

Globalization of the Internet:

Latinos and Latin America, a Comparative Perspective

Below are the findings made by a group of students of the University of Texas at Austin, under the guidance of Professor Joseph Straubhaar and Teaching Assistant Elissa Fineman, during the Spring Semester 2001. Their papers focus on economic, social and institutional conditions that affect the development of the Internet.

Access to the Internet: Access in Argentina

Chris Williams & Brian Bertino, May 2001

Introduction

The Latin American country of Argentina is populated by 36.6 million people of various cultures most of which descend from European origins. Scattered over 2,780.4 thousand square kilometers, roughly 13 Argentines inhabit each square kilometer with a life expectancy of about 73 years. Though Argentina is considered to be a highly educated and steadily advancing country, the percent of its population below the poverty line is 17.6% as of 1997. The recorded GNP per capita is \$7,600 US and the GDP for the country is \$281.9 US. The digital divide in Argentina is very much a pressing issue especially among the poorer members of the population.[\[i\]](#)

The basic lack of technology and uneven income distribution in Argentina presents the dominating barrier to a majority of the population's access to the Internet. This directly affects the division between the users and the non-users of the Internet as it is generally the upper 23% of the population that is able to afford Internet access and the lack in improvement of the conditions only reinforces this gap.[\[ii\]](#) High costs of equipment telephone lines, and basic service providers are also a hindrance to reasonably affordable access for such an underprivileged country. Finally, due to the great expense in supplying rural areas with the means to establish an Internet connection, these regions are simply lacking the opportunity completely. As a result of these factors, there is much delay in any widespread growth of the Internet over the country as a whole.

The Digital Divide in Argentina

The comparison of Argentina to other Latin American countries: (per 1,000 people)[\[iii\]](#)

Country	Newspapers	TV sets	Telephones	Mobile Phones	PCs
Argentina	123	289	203	78	44.3
Mexico	97	261	104	35	47
Brazil	40	316	121	47	30
Chile	98	232	205	65	48

These numbers reflect Argentina's standing as upper strata in the areas of communications as whole when compared to other Latin American countries. However, these numbers are still very much lacking in respect to the rapid growth and accessibility of the Internet in various other areas around the world. The gap between the users and non-users is also an important issue to consider when analyzing the

digital divide. It is reported that the average Internet user in Argentina is a 29-year-old male who is a college graduate with at least five years of computer experience and also has advanced or mid-level knowledge of information and computer technology.^[iv] This is a highly selective group and a very low percentage of the Argentine population.

Telecommunication Infrastructure

Another serious hindrance to Internet availability is the unreasonable expense incurred on those attempting to gain access. The costs of local calls as well as those of leased lines have failed to deflate even after years of service and most Argentines simply are unable to consider such a service. A survey performed as late as 1999 revealed that people still found the Internet to be too expensive to justify. Thus, an access code number, 0616, was created as an attempt at solving the problem.^[v] By using this number, to access the local ISP, the user is guaranteed special pricing rates that are intended to make the Internet more affordable. Despite many of these adjustments and attempts at planning for a more affordable Internet, there is still a sizable division between the reality of the situation and the idealistic dreams of government programs. The ideas are good, yet many factors work against them. The lack of funding, extremely high costs, as well as practical application of these plans to many of the rural areas of the country are simply overwhelming.

Economic Issues

As is common in most Latin American countries, the division between the wealthy, upper class income bracket and the poorer, lower class bracket is a considerable one. This is directly illustrated in comments such as this noted report "from August 1988 to August 1999, in Buenos Aires the gap between the rich and poor increased even further the richer 10 percent of the population increased its income by 4.9% while the remaining 90% of the population lost some 10% of its purchasing power. As in previous years, the lowest income groups were the ones more negatively affected by the changes."^[vi] The population below the poverty line represents almost one-fifth of Argentina's population at 17.6%.

Argentina is a fairly industrialized country. When assessing the various levels of Argentina's economy the numbers are as follows: Agriculture 6%, Industry 32%, Manufacturing 22%, and Services 61%. This details a decline in the presence of the percentages of the economy funneling into industry from a 1990 survey. The overall wealth of Argentina is depicted in the Gross National Product with was \$277.9 billion US in 1999, which, though it has increased since the 1995 survey, it is a drop from the 1998 GDP. A positive reflection is the fact that direct foreign investment has shown a significant increase since 1990 as well as the fact that official developmental assistance per capita is down to \$2 US in 1998 from \$5 US in 1990.

Social Issues

According to the World Bank Poverty Report website, public expenditures on education in Argentina is only 3.5% of the GNP, which is up from 2.7% in 1980.^[vii] However, this is only a .8% increase over 17 years. The literacy statistics of both youths and adults in Argentina is higher than most other Latin

American countries, so as a whole, it is represented as fairly adequate educationally. The population divides throughout the regions of Argentina unevenly with 90% of the population living in urban areas as of 1999. An accurate depiction of the split between the rich and the poor rests in the statement, "According to recent studies of the sector, in the high income segment of Argentine society Internet access is expected to grow from the current 23% to some 53% in 2003 but in the low-income segments Internet penetration-which stood at zero in 1998-was expected to reach no more than 4% in 2003."

Conclusion

Over the past ten years Argentina has made great strides towards integrating the Internet into its society. With its governmental sponsored programs reaching out to the poor classes and privatized businesses lowering prices for the general public the country may someday reach its goal of incorporating the Internet into the Argentina national landscape. But for now the main barriers remain to oppose these plans. The country lacks the financial and technical means of reaching all its inhabitants and as the divide between the country's wealthy and poor classes widen it will become more difficult to reach the majority of the country that falls into lowest economic bracket.

[i] <http://www.worldbank.org/poverty/wdrpoverty/report/index.htm>

[ii] Petrazzini, B., Guerrero, A.(2000). Promoting Internet Development: The case of Argentina, a case study Katz,R.,Booz, A.,Hamilton (1999) Las tendencias tecnologicas y competitivas en la industria de las telecomunicaciones e informatica: Implicancia para la Argentina. Paper presented at ExpoComm.

[iii] <http://www.worldbank.org/poverty/wdrpoverty/report/index.htm>

[iv] Petrazzini, op.cit.

[v] Petrazzini, op.cit.

[vi] Petrazzini, op.cit.

[vii] Petrazzini, op.cit.

Access to the Internet: Access in Bolivia

Quan Tran & Elizabeth Barrett, May 2001

Introduction

Bolivia's capital is La Paz. It is bordered by Brazil, Peru, Chile, Argentina, and Paraguay. It is located in the western part of South America. The area of Bolivia is 1,098,50 km² and hosts a population of about 8,152,620 people. The population is made up of fifty-five percent indigenous peoples, thirty percent Mestizo, and fifteen percent European and Asian. Languages spoken in Bolivia include Spanish, Quechua, and Aymara. The predominant religion is Roman Catholicism with about ninety-five percent of the population as its followers; the remaining five percent follow the Protestant religions. This paper will be discussing the various barriers to Internet access in Bolivia, following under the headings: Telecom, Computer Infrastructure, ISP Issues, Economic Conditions, Social Issues and Internet User or Adopter Patterns.

The Digital Divide in Bolivia

The penetration of telephone mainlines per one hundred people is 6.9, mobile phones make a smaller dent with 2.7 per one hundred people and personal computers are .75 per one hundred people. These numbers on access to telecommunications are pretty low, especially in comparison to other countries in this study. Bolivia is lower than Brazil, Chile, and Mexico on all accounts. It is closest in access to Peru who leads by only a few people per hundred on the categories of telephone mainlines and mobile phones but by double the amount of people with personal computers. Approximately six hundred thousand people own computers across Bolivia, however, it is much more difficult to get access outside of La Paz. The number of Internet hosts in the country is .0114 per one hundred people.

Telecommunication Infrastructure

These numbers do not look so surprising once one looks at the government's role in spreading the telecommunications industry. The Italian firm Stet International purchased the company offering long-distance and international telephony -- ENTEL -- for US\$610 million in 1995. ENTEL enjoys a monopoly on long-distance/international service through 2001, and rates have remained high by international standards. Local telephony within cities is controlled by independent cooperatives that also enjoy a monopoly on wired service through 2001. While ENTEL has invested in fairly sophisticated switching systems, the cooperatives generally have not been able to modernize their systems, due to the lack of financing opportunities. Thus, local service tends to be poor. The three largest cooperatives (COTAS, COMTECO and COTEL, in Santa Cruz, Cochabamba and La Paz, respectively) control almost 85% of the country's local telephony." There are five Internet Service Providers operating in Bolivia at this time.

Economic Issues

Bolivia's storied political instability has not done wonders for its economy. In fact, it is one of the poorest countries in South America. The sources of revenue include a large agricultural sector as well as its energy industry. The various divisions in the Bolivian economy break down as agriculture equaling sixteen percent, industry at thirty-one percent, manufacturing at seventeen percent, and services at fifty-four percent. It is due much to recent government projects that have settled the inflation rate from eleven hundred percent to under twenty percent. However, the real GDP growth rate is very slow, only increasing at a rate of about one percent. Bolivia was included as one of the countries surveyed by the HIPC initiative, that is, the Heavily Indebted Poor Countries.

In recent years, Bolivia has made strides towards a more market-oriented economy, but slow growth has hampered the economy due to the Asian financial crisis in recent years. The slow growth has also put a damper on anti-poverty programs and unemployment in the country is a definite concern; 11.4% of the country is defined as such. To get online, one must have the money to invest in a computer and with widespread poverty striking the nation, it is difficult for many Bolivians to support themselves with the basics, much less provide themselves with luxuries like the Internet.

The state of poverty in Bolivia is such that in 1993, twenty-nine point three percent of the urban population fell under the poverty level; and in 1995, it was found that seventy-nine point one percent of the rural population lived under the poverty level. Abject poverty, while not limited to, is certainly dominated by the population living in rural areas of Bolivia. The distribution of income is such, the lowest twenty percent of the population control only about five point six percent of the income while the top twenty percent of the population control about forty-eight point two percent of the country's wealth. These disparities, both urban/rural as well as income distribution itself have fractioned Bolivia to the point where the poor have very little to work with to improve their lot.

