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Profitability of the e-Industry in Mexico
Myths and Realities

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Abstract

Is the Internet based environment creating a relevant economic value added to the Mexican region? Are the two main indicators of profitability of any industry, satisfied by the x2x service suppliers? Does the Mexican group of companies providing x2x infrastructures, complementary services, and e-clients networks, generate a profitable industry growth? Are the conditions of the factors feasible, to achieve an attractive industry?
In this paper we try to identify the conditions that are needed to achieve a successful electronic environment industry in Mexico, strong enough to enhance other industrial activities (i.e. productivity, profitability, value creation for the customers) and in parallel having a relevant impact in the macro-economic indicators of the country.

Current situation of the x2x combinations

Comment made by one of the largest e-business back-end suppliers, regarding to when they would come to Mexico:

"…We will be ready to come to Mexico when the country be ready for us…"

We think that this sentence involves the current situation of Mexico regarding the position of electronic practices in different companies, industrial sectors, government and NG organizations.

> The profitability of different business cases that started web-based activities is decreasing or has ever existed. The industry structure and the sustainable competitive advantage, two main indicators of a high performance industry are not very prolific.

The not existence of a well-structured Mexican e-industry is making the metrics of profitability more difficult to evaluate. There is not an e-culture within the enterprises or a sense of collaboration among industry participants.

Although the behavior of most of the cases is not different from the trend of performance of industrialized countries, the scale of the factors that the country manages falls within the trends of low developing countries, in spite of Mexico's large active population, a high trade balance, and now having a strong transformation to new forms of government and new formulas of economy.

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Industry behavior

In order to set up the conditions to achieve a prosperous industry, we have to identify if the region has the proper factors conditions to support and to sustain a competitive industry. There are three questions that we have proposed as research topics, before we can state if the conditions are proper or not to have a success and prolific e-industry:

- First, is there any e-industry in Mexico? Is it an attractive industry by itself?
- Second, is the e-industry creating profits for its own e-companies in the Mexican region?
- Third, is this industry leveraging the economic development and creating wealth to other sectors and related communities?

To be able to cope with the first issue, we will use a simple approach for industry analysis, which considers eight critical factors producers of attractiveness: a). Marketing and positioning b) Competitiveness c) Infrastructure d) Financial leverage and economic factors e) External opportunities and constrains f) Human resources g) Clients structure and h) Complementary industries.

Having in mind those factors, we are going to study the behavior of the industry under the capability of being able to create **wealth**, and sustainable development through the possibility of linking clusters of several companies, education institutions and NG organizations. The capability of leveraging individuals, companies, industrial sectors and regions through different e-mechanisms and information technology platforms. Networks that permit to close the cycle, offering the capabilities of continuing **learning** and growing through all components of the industry and finally generating large, differentiable and unique **leadership**.
The three elements (linking, leveraging and learning) have been adapted from the metrics included as competitiveness measures of industrial development of the UNIDO World

Industrial Report 2001. We have used them in order to empower the enabling ICT´s for achieving high competitive positioning.

The critical success factors (CSF´s) were compacted and analyzed in detail until 5 issues came as important for the existence, growth and sustainability of the e-industry.

The analyzed CSF´s were:

- Telecommunications Infrastructure.
- The environment formed by the main suppliers of e-services.
- Economic, financial support and demand structure of e-services.
- Competitive structure of the manufacturing sector that are clients of the e-environment.
- Hardware/software infrastructure (which was not considered in this study due to the fact that it is not critical for Mexican development of the industry)

The linking factor

Telecommunications infrastructure

In order to have an effective linkage between suppliers, producers and clients (basic structure of any x2x combination chain), it is necessary to have an efficient, effective and sustainable telecommunication infrastructure.

The future behaviour of the Mexican industry of telecommunications is quite similar to the development of the industry in the USA (of course maintaining the proportions). There is not strong evidence that economical and/or political forces will diminish or weakness the American (USA) trend influence in the country.

