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THE MEXICAN INTERNET AFTER THE BOOM:
CHALLENGES AND OPPORTUNITIES

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Introduction

The Internet will be the defining technology of the first decade of the 21st Century. It is redefining boundaries of all sorts in new and unforeseen ways. As with many previous disruptive technologies, the Internet can be a double-edged sword for developing countries such as Mexico. For example, the Internet has the potential to dramatically lower barriers to cross-border trade. This will enable international retailers to penetrate the Mexican market potentially undermining domestic retail businesses. On the other side, the Internet could provide opportunities for Mexican firms to enter the global market, particularly Spanish-speaking Latin America and the huge U.S. Hispanic market.¹ But this is only the tip of the iceberg of change. For example, in a country such as Mexico in which information has not been readily available and public libraries are relatively few in number and poorly stocked, the free and low-cost information available on the Internet provides a powerful new distribution medium – it provides inexpensive access to global information sources.

Flores and Gaspar (1997) argue that the Internet offers an opportunity for countries such as Mexico to increase already growing relations and strong existing linkages with the more developed economies. Mexico is part of what they term "the intermediate countries in terms of communications infrastructure." For them, the Internet opens new connections for information to flow more quickly than ever. This is true, but it may also be that the Internet exhibits winner-take-all characteristics on a global-level. If this is correct, it might be that the Internet will open up the Mexican economy to competition from websites in more advanced nations, while there would be far less reciprocal opportunities for Mexican web-based firms to expand outside of Mexico. This would suggest that the Mexican economy would simply lose. The likely result is a complicated amalgam of shifts and surprises that lead to entirely unforeseen results.

¹ Recent estimates put the number of Hispanic Internet Users in the US at about 12.5 million, 21 percent whom prefer to view and read in Spanish, 28 percent who use both equally (Hispanic Business 2004).

This paper will present an overview of the issues involved in the development of the Internet and e-commerce in Mexico. The first part of this paper discusses the current state of the Internet and e-commerce in Mexico. The second section is directed at the development of Internet business in Mexico and Latin America. The third and concluding section provides an overview of the various approaches towards Internet and e-commerce development currently being undertaken in the Mexican/Latin American context. Three questions are of particular interest here: the first is the question of barriers to Internet growth and e-commerce development. These mostly revolve around problems associated with economic underdevelopment that has produced a historically long-standing and well-entrenched telecommunications divide. Second is the question of Mexico's national e-commerce development in the context of the borderless Internet. With adequate bandwidth and an increase in desirable products available by direct download, there is no reason why e-products and web sites aimed at one or more national markets cannot be located in another national economy far away. However, it is also true that for most services each country has its own idiosyncrasies, which can make certain types of cross-border marketing without localization difficult. Lastly is the question of Mexico's Internet and e-commerce growth after the end of the technology boom of the 1990s. Mexico's Internet economy was certainly affected, but it was not a disaster. Start-ups failed, sites that survived had to retrench, and domain registration cooled, but business-to-business e-commerce has continued to grow, ISP development has continued—including deployment of cable modem, DSL, and wireless service—and more users continue to connect to the Internet.

The Early History of the Internet in Mexico

In 1969, the Internet which was first launched in the U.S. by the Department of Defense Advanced Research Project Agency (DARPA) as the ARPANet (Abbate 1999). The first countries to connect to the Internet tended to be the U.S.'s closest Cold War allies. In Mexico, educational institutions connected to the Internet the earliest. The first connections were Instituto Tecnológico y de Estudios Superiores of Monterrey (ITESM) and Universidad Nacional Autónoma de México (UNAM—in Mexico City), which connected to BITNET in 1987. The first actual connection to the Internet using Internet protocols was made in 1989, once again by ITESM. By 1990 a number of other Mexican universities and educational institutions including the Ministry of Public Education were connected. Gradually after that, other Mexican educational institutions joined and by 1994 most were connected (Gutierrez Cortes and Islas C. 2000, see also Palacios 2003). However, given their limited budgets, even a connection did not mean that the entire institution was wired with high-speed connections. Moreover, the service was routed through servers in Mexico City, which meant that service was slow or, sometimes, interrupted.

Mexico was relatively slow in introducing the Internet into its higher educational system, and thus Mexican industry took even longer to become aware of the potential. Certainly, awareness of the Internet trailed that of the developed countries and even Brazil. However, leading educational organizations, such as CONACYT, did recognize the opportunity and, indeed, the necessity of connecting to the Internet. Measuring the speed with which the Internet was accepted is naturally difficult, however the intense interest seems to have lagged particularly the Asian developing countries.

After 1995, the adoption of the Internet by universities and government agencies accelerated. As in the U.S., early adoption was in the departments of engineering followed by the sciences. The social sciences would be much slower, because of a lack of funds for computers and local area networks and a generally conservative bias in these faculties. By 2000, however use was generalized and most university students had an email address. In 2001, Mexico joined a consortium of American universities to link to Internet-2, a collection of advanced networking technologies that enable distant collaboration on complex projects. Internet-2 technologies are also being used to link far-flung educational institutions through

video-conferencing. As of this writing, there are 54 member institutions in Mexico's Internet-2 consortium (CUDI 2004).

Domain and Web Site Growth

Data on Internet hosts and domain names provide an empirical perspective upon recent developments in Mexico. NIC-Mexico (2004) reports that as of January 2002 there were 918,288 Internet hosts in Mexico (an increase of 31.0 percent over the previous year).² In the period from July 1998 to January 2002 host growth increased an average 43.6 percent every six months. Top-level (.mx) domain name registration in Mexico has also seen high growth with nearly 90,000 registrations as of mid-2004. The rate of growth has tapered off however; after reaching a peak in mid-2001, registrations actually dropped, only to resume their increase at a much slower rate than before (see FIGURE TOP DOMAINS). The largest growing domain-name category is .com.mx. According to the most recent data there are currently 85,251 unique registered top-level domain names (i.e., names under the top-level designation .mx) in Mexico of which 90.4 percent (80,149) are commercial (.com.mx, see FIGURE DOT COM).³ Prior to 2001 business domain registrations (.com or .com.mx) grew at a blistering pace: a yearly average of nearly 800 percent per year. Since 2001 this growth rate has subsided considerably, to a little over 9 percent per year. The fastest growing non-commercial domain type is .org.mx (see FIGURE DOMAIN GROWTH). This shift in the domain growth rate coincides with the technology industry recession in the United States.