This uneven distribution within Bolivia is reinforced by the rank of Bolivia among nations in several categories. With a Gross Domestic Product of twenty-two point eight billion, Bolivia ranks eighty-two out of one hundred and ninety-one. However, because of its population, Bolivia ranks eighty-two out of one hundred and ninety-one in terms of Gross Domestic Product per capita. The immense cocaine trafficking that occurs in Bolivia and the relatively recent crackdown on drug trafficking done by the United States has also caused additional stress on Bolivia's economy; thousands of families that grew coca for the cocaine industry are also now out of business. Bolivia's foreign debt was six point two billion in 1999, illustrating their dependence on foreign powers. The number of stresses on Bolivia's economy and on its people display that there are larger problems than penetration of the Internet in Bolivia.

Bolivia is trying to catch up to 20th century standards in business and development. Much of the country remains in a time capsule. The majority of people who live there are peasants. Other problems have also socially affected Bolivia; for instance, Bolivia is the second largest manufacturer of coca, which is processed into cocaine. This contributes to the political corruption in the country and the unrest that the people have for the country's leaders. Recently, the government has made strides to improve its foreign relations to attract investors, but many are turned away from the country's history of hyperinflation.

Social Issues

Contributing to the penetration and interest in the Internet is the literacy rate in Bolivia. While the figures from 1998 seem high with adult literacy at eighty-four point four percent and youth literacy at ninety-five point four, it is important to note the amount of schooling that accompanies these figures. Statistics report that ninety-five point four percent of the population that is eligible attends a primary school but the numbers drop off sharply and only forty percent of the population that is of age attends secondary school. These low numbers are corroborated by the fact that from 1995-1997, only four point nine percent of the GNP was spent on public education. This is in comparison to Brazil who spent five point one percent, Peru who spent two point nine percent, Mexico who spent four point nine percent, and Chile who spent three point six percent. While these numbers look fairly close, one must remember that the GNP's for these various countries are wildly different, Bolivia being one of the poorest countries in South America. The Education Development Center along with the Bolivian government and other NGO's are promoting literacy, especially among women and girls over the radio, an appliance that about sixty-seven point five out of one hundred people own. This will give them an additional chance at educating themselves and hopefully give them an awareness of the Internet as a tool. Microsoft, too, is working to support IT education and training in schools, mentioning that it hopes to give support to children whose parents have either died or abandoned them.

Bolivia is the highest and most isolated country in Latin America. The people that live here are just as isolated, not because of the rough terrain, but by culture and tradition. Bolivia is one of the poorest and least developed countries in Latin America. 70% of the population (8.1 million total) lives below the poverty line. From 1980 until 1999, the urban population has increased from 46% in 1980 to 62% in 1999, but nearly 80% of those who remain in the rural areas still live in poverty.

The Bolivian population is made up of 30% Quechua, 25% is Aymara, 30% is Mestizo (mixed white and Amerindian), 15% is white. The education system in Bolivia is improving however. 83.1% of the country is literate. 90.5% of the male and 76% of the female population is literate. Spanish is the official language, as are Quechua and Aymara. Although Spanish is the official language, only about 60-70% of the population speaks it at all, and out of that figure, many speak it as a second language. The remaining people speak Quechua, which is the language of the Incas. The predominately indigenous population can explain this language barrier. Well over 50% of the population maintains traditional values and beliefs. The population in Bolivia is spread throughout the country quite generously, meaning that there are not many truly dense population zones. The diverse geography also comes into play and creates natural barriers for the people. This certainly causes concern for the country wanting to put up phone lines. The diverse geography and the well spread out population would certainly make putting up phone lines a truly expensive and difficult task.

Conclusion

In conclusion, Bolivia's various economic and political issues seem to be the stem of the problem regarding the state of the Internet in the country. While political unrest has caused upset in the economy and cocaine trafficking has brought further economic troubles since the crackdown by the United States, the poor keep getting poorer and the rich, richer. It is evident from the figures in the income distribution and the poverty levels in cities versus rural areas that Bolivia is a land of contrasts. Until there is a regulation on the telephone service and an upturn in the economy, Bolivia will have a

hard time righting itself and entering the mainstream as other South American countries are doing with the Internet.

Access to the Internet: Access in Brazil

Jeremiah P. Spence & Laura A. Q. Barbosa, May 2001

Introduction

Brazil is the largest country in South America, with a population of 173 million (2000). The population is a cultural-ethnic mix of indigenous, African black, colonial Portuguese, immigrant Europeans & Japanese. The Brazilian population is over 80% urban, and there is a very distinct economic divide. The top 5% of the population control well over 50% of the national economy. The main language spoken in Brazil is Brazilian Portuguese. There are also significant pockets of German, Polish, Italian, Spanish, Japanese, Dutch, and a variety of indigenous languages spoken in the country. The economy of Brazil is the eighth largest in the world and is a diversified mix of agriculture, industry, export, and tourism.

The Digital Divide in Brazil

This paper will attempt to identify the barriers to access to the Internet, which play a part in the growing digital divide in Brazil. The existing barriers can be easily broken down into four major sections. The first major barrier that we will examine is an infrastructure-based issue. If you have large tracts of the country that have no access to electricity or phone lines then it is quite difficult to imagine that these areas will have exposure to the Internet. The second barrier is very difficult to resolve, it is a systemic barrier that exists in the economic situation of the country. This barrier creates a basic divide between the haves and the have-nots that defines the Internet usage patterns of the populace of the country. The third major barrier is in the area of societal issues. There are major problems in Brazil with literacy and education. The fourth major area we will examine is in the Internet usage-adoption patterns. We will discuss in the section how the upper 15% of the population seems to be rapidly accepting the Internet and integrating it in to their lifestyle, but the rest of the population faces large economic, social, and infrastructure barriers to gain access to the Internet.

The current divide in access mirrors the country's economic division. The situation in Brazil is quite distinct. Among the top 15% of the population there is a very rapid penetration of Internet usage (31.7% in 2001), as displayed in table 1.[\[i\]](#) However, the rates of penetration among the general population of Brazil are sparse (4.8% in 2001), as illustrated in table 2.[\[ii\]](#)

As you can see in the following table 3, the rate of PC penetration in Brazil is remarkably low, which of course is a clear reflection of the national economic situation which does not allow the vast majority of the population sufficient disposable income to purchase a personal computer.[\[iii\]](#)

Telecommunication Infrastructure

The World Bank's World Development Report 2000/2001 gives a very clear insight into the lack of infrastructure in the majority of rural Brazil. According to Table 19, as of 1998, only 12 Brazilians in a 100 have a telephone, and only 4.7 Brazilians in a 100 have a mobile phone. These numbers indicate that

only a minute fraction of the populace has access to the telecom infrastructure nationwide. The situation with computers is similar. Only 2 in 100 have a computer.

There has been an improvement a slight improvement in the situation since the completion of the telecom privatization process. The new telecom structure has allowed greater access to telephone lines, and the number of mobile phones in the hands of Brazilians has exploded.

Economic Issues

The economic situation in Brazil is a profound schism between the haves and the have-nots. Despite the fact that Brazil has the eighth largest economy in the world, approximately 32% of the rural population lives below the poverty line. (WDR - 00/01 - Table 4) Another clear indicator shows that the top 20% of the population controls more than 63% of the nation's wealth. This means that 80% of the Brazilian population has access to less than 40% of the nation's wealth. (WDR - 00/01 - Table 5)

This translates to a very clear economic barrier for the poorer 80% of the population to access the Internet. This barrier cannot be overcome easily. It is related to uneven economic growth, regional inequities within Brazil, urban/rural divisions, and lack of access to educational, social, financial and other resources for much of the population

Social Issues

In the arena of social issues the barriers to Internet access are clear and profound. Brazil maintains only a 15% adult literacy rate (WDR - 00/01 - Table 2), and while close to 97% of the population enrolls in primary school only 66% of the population enrolls in secondary school. (WDR - 00/01 - Table 6)

It is clear that until Brazil improves its adult literacy rate beyond 15%, it will be close to impossible to move beyond this class ceiling in Internet access. One can see a clear parallel between the adult literacy rates and rates of penetration of internet access in the top 15% of the population compared to the rates of penetration in the general population. (see tables 1 & 2)

Internet Usage and Adoption Patterns

In September 2000, the most recent version of the IBOPE media use report was published, which outlined the current usage and adoption rates in the nine major metropolitan areas in Brazil. Only 19% of the urban population has access to the Internet via a computer, and 48% of these users belong to class A & B. The interesting change was that the research data indicated that 1.9 million Brazilians intended to purchase a mobile phone that allowed WAP (Wireless Access Protocol) to the Internet, and even more interesting is that the distribution of those accessing WAP across the social classes is close to even. Of those who have access to WAP 31% belong to classes A & B, 35% in class C, and 34% in classes D & E. [\[iv\]](#)

This shift shows that there may be a way to move beyond some of the major barriers to Internet access. The other major pattern in the research showed that of classes A&B, 72% of those are male. This would indicate that the vast majority of affluent women have yet to discover the Internet.

Conclusion

Brazil has vast barriers to accessing the Internet. These barriers include literacy, education, economic purchasing power, and infrastructure (telephone lines, etc.). However, we have seen that there are definite opportunities to overcome some of these barriers. We will explore some of these opportunities in subsequent papers in this series.

[i] Elkin, Noah. "Making Low-Cost Internet Access a Reality in Brazil." Emarketer.
http://www.emarketer.com/analysis/elatin_america/20010209_lowcost.html. 9 February 2001.