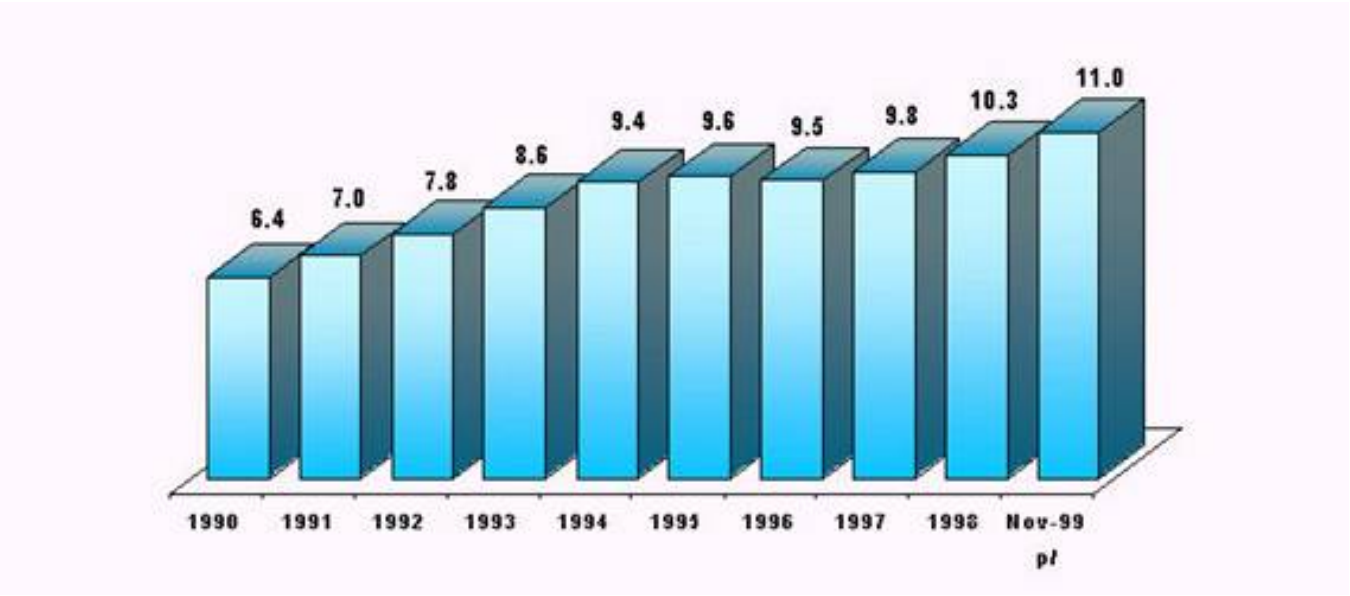
However, European products and standards may start having a presence in the future, due to the signing of the Free Trade Agreement with the European Union (TLCUE 2001), reinforcing some partnerships with old players (such as between Telmex and France Telecom, etc.).

Telephone infrastructure facts

In order to support an effective e-industry, it is necessary to start with an efficient number of telephone lines per inhabitant. It is of fundamental importance that a large proportion of the population be connected.

Although the physical telephone lines has incremented to approx. 12-13 lines per 100 inhabitants by year 2001, and the cellular infrastructure has now more than 13 million subscribers, the total number of lines has been incremented to approx. 23-24 lines per 100 inhabitants, this ***not enough to support an Internet based industry for a country of almost 100M people.***

Telephone Lines in service per each 100 inhabitants from 1990-1999:



Source: COFETEL, with information given by the concessionaires. P/Estimate numbers from the date indicated above.

§ Although mobile telephony is growing faster for Internet purposes, this increment doesn't represent a leverage sign, due to the high cost of the wireless connection and the current scarce accessibility to Internet ports.

§ In spite of the large numbers of the wireless connections, physical links are still necessary to support web-based connectivity. The telephone system is becoming digital since1998; currently, 98% of the new wiring connections are digital. But this is not enough.

Source: COFETEL, with information provided by the concessionaires.

Percentage of Digital Wire Connections
Telephone System

§ Between 1999 and 2003, main physical lines in service will increase from 11 million to 18 million, a compound annual growth rate of 13%. During the same period, penetration will increase from 11 per 100 inhabitants to 16.8. (Pyramid Research)

§ Special attention must be placed to rural telephony because the unmet demand is growing faster, and from a political perspective is an area that must be covered. The Mexican Gov. wants to bring the phone density to 30 lines per each 100 inhabitants by the end of 2010, including the largest rural zones still without any type of connection.

This would open the possibilities of linking facilities to a larger population segment; however, still not covering the two ends of the commercialization chain.

Economic investment infrastructure

Financial supporting actions regarding the telecom infrastructure are basic in order to have a flourishing industry.

§ To achieve the appropriate leverage, investments made by large companies will produce their benefits in the near future (2002) (IT ISA-1997). All new companies will finish their investments by year 2002, although TELMEX intensified efforts to pre-empt competition in the local loop, by offering discounts on the installation fee for additional lines. The investments of these companies are large:

ð Alestra: approx. $1B of investment assigned to construct an optic fibre network of 8,000 Kmts.
ð Avantel: $600M to construct 5,000 Kmts. of optic fiber .
ð IUSATEL: $1.29B to operate 14,000 Kmts of fibber network to offer VA services such as cellular, fixed cordless telephony, and long distance.
ð Miditel: $350M to offer local and LD telephony as well as VA services via satellite to more than 4700 rural sites.
ð Cable TV has more than 1M subscribers through 27,500 Kmts of cable, with more than 173 cable concessionaires (1997). They will need to invest more than $10M in order to upgrade their current systems.

- Another factor that will have a great influence in the telecom industry is the number of paid TV subscribers. Defined as cable and MMDS subscribers, has seen little growth in the last four years, expanding from nearly 1.6 million in 1994 to nearly 1.9 million in 1998, a compound annual growth rate of 5%.