² "Host" refers to any computer that has full two-way access to other computers on the Internet. Internet hosts have unique numerical identifiers (IP addresses).

³ A domain name locates an organization or other entity on the Internet, such as www.yahoo.com. While Internet hosts have IP addresses, not all host computers have domain names, i.e., are website servers. The domain name system organizes domain names in a hierarchical fashion based on type, geography, etc. For example: Top-level geographical domain names include .us for the United States and .mx for Mexico. Top-level types refer to the group or individual running the web site and include .com for commercial websites and .gov for government websites.

Generally speaking, the kind of data posted by Internet users in Mexico is similar to that around the world. A cursory survey of the Mexican Web indicates a growing number of Mexico-based postings. A large number of sites can be found on many topical areas including colleges and universities and national government agencies and local governments (as discussed above). Other local-origin sites (as opposed to internationally-driven sites such as Yahoo Mexico or TIMSN), include tourist-related businesses such as hotels and restaurants and general travel guides for various cities and regions, general firm information/advertising sites, art and culture sites, financial information sites, and economic or export promotion sites. Many of these sites are locally based, while many others, multinational hotel chains for example, are located on U.S. servers, or have dual local and U.S.-based components.

The fast dissemination of new ideas, approaches, fads, and trends is one of the defining characteristics of the Internet. New ideas and technologies can be transmitted over large distances very quickly. Our research shows that many, if not all, of the current social and technological trends reach Mexico in a timely fashion, although they may not spread as widely as in other areas. Technologies such as IRC (Internet Relay Chat), webcams, and email are utilized by Mexican Internet users. Most Mexican Internet users have at least a rudimentary enough grasp of English to use technologies and software that has not yet been translated into Spanish. While such trends as blogging and social networking are not as developed as in the United States, they are taking hold in Mexico. One Mexican blogging site, *Blogs Mexico*, lists 436 Mexican web logs.

Internet Access and Service Providers

Estimates of how many Internet users there are in Mexico vary widely but it is clear that the number is growing fast. In 2002, the consulting firm IDC-Select (COFETEL 2004) estimated that there were 4.7 million Internet users in Mexico. Of these, 41 percent are women, 37 percent are between the ages of 15 and 24, and 40 percent (1.9 million) access the Internet from home. Snapshots International (2004) reports that there were 4.99 million users in 2003, and forecasts that there will be over 13 million users of Mexican ISPs by 2008. Overall the majority of net users are in businesses, followed by home users, and school users (see FIGURE USERS). Much of the growth in Internet users is harder to track since it is concentrated in the Internet café space. In 1999 office computers accounted for 63 percent of Internet connections—currently the figure is 34 percent. Public connection sites (such as Internet cafes) now account for 32 percent of Internet connections, up from only 2 percent in 1999 (COMTEX 2003). It is important to keep in mind that these numbers represent only a small proportion of Mexico's 100 million population. Poverty and an underdeveloped telecommunications structure are significant barriers to Internet usage for millions of Mexicans (Chen and Wellman 2003). According to the research firm ComScore Media Metrix, Hispanics in the US outrank the Internet user population of Mexico by 73 percent (Morrissey 2003a).

Internet access in Mexico, as in other countries, takes many forms. In Mexico, as in other countries, the dominant household technology for Internet access in 2000 was using a PC with a dial-up modem to a local ISP. The majority of users who access the Internet from their homes do so by phone. However, there exists in Mexico a significant telecommunications divide in that there are only 15.7 fixed telephone lines per each 100 inhabitants (COFETEL, 2003 data). The lack of telephones (and home computers) also shows a great deal of regional variation; for example the northern border states have more than twice as many phones per capita than the states near the southern border (TABLE REGIONS). This telecom gap is at least partially addressed by the growth in cell phone penetration. As of 2003 there were 16.3 million fixed telephone lines in Mexico. The number of cell phones in early 2004 was nearly double that, 31.7 million (COFETEL 2004, see FIGURE TELEDENSITY). Just how many of these

phones are owned by people who have no fixed line at home is unknown. It is likely that a significant percentage of Mexican cell phone users are affluent enough to already have a fixed line at home and that many families have multiple cell phone users under the same roof. Mexican cell phone systems have the same digital capabilities as those around the world, including both the ability to access the mobile web, as well as the ability to be used to link a computer to the Internet. However, it is doubtful that cell phones have had a big impact on Internet access as both of these methodologies suffer from speed and expense issues.

Despite the relative paucity of Internet usage in Mexico, however, connection growth appears both strong and steady. User growth from 2001 to 2002 increased by a little over a million—at the same time as the dot com bubble burst and domain registrations in Mexico were actually declining (see FIGURES TOP DOMAINS). Advertising billboards and marketing kiosks for Prodigy (Mexico's largest ISP) and AOL (the second largest) can be found all over Mexico City. In 2003, AOL Mexico entered into a marketing partnership with Burger King (Morrisey 2003b).

Cable modem and DSL service has been established in many Mexican cities. Some parts of Tijuana have had cable modem service for almost five years. Cablevision, one of Mexico City's two main cable TV providers rolled out cable modem service in January 2001. Another ISP, Megacable, has operations in 17 cities. However, cable television penetration in Mexico, at 40.2 subscribers per 1,000 inhabitants, remains extremely low. As of March 2004 there are over 220 operators covering 2.8 million subscribers (COFETEL 2004). The largest operator is Cablevision, owned by Televisa and Telmex, with 400,000 subscribers. In many cities, if available, cable modems are often the connection method of choice, because of their speed and the flat rate. However, large areas of most Mexican cities are either not served or are underserved not only by phone and cable lines, but sometimes lack running water and electricity. ISPs, including the telephone monopoly Telefonos de Mexico, have created plans that reduce

high local telephone rates incurred by Internet users.⁴ Per-call, rather than per-minute, phone charges are being instituted in some Mexican cities (BCG 1999). According to various sources, unlimited phone Internet access can now be had for 30-40 dollars per month.