[ii] *ibid.*

[iii] *ibid.*

[iv] IBOPE. "8ª edição mostrava que 4,7 milhões de consumidores queriam acessar a Internet por computador".
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Access to the Internet: Access in Chile

Loreto Caro & Ken Dykes, May 2001

Introduction

From the northern desert of Atacama to the frigid Antarctic terrain, the mountainous Andes to the endless Pacific, Chile is home to a population and financial system as diverse as its landscape. Continually facing jolting change as it hosts one of the most dynamic economies in Latin America, the country has directly confronted the increasing world movement toward the global information society. However, as telecommunication demands continue to grow, Chile is being pushed into a do-or-die infrastructure development race necessitating immediate appraisal of its current state, evaluation of key issues, and a plan of action if the country is to maintain its impressive economic status.

The digital divide issues span many specific problems with gaps between various subgroups of the Chilean population. In addition, physical infrastructure can also be a hindrance to technological expansion, as Internet growth is difficult when computers and phone lines are limited. Economics also come into play, most notably through uneven distribution of wealth. Social issues, such as literacy and cultural patterns, bring forth another significant facet to the problem. Finally, Internet adoption patterns can also provide key information to barriers and paths to access. In short, the current state of access in Chile is a multidimensional problem that this paper will address.

The Digital Divide in Chile

Chile has taken large strides toward complete infrastructure integration in the past years. The results of the country's efforts are most evident within its strong infrastructure standing as compared to other Latin American countries. For instance, according to World Bank reports in 2000 ranking Chile against other Latin American countries, Chile has more phone lines and personal computers than Argentina, Brazil, or Mexico. Furthermore, Chile falls second only to Argentina in mobile phones and third in Internet hosts, as shown in Table 1. Clearly, Chile has a relative advantage in Latin America.

Table 1: Chile by Comparison

Indicators	Chile	Argentina	Brazil	Mexico
Phone lines per 1,000 people	205	203	121	104
Mobile phones per 1,000 people	65	78	47	35
PCs per 1,000 people	48.2	44.3	30.1	47
Internet hosts per 10,000 people	26.42	38.48	26.22	40.88

Source: [World Bank](#), 2000/2001

However, despite past and continuing efforts, the country still suffers from uneven access, notably by age, gender, education, income, and geographic location. As Table 2 displays, the vast majority of Internet users (68%) are between 15 and 34, with users older than 60 constituting only 4%. There is a clear marginalization of the elderly, as well as a steady decline in access as age increases beyond 35. Users over 35 years of age only constitute 30% of the total user population. In addition, only 34% of Chilean Internet users are women according to the 1999 Stanford report. The gap also applies to education levels, with 37.8% of people that have completed higher education utilizing the Internet, while only 0.3% of those that have only completed primary education accessing the Internet. Table 3 shows the differences in more detail, yet undoubtedly those with less education have less access to information - creating an information deprivation cycle that must be improved (The Information Revolution in Chile, Stanford University, 1999).

Income also affects access, as 24.7% of those at the top tier of income have access at home, versus 1.5% of those at the lowest tier of income. Table 4 illustrates that this trend holds true for access at work as well. At both work and home, each of the five income tiers outlined show a significant difference in access by income. Even in the top three tiers, the percent of access roughly doubles for each level. Finally, the gap also applies to geographic location. According to the same report, access opportunities are most prevalent in and around the city of Santiago; rural cities are much less likely to have access. Throughout the country as a whole, 12.5% of people in urban areas can access the Internet at home, compared to 1.8% in rural areas. This holds true for access at work as well, with 22.8% of people in urban areas accessing at work, versus 4.1% of rural inhabitants. The rural/urban split comprises yet another significant divide within Chile (Chile: Moving Towards the Information Society, 1999, p.38).

This divide may be due in part to Chile's high urbanization. Roughly 85% of the country's 15 million inhabitants live in urban areas. Furthermore, 40% of Chile's population is centered in the city of Santiago, rather than dispersed among several large cities. Consequently, it is within the region of Santiago that the vast majority of the nation's infrastructure is concentrated. The Santiago Chamber of Commerce reported that 57% of Chile's fixed-line phones and 58% of mobile phones are based in the capital city of Santiago. Over half of the Chilean Internet population lives in Santiago (Nua Internet Surveys, Digital Divide Evident in Chile, November 2000).

Telecom, Computer Infrastructure, ISP Issues

According to the most recent data from the 2000 World Bank Report, Table 19, Chile has 205 phone lines per 1,000 people, 65 cell phones per 1,000, and 48.2 computers per 1,000. In addition, at the end of the year 2000, there were 31 ISPs serving over 1,025,000 people, according to a study by Gémines, a Chilean consulting firm. This number is up from an earlier study in March 2000 by the Facultad de Ciencias de la Comunicación e Información from the Universidad Diego Portales, stating that there were 27 ISPs in Chile serving approximately 1 million users at the time (El Mercurio, 02/26/01).

Overall, the combined information shows continued improvement in the country, yet still a need to further implement efforts toward universal access in the nation persists. This has led to recent reports presented to the President of Chile regarding policy and barriers within the information technology. Unequal social and geographical distribution of technology infrastructure, a lack of regulatory

frameworks, and a currently reluctant business culture all act as barriers within the country (The Information Revolution in Chile, Stanford University, 1999).

Economic Issues

Chile was driven at full speed into a free market economy in the early 1980s under the dictatorship of General Pinochet, who took control of the country through a bloody coup d'etat that overthrew the Socialist administration of Salvador Allende in 1973. Though severely criticized for the human rights abuses occurred during his regime, the international community gives him credit for the "Chilean economic miracle". Within his tight grip, the previously state-orientated economy was transformed into one of the most open economies in the developing world. This set the foundation for extraordinary investment and growth in the 1990s (Hudson, 1994).

As of 1999, Chile has a population of approximately 15 million, a GNP of \$71.1 billion, and a GNP per capita of \$4,740. The country's GNP ranks 43rd among countries, bringing it close to the top quarter of all nations. Despite economic promise though, the country still has 20.5% of its citizens below the poverty line. This flows from unequal share of income, with the top 20% of inhabitants holding 61% of the income, while the bottom 20% hold only 3.5% of the wealth. The economy itself breaks down as follows: agriculture provides 8%, industry 33%, manufacturing 16%, and services 59%. Foreign investments equate to roughly \$4,638 million, and the official development assistance, as a percent of the GNP, is 0.1% (World Bank, 2000, Table 1, 4, 5, 12, 21).

Social Issues

Chile was considered for a long time as a country dedicated to the education of its people. Major improvements in the access to education were made in the 60s and the beginning of the 70s. The Pinochet dictatorship that began in 1973 greatly altered the public/private composition of the educational institutions, and curtailed the expenditures to a detrimental level (The Information Revolution in Chile, Stanford University, 1999).

Ever since the country regained its democracy in 1989, many efforts have been made to revert the effects of the military regime over the educational system. At the secondary school level, a significant leap can be noticed: in 1982 the coverage among the age group was 65%, while in 1998 it reaches almost 82% (Estadísticas del Sistema Educacional de Chile, 1998). Since 1996 the Ministerio de Educación de Chile has implemented an Educational Reform that we attempt to explain briefly.

Chile has a highly decentralized education system. Municipal authorities manage public schools, and families are free to choose between public and publicly certified schools - all of which receive monthly transfers from the central government, based on attendance. Clearly, the major handicap is insufficient classroom time.

The Government has initiated a process designed to lengthen the school day at all of the subsidized educational establishments, unifying them under the umbrella of a "single shift" system. This new effort requires the creation of infrastructure and organizational conditions necessary to offer a full day of academic studies (the morning and part of the afternoon) for all subsidized educational facilities in Chile

- schools are moving from a half-day, six-hour schedule to a full-day, eight-hour program of study. In the end, the longer school day will benefit 2.1 million elementary and secondary school students. The extension of the school day has been supplemented by an unprecedented campaign to reinforce the quality of Chile's teachers. The implementation of the educational reform has included improved training for teachers at the university level, enhanced retraining of around 25,000 teachers currently employed, some 500 scholarships each year for studies abroad, and annual awards for excellence in teaching.

More than 15% of government expenditure goes to improve the access of Chileans to education. Currently, illiteracy is almost non-existent in the 15 to 24 years old population. According to the Human Development Report 2000, the youth literacy rate is 98.7%, while the adult literacy rate is a bit behind with 95.4%.

There is still much more to improve in terms of access to sources of information. For example, out of 1,000 people, only 98 daily newspapers are available in Chile. This is below Argentina, equal to Mexico and above Brazil. A much better situation can be appreciated if we consider radio. In this case, out of 1,000 people, some 354 have access to radio. People owning television sets have not reached this point yet: out of 1,000, 232 have television sets.

Conclusion

Currently, Chile is investing over 1.5% of its GNP in the area of new information technologies (El Mercurio, 11/10/00). There is no doubt that President Ricardo Lagos considers the incorporation of Chile to the global and digital economy a top priority. "What we are discovering is that technology will enable us to surmount the geographical disadvantages of our nation. We must convince ourselves that technology offers tremendous opportunities to our country, and that it is our obligation to take advantage of them to the fullest", he said after his visit to Silicon Valley in November 2000 (Santiago Times, 11/24/00).

A study by the Economics and Management Faculty of the University of Chile and published in December 1999 announced the explosive growth of the Internet was going to have during the year 2000. The argument was based on the following facts:

- Lower prices for telephone connections to Internet
- Multiplication of ISPs, making the market more competitive
- More access at educational institutions and work

The predictions proved to be correct. The percentage of Chileans that have access to the Internet had a spectacular growth of 186%, leaping from 700.000 users in December 1999 to 2 million in September 2000. According to the official data announced by the Undersecretary of Telecommunications, 13% of the population has access to the Internet. Out of this total, one million and a half are users that have connections at their work place; the rest have university accounts or direct connections at home. While in September of 1995 there were only 7.600 servers and 192 cl.-domain sites, five years later the former add up to 87.000 and the latter, to 29.000 (El Mercurio, 09/28/00).