  The lingering effects of the 1995-1996 economic crisis and the entry of direct to home (DTH) operators have stunted pay TV subscriber growth in the last four years despite the presence of traditional growth drivers such as increased competition and low monthly rates ranging between $10 and $17. Between 1999 and 2003, Pyramid Research estimates that the number of pay TV subscribers will rise from nearly 2 million to 3.2 million, and most of them offering Internet services as an alternate service.

*** These future technological trends show a positive factor and an alternative for telephone lines. We think that in a few years, most Internet connections will be carried through cable at broadband speeds. This is a breakthrough of the telecommunication industry after many years of being a monopoly. The input**

barriers have been downsized and diverse services offers have emerged. This will enhance the characteristics of the industry, bringing diversity of suppliers and high-speed connections.

How the Telecommunication Industry supports the Value Added Services (i.e. Internet)

Some findings regarding value added services

§ The Value Added Services (VA) of telecommunications represents the larger segment of possibilities for this industry. In 1999 there were more than 2,300,000 users from government, homes and business. This segment needs a great amount of telephone lines, ISPs (there are more than 400 large providers) and larger amounts of communication hardware and software equipments.

One of the fastest growing areas is the Internet supplier and services sub-segment. This segment has grown enormously world wide; however, Mexico is not completely enabled to support the Web at least at the rate the active population grows. In 1998 in Mexico, only 1.4% of the population was connected on-line (against 26% of the USA) with less than 5 telephones on-line per 100 (against almost 70/100 in the USA) inhabitants with telephone, which reduces the capacity for using the Web substantially at least in the short term.

§ While the basic infrastructure is still growing, other segments of VA services have a more aggressive behaviour:

- ♦ Televisa is now working on a joint venture with News Group, TCI and Organización Globo (Brazil) to cover all the Americas via DTH market.
- ♦ Medcom (subsidiary of Group Red) is working on a joint venture with Scientific Atlanta.
- ♦ Galaxy communications is a joint venture between Huges, Multivision, Org. Cisneros (Ven) and TV Abril (Br) to provide DTH services.
- ♦ Multivision has a joint venture with NTN Comm. to develop interactive TV countrywide.

§ The consolidation of the 3 largest Web services in Mexico (Azteca-Todito,

Televisa and Telmex-Prodigy) will change completely the Internet services providers, pulling enormously the telecom industry as well as the link to the entertainment, reaching high demands and use of large and more complex infrastructures and networks administration. This pattern is being followed all around Latin-American countries mainly in Brazil, Chile and Argentina.

§ But on the industrial side, the IIT industries have a low market penetration in Mexico:

IT market in 1998 was of $4,143M in diversity of elements and different sizes of enterprises:
55.5% of large companies (>5000emp)
24.6% of medium size (1000-5000emp)

However, most of the digital services (hardware and software) have been applied very limited over the small and medium small companies (15-100 employees), which are more than 130,000 companies that are using ITs for clerical operations and some applications of e-commerce but not as potential users of all variations of Internet **business-to-business** services. But there is a trend on the Internet servers and telecom supports and complements, which will increase and must be effectively managed. Of course this is a small fraction of the total 3,500,000 companies in the country.

From these 3,5M companies, there are:

- 175 companies with more than 5000 employees
- 905 companies with 1000-5000 employees
- 4,067 companies with 250-1000 employees
- 18,804 companies with 100-250 employees
- 110,912 companies with 15-100 employees
- 3,302,509 companies with less than 15 employees.

(Select-IDC)

Observing these figures and correlations, the TCI (telecommunication and information) industries are a growing segment and will be for the next 5 and more years (until 2006), if the government policy regarding the TCI industries **does not have any big breakthrough due to the political forces. Which seems improbable giving the new government plans and good economic signs of growth in the country, but still the coverage is very limited.**

The VA services

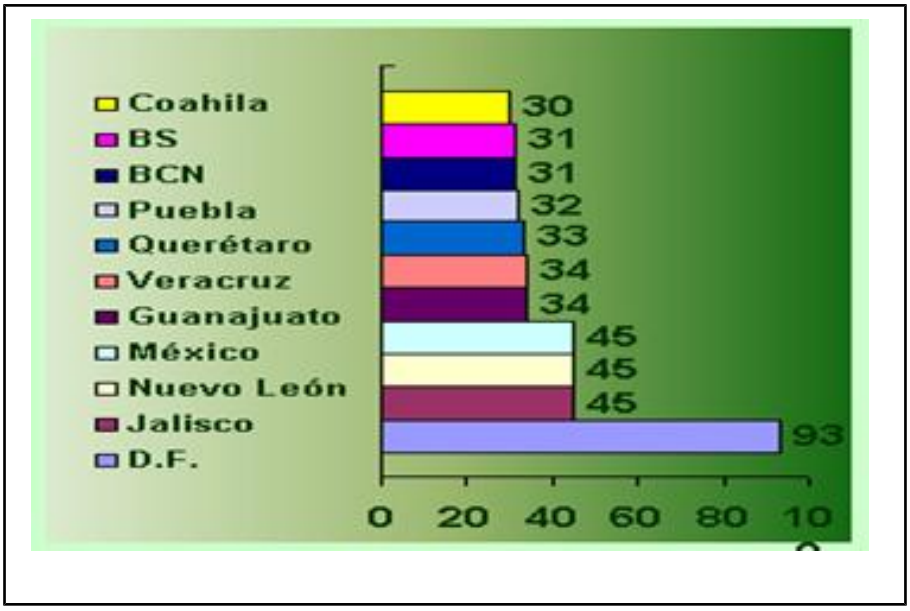
§ Internet services (included corporations, homes of VA Services) have shown the

following behavior:

1998: $125M
1999: $180M
2000: $275M
2001: $325M
2002: $475M
2003: $525M

It is interesting to observe that in 1999, the relation of ISPs of 2 MBPS was 68% of the total of other speed (64Kbps, 128 and 256) equipments, which means a faster conversion relationship.

§ **MEXICAN STATES THAT HAVE MORE THAN 30 ISPs (*Internet Service Providers)***



Source: COFETEL. Number of ISPs per State. 1999

§ All this partially concludes that Mexico is not yet capable enough to handle the Internet worldwide growth rate, because exists a potential market (NAFTA), which in the future may be a huge source of trade for the Mexican industry.

§ NAFTA is considered the largest economical population group in LA, which generated approx. US$900 billions (for the year 2000), much more than Brazil US$600 billion. This figure considers the GNP of Mexico (approx. $US 560) plus the product generated by the 34 million of Latinos in the USA, from which 75% are Mexican.

This population will pull up the trade activity industry widely and is a positive factor to support the domestic industry structure. Here is a niche that should be focused and

infrastructure should be enhanced to support this opportunity of high value added and large ROIs.

§ A word of caution. As well as the industry growths, the demand will growth sooner and the **saturation of the broadcasting** bands will be a fact and a barrier to growth, reducing the availability and dissemination of the services. A cannibalization strategy will be in operation as soon as this reaches a climax. This will provoke a non-balanced competitive environment, which will change the rules to compete.

§ Applications will move to killer services, as is the behaviour of industrialized countries. The trends follow the leaders; however, the population rate of connection on-line is still too low to pace the lead:

Population Connected On-line	**1998**	**2003**
% Population Connected On-line in the US	26%	62%
% Population Connected On-line in Europe	11%	44%
% Population Connected On-line in the World	4%	11%
% Population Connected On-line in Mexico	1.4%	7.9%
Countries with 40% of the population connected on-line	0	14

Source: Select-IDC

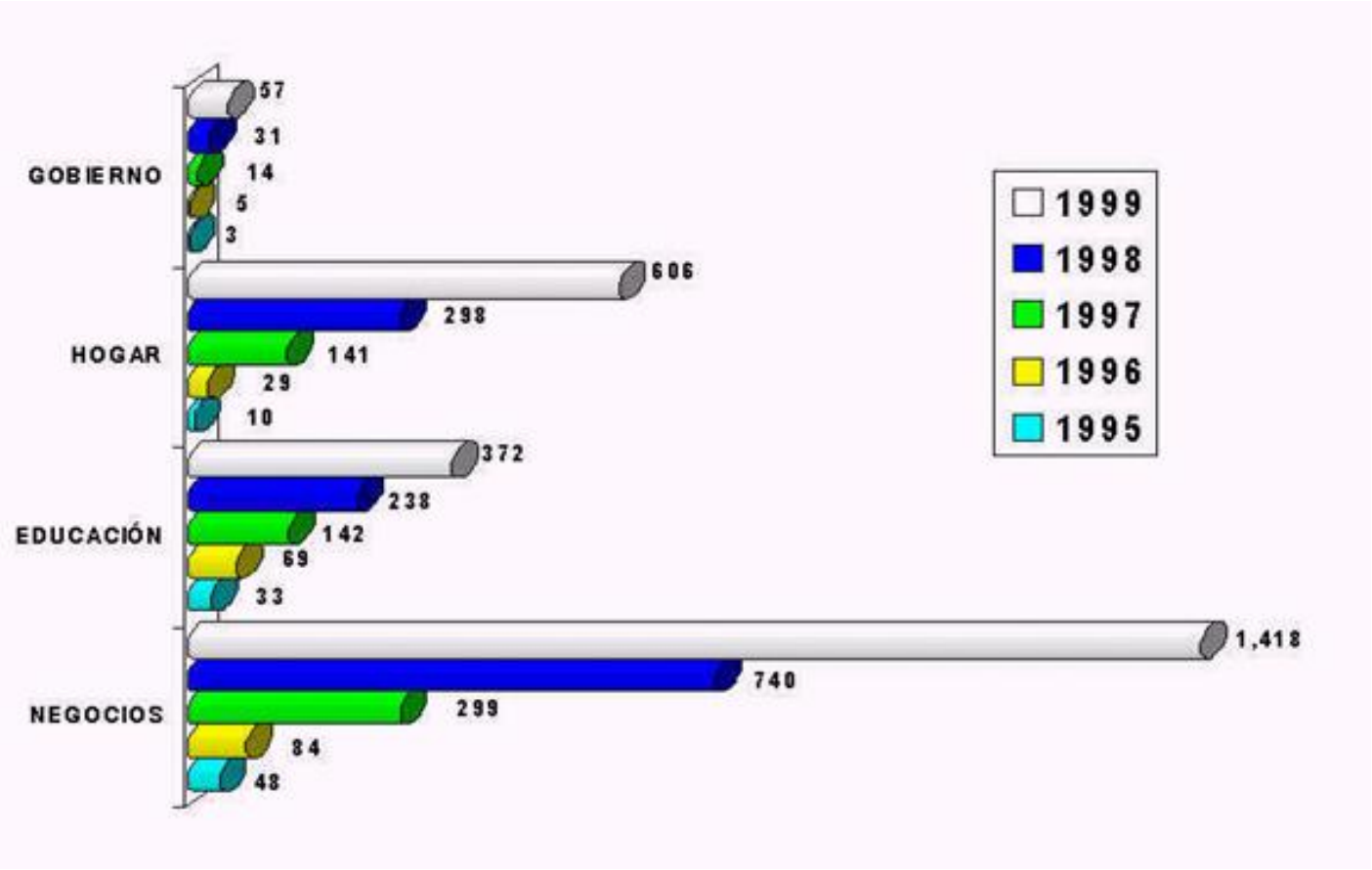
ESTIMATE INTERNET USERS IN MEXICO (THOUSANDS)