Given Mexico's economic structure, many Mexicans access the Internet outside of home. Most large academic institutions are connected to the Internet and Internet cafes can be found in many Mexican cities and towns. Internet cafes are already a \$900 million market for ISPs and it is estimated that the number of users will increase about 25 percent per year for the next four years (COMTEX 2003). For example, Ensenada, a small coastal city in Baja California, has as many as 10 Internet cafes most with high bandwidth connections. Competition has lowered the connection costs in these cyber cafes to just under two dollars per hour. Tulancingo, a small city of about 70,000 in the poor, mostly agricultural state of Hidalgo about 100 kilometers from Mexico City, provides an interesting example of Internet use outside of the big cities.⁵ Lacking an airport, with an economic base centered on agricultural services and textiles, Tulancingo has at least four cyber cafes. The young people who are the main patrons of these cafes use Internet Relay Chat, email, and download a variety of files including MP3s. A great deal of interest in personal computing and the Internet exists on the part of young people, particularly those who attend schools or universities where they can obtain access without having to invest their own funds.

Beginning last year, Wi Fi (localized wireless Internet access) is being deployed throughout Mexico, with "hotspots" (access points) located mostly in cafes and hotels in more affluent areas. The *Economist Intelligence Unit* (2003) reports that at least 20 major Wi Fi access operators were operating in Latin America at the close of 2003. A search of Intel's hotspot directory turned up 200 hotspots run by seven national providers, including Telmex and Megacable (a cable TV and cable modem provider in several Mexican cities), and numerous independents. There is some doubt however as to just how popular public Wi Fi access will become in Mexico. Not only is it plagued by the same high prices and

⁴Most Mexican phone companies charge by the minute for local usage.

multiple provider problems as the hotspot industry in the US, far fewer Mexicans are able to afford laptop computers, and those who have them are wary about carrying them around—especially in big cities where street crime is a problem.

While computer equipment is still priced too high for a majority of Mexican consumers, the recent decline in computer and component prices have created a flourishing trade in "white box" systems assembled locally (Guadarrama 1998). The most popular computers as a percentage of the market are the white box category. A PC adequate for Internet use costs only \$300-\$500 in many parts of Mexico. A thriving "Plaza de Computacion" in Mexico City has been in existence for nearly 12 years and rivals computer market districts in the US and Asia. This marketplace's offerings include finished systems, networking equipment, peripherals, and a large variety PC components and parts. Outside, as in other parts of Mexico, numerous sellers of unauthorized copies of software programs can be found (see Kamber 2000). The increasing penetration of PCs in the home and PCs and local area networks (LANs) in the office means a significant installed base now exists in Mexico.

The phenomenon of free Internet access came much later to the Mexican market than it did in the U.S. The first free access was Terra Libre launched by Terra Networks Mexico, a subsidiary of the Spanish firm, Telefonica in November 1999. Two other free access services were Gratis1.com, Inc. a joint venture of Chase Capital Partners, New York-based StarMedia Network, Inc. and others and Tutopia.com, a subsidiary of Miami's IFX Corp. The uptake of free Internet was slow in Mexico where by July 2000 only about 420,000 people of the two million total users were availing themselves of free access (Garibian 2000). However, as in the United States, the free-Internet business model has had problems. Gratis1 closed shop in 2001 (a year before StarMedia sold its Internet assets to EresMas) and Terra Libre, while seemingly still offering free access, appears to be focusing most of its efforts on finding paying customers (Naraine 2001).

⁵ According to the Mexican census, the municipio of Tulancingo's population is about 121,000. A municipio is similar to a county in the US; the figure of 70,000 is a rough estimate by the authors.

The Mexican market has not been easy for non-Mexican ISPs to penetrate, in large measure, because Telmex, the former monopoly phone provider, is under no pressure to provide access for other firms. The situation is particularly beneficial for Telmex. Since they receive the local phone charges by the minute and can charge for Internet access, they always have the option of providing "free" access, because they can still secure profits from the local call. Thus, Terra, AOL, and other competitors have had difficulty making headway in Mexico (Reuters 2000).⁶

Government adoption of the Internet

Government agencies were slower to adopt the Internet, however by 2000 every Mexican state government except Quintana Roo had a website (Gutierrez Cortes and Islas C. 2000). However, though public sector Internet initiatives have been slow to develop, in part due to skepticism about the utility of the Internet in a country where many children still attend school in adobe buildings and the majority of the population does not have phones, they are gaining momentum (see Scheeres 2001). According to data compiled by INEGI (2003), as of 2000 94 percent of central government agencies, and 75 percent of state agencies were utilizing the Internet for the provision of services and information to the public. Since 2001, .gov.mx domain registration has grown an average of 25.5 percent per year (see FIGURE SUB DOMAINS).

In 2001 the Mexican government embarked on a project called eMexico with the goal of linking 10,000 communities to the Internet by 2006 (Scheeres 2002). The idea is to set up community "kiosks" where students can access school information and citizens can use the Internet to interact with government agencies. eMexico also maintains a portal which links to four specially developed federal

⁶ AOL has had limited success in gaining market share in overseas markets. This limited success is curiously the inverse of the explanation of their success in the U.S. and is path dependent. In the U.S., AOL was an important player in the dial-up access market **prior** to the emergence of the Internet. This meant that it began with large market share and was able to parlay that into a dominant position in the dial-up market for Internet services, despite their lack of any technological or pricing advantage. When AOL offered their service overseas, they had no special advantages and thus meet consumer indifference. When this was combined with a premium price package, customer response was usually negative.

government sites: e-Aprendizaje, e-Economia, e-Salud, and e-Gobierno, which provide information on government programs and educates the public about such things as health, business development, educational opportunities, etc. eMexico also provides an integrated system of state and municipal government sites.

Other sites, *Tramitinet* (transaction net) and *Compranet* (buy net), aim to enable ordinary citizens and businesspeople to conduct their business with national and local government more efficiently and to open up and make government activity more transparent. SECODAM, Mexico's secretariat of public education maintains an anti-corruption web site aimed at children. Using the Internet for government-citizen, is not only potentially more efficient, but also allows transactions with government officials to take place at a distance, removing the direct contact that provides the opportunity to solicit bribes. These government initiatives had an almost immediate effect when a team of reporters searched *Compranet* to discover authorizations for more than \$1 million for upgrading the presidential residence, including \$500 bath towels, which produced the "Towel-gate" scandal early in the Fox administration.