The overall situation looks promising with a solid economy and the firm will of the current administration. But, even if access issues are resolved successfully more challenges are yet to come, for example, the lack of computer skills and knowledge of English. A study carried out by the National Institute of Youth last year indicated that 41% of young people between 15 and 29 years old consider they do not have good computer skills and 56, 4% admit they do not understand English. According to the Undersecretary of Education, José Weinstein, these are the main barriers that are preventing students from making the most of the Internet. "This is a great challenge for us because it requires changes in our curriculum, more equipment and training for teachers", he pointed out. In his opinion, the Governmental plan must go further in that direction (La Tercera, 12/16/00).

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Access to the Internet: Access in Cuba

Carrye Gilliland & Landon Peterson, May 2001

Introduction

To the south of Florida, in the Caribbean Sea and Atlantic Ocean, lies the familiar, under-developed country called Cuba. This tropical region is the home for over 11 million people, mostly in between 15 and 64 years old. There are many different types of ethnic groups including 50 % mulatto, 37% white, 11% black, and 1% Chinese. The main language is Spanish. Most of the land is used for agriculture from the cultivation of crops, pastures, and forests as well as industrial work. Fidel Castro is Cuba's prominent figure holding the office as the President of the Council of the State, or the Prime Minister. Castro's Cuban Communist Political Party creates a durable dictatorship that strictly controls everything from communications, taxes, and foreign trade. Recently, Cuba's economy has increased rapidly from the early 1990s because of the tourism in the area.

The Digital Divide in Cuba

There is clearly a digital divide in Cuba compared to the rest of the world. The lack of US interest and involvement in improving this country's technological advancements has not helped either. Nonetheless, Cuba does firmly believe "we can't prevent the net, so we must learn to use it" (The Guardian, 1999). Yet, it becomes a problem when part of the population cannot read or write, so how could they possibly email or surf the web? And, since the Internet instigates globalization, merging different parts of the world together, we need to think about whom it's benefiting? It is certainly not Cubans when they are compared to the Western "one computer one desk" standard. They are not even close to those figures, with approximately 1 computer per 1000 people. Secondly, another critical problem is how the Cuban government regulates private use on the net. "Controlling what Cubans read and hear has been part of President Fidel Castro's rule from the beginning" (The Guardian, 1999). The government understands that if the Internet grows to what it is in other areas, it will be a serious threat to the "information monopoly" that the government prefers to regulate and oversee. Only about 40,000 officials, business people, and foreigners out of 11 million are authorized and linked to the web. (The Guardian, 1999) Although thousands of others have found unofficial ways to get connected, the government is slowly increasing access in public places. These areas include public libraries and schools and now even companies want to build cybercafes throughout the country. Unfortunately, even these advancements will limit the average Cuban who is not familiar with computer technology. Moreover, the cost to have the Internet is about 36.23 USD per month for someone who makes on average around 10 USD per month; it just is not feasible for most Cubans. (Press & Snyder)

Internet User Patterns

Internet connections, as we have said are closely regulated by the government, and are granted almost solely for academic purposes. According to a questionnaire answered by a contact at CENAI, the primary

networking institute in Cuba, of his registered users 81% were university and faculty research staff, 0% university students, 4% government employees, 12% commercial employees, 3% NGO employees, and 0% employees of international organizations.* Despite the resistance to widespread private use of the Internet, the government acknowledges and embraces the financial opportunities of e-commerce, especially with the tourism industry. And despite the perceived utility of some that "we cannot prevent the internet so we must learn to use it," youth clubs now provide a vast array of computer courses for students of all ages who seem to show quite a desire to get connected. Some also see the Internet as potentially beneficial for broadcasting Cuban ideas and culture to counter-effect anti-Cuban rhetoric, and as an interface for networking Cuban literature to get around paper shortage problems.

Telecommunication Infrastructure

Today, it is imperative to connect to the world through technology, especially the Internet, and it is clear Cuba is falling behind in regards to its infrastructure. First off, out of 11 million people only 385, 000 have main telephone lines (UNDP, 2000). "Cuba has fewer main telephone lines as a proportion of population and GDP than any Caribbean nation but Haiti." (Press, 1996) The phone system is set up as a trunk system connected with a coaxial cable. There is fiber-optic distribution in Havana and on Isla de la Juventud. In addition to the lack of phone lines, most of the telephone systems have not been renovated since the 1930s and 40s. This poor infrastructure causes echoes, disconnections, and also hinders both voice and fax calls. Although there is a satellite earth station for international calls, it is very expensive and unreliable. Recently, there have been analog and digital mobile/cellular services established in Cuba, however, it is still rare for the average person to afford cellular, or regular, phones these days. (Regular phones cost 6.25 pesos) Furthermore, only about 2,000 cellular phones are used through out the entire country. (CIA, 2000) Electronic mail services were first at the university and educational facilities for students and teachers, but this technology is still highly concentrated. As of 2001, there are 5 total ISPs for business and academic institutions (Ashby and Bourget). The IP link once online is as low as 64 kb/sec, although there are plans to upgrade to 256 kb/sec soon. Even if someone is experienced on the web, paying for it is another issue. The charge time in 1995 was 53 cents per minute and traffic costs were 53 cents per kilobyte. (Press and Snyder) In 1998, the Human Development Report could not even count one personal computer per every thousand citizens because of the cost. One critic claims, " 'we are an underdeveloped country which fights every day just to feed and cloth itself. (The Internet means nothing to the majority of the people'" (The Guardian, 1999).

Economic Issues

Cuba's domestic economy and foreign trade are primarily controlled by the state, under the socialist dictatorship of President of the Council of State, Fidel Castro Ruiz. Major industries are sugar, petroleum, food, tobacco, textiles, paper and wood, nickel, and livestock, but Cuba's driving industry of today is tourism, which has grown 20% annually since 1993. It is estimated that by 2010, the island will attract up to 10 million foreign tourists, spending \$5 billion (Trumbull, citing Godinez, 1998). The GDP is \$18.6 billion, with a per capita GDP of \$1,700. Breaking down the GDP by sector, agriculture accounts for 7.4%, industry, 36.5%, and services, 56.1% (CIA World Factbook, 2000).

During the early 1990's, in the wake of the collapse of the USSR and its withdrawal of support to the Soviet Bloc, the Cuban economy fell by 40% and with it, employment rates (Trumbull). To worsen the effects of this "Crisis Period," as it is called, the U.S. strengthening of its embargo on Cuba, under the Helms-Burton Act, has created a large obstacle to the bringing in of new technology such as U.S. software, not to mention other needed goods. Meanwhile, although Castro initiated a reform to liberalize foreign investment, Cuba's foreign debts have established it as a high-risk country for investment (Orro), largely preventing it from attracting foreign investors and securing new loans.

Other reforms implemented by Castro such as the dollarization of the economy, and the legalization of self-employment has improved the status of the economy, which increasingly appears to adopt market-based values. Cubans who work in the private sector earn considerably more than state workers do, and those who earn dollars have even more purchasing power. However, heavy taxes discourage many Cubans from making the jump to self-employment. With the average monthly wage at approximately \$13, and Internet access costing \$5/hr., use is mostly restricted to tourists or Cubans who are paid in U.S. dollars. State workers do not make nearly enough money to afford the cost of access. As if the economics wasn't enough of a barrier itself, Internet connections are outright prohibited without government permission, due to fear of dissent and dissemination of anti-propaganda propaganda.

Social Issues

Education is highly valued by Castro and by Cuba, where law requires school attendance through the ninth grade. About 7% of the population has graduated from college, 4% with degrees. An additional 1.3 million Cubans have graduated from technical schools. Eight universities in Cuba offer degrees in information technology, while the Institute for Science runs 40 branches around the country providing computer science education to adults (Ashby). Literacy level is not much of a barrier to Internet access for the Cuban population, of whom 96.4% above the age of 15 can read. Sadly, however, as mentioned above, the dollarization of the economy, and legalization of self-employment, while improving the overall economy, have created class/wealth distinctions atypical of socialist tradition, which effectively restricts state workers, farmers, and peasants from being able to afford Internet access.

Conclusion

While the antiquated infrastructure definitely poses a problem for phone line Internet connections, Cuba's primary concerns for the future of Internet access are economic and regulatory issues. These two factors are so closely related that they pose a potentially formidable opposition to development, but just how long they can keep the clamp down on a population of such educated and future-minded citizens remains to be seen

Access to the Internet: Access in El Salvador

Byrne Rock & Teresa Valdez, May 2001

Introduction

El Salvador is the smallest of the seven Central American countries. It is also a country that has been riddled with social and political turmoil, and almost continuous warfare, still recovering from its recent civil war in which about 70,000 Salvadorans were killed. The conflicts have understandably had lasting effects on the people and economic situation of the country. Military dictatorship, violent coups and poverty have all taken their toll on the Central American nation, and it is now largely dependent on the U.S. and other foreign countries for assistance. Natural disasters are also common. Several years ago, El Salvador and other Central American nations were hit by hurricane Mitch, and in January of 2001, an earthquake shook the area and left thousands of Salvadorans homeless. Salvadorans are 89% mestizo, 10 % native Indian, and 1% white European. Most Salvadorans speak Spanish, but in a few rural places, native languages are still spoken, although it is becoming rarer and rarer. About the size of the state of Massachusetts with a population of about 6 million people (about 20% of which live in the U.S.) other issues may come first in the public consciousness than the Digital Divide.

The Digital Divide in El Salvador

In a country of about six million people, almost half live below the poverty line. According to a NUA survey in April of 2000, only about 40,000 Salvadorans were online, a scant .65% of the total population. Not even some of the richest one percent of the population can say they are online. Many of the people that are online are a part of the higher educational system, with a great number of people getting connected at the university level. This is typical of many countries, but El Salvador is slowly entering global society.