government

business

education

home



Source: Select-IDC 1999. (Information provided by the INEGI).

Although these figures are growing fast, they are still quite behind the large figures of the 10 billion B2B and 1 billion B2C profits of year 2000, and the projected 65 billion of B2B and 5 billion of B2C worldwide trade of year 2005.

In summary, these potential e-customers are **too low** to create a real trade of products among most business of the entire country.

Most of these users are located in the 3 population centres in the country (the centre: Mexico City and metropolitan cities like Toluca, Puebla, Pachuca, the Guadalajara area and Monterrey).
And still more dramatic, the growing gap among low-level population and high social levels, due to Internet usage is creating serious divisions among economic classes.

We can hypothesize that Internet based infrastructure instead of being an enabler for the industrial development, is promoting the gaps among different social layers.
The incapacity to connect the poor production areas with the rich consumers will increase the unequally proportions, diminishing the possibilities to compete widely, because the "capable" consumer will continue shopping foreign more competitive goods on the web.

This is a key point to achieve profitability of the e-industry. Not only to have a large

NAFTA market segment, but without all "competitive" elements of the supply chain with the producers' chains connected, it is impossible to achieve high levels of competitiveness. This will limit the industry as well as the domestic growth.

The Telecom Industry Trends

Ø Since 1996 the telecom industry has grown seven times faster than the Mexican economy as a whole. Wireless telephony (cellular, paging, etc) is the segment with the largest potential within the telecom industry. More than 1.5 million wireless lines will be created in the next three years.

Ø To compete at global levels, at the long run, and to support all value added services including Internet coverage, the telecom companies in Mexico will have to craft the following strategies:

- Reduce network costs with cost-efficient (cost per demand-mile) technologies, automated provisioning, optimal resource management, and integrate network functionality.
- Provide new services such as data (VPNs), packet voice, remote access, wireless-fixed communications (for rural areas), integrated data-voice-image and mainly a large variety of Value Added Services. Most of the main carriers are integrating all these services over optical fiber platforms.
- Integrate Network Design Capabilities.
- Invest in current technologies and in the effective use of them for local problems, at the same pace as the USA.

Ø In general, the concept of Integrated Network Design Tools (INDT) carrying service networks, transport networks and optical networks will be the trend for major carriers.

Ø Another issue that Mexican main carriers must address is Network Capacity and Service Planning (NCSP). Service provisioning must be structured for near term and long-term scenarios, having in mind the fast growing of Value Added Services, that the country is experimenting, as well as the tremendous growth on the multimedia segment. For large and medium size companies, User Demand Management is a Key Success Factor to achieve competitive levels. Users demand, bandwidth assignment, cost/performance improvement, mobility capabilities, new services, client/server applications tools, etc; are specific key factors to compete.

Ø But we think that one of the main threats is the possible movement that TELMEX may do to eliminate or diminish outside competitors. This is a key issue in the industry, which makes the future uncertain.

In summary, the linkage factor (telecom infrastructure, internet VA services and telecom trends), show that there is not enough capacity to connect via Internet business to business facilities for most SMEs.

The conditions of these factors are not strong enough to sustain a robust and integrated industry that may consider all elements of the chain supply-client efficiently, effectively and competitively connected.