E-commerce in Mexico

While there is a great deal of interest and investment in e-commerce in Mexico and in other Latin American countries, growing viable businesses, especially in the B to C space, is another matter. As in the US, the optimism of the late 1990s was shattered by the market realities of 2000 and 2001. Numerous start-ups failed, others such as StarMedia were sold off at fire sale prices, and the established companies like Yahoo and AOL had to scale back their operations. Solid information on the current actual state of e-commerce in Mexico is hard to come by. What there is consists mostly of extrapolations from Mexico's and Latin America's usage and infrastructure data. These tend to indicate that while growing, e-commerce, especially B to C will remain relatively small phenomenon in Mexico. According to a report by Credit Suisse First Boston, online advertising spending in Mexico alone should reach \$28 million in 2000, about a 155 percent increase the previous year (*CNET News.com* 2000). Numerous web portal services were created in 1999 and 2000, both by domestic and international start-ups, and by existing

foreign portals such as Yahoo. These sites utilize a number of strategies depending on the interests of the investor. Companies like Yahoo and MSN seek to extend their reach both to Spanish-speaking Hispanics in the U.S., and Spanish and Portuguese language markets in Latin America. Large Mexican media firms like Televisa and Grupo Azteca are seeking to extend their reach into new markets, often by partnering with a U.S. company as in the case of Telmex and Microsoft's T1msn.com. Numerous other portal sites have been developed either by Mexican investors with a domestic focus, or as in the case of StarMedia, international investors who seek to develop the entire Latin American market.

Focused commercial sites in Mexico and Latin America are growing rapidly. Mexico's move to e-commerce mirrors that of the United States, but lagged by about three years and on a much smaller scale. In 2000, the government enacted legislation recognizing Internet purchase orders as binding contracts (Greenberg 2000b). Most of Mexico's major media and consumer marketing groups, such as Televisa and TV Azteca have established portal presences on the Web either independently or in partnership with U.S. firms. Like their counterparts in the U.S. such as Yahoo!, these sites include a variety of offerings including news content, free e-mail and other services, and various types of online mall and auction services. In addition, a growing number of existing local retail business, such as book stores, computer retailers, and music CD retailers have established a presence on the Internet. According to a recent study by the Boston Consulting Group and Visa, in 2000 there were in excess of 1,300 e-commerce merchants in Latin America (Hallford 2000).

E-commerce in Latin America and Mexico grew quickly. According to a study released by Forrester Research (Greenberg 2000a) e-commerce in Latin America (excluding Mexico) was expected to reach \$83 billion by 2004. Brazil and Argentina were expected to account for most of the value; \$64 billion and \$10 billion respectively (see TABLE RETAIL). Mexican e-commerce, partly due to the effects of NAFTA, could reach \$107 billion by 2004. While this a significant amount for Mexico, it should be pointed out that it would be only about 3.3 percent of the projected total of \$3.2 trillion the United States.

The Boston Consulting Group and Visa recently estimated retail e-commerce in all of Latin America would reach about \$580 million in 2000, an increase of 432 percent over 1999 (Hallford 2000). Mexico occupied the second position in retail e-commerce (\$91 million) after Brazil (\$300 million) and before Argentina (\$82 million). They also estimated that only about 7 percent of retail e-commerce sales would come from the U.S., down from about a third in 1999. In contrast to the U.S., where business-to-consumer (B-to-C) e-commerce emerged first, there was substantial evidence that it would will business-to-business (B-to-B) e-commerce area that was expected to grow most quickly in Mexico (B-to-B is discussed in more detail in later section). For example, in 2000 the Mexican government estimated that 70 percent of e-commerce was B-to-B and that it reached several hundreds of millions (Greenberg 2000b). In contrast, B-to-C e-commerce was estimated to be only \$50 million.

Despite the barriers to Internet usage and e-commerce, Mexico witnessed a remarkable explosion of e-commerce startups. According to Quinones (2000), approximately 150 “dot-coms” were launched in 1999-2000. A study by Bain & Company found that venture capitalists had invested at least \$1.5 billion in Latin American Internet and e-commerce startups (Greenberg 2000c). While small by U.S. standards, this was a remarkable sum given the notorious reluctance of investors to bankroll new ventures, particularly given the closed world of Mexican business. A number of young entrepreneurs, many having recently completed MBAs in the United States, shocked family and friends by choosing to participate in a startup, rather than take jobs in established firms or family businesses (Quinones 2000). Still, many of the Latin Americans finishing their MBAs at Stanford University, while interested in starting or working for Internet business, were reluctant to return to their home countries to do so. Miami, considered by some as the “hub of the Latin American Internet,” has been a magnet for many Latin Americans interested in e-commerce (Epstein 2000). Sadly, many of these new businesses failed (eBusinessForum.com 2004).

Even more so than the U.S., in Mexico the sites generating the greatest amount of traffic are the portals. There were stand-alone e-commerce sites such as Fiera and DeCompras, but there was not yet an abundance of such companies. Some companies such as Sanborn’s, which operates a chain of

restaurant/pharmacies throughout Mexico, developed their e-retail operations to build upon their existing brand popularity. The portals offered e-commerce offerings either vertically through their own website or by providing links to another online shopping site. This leverage to route network traffic suggests that the dominant portal sites would have considerable influence over which e-commerce sites would become the dominant web e-retailers in Mexico.

There were three main groups of websites currently contesting for dominant market share and establish themselves as the premier portal-sites. The first and most numerous set of competitors are based in the United States and are exemplified by AOL, StarMedia, Yahoo, Yupi, and QuePasa.⁷ These firms were funded by U.S. venture capitalists and thus had large reservoirs of capital initially. They were extremely aggressive and created much hype. Another set of competitors were based in countries other than the United States and Mexico, these competitors are represented by Terra Networks out of Spain and El Sitio from Argentina. For the most part, existing Mexican companies were early movers onto the Internet, however Sanborns is an important exception. There were also some Mexican startups such as DeCompras that have been successful. The final and possibly the most well balanced types of competitors might be joint ventures such as the alliance between Microsoft and Telmex, which combined very knowledgeable Internet companies, with well-established Mexican brand names.

All of the above mentioned companies with the exception of Sanborns and DeCompras are not e-commerce only sites. They are also search engines or portal sites. The connection between the portals and e-commerce is one of convenience. The portals will be able to direct traffic to the e-commerce sites that they are sponsored by and thus help affect which sites succeed and fail. Surprisingly, several of the portals have chosen to offer their own e-commerce offerings in addition to that of their sponsors. The relationship between e-commerce and these portals is important because they will be able to funnel their users to whichever purchasing sites they wish, in effect, helping to determine the winners in the market.

⁷ Yupi has been taken over by TIMSN, and QuePasa has repositioned itself as a portal focused on the US Hispanic market.