Telecommunication Infrastructure

El Salvador's telecommunications infrastructure is a developing one. During the country's civil war, leftist Guerillas waged war on the right-wing El Salvadoran government. Often telecommunications targets were attacked in order to weaken the overwhelming strength of the governmental militias. The rebuilding of telecommunication infrastructure, a necessity for access to the Internet, has characterized the years following the war. As is to be expected from a developing nation-state, this rebuilding has been slow but steady. Limiting factors greatly affect the speed at which El Salvador's Internet can grow. Among these are a low number of mobile phones and personal computers. Although El Salvador has 464 radios and 675 television sets (per 1,000 people), it only has 18 mobile phones (per 1,000 people) and a number of personal computers too small to be accounted for according to the World Bank's World Development Report 2000/2001. The lack of personal computers puts El Salvador at an enormous disadvantage with relation to the digital divide. The El Salvadoran Government hopes that privatization of communication technology will increase the speed of development. In 1998 the country's only

telephony company, ANTEL, was split into a wireless and a wired component. France Telecom purchased 51% of the wired shares for \$272 million, while 51% of the wireless component was purchased for \$41 million by Telefónica de España. This placed the telecommunication destiny of the nation in the hands of foreign investors and businesses. "As of January 1997 there were 350,000 telephone lines in El Salvador with 70 per cent of all lines in the capital San Salvador. That amounts to less than six lines per 100 people in the country as a whole with a waiting list of 300,000." (Telecommunications) The urban concentration of El Salvador's telephony is also a weak link in the Internet chain. Without telephone lines that run to non-urban geographic areas, a comprehensive network cannot be attained. According to Guanacos Online!, an El Salvadoran Internet related website, the country has at least 19 ISPs including CTE/Antel.net, Citicom, EuroMaya, Netcom, Telemóvil, and Internet de El Salvador. Guanacos Online! also lists 10 domestic chat websites as well as three different Cyber Cafe companies operating within the country's borders. The additional fact that ANTEL concluded a deal with Amzak International in February 2000 to provide cable telephone services offers more hope for El Salvador's developing telecommunication industry.

Economic Issues

El Salvador's level of economic development is another major barrier to access to the Internet. The country's GNP for 1999 was \$11.8 billion making per capita wealth \$1,900. According to a Lexis-Nexis Document, "More than 20 percent of the population lives in extreme poverty. Population density is high with around 280 inhabitants per square km. It is particularly high in the capital, San Salvador, where population density is more than twice the national average." This fact undoubtedly plays a significant role in determining who is able to afford a personal computer. A 2000 estimate for El Salvador's population is 6.3 million people. Hong Kong has a population of 7 million and a 1999 GNP of \$161.7 billion. This demonstrates the economic disparities between two nations of similar population. The highest 20% of the country's population accrues 56.5% of the national wealth, while the lowest 20% makes only 3.4%. El Salvador's GDP was 10% agriculture, 28% industry, 22% manufacturing, and 61% services in 1999. El Salvador's labor market consists of the production of the agricultural products maize, millet, sugarcane, coffee, beans, rice, cotton, shrimp, beef, and dairy products. Industrial products include processed food, beverages, fuel, cement, textiles, cigarettes, petroleum products, and raw sugar. A lack of technological based services and jobs also adversely affects El Salvador's inequity with regard to digital technology. El Salvador accepted \$30 per capita in official development assistance in 1999, less than half of the amount accepted in 1990. The nation's foreign domestic investment was \$12 million in 1998. As El Salvador's economy improves less outside assistance will be required. For the time being, however, the country's developing economy is a reflection of its struggle to catch up to other countries that are leading the digital changes related to globalization. In order to incorporate more of the population into an El Salvadoran Internet, the economic playing field must be leveled for all citizens.

Social Issues

Education is one of El Salvador's greatest barriers to access. Many Salvadorans simply do not have the education or income required to get online. At least 19% of adult males and 25% of adult females in El Salvador are illiterate, with about 76 % of the total population completing grade 5. Only 36% of

schoolchildren enroll in secondary school. About half of the population lives in rural areas, where access to group use computers such as libraries, schools, or Internet booths is even more inhibited. Since the nation is largely agricultural and rural, the massive deforestation and pollution have had a devastating effect on the economy. El Salvador has lost 95% of its forests to farming and other developments and the land is not supporting the people as well as it could. Loss of these natural resources has driven rural areas into even more poverty. 55% of the rural population is living below the poverty level compared to 43 % of the urban population. Low income and little education are factors that will continue to impede the progress of El Salvador in the global electronic world.

Conclusion

In a country like El Salvador, widespread Internet access is still a long time away. The country is grappling with issues like poverty, recovery from civil war, lack of telecommunication infrastructure, and various natural disasters. Slowly but surely, however, they are starting to have more widespread Internet access. It is still limited to the relatively wealthy, but it is increasing. El Salvador is already worlds away from where it used to be. They are starting to have more widespread Internet access. With the growing popularity of Internet booths which offer relatively low priced access, people who would have otherwise not been connected are getting online. It is still limited to the relatively wealthy, but it is increasing. El Salvador is already worlds away from where it used to be.

Access to the Internet: Access in Guatemala

George Scariano & Ryan Polomski, May 2001

Introduction

Guatemala, a land of extreme ecological and ethnic diversity, is located immediately south of Mexico, west of Belize, and north of El Salvador and Honduras on the narrow Central American isthmus. The country's 11.1 million people are divided between mestizos of Spanish and Indian descent, and an extensive indigenous population of pure blood. The 1.5 million people living in and around Guatemala's City make up, by far, the country's largest urban center. Like most Central American countries, Guatemala is bi-coastal, and has rare tropical forest-regions within its borders.

An initial survey of Guatemala's economic and social conditions provides a clear look at the country's future struggle in attaining Internet equitability. In many ways, the present digital divide is not only an extension of the nation's social and economic ills, but is also serving to agitate and augment those ills. The instruments for freedom of expression and individual empowerment have yet to reach the people of this often ignored neighbor of Mexico.

The Digital Divide in Guatemala

Guatemala's primacy in size, population and gross national product has not been translated into widespread prosperity or the abolition of a significant digital divide. While collecting and analyzing data on Guatemala's telecom and computer infrastructure as well as Internet Service Provider issues, it becomes apparent that, although there are encouraging projects and initiatives, the overwhelming obstacles stem directly from Guatemala's status as an impoverished nation and its internal underdevelopment.

Telecommunication Infrastructure

First, we will present some statistics that round out the economic/ communications portrait of Guatemala. All these statistics are cited from (1.) the UNDP Human Development Report 2000, (2.) the World Bank World Development Report 2000/2001, (3.) International Development Center - Canada 2000.

The percentage of households in Guatemala with phone coverage was low at five percent. When determining telephone density, the percentages were 10% urban, 1% rural, and 3% total. The latest figures from 1998 show that Guatemala has about 40 telephone mainlines per 1000 people, as well as 10 mobile phones per 1000 people -- the latter almost certainly being a statistic which has increased over the past 10 years. Switching to computer statistics, 8 Guatemalans per 1000 actually owned a personal computer in 1998, and as of January 2000 there were 1.56 Internet hosts per 10,000 people. The coverage of the Internet (in terms of percentage of the population) was quite low at 0.6%, with the existence of nationwide local service being basically limited to the "capital and a few other cities". The

telecommunications systems, including the ISPs, have been fully privatized with an intense competition between the phone companies. According to (4.) IDRC: "Privatization promotes an accelerated development of telecommunications and the private offer of Internet service directed towards the population with spending power. There is little presence of social compensatory interventions, and quite unfavorable socioeconomic conditions when it comes to Internet access for the majority of the population" (own emphasis).

One example of Guatemala's few compensatory interventions are the community technology centers, called "centros digitales", available as part of a development program privately funded by Francisco Marroquin University. They offer connectivity and training, with the eventual goal of over three hundred centros -- one per municipalidad. As far as large-scale educational policies with an Internet component, Guatemala has them planned, but not yet implemented due to public financial resources. One needs the hardware with which to teach before embarking on a nationwide program, and that requires funds that seem not to be available in the near future.

The 1998 privatization and sale of the Guatemala's telephone system to private entities has achieved the desired result of spurring investment and increasing equipment imports -- which rose by \$17 million from '96 to '97 alone. (Industry Sector Analysis: U.S. Foreign Commercial Service and U.S. Department of State, 1998) Computer hardware import is rose at a 15% clip over the same period. As of 1998, there were 300 recognized computer dealers (ISA). Many more are suspected to conduct business in Guatemala's informal economy.

Foreign, wealthy communication corporations are increasingly penetrating the shores of Guatemala. In April of 1999, Telgua Inc. launched it's PLS Digital wireless program, which enhances voice, data and enhanced calling services in Guatemala City and Antigua. Puerto Barrios, Quezaltenango, Escuintla, and Puerto Quetzal are scheduled to be added to the service area in the future. In July of 2000, Guatemala was included in Emergia's planned, extensive Latin American seamless broadband network. How dense the connectivity to Guatemalans living outside the urban centers is yet to be seen. It is possible that corporate infusion may be correlated with the government's Phase II of MayaNet, whose goals include a stronger metropolitan backbone with more points of presence, expansion of LAN's in academic and governmental institutions, and expansion of MayaNet to the country's interior. An improved infrastructure would possibly drive down the current impossible telephone and Internet rates that plague most of the country.

Internet Usage and Adoption Patterns

While the specific data is lacking that delineates who is getting on the Internet first, last or not at all --- the statistics on poverty, literacy, and disparity in incomes can lead us to safely assume that urban and rural poor (especially those who are illiterate) are the citizens of Guatemala whom are least involved in Internet communications. If the private telecom providers do not deem poor rural areas profitable, there will almost certainly not be increasing coverage unless public policy emphasizes interconnectivity and training/ education. At present, such public policy excludes huge swaths of the nation -- especially the rural and urban poor.