The Leverage Factor

Following our initial proposal, the next issue to consider, is how the e-industry supports the **leverage factor.** This is related to the empowerment created by the enabling Information and Telecommunication Technologies (including all e-enablers) over the production and service sectors.

Without this alignment, all infostructures are worthless and ineffectively if they are not connected to the productive leverage of the manufacturing activities.

Proof of this, has been the low proportion (less than 25%) of items produced by Latin-American producers that were traded in the total e-commerce activity of 1999 in Latin America. This means that 1 out of 4 dollars sold were produced by Latin-American countries, the other 75% went to the USA or Asian producers of items sold for Latin-American consumers.

Innovative actions based on e-management and e-production (suppliers-customers) must be developed in order to empower LA companies to become more competitive. Mexico is not an exception.

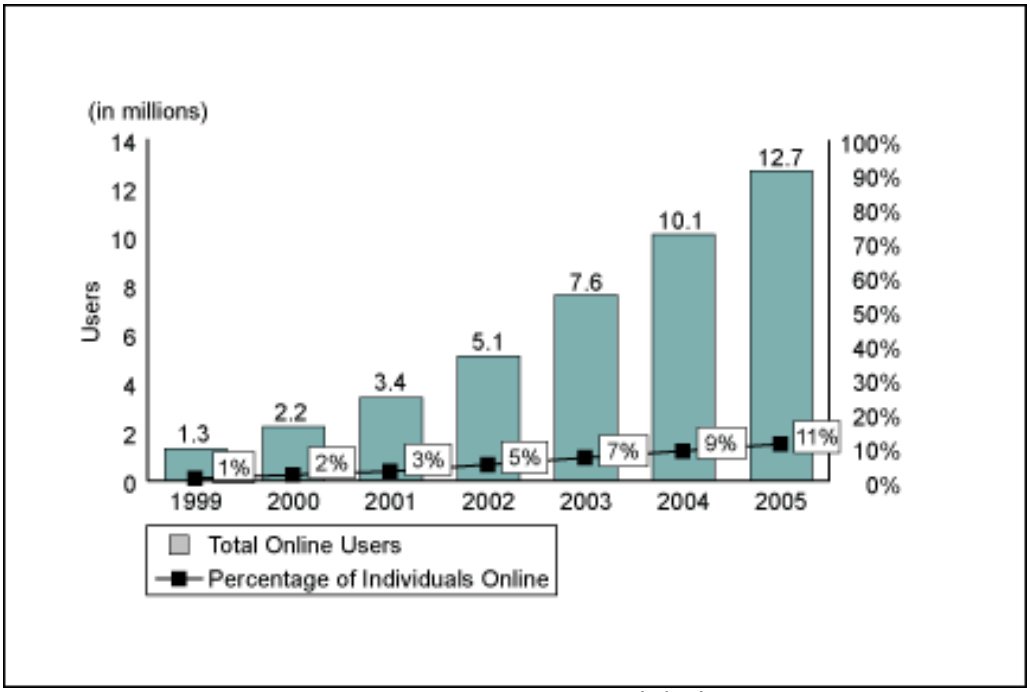
1. The conditions of the factors of the e-industry in Mexico

In order to analyze in more detail the market trend of the e-industry, the following statistics must be considered:

Jupiter projects that almost eight million Mexicans will be online by the end of 2003, and that the figure will rise to nearly 13 million in 2005—roughly a tenfold growth in six years. (See Figure Mexico's estimated 1.3 million online users in 1999 were concentrated primarily in Mexico City). Despite the tremendous explosive growth, this is only 11 percent of Mexico's residents with the capacity of doing business online in 2005, or about one in every nine people. (Jupiter estimates that penetration rates will go over around one in six

for Argentina and Chile in 2005.)

Online Users and Penetration in Mexico, 1999–2005



SOURCE: JUPITER INTERNET POPULATION MODEL (1/00) © 2000 JUPITER RESEARCH

a. Partial issue: low proportion (against total population) of potential connected customers.

This relatively low online penetration can be attributed in part to underlying economic conditions: While Mexico is the second-largest economy in Latin America, the average consumption per capita was in the year 2000 about $US 5,600 GDP, is markedly lower than Argentina and Chile, and only slightly higher than Brazil. Mexico has fallen behind due to changes in political leadership, administrative inertia, lack of infrastructure and a wide digital divide, between a minority with technology access and a majority without it. (BNamericas.com, July 2001).

