America Latina y El Caribe). (1999a). America Latina: Poblacion Total, Urbana y Rural y Porcentaje Urbano por Paises. Cuadro 11. Boletin Demografico, No. 63, Enero, 1-6.
(<http://www.eclac.cl/publicaciones/Poblacion/2/LCG2052/BD63.11html>).
12. _____ (1999b). America Latina: Tasa de Crecimiento de la Poblacion Total, Urbana y Rural por Paises. Cuadro 12. Boletin Demografico, No.63, Enero, 1-3.
(<http://www.eclac.cl/publicaciones/Poblacion/2/LCG2052/BD63.12html>).
13. _____ (2000a). Declaracion de Florianapolis. Reunion Regional en Tecnologia de Informacion para el Desarrollo. Brasil, Junio 21-22, 1-9.
14. _____ (2000b). Latin America and The Caribbean in the Transition to a Knowledge-Based Society: An Agenda for Public Policy. LC/L.1383, June, 5-25.
15. U.S. Department of Commerce (1998). The Emerging Digital Economy. (<http://www.ecommerce.gov>), 2, 4, 21, 23, 35.