While temporarily shelving the philosophically quagmire of whether or not poor villagers need or want the Internet in their lives and assuming that the digital divide should be bridged, there are Internet applications of perceived utility which are being fostered. The main thrust of these comes from USAID. Guatemala's bilateral program was named in the 1999 Internet for Economic Development Initiative (IED). Two of the platforms of the IED are as follows:

- Spurring the deployment of advanced information infrastructure to remote and urban areas through collaboration with multinational organizations, NGO's and the private sector
- Fostering the use of specific Internet application such as micro e-commerce, telemedicine, distance education, environmental surveillance, and improved access to government services.

These platforms neatly encapsulate both the strategy and the applications in narrowing the digital divide in Guatemala.

An indirect statistic related to Internet adoptive patterns are the purchase of computer hardware. While purchasing of computers and peripherals are rising at a 15% annual rate, the great majority of purchasers are, in order, the government, the financial service sector, industry and commerce, and banking systems. Private individual purchase is, by far, the least of all (ISA Dept. of State, 98).

Economic Issues

Recent economic data concerning Guatemala illustrates a nation that continues to struggle under an oligarchic system, inept public policies, and racial segregations that limit the benefits of trade and commerce to an elite few. While the country boasts the highest GNP in Central America at \$18.4 billion, and a respectable 3.5% average growth rate, 64.3% of Guatemalans exist on less than 2 dollars a day, and \$1,660 GNP per capita (World Bank: World Dev. Report, 2000-2001, Tables 1 and 4). The economic divide is magnified in the rural and indigenous sectors. Of Guatemala's 4 million people that make up the labor force (out of 11.1 million total population), over half work in the low-wage rural agricultural industry where less than 2% are estimated to own at least 65% of the land and resources. 78% of all the farms are less than 3.5 hectare and occupy just over 10% of the land (World Bank Table 3, CIA World Fact Book 2000, & USAID-Guatemala). Restricted to these small, less-than favorable plots, rural farmers (60% of whom are Mayan or of Mayan descent) migrate to large plantation farms for seasonal wage work on the Pacific coast sugar and coffee plantations (International Labor Organization, 1989). These seasonal workers join with the permanent laborers to drive the large agro-export industry, which creates 1/2 of all export earnings. The entrenched latifundio-minifundio complex (20 families control most all of the agriculture and industry) has and continues to result in a severely oppressive economy, where workers lack all opportunity to achieve financial independence and purchase profitable land (UNICEF, "Break Through for Children). This system is enforced through the powerful political alliance of the landowners (The National Farmers and Ranchers Assoc., CONAGRO) whose interests are often protected by a corruptible and deadly military. Since the end of the 36 year long civil war in 1996, the promise of agrarian reform remains an unfulfilled: 76% of the poverty stricken Guatemalans are rural dwellers; 74% are of indigenous background (International Labor Organization).

The agricultural economy, which added 23% to the GDP in 1999, is not the only sector dominated by a dualistic structure. Industry (19% of GDP), manufacturing (13%), and services (58%) all suffer from

similar lacks of mobility and equality (World Bank, Table 12). Nation-wide, 63% of the income and consumption occurs within the top 20% of the earnings bracket, while the lowest 20% contributes and relieves only 2.1% (World Bank, Table 5). Most non-agricultural business is located around the urban center of Guatemala City. Driven to the city by the unequal rural land distribution, migrants are creating a pool of cheap, desperate and disorganized labor. Foreign direct investment has risen from 48 million in 1990 to 673 million in 1999 (World Bank, Table 21). Investment, in large part, is in the cities' maquiladora sector by large U.S. owned corporations taking advantage of the inexpensive labor, and the government sponsored Free Trade Zones ("Guns and Greed", Richter). The work force in this intensely growing sector is composed of mainly (est. 90%) women between 18 and 25. Nearly 100% of the products made in the low-wage and brutal conditions are U.S. bound (Murga, G.P., "Promised the Earth").

Meanwhile, Guatemala's economy is under increasing strain from the world's financial governing bodies including the IMF and the World Bank to solve its macro-economic imbalances, and to curb its rising external debt, which is listed at 4,565 million in 1999 (World Bank, Table 21, Murga). Instead of changing the nation's internal imbalances, the Guatemala government, its military, the large land and industry owners and now the intense foreign investment capital facilitated by advances in telecommunications, data transmissions and data processing are all augmenting the economic crisis of the great majority of the nation's inhabitants in order to improve international credit rankings.

Guatemala's economy of exclusion has a long and troubling history, beginning with the Spanish conquistador invasion and indigenous enslavement in the 16th century, to the U.S. backed military coup of Guatemala's only financially reforming government in 1954, up unto the current, globalized financial structure which preys on cheap labor.

Social Issues

Any social comment on Guatemala society must begin with the recent and horrific war between the Guatemala army and the country's people from 1970 to 1996, in which 150,000 to 200,000 Guatemalans, mostly rural indigenous, lost their lives (Jonas, Centaurs and Doves). The war exists as a sub text for any discussion of the country's present and future circumstances, but is particularly and immediately important in regards its social character.

At its height in 1982-83, under the leadership of Rios Montt (now the current president of Congress), the Guatemalan military conducted a massive counterinsurgency campaign against the revolting UNRG guerrilla group by destroying and murdering entire villages, creating barb-wired, Spanish-only speaking "model villages" in their place, using methods of documented torture and, in general, creating an environment of fear and terror throughout the country side. The partially U.S. trained military has and continues to act with impunity, including the recent 'unsolved' assassination of the prominent activist and author Msgr. Juan Girardi in April 1998 ("Guns and Greed", Richter). The repression of all acts of reform and empowerment dominates the social consciousness of Guatemala, especially the rural, indigenous Mayan population, who were the main targets of the military. The World Bank Post Conflict Unit has grouped Guatemala with Cambodia, Rowanda and Somalia, as areas in which extended armed conflict undermines social capital, and "intrapersonal and communal trust". Evidence that a multi-generational experience of warfare and violence tears at the social fabric can be found in every statistic

measuring the health of Guatemala's communities. A most telling statistic, however, published in June of 2000 by the Dallas Morning News, predicted that guns would outnumber people in Guatemala City by the new year. There are 1.5 million people in Guatemala City.

World Bank 2001 statistics gauging nation-wide illiteracy for men and women above 15 years of age at 25 and 40 percent, respectively. Urban numbers are higher, at 37 and 39 percent, respectively. Rural statistics are unofficial, but ground reports by humanitarian organizations, such as the Poresa Xtani Project, and Casa Xelaju claim that 66% of girls drop out of school by the 3rd grade for traditional and financial reasons, and in some rural communities, female indigenous illiteracy is close to 100%. Small NGO operations are attempting to spread the skill of reading and writing with limited success. In the report "Reasons For the Non-Participation of Adults in Rural Literacy Programs in Western Guatemala", by German Cutz, she writes, nonparticipation is caused by feelings of threats to their ethnic identity, native language, and a sense of loyalty to their community. Top reasons for avoiding Spanish literacy programs were a fear of participating in groups, lack of self-esteem, and financial lacking. The war continues.

Unique to Guatemala are the 22 separate indigenous languages spoken throughout the country. The most prevalent non-Spanish language is Quiche Maya which has 700,000 speakers, 95% of whom do not speak Spanish (Stross, 2001). The preservation of culture and ethnic diversity seems to symbolize Guatemalans richness as well as its inherent disunity. Internet programs, like LearnLink, have begun indigenous language preservation programs, as well as the embryonic installation of dual-language academic instruction. Currently 12% of Guatemala's schools are bilingual, and, with Internet training, the number is expected to rise dramatically (USAID).

Statistics recording academic enrollment are incomplete, but, roughly one half of all children are reaching grade five -- 52% of male and 47% of the female population (World Bank, Table 6). Guatemala City is home to 5 universities, including University of San Carlos whose student population exceeds 50,000, and who may soon acquire partial ownership of Guatemala's first public access television station (Moore, 2001). Guatemala's universities have traditionally been the home to progressive movements; reform groups have quieted, however, since a military crackdown in the early 90's. For every 1000 people, there are 79 radios, 126 television sets and only 41 telephone mainlines (World Bank, '97, '98 & '98, 2000 Table 19). The daily newspapers, mainly La Prensa, is read by 3.3% of the population (World Bank, 1996, Table 19). Military and political interests when necessary have traditionally controlled the content of Guatemalan media, especially during elections and times of social unrest.

More lingering evidence of Guatemala's social poverty is evident in some disturbing trends. According to National Survey on Mother and Child Health, 50% of Guatemalan children suffer from chronic malnutrition. (1999). The Inter-American Development Bank claimed the country to be one of the world's 5 most violent, citing the 257 murders in the first half of 2000 alone, as well as the increasing prevalence of vigilante law and lynching (26 for the same period) in the police-vacant country-side (July, 2000). In the fallout from the war, Guatemala has become the world's 4th largest provider of adopted children, whom are seen as financial commodities for lawyers, agencies, and (far less, however) for the parents themselves (IAD, July 2000).

While violence and terror are embedded in the current Guatemalan society, some amazing evidence of resiliency, especially amongst the indigenous populations, have become recently noticeable. The UN's peace-building initiative in Guatemala is "its largest and most ambitious such operation in the world",

spearheaded by the MANAGUA watchdog program (UNICEF, "Breakthrough for Children 2000). International NGO's like Amnesty International and charity arms of corporations such as the eBay Foundation have taken notice and are contributing resources to the revitalization effort. Locally, the Guatemalan society, for all its ills, appears to be picking up the pieces, especially in the rural highlands; Quezaltenango has recently elected an indigenous mayor. The Guatemalan people are slowly being heard by the international community, making their claim as important and vital members of the increasingly integrated global village, a people rich in history and beauty, to be forgotten or exploited nunca mas.

Conclusion

The parallels between Guatemala's economic and social inequities and its digital divide seem to be extremely correlative. Education and literacy, two necessities for Internet and technical utility, are being thwarted by the grander, macro-economic and ethno-political crisis. Lack of public subsidies and corporate not-for-profit infusion of telecommunication infrastructure -- combined with an instilled indigenous fear of intrusion and destruction of culture and community complicates the future of the 'have-not' Internet deployment. Without public or international assistance -- it takes years of waiting, and the price of an average annual salary for a family to obtain just a phone line -- the wide spread of the most recent tool of democratic liberation will remain unobtainable for 90 to 95% of Guatemalans (Guatemala Weekly, 4-96; IDRC, Martinez).