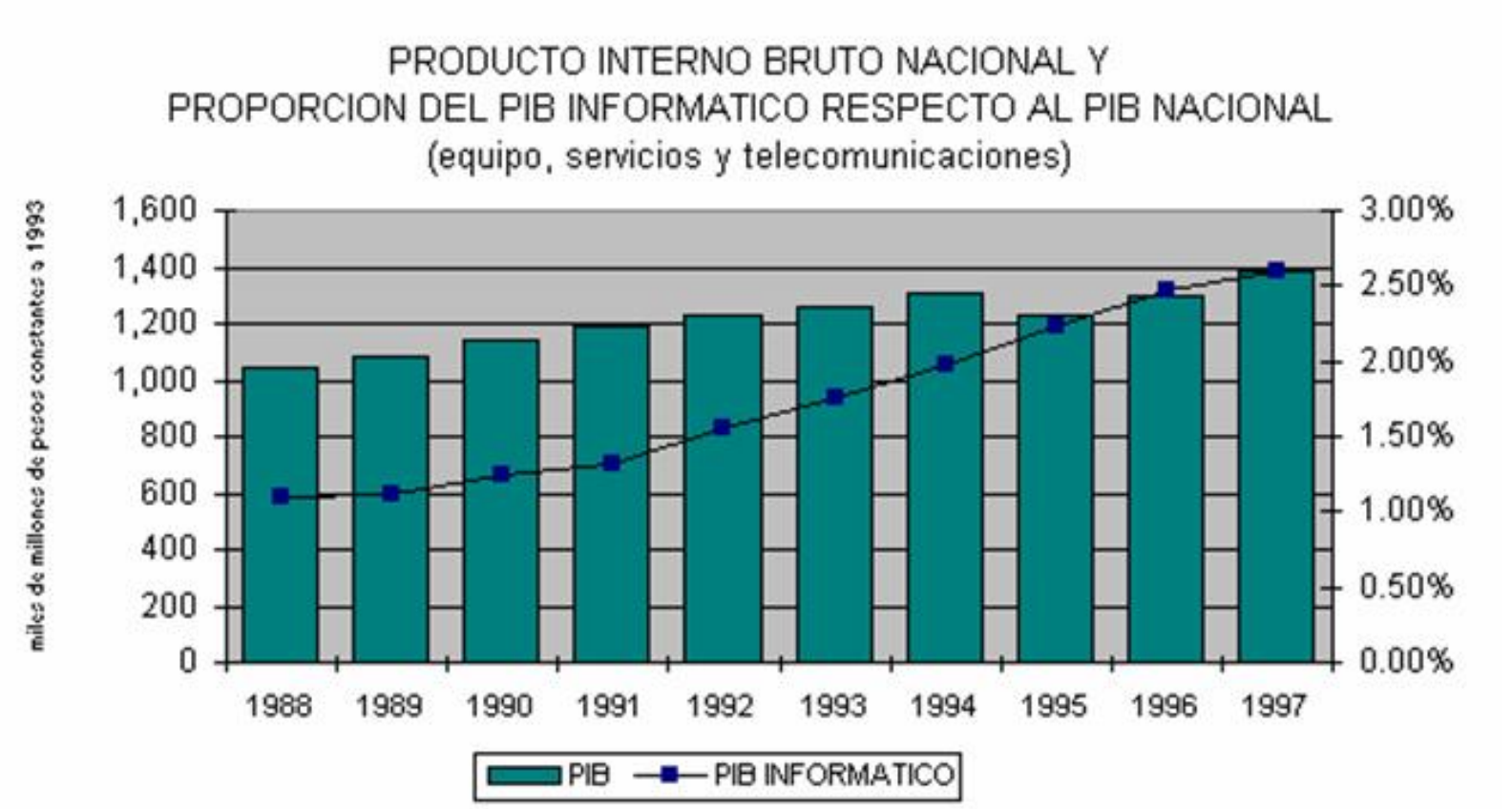
b. Partial issue: low income capacity to achieve high levels of potential consumption.

Industrial competitiveness

At the industrial competitiveness level, according to the 2001 World Industrial Development Report (WIDR) issued by the World Bank (to be published late 2001), Mexico is ranked in the 43rd place in the Technological Effort Scoreboard, using 1998 data.

Productivity of the IT´s industrial activity has shown an important increment parallel to the national productivity indexes. But this doesn't mean a high empowerment to other industrial activities of the country, as we will see later.

Following graph shows the GNP vs. the growth of the IT activity.



Thousands of millions of constant pesos of 1993

Source: Mexican National Account System. Goods and Services Account 1988-1997. Volume II. INEGI 1999.

Equipment: Comprehend the 5402 activity subgroup. Equipment and devices for data processing.
Services: Comprehend the 6821 activity subgroup. Informatics and related activities.
Telecommunications: Comprehend the 6511 activity subgroup. Telecommunications.

§ And the Estimate Market of the IT for year 2000 and 2003 is:

Segment	2000	2003
Servers	$507M	$602M
Data Communications	$458M	$664M
Software (general)	**$586M**	**$811M**
Telecommunications (general)	**$15,953M**	**$19,312M**
Telecommunications equipment	$2,190M	$2,907M
Telecommunications services	$13,763M	$16,405M

Source: Select-IDC, Aug.1999. (US Dollars. e:estimate)

§ In the USA the situation is completely different. By the end of the 90´s productivity improvements attributable to the use of technology across various business sectors, accounts for more than **one-third** of the overall productivity growth.