For example, Yupi.com hoped to integrate the e-commerce and portal functions and so they not only operated the portal but to also operated all of their online sales and marketing

Mexico and the Pan-Hispanic Internet

The Internet does not occupy space in the conventional sense. Taken collectively, the Internet is not about the actual physical hosts, nodes, routers, switches, cables, and backbones that give it physical meaning; it is a borderless, homogenous space structured by protocols and domains expressed in code (Lessig 1999). Any computer connected to the net can potentially access any other computer connected to the net. This is already having profound implications for the way people live and work and with the advent of wireless access, people will be able carry cyberspace with them wherever they go in physical space. It will also likely have profound effects on the structure and function of markets, increasingly throwing into question some nationalist notions of economic exchange.

The most salient variables affecting the developing structure of e-commerce and Internet space on the international level are path-dependent evolutions from previous features. Insofar as the Internet is used to facilitate the exchange of tangible goods (take Internet merchants such as Amazon.com, for example), e-commerce is at least partially subject to the limitations inherent in the physical transfer of matter such as transport distance, security problems, the effects of weather, national boundaries, etc. The “transport” of intangible, information-based goods, be they music, software video, text, or anything else reducible to bits, is virtually frictionless. Communication over the net is limited more than anything else by language and cultural barriers.⁸

Thus, while the actual physical nodes (i.e., the servers) of a given website or e-commerce firm are place-based, potential audiences exist in a boundary less world. If one takes a global markets view, then

⁸ It is interesting to speculate how much of a problem language will be in the future. Already there are websites which will perform rudimentary translations. It is entirely possible that in the future very sophisticated translation programs could run on very powerful servers, providing real time translation of web pages, email, and most
Footnote continues on the next page.

the United States is at least partially a Latin American country; ranked by population the United States is currently the fifth largest Latin American country with a Latino population of 32.0 million. In 2050 the U.S. is projected to be ranked third with a Latino population of about 96.5 million, nearly the current population of Mexico (Davis 2000). Latin American e-commerce firms have a compelling interest to include this population in their marketing plans.

A certain ambiguity exists in regard to a firm's physical location and its market "location." U.S.-based firms routinely target Mexican audiences, while Mexican (or other Latin American) Internet start-ups are also spending effort on developing markets in other Latin American countries. According to Grant Smith, an analyst with the Yankee Group, "a typical path involves establishing operations in Miami, getting funding from U.S. venture capital firms, and positioning themselves as a pan-regional Latin American player" (Welte 2000). Perhaps the most well known example of this is StarMedia, which is funded primarily by U.S. investors and has its headquarters in Miami. According to published information and interviews conducted for this report, many pan-Latin America-focused e-commerce businesses include U.S. Hispanics as part of their marketing strategy. Moreover, many U.S. e-commerce firms, either intentionally or unintentionally, have customers located somewhere in Latin America. Interviews and discussions with Mexican Internet users indicate a preference for U.S.-based portals, news and information sites, and Internet retailers. Reasons given include security concerns, site quality, trust, and the overall appeal of U.S.-based sites and brand names.

According to a recent study by the consulting firm eMarketer, almost 75 percent of Latin American online shoppers use U.S.-based sites (Business 2.0 2000). ZonaFinanciera.com claims 25 percent of its 500,000 unique monthly visitors are from the U.S. Along with ZonaFinanciera, Patagon, and LatinStocks have also made efforts to attract U.S. Hispanics (Schibsted 2000). All three of the major finance sites above are headquartered in the U.S. U.S. Internet and e-commerce firms, such as AOL and

interestingly, chat and instant messaging. However, in the near-term language and cultural affinity will be powerful forces shaping Internet communities and e-commerce.

Yahoo, have made efforts to cater to Spanish speakers in the U.S. and to those in other Latin American countries through target operations and sites such as Yahoo! Mexico.

Generally speaking, the borderless nature of the Internet, and the drive on the part of many e-commerce sites to develop an international market audience, means that it is probably more accurate to think of a Pan-Latin American or Pan-Hispanic Internet than an Internet bounded by national borders. Though as we shall discuss, it could be that the concept of a "Hispanic" or pan Latin American market may be questioned because of the need to customize sites by country. And yet, to achieve the necessary market size, most important e-commerce startups such as portals, e-retailers, finance sites, etc., must have an international focus. Argentina, Brazil, Mexico, Spain, and the United States are emerging as the business centers of Latin American/Hispanic Internet. Several sites studied are focused on those five countries -- many others are attempting to serve unique content to most, if not all, Spanish-speaking countries. StarMedia has sub-portals for most Latin American countries and for the US and Spain.

Customization

While there is a great deal of linguistic homogeneity in Latin America, the news, entertainment, and other information differs from country to country. Put different, Mexicans are little interested in Argentinean national news and vice versa. Sites that address the Latin American market at the aggregate level instead of customizing content to each individual country will meet with only limited success. Two alternative strategies are possible: The first consists of portal and e-commerce sites indigenously created and focused on the home market. Such sites usually attempt to seek the advantages provided by existing brand names through tie-ins with, or spin-offs from, existing media properties. This is the case with the portal Todito.com that is 50 percent owned by TV Azteca and esmas.com, which is a subsidiary of Televisa. Another approach is to leverage economies of integration by creating an integrated system of nationally or regionally based content that is then delivered selectively to groups of users based on their location, or on whatever particular customization they select.

There is a tremendous amount of competition already present, and although sites such as StarMedia have received the most attention, their cross-national attractiveness is dubious. Many of them offer only a mix of news from all over the continent. Likely, this superficial customization will not be sufficient to capture users. Starmedia's strategy has been to establish local content creation branches with the assumption that local managers and site developers are best able to respond to the needs of regional or national audiences. There is also significant linguistic heterogeneity requiring that content be edited to local standards (Marcos 2000). Terra and Microsoft have developed the most advanced portal sites in terms of customization. When a user browses Microsoft's (www.msn.com.mx) they are able to choose which Mexican city they live in, for updated weather everyday, along with news specific to Mexico. Similarly Terra's Mexican site (www.terra.com.mx aka. www.infosel.com) includes customized Mexican news and surveys targeted at the website viewers asking questions ranging from their opinion on politics to their preferences for gift giving.