The situation is ironic, for the under represented and exploited Guatemalans are those who could most benefit from access to global information, cross-community communication and organization, on-line trading of crafts and wares, and distance learning of language, agricultural and business skills. International investment in the telecommunication infrastructure appears to be the best hope for financial and political revitalization in Guatemala for, currently, the nation lacks the social and financial capital to build a productive nationwide network.

Access to the Internet: Access in Mexico

Horacio Gallegos, Markell Pool & Rachel Anderson, May 2001

Introduction

Mexico is the most populous Spanish-speaking country in the world with an approximate population of 97 million. There are many different ethnicities residing in Mexico but the majority (60%) is Mestizo, a mix between indigenous and Spanish ancestry. The remaining population is 30% indigenous and 10% white. Mexico's society also lives with huge discrepancies in wealth between the different social classes and ethnic groups. This contributes to the problem of Internet access and the digital divide that currently exists. The issues of economy, telecommunications infrastructure, and various social issues pinpoint the major barriers to Internet access in Mexico.

The Digital Divide in Mexico

As in many developing nations, the digital divide has roots in the country's economy and weak middle class. Middle-income families lack the purchase power to support a high-tech industry. Therefore, information technologies become a tool of the elite and the line is drawn between "haves" and "have-nots." The infrastructure that can erase this line is comprised of PC penetration and availability, Internet access, and electricity. Although Mexico has seen significant improvement in many areas like access to electricity, the country still suffers from limited access to technologies. ISP's, PC's, and phone lines are not as accessible to people of lower incomes, and virtually unattainable to those in rural areas.

Telecommunication Infrastructure

The second major problem creating the digital divide is the country's infrastructure. Using the Internet requires three tools: a computer, Internet access, and electricity. In regards to the majority of the population two if not all three of these tools are usually unattainable, not unavailable.

To even begin to consider having Internet access one must first look at hardware. In 1998 only about 4.7% of the population owned a personal computer. Access to hardware is a significant barrier. However, availability is not a major problem. Most cities in Mexico have the presence of stores such as Office Depot. It is people located outside cities and having limited incomes who are denied access to the Internet.

The second concern is phone lines. Telmex, Mexico's largest phone line provider, was sold by the state to the private sector in 1990 with the promise that it would provide phone service to the entire country. However, Telmex has done little to keep its promise. In 1997, the state broke Telmex's monopoly. As a result, Telmex was forced to lease lines to other private phone companies (resellers). The state failed to make arrangements with the telecommunications giant to establish a price ceiling for line leasing. Telmex was overcharging resellers to lease lines, thus killing any competition. Furthermore, Telmex required a fee of \$120 US dollars to connect, while the average Mexican worker made only \$200 per

month. In 1998, there were only 104 main telephone lines per 1000 people. In simplest terms, Telmex was failing to provide.

However, in the case of electricity, Mexico is at an advantage. In 1996, 95% of the population had access to electricity. This number increased to 97% in 2000. The major problem exists not in availability of electricity, but in cost.

Once the barriers of computer, phone line, and electricity have been breached, an Internet Service Provider (ISP) must be present. A current search of "Mexico>Internet Service Provider" on Yahoo brings up almost 40 different ISP's. In addition, some computer corporations are facilitating the use of the Internet. Presario Compaq offers one-year free Internet access with the purchase of a computer. The rural villages and small towns, however, are usually still excluded from ISP connectivity. It is in these communities where most poor Mexican resides. With the current growth rate of users in cities, there is too much demand there to divert connectivity efforts to the small rural villages.

Economic Issues

Compared to other countries in the region Mexico ranks among the highest in economic growth and foreign investment, and boasts an administration that encourages innovative business practices. However, Mexico continues to display large discrepancies in wealth between various socio-economic classes. Moreover, Mexico's various regions create enormous inequalities between urban city dwellers and rural peasants. In addition, the Federal District around Mexico City continues to monopolize Mexico's economic, political, cultural, and financial essence. This exponential population growth and continued urbanization has increasingly strained an already struggling economy.

During the 1960's and 1970's Mexico's economic development strategy involved a large state role and heavy protection from international competition. By 1980, this strategy, known as import-substitution industrialization, had produced an inefficient, uncompetitive economy that could not produce what the nation demanded for growth. After repeated devaluation and high inflation rates during the 80's and 90's, the Mexican government has attempted to restructure the economy with a development strategy sought to make Mexico more efficient and globally competitive by reducing the role of the state, emphasizing private-sector initiatives, and replacing foreign loans with capital obtained from exports and foreign investment. Initiatives and changes like these have improved the situation of the Mexican economy, consequently convincing the World Bank to classify the nation as upper middle in terms of GNP per capita. Only a few countries, like Brazil, Argentina, and Chile, attained this status within this region.

As the Internet era arrived, industry specialists realized that technology penetration was low and technology infrastructures weak. These matters only made prices more expensive for everything technology-related. Prices, combined with a low GNP per capita of US\$4,400, alienated most Mexicans.

Experts often attributed the lack of technology penetration to high poverty levels. However, this reality can be better attributed to purchasing power. While a medium income family earning \$4,400 may be able to afford basic necessities like food, shelter, and medical care, the ability to support a high-tech industry (PC's, Internet service) is very difficult with 42.5% of the population earning under \$2 per day. A middle class existence can condemn a Mexican family to miss out on the Internet Era.

Mexico counts on an elite population that controls a significant portion of the income. With the top 20% group controlling almost 60% of the nation's income, they maintain the status quo. Real progress cannot be made until this group commits to support the cause of the lower classes. This barrier of indifference may be social, as well as economic.

Also, in recent history there has been a considerable amount of red tape when dealing with local authorities. Jupiter Communications stated that independent Latin American e-marketplaces that don't partner with international marketplaces would probably run out of funding and close. In an attempt to modernize the economy the Mexican bureaucracies have relinquished some power to the private sector as well as to their international partners. The percentage of the GDP produced by state-owned enterprises has dropped from 6.7 to 4.9 from 1990 to 1997. Foreign investment has increased dramatically from \$2.6 to \$10.2 billion between 1990 and 1998. These two figures are usually indicative of countries headed for modernization.

With modernization and urbanization comes an increase in manufacturing and service-related industry and a decrease in agricultural labor markets. A high percentage of the Mexican GDP is currently produced by the manufacturing and service industries, with 21 and 68%, respectively. The service-industry percentage is higher than in some Scandinavian countries and closely trailing the United States (72%). The only sector that has seen a decrease is agriculture, falling from 7 to 5% between 1990-1999.

Social Issues

In addition to economic and infrastructure barriers, distinctive social classes feed the digital divide. Mexico, as a whole, has experienced a rapid economic growth in the last couple of years, but the proportion of Mexicans living in poverty has grown simultaneously. At least 28.6% of the Mexican population is classified as poor, and the gap between the rich and the poor has steadily increased. Currently, 70% of the population lives in urban areas and only 30% in rural areas.

This migration from rural areas to the cities can be attributed to a lack of job opportunities, leading people to settling in areas that were lacking urban services. This development of urban poverty is most obvious in the border towns. Rural poverty is closely connected with lack of land ownership and indigenous rights. There are concerns of violations of Universal Human Rights in regards to these issues.

In addition, the Mexican population consists approximately of 60% Mestizo (mixed indigenous-Spanish), 30% indigenous, 9% white, and 1% other. There is a definite racial hierarchy in Mexico that is easily observed, but seldom acknowledged. The present day indigenous people suffer from oppression, poverty and discrimination caused by a mind-set that idealizes a white skin color. This is reflected in all kinds of media and, especially, in advertising. There is reason to believe the public education system is contributing to the augmentation of racism by encouraging this type racial division.

Another social barrier to Internet access is the issue of education. Based on the literacy rates (91% are literate) and the required primary education (86% reach 5th grade), a large majority of the population has the basic knowledge necessary to use computer technology. However, one of the problems is that most Internet access and training in technology occurs in universities and at higher levels of education. The majority of the population does not have access to these institutions . Even though college

enrollment has increased from 62,000 in 1954 to 1.2 million in 1994, this still represents a small percentage of the young population.

Conclusion

It has become apparent through our research that there is a significant digital divide in Mexico, which might augment if not addressed immediately. Due to inequalities in income distribution and the presence of structural racism it is difficult for the majority of the population to gain access to new technologies like the Internet. With 20% of the population controlling almost 60% of the nation's income and at least 10% of the population living in absolute poverty, the barriers to Internet access might seem somewhat overwhelming. A monopolized telecommunications system only adds to the division of access by creating a price structure infeasible to the lower classes. Despite Mexico's rapid economic growth in recent years that has classified the country as an upper middle nation, the digital divide remains a major problem that will only add to already-existing disparities.

Strategies for Improving Access to the Internet: Brazil

Jeremiah P. Spence & Laura A. Q. Barbosa, May 2001

Introduction

Brazil has vast barriers to accessing the Internet. These barriers include literacy, education, economic purchasing power, and infrastructure (telephone lines, etc.). Through privatization, legislation, and market liberalization initiatives Brazil is making significant progress toward decreasing these barriers.

Telecommunication Structure

In recent years, the Brazilian Government has pursued a comprehensive privatization and economic liberalization agenda, which is completely changing the face of the market and its players. In light of the recent privatizations and market liberalization, Brazil's telecommunications sector is poised for dramatic growth.