It is important to consider the limitations of customization as a necessary or basic strategy. Many of the services accessed through portals, e.g., search, chat, email, news and information, weather, etc., need only minimal customization, if any. Generally speaking, people use portals as starting-points, searching out specific localized content when desired. Portals wishing to target particular nations or regions can aggregate content from other providers (news for example), as is the case with several portals that aggregate content from Notimex, a Mexican news service. The economic situation has also been a problem—limited advertising revenues have forced many sites to cutback the staffs that gave different sub-portals a local feel. StarMedia's various country sites, for example, are virtually indistinguishable from each other. Country customization has turned out to be far more important for targeting advertising than for localizing content.

Business-to-business E-Commerce

B-to-B e-commerce is growing much more quickly in Mexico than B-to-C. There are a variety of reasons for this. First, established firms have sufficient funds to invest in infrastructure, equipment, and personnel. Second, for many of them there will be important savings by moving online. Third, Mexican firms are integrating into the global market in which supply chains are being converted to HTML and XML-based software. Having Internet connectivity and the ability to conform your business processes to such standards are becoming crucial requirements for doing business. A strategic decision to not invest in these capabilities will perform by a decision not to participate in global markets, but also in the Mexican market as national customers and suppliers adopt the global standards. The result is that Mexican firms are being compelled to adopt these business processes. As a result, established firms are rapidly being integrated into the e-commerce revolution.

Among Mexican national firms, the undoubted leader in the adoption of sophisticated IT is CEMEX. Already prior to the emergence of the Internet, CEMEX was using sophisticated computer-based dispatching for its cement trucks to maximize utilization and quality. So, it was quite natural for it to integrate the Internet into its operations. In October 2000, CEMEX (CEMEX 2000a) announced that it was moving its entire supply chain to a web-based system. In September 2000 Mexican cement maker CEMEX joined with Cisco Systems to establish a subsidiary for online buying and selling of products. The joint venture would initially focus on three business areas: "the development of online construction marketplaces, the creation of an Internet-based marketplace for the purchase of indirect goods and services, and the expansion of Cemtec -- CEMEX's information technology and Internet consulting services company -- into new markets (CEMEX 2000b). This was in addition to its joint venture with Mexican industrial conglomerate Alfa, a unit of Brazilian bank Bradesco and Brazil's industrial giant Votarantim announced in July 2000 (www.latinexus.com). Also, in April 2000 CEMEX announced that it had invested \$50 million in a Miami-based incubator Latin American Internet projects named PuntoCom Holdings (www.punto.com). For CEMEX, the integration of the web-based applications into its corporate strategy is evolutionary, because of its earlier commitment to the use of information

technologies. Moreover, it is attempting to leverage its capabilities to create B-to-B marketplaces that other Mexican and Latin American firms would use. Finally, it is moving its supply chain to a web-based platform.

The potential for B-to-B e-commerce in Mexico is undoubtedly great, but given the current turmoil in the market exactly how it will develop is difficult to predict. A survey conducted in 2002 found that 30 percent of all tasks at large Mexican companies were done electronically (*eBusinessForum* 2004). Another study found that between 50 percent and 70 percent of Latin American businesses accessed the Internet in 2001 and that by early 2002 virtually all companies with more than 200 employees had websites (*eBusinessForum* 2002). For small and medium-sized Mexican firms, the various B-to-B vertical market platforms being created in the U.S. offer possible new customers. For example, smaller Mexican suppliers could use these platforms to bid on RFPs posted by U.S. firms. Though the registration and bidding on RFPs seems the most obvious methodology, there is much experimentation underway. For example, in October 2000 a United States-based trade portal for the Americas, Ihemisphere, signed an agreement to provide services to the 33,000 member companies of Mexico's industrial chamber, Canacindra. The site will allow Canacindra's members to post sales leads, create online stores, and access logistics via US-based logistics provider (BNamericas.com 2000).

Funding for Mexican Internet Startups

The massive Internet Bubble began in the U.S. and then spread globally. Latin America and Mexico experienced its effects, as did many other countries. Mexico and most of Latin America have little or no history of venture investing. The largest sources for venture capital were the U.S. and Europe firms that began investing in Latin America in the late 1990s. The most important of these were Advent (Boston), Chase Capital (New York), Flatiron Partners (New York), Hicks Muse (New York), Softbank (Japan), Intel Ventures (Silicon Valley), T.H. Lee Putnam (New York), Newbridge (New York), Santander (Spain), Europe@Web (London), and Explorador (Silicon Valley). Also, at the end of 1999 some of the Latin American economic groups, such as Claro in Chile, CEMEX and Carlos Slim in Mexico, Liberman in Argentina, and Latintech and GP Investimentos in Brazil began investing in Internet startups.

The importance of the U.S. venture capitalists in the creation of the Latin American Internet industry is remarkable. All of the firms profiled above, with the exception of those that are arms of large Mexican firms were funded by U.S. venture capital funds, especially significant was Chase Capital and Flatiron Partners. Interestingly, a fund formed in 1999, Explorador, specializes in funding only Latin American startups. After successful initial public offerings for Latin market-based Internet firms such as Starmedia and El Sitio, U.S. venture capitalists believed that investors would purchase even more Latin American Internet stocks. However, most of their investments were unable to complete IPOs before the market crash that began in March 2000. This left the venture capitalists with unprofitable startups that began running out of money in late 2000. Starmedia and El Sitio proved to be disastrous investments for the public and by January 2001 were close to being relegated to penny stocks. Starmedia had fallen from a high of \$61 per share to \$1.90 and El Sitio had collapsed from its high of \$40 per share to \$.625 per share and neither had much prospect of recovering.

Barriers to the Growth of Internet and E-Commerce

There still exist considerable barriers to the development of e-commerce in Mexico. In addition to the relatively high cost of computer equipment, low quality phone connections at the local level make high-speed connections difficult. Despite their decreasing cost, PCs are still a costly consumer item, and combined with Internet access and phone costs, accessing the Internet privately was still out of reach for most families in a country with GDP per-capita of \$8,500 and 27 percent of the population below the official poverty line. High local phone rates are a serious obstacle. Moreover, only a minority of Mexicans have bank accounts or credit cards, thereby problematizing payment for Internet-based services or retail products. The parcel delivery system is unreliable, or if reliable, expensive, making electronic retail sales of physical goods less feasible. Given all this then, it is unlikely that in the near term Mexico will reach the same critical mass that fed the explosive growth of e-commerce in the U.S. However, as we have seen, both commercial and non-commercial Internet usage is growing in Mexico. Further growth could occur along lines similar to the U.S., and there was the possibility that the Internet's ability to transcend borders would lead to some Mexican e-commerce being implemented by, or even dominated by, U.S. firms. Mexico will find ways to overcome the barriers to Internet development by adapting to the Internet, and by adapting the Internet to Mexico.