Anatel, the Brazilian version of the FCC, reports that Brazil had 27.8 million main telephone lines and a line penetration of about 17 lines per 100 inhabitants at the end of 1999. ANATEL projects that figure to rise to 28 per 100 inhabitants by the end of 2003 and to 33 by the end of 2005. ANATEL reported 713,000 public telephones at the end of 1999, to rise to 981,000 by the end of 2001. [\[i\]](#)

The data communications sector, while still small, has grown essentially unregulated for a few years, attracting many new providers to the sector. Entry is relatively easy, requiring an application to ANATEL and a modest licensing fee. While still young, the market is also increasingly lucrative, with analysts predicting growth rates of about 50 - 60 percent. [\[ii\]](#)

Despite strong growth in the data communications market, it is still overshadowed by the phenomenal growth in demand for access to the Internet. This sector is attracting attention from not only the traditional telecom operators, but increasingly from pay television operators, who were recently authorized by ANATEL to provide high-speed Internet access via cable modems. The Yankee Group estimates that there were 8.8 million Internet users in Brazil by the end of 1999, for a penetration rate of about five percent. Currently, only 7 percent of Brazilian households are online. However, Brazil has already demonstrated a greater ability to absorb new technologies than other Latin countries, and that number could increase to 17 percent if PC leasing and flat phone rates are introduced. The Yankee Group predicts that there will be 35 million Internet users in Brazil by the end of 2003, for a penetration rate of about 20 percent. [\[iii\]](#)

Major international companies such as Telefónica, America Online (AOL), Yahoo, StarMedia and others are entering the Internet services market. Consolidation has affected Internet Service Providers (ISPs), and there are currently about 400 left in the market, whereas there were over 1,000 until relatively recently. The top ISPs in Brazil are Universo Online (UOL) with a half million subscribers; Zaz (owned by Telefonica's Terra Networks) with approximately a quarter million subscribers; Mandic.com with about 92,000 subscribers; Matrix Internet; AOL Brasil; Onda; Originet; ICONet; UniNet; and DGL Net. Dial-up

Internet access costs as little as \$11 month, and free access offers are becoming increasingly numerous. [\[iv\]](#)

In a joint venture with the Cisneros Group of Venezuela, AOL launched its Brazil operations in November. For AOL, Brazil is the obvious starting point for its plans to invest approximately USD \$200 million in Latin America over the next few years. AOL and IBM Brazil recently announced a strategic partnership that should allow AOL to capture market share while simultaneously increasing PC ownership (and IBM market share in Brazil). Targeting the middle class, IBM will finance computers, already loaded with the AOL software, with a down payment and a low monthly installment for 24 months, which includes unlimited Internet service. [\[v\]](#)

Government Policy

The telecommunications sector has undergone dramatic change in the late 1990s, beginning on August 15, 1995, when the legislature passed a constitutional amendment to remove the federally mandated monopoly in the telecommunications sector. This and the 1997 General Telecommunications Law ("Lei Geral de Telecomunicações") laid the groundwork for privatization and liberalization, the establishment of an independent regulatory body (described below), and for greater competition in the cellular, data communications, value-added-services, and satellite transmissions sectors. [\[vi\]](#)

The Brazilian telecommunications sector underwent major restructuring in the 1990s. Previously, the Ministry of Communications (MOC) was responsible for planning, coordinating, supervising, and regulating telecommunications and postal services in Brazil. However, in October 1997, a new independent regulatory agency, the Agencia Nacional de Telecomunicações (ANATEL) was established by presidential decree. ANATEL took over all regulatory responsibilities formerly placed with the MOC, including: representing Brazil in international telecommunications fora; regulating the procedures for licensing and providing services; granting and revoking licenses; enforcing regulations; management of spectrum and satellite orbital slots; and accepting and certifying equipment and products. Broadcasting is not regulated by ANATEL and will be covered by future legislation. The MOC is responsible for telecommunications policy. [\[vii\]](#)

Competition in data communications was introduced by a July 17, 1991 regulation (Portaria 525), which allowed private companies to offer certain limited communications services, including data communications, ending Embratel's monopoly in data communications. Under the July 1991 regulation, state operating companies may now provide intrastate, dedicated data communications services in partnership with private companies, including value-added and packet-switched services, using either leased lines from Embratel or the state operating companies. [\[viii\]](#)

As Internet services are relatively new in Brazil, discussions within the Government continue regarding Internet policy. There are currently no policies governing access to the Internet, which is viewed as a value-added service, and there is no special license required to be an ISP. There are no restrictions concerning the types of services that may be provided, except for telecommunications services (i.e. "voice over IP" or "voice over the Internet"). ISPs are not allowed to establish nor to operate their own switches, only telecommunication companies can operate switches or any other cable related to telecommunications services. The Association of Internet Service Providers reported that some ISPs

have been shut down by ANATEL for providing Internet telephony services illegally. Limitations on the Internet business in Brazil are described in the general law of telecommunications ("Lei Geral de Telecomunicações"). [\[ix\]](#)

ANATEL recently approved the provision of Internet services over cable modems, so cable operators are now also entering the market. Globo Cabo recently launched high-speed Internet access over its cable infrastructure in Sao Paulo, and plans to expand the service offering during the first half of 2000. Globo's pay television rival, TVA, launched a one-way Internet access service in Sao Paulo in late 1999. [\[x\]](#)

Telecommunications Restructuring

In preparation for telecommunications privatization, the Brazilian Government created twelve fixed line, cellular and long distance companies out of state-owned monopoly telecommunications provider, Telecomunicações Brasileiras S.A (Telebras), and on July 29, 1998 sold nineteen percent of the shares it held to private investors for \$19 billion.

The transactions were as follows:

- MCI purchased the long distance carrier, Empresa Brasileira de Telecomunicações (Embratel), for \$2.29 billion.
- Telefonica de España, in partnership with Iberdrola, Bilbao Vizcaya Bank, RBS (one of the largest media/telecommunications companies in Brazil) and Portugal Telecom purchased TELESP (the fixed line company in São Paulo) for \$5 billion. The company now uses the name Telefónica.
- Telecom Italia and Opportunity (a Brazilian investment bank) purchased TELE CENTRO SUL (the fixed line company for the states of Parana, Santa Catarina, Mato Grosso do Sul, Mato Grosso, Goias, Distrito Federal, Tocantins, Rondonia and Acre) for \$1.8 billion.
- Andrade Gutierrez (one of the largest civil construction companies in Brazil), La Fonte Alianca do Brasil, Inepar (a business group from southern Brazil and the Brazilian partners of Motorola's Iridium project), Brasil Veiculos and Macal, purchased TELE NORTE LESTE (including Rio's telecommunication company and Telerj fixed line company, as well as the companies for Minas Gerais, Espirito Santo, Bahia, the Northeast region states, Amazonas, Para, Roraima and Amapa) for \$3 billion.
- Portugal Telecom purchased TELESP CELULAR (the cellular company for the State of Sao Paulo) for \$3.1 billion.
- Telefonica de España, Iberdrola, NTT Mobile and Itochu Corporation purchased TELE SUDESTE CELULAR (including the cellular companies of Rio de Janeiro and Espirito Santo) for \$1.2 billion.
- Canada's Telesystem International and Brazilian investment bank Opportunity purchased TELEMIG CELULAR (the Minas Gerais' cellular company) for \$655 million.
- The Globo Group (a Brazilian media group, owners of O Globo newspaper and TV Globo), Bradesco (the largest Brazilian commercial bank) and Telecom Italia purchased TELE CELULAR SUL (the cellular companies of Rio Grande do Sul, Parana and Santa Catarina) for \$606 million.

- Canada's Telesystem International and the Brazilian investment bank Opportunity purchased TELE NORTE CELULAR (including the cellular companies of Amazonas, Para, Roraima, Amapa, and Maranhao) for \$163 million.
- Splice do Brasil (one of the largest telecommunications equipment manufacturers in Brazil) purchased TELE CENTRO OESTE CELULAR (the cellular companies for Mato Grosso do Sul, Mato Grosso, Distrito Federal, Goias, Tocantins, Rondonia and Acre) for \$384 million.
- Telefónica de Espana and Iberdrola purchased TELE LESTE CELULAR (Bahia and Sergipe cellular companies) for \$370 million.
- The Globo Group, Bradesco and Telecom Italia purchased TELE NORDESTE CELULAR (cellular companies of six northeast states) for \$577 million. [\[xi\]](#)

The Brazilian Government set a series of performance criteria and additional standards in order to improve the telephone system through the privatization process, including:

- ANATEL was responsible for receiving complaints about operators;
- operators had 18 months to comply with the new rules agreed to in the concession contracts;
- operators had to begin providing service consistent with international standards by the year 2000;
- quantitative targets were set for the number of fixed telephone lines;
- rates were scheduled to drop, with the big reductions estimated for 2005;
- operators must provide residential telephone service within three working days by the year 2000. [\[xii\]](#)

Community Access

In 1992, while Telebras was still a monopoly, a community telecenter project was initiated with the goal of creating a total of 13,000 centers by 2000. Each center would be a combination of Internet access point, small business services, and government services portal. Unfortunately, after Telebras was privatized the new management decided to discontinue the project. [\[xiii\]](#)

A related project continues today under the auspices of the Bahia State Government called Serico de Atendimento ao Cidadao (SAC). The state government operates these community centers that function as portals to the local, state, and federal government. SAC has grown to provide small business services and onsite Internet access (SACnet). [\[xiv\]](#)

Conclusion

Brazilian barriers to accessing the Internet include literacy, education, economic purchasing power, and infrastructure (telephone lines, etc.). Through privatization, legislation, and market liberalization initiatives Brazil is making significant progress toward decreasing these barriers.

[i] Brazil - Telecommunications Market. "Guide to Latin America and the Caribbean." DOC - Office of Telecommunications Technologies. <http://telecom.ita.doc.gov/ot/latinam.nsf/>

[ii] ibid.

[iii] ibid.

[iv] ibid.

[v] ibid.

[vi] ibid.

[vii] ibid.

[viii] ibid.

[ix] ibid.

[x] ibid.

[xi] ibid.

[xii] ibid.

[xiii] Acceso Universal <http://www.accesouniversal.net/>

[xiv] ibid.