Before the Mexican population can purchase goods online, computers and Internet access first must be affordable and reliable. Old, outdated phone technology exists throughout Mexico and Latin America; in many parts of Mexico the best possible connection speeds over phone lines are between 14.4 and 28.8 KBPS (Alvarado 2000). Moreover, there is only about one installed phone for every ten people in the population. Residents of many smaller towns, even if they have phones, are not able to access Internet service locally (Belejack 1998). Recent investment by Telmex and American companies such as PSINet and Qwest Communications should alleviate some of the bandwidth problems, but high levels of regulation and the monopolistic structure of the Mexican telecommunications industry, and particularly the now-privatized Telmex operate to retard change and discourage competition (Gonzalez et al. 1998).

Greater bandwidth will not be sufficient to cure the high-cost, low-value proposition that is the present state of Mexican Internet access.

Payment and encryption issues are also problematic in Mexico. Credit card usage is still confined to about 22 percent of the Mexican population (Business 2.0 2000). Bank accounts (particularly checking accounts and ATM access), while increasingly widespread, are still not as ubiquitous as in the U.S. Many employers still pay their employees in cash. Since one of the most convenient aspects of web shopping is the ability to make immediate payment for goods with a credit card, this serves as a barrier to the development of the type of retail e-commerce becoming common in the U.S. Infrastructure problems make it difficult for those with credit cards as well. Many sites lack both secure links and automated payment systems; often even when payment is made online, the credit card numbers are read off a screen and then punched into a credit-card terminal. Jan Smith, the managing director of InfoAmericas states that even if the consumer-side problems were solved and “you had this massive surge in consumer purchasing, the infrastructure of consumer sites is not ready” (Weisman 2000). Lack of credit cards could be overcome with the development of ATM-based debit cards, which could be used over the Internet. However, ATM use in Mexico has only recently grown, since many companies have begun using ATM networks to circumvent security problems associated with distributing large cash payrolls at the work site.

Consumer perceptions of security present a formidable barrier to the kind of retail e-commerce growth seen in the United States. Whether these concerns are justifiable was not ascertainable. One of the greatest difficulties for e-commerce in Mexico is the lack of confidence in the reliability and honesty of unknown vendors. There is an understandable reticence to disclose credit card numbers to such vendors. The fact that the U.S. Government has allowed the export of 128 bit (high security) encryption embedded in the most popular browsers might allay part of these fears. But most consumers are probably unaware of the strength of such security, and the larger issue is probably what the vendor could do with the credit card information. Here, general concerns with the effectiveness of the legal system in protecting consumers creates a general feeling of distrust, not allayed by promises of better technical security (InfoAmericas 2000). This is evidenced by studies indicating that Mexican consumers feel more

confident purchasing online from a company based in the U.S. versus a company indigenous to Mexico. The possible perverse outcome could be the willingness to provide numbers to an U.S.-based firm such as Amazon or Dell and not to a Mexican firm.

Mexicans interviewed on a casual basis by the researchers expressed a preference for U.S.-based news, information, and portal sites. The oft-cited reason is a higher level of trust of the reliability, security, and quality of the information and services offered by U.S. sites. Additionally, there is a corresponding lack of confidence in the public postal system. One of the major factors that has pushed the rapid growth of Internet retail sales in the U.S. is the existence of a very highly developed and reliable package delivery system including both the U.S. Postal Service and private carriers such as Federal Express and United Parcel Service (UPS) (Kenney and Curry 1999). Indeed, the Mexican postal system cannot be used to deliver retail purchases, particularly easily resalable items such as electronic goods or music CDs. Alternative private services such as UPS and DHL are generally very reliable, but are also more expensive. There are now alternative Mexican-operated sites. The first is Estefeta, which is less expensive than the foreign services though not quite as fast. Not quite as efficient is Mexpost, a fast delivery company operated by the Mexican postal service, though it does not suffer the bad reputation of the regular Mexican postal service.

Despite the considerable barriers encountered in Mexico, and despite the illusions that were shattered when the 1990s tech boom ended, it is clear that the Mexican and pan-Hispanic Internet is a permanent phenomenon. Just how deep its reach into the lives of ordinary Mexicans will be is the problem. It seems the case that e-commerce in Mexico, and to some degree Internet usage itself, particularly in their incipient stages, will take off most strongly among a minority of the population in the middle, upper middle, and upper classes, as well as among businesses, particularly those who have a stake in integrating with the global economy (see Palacios 2003). The Boston Consulting Group estimates that given the conditions prevailing in 1999, about 11 percent of Mexican households can afford Internet access. They estimate that given ideal conditions including American-level ISP rates, flat telephone rates, and PC leasing, about 18 percent of households could afford Internet access (BCG 1999). Moreover,

there are doubts about the eventual success of the eMexico program; press reports indicate that the program is seriously underfunded and that only a fraction of the projected 10,000 communities have actually been linked (Scheers 2002). The bright spot, to some degree, is the success of the Internet café industry, which has provided access to many people who would otherwise have none at all.

REFERENCES

- Abbate, Janet. 1999. Inventing the Internet (Cambridge: MIT Press).
- Alvarado Bremer, Alexander. 2000. "How Wired is Latin America?" ZDNet Latin America (October 14), <http://www.zdnet.com>.
- Belejack, Barbara. 1998. "Two Clicks From Paradise." Latin Trade Magazine (September 1). <http://www.latintrade.com>.
- BCG (Boston Consulting Group). 1999. E-Commerce in Latin America: From Opportunity to Reality. Boston Consulting Group (July).
- BNamericas.com. 2000a. "1hemisphere to Provide Services to Canacindra." (17 October)
- Business 2.0. 2000. "Latin American e-Commerce Expands Despite Barriers," Business 2.0 (June 27), <http://www.business2.com>.
- CEMEX. 2000a. "Press Release: CEMEX and i2 Technologies Announce Collaboration." (October 10).
- CEMEX. 2000b. "Press Release: CEMEX Launches E-business Strategy." (September 13).
- Chen, Wenhong and Barry Wellman. 2003. "Charting and Bridging Digital Divides: Comparing Socio-economic, Gender, Life Stage, and Rural-Urban Internet Access and Use in Eight Countries." AMD Consumer Advisory Board (October 27).
- CNET News.com. 2000a. "Battle Seen as Web Portals Crowd Mexico." CNET News.com (May 15), <http://news.cnet.com/news>.
- COEFTEL--Comisión Federal de Telecomunicaciones 2004. COFETEL Website, Area Economía, Sección Estadística. <http://www.cofetel.gob.mx/>
- COMTEX. 2003. "Internet Cafés are Main Access Points for Internet in Mexico," COMTEX News Network (August 20).
- CUDI--Corporación Universitaria para el Desarrollo de Internet . 2004. CUDI Website. <http://www.cudi.edu.mx/>.
- Davis, Mike. 2000. Magical Urbanism: Latinos Reinvent the US Big City. London: Verso.
- ebusinessForum. 2003. "Latin America: Will the Wi Fi Craze Catch On in the Region?" eBusinessForum (October 7) http://www.ebusinessforum.com/index.asp?doc_id=6763&layout=rich_story
- ebusinessForum. 2004. "Doing eBusiness in Mexico?" eBusinessForum (October 7) http://www.ebusinessforum.com/index.asp?layout=newdebi&country_id=MX&channelid+6&country=Mexico
- ebusinessForum. 2003. "Latin America: Internet Advances?" eBusinessForum (October 7) http://www.ebusinessforum.com/index.asp?layout=printer_friendly&doc_id=6251_
- Epstein, Jack. 2000. Masters of e-Business Administration." Latin Trade Magazine (July 1). <http://www.latintrade.com>.
- Flores Olea, Victor and Rosa Elena Gaspar. 1997. Internet y la Revolución Cibernética (México, Editorial Oceano).
- Garibian, Pablo. "Mexico sees slow uptake of Internet services." Reuters (July 25).

- Gonzalez, Adrian, Amar Gupta, and Sawan Deshpande. 1998. "Telecommunications in Mexico." Telecommunications Policy 22 (4/5): 341-357.
- Greenberg, Paul A. 2000a. "Latin American E-Commerce to Reach \$82B by 2004," E-Commerce Times (April 20), <http://www.ecommercetimes.com>.
- Greenberg, Paul A. 2000b. "Mexico Enacts Landmark E-Commerce Law" E-Commerce Times (April 28), <http://www.ecommercetimes.com>.
- Greenberg, Paul A. 2000c. "Report: E-Commerce Coming of Age in Latin America" E-Commerce Times (April 28), <http://www.ecommercetimes.com>.
- Guadarrama H, José de Jesús. 1998. "Las computadoras sin marca, una industria en auge." El Financiero (November 16).
- Gutierrez Cortes, Fernando and Islas C., Octavio. 2000. "La influencia de internet en México y su impacto directo en la práctica política y administrativa." Proyecciones 1, (5).
- Hallford, Joshua. 2000. "Latin American e-Commerce Heats Up," Industry Standard (October 10), <http://www.thestandard.com>.
- HispanicBusiness.com. 2004. "Advertisers Missing out on English-dominant Hispanics," HispanicBusiness.com (April). http://www.hispanicbusiness.com/news/news_print.asp?id=15814
- INEGI. 2003. "Proporcion de la Dependencias y Entidades de la Administracion Publica por Uso de Internet segun nivel de Administracion." (June 24). <http://www.inegi.gob.mx/est/contenidos/espanol/tematicos/mediano/med.asp?t=tin013&c=3435>
- InfoAmericas. 2000. "Market Analysis: E-commerce Opportunity." (September) http://www.infoamericas.com/Tendencias/E-commerce/0900_e/0900_e.doc
- Kamber, Mike. 2000. "Street Scene: Mexico's CD pirates," Wired News (July 22), <http://www.wired.com/news/>.
- Kenney, Martin and James Curry. 1999. "Knowledge Creation and Temporality in the Information Economy." In Raghu Garud and Joe Porac (eds.) Cognition, Knowledge, and Organizations (Connecticut: JAI Press).
- Lessig, Laerence. 1999. Code and Other Laws of Cyberspace (New York: Basic Books).
- Marcos, Daniel. 2000. Director General Patagon.com, Personal Interview.
- Morrisey, Brian. 2002a. "US Hispanics Are Biggest Share of Spanish Speakers Online," ClickZ Network (March 17). <http://www.clickz.com/news/article.php/2110451>
- Morrisey, Brian. 2002b. "AOL Mexico, Burger King Launch Promo," ClickZ Network (May 13). http://www.clickz.com/stats/big_picture/applications/article.php/2205671
- Naraine, Ryan. 2001. "Another Free ISP Shuts Down," ISP Planet (January 11). http://www.isp-planet.com/news/gratis1_down.html
- NIC Mexico—Network Information Center, Mexico. 2004. Host and Domain Statistics. <http://www.nic.mx/es/Estadisticas?category=dominios>
- Oseguera, Juan Antonio and Silvia Ansorena Coyne. 1999. "Al Ataque," Expansión (October 27):43-66.
- Palacios, Juan J. 2003. "The Development of E-Commerce in Mexico: a Business-Led Passing Boom or a Step Toward the Emergence of a Digital Economy?" The Information Society, 19: 69-79.

Petersen, Andrea. 2000. "E-Commerce Backers are Targeting Latin America, But its a Tough Sell," Wall Street Journal Interactive Edition (January 25), <http://interactive.wsj.com>.

Quinones, Sam. 2000. "Mexico's Net Upstarts," The Industry Standard (April 24).

Reuters. 2000. "AOL Launches Mexico Service." Reuters (July 12).

Scheeres, Julia. 2002. "Mexico Wants an E-Revolution," Wired News (February 25).
<http://www.wired.com/news/business/0,1367,50622,00.html>

Schibsted, Evantheia. 2000. "Follow the Dinero," Business 2.0 (March 1), <http://www.business2.com>.

Weisman, Jon. 2000. "Latin American E-Commerce Still Facing Hurdles," E-Commerce Times (August 24),
<http://www.ecommercetimes.com>.

Welte, Jim. 2000. "The Fox Fix," Business 2.0 (August 24), <http://www.business2.com>.

WEBSITES CONSULTED

www.CEMEX.com

www.BNAmericas.com

www.amece.com.mx

<http://intel.jiwire.com>

<http://www.blogsmexico.com>