§ For instance in the period 1995-99 out of the **2.4% growth, almost 1%** were the contribution of information processing, equipment and software, 2% to multi-factorial productivity factors, 0.3% to labor composition and 0.1% to other capital services, this really represents a high influence in the economy of the country.

§ We don't have precise figures of what is the proportion in Mexico, but we can assume it is not and will not be significant (although the growth trend is parallel to the general productivity growth)

c. From these data we can make a series of conclusions toward enhancing our hypothesis, …Mexico is not ready to compete with an aggressive e-industry… There are many facts that support this statement…. although the IT activity represents a high value in dollars, its influence in the national productivity is insignificant.

2. Benchmarking of relevant metrics of the e-industry

The following tables show different statistics that may be useful to elaborate a model capable to identify a possible attractiveness of the e-industry (if there is a such industry) and the capacity of leverage that this industry may achieve in Mexico.

The first table shows the revenues obtained by the B2C transactions.
Incomes of 400, 700, and 1.3B in LA are dramatically lower than other geographic areas. This means that clients are buying more foreign items than those produced inside countries in LA.

Total B2C Transactional Revenues, by geography

(US Billion dollars)	1999	2000	2001	2002	2003
North America	17.4	31.2	51.0	82.9	127.2
Latin America	0.4	0.7	1.3	2.7	5.1
Asia Pacific	1.8	6.1	16.5	37.8	69.3
Middle East and Africa	0.2	0.3	0.6	1.4	2.9
Europe	4.1	11.7	27.1	56.2	109.2
Total	**23.9**	**50.0**	**96.5**	**181.0**	**313.7**

Source: Datamonitor

d. Again a low capacity of consumption is shown in the region, considering B2C transactions.

Total B2B Transactional Revenues, by geography

(US Billion dollars)	1999	2000	2001	2002	2003
North America	678.0	855.0	1,114.0	1,476.0	1,803.0
Latin America	23.0	34.0	51.0	78.0	106.0
Asia Pacific	185.0	269.0	414.0	622.0	823.0
Middle East and Africa	26.0	37.0	57.0	84.0	114.0
Europe	296.0	395.0	578.0	914.0	1,317.0
Total	**1,208.0**	**1,590.0**	**2,214.0**	**3,174.0**	**4,163.0**

Source: Datamonitor

e. On the other side, B2B is better than B2C, but still far away from industrialized countries. This may be due to the low offer of goods produced by LA countries. Again, very low leverage of their products, low competitiveness, etc.

Total e-Commerce Revenues, by geography

(US Billion dollars)	1999	2000	2001	2002	2003	2004
North America	696.0	886.0	1,165.0	1,559.0	1,931.0	2,304.0
Latin America	24.0	35.0	53.0	81.0	112.0	143.0
Asia Pacific	186.0	275.0	431.0	660.0	893.0	1,116.0
Middle East and Africa	26.0	37.0	57.0	85.0	117.0	148.0
Europe	300.0	407.0	605.0	970.0	1,426.0	1,820.0
Total	**1,232.0**	**1,640.0**	**2,311.0**	**3,355.0**	**4,479.0**	**5,531.0**

Source: Datamonitor

f. The total revenues for LA (i.e. 53 vs. 2310 of the total in 2001) are quite inferior to industrialized countries; this means that the leverage produced by the e-commerce to the local economies is minimum and still irrelevant. Not great wealth is created, and most movements come from imported items from industrialized countries by e-means.

Online Population, by geography

(Millions)	1999	2000	2001	2002	2003	2004
North America	124.2	149.8	171.5	188.9	205.6	220.8
Latin America	9.2	14.9	20.0	25.4	30.8	35.9
Asia Pacific	46.8	110.1	162.0	209.7	253.3	291.7
Middle East and Africa	4.2	7.4	11.5	15.9	20.6	26.0
Europe	68.4	117.3	155.4	183.9	203.5	217.9
Total	**252.8**	**399.5**	**520.4**	**623.8**	**713.8**	**792.3**

Source: Datamonitor

g. If we consider the total population as a unit (i.e. 520.3M in 2001), where all countries can compete and trade goods between each other. We see the tremendous disproportion of LA (i.e. 20M) countries unable to sustain a wealthy trade with other countries. On the contrary, importing goods compete more against local producers. This creates a larger gap between domestic producers at

different social levels instead of a high leverage due to Internet based business.

Online Shoppers, by geography
(Millions)

	1999	2000	2001	2002	2003	2004	2005
North America	55.9	94.8	127.4	153.7	175.2	194.3	208.1
Latin America	2.8	5.1	7.8	11.2	15.0	19.0	23.2
Asia Pacific	12.3	37.2	65.8	95.0	125.9	161.4	204.5
Middle East and Africa	0.8	1.8	3.3	5.4	8.0	11.8	17.8
Europe	23.4	62.9	104.7	137.0	161.6	178.7	189.3
Total	**95.2**	**201.8**	**309.0**	**402.3**	**485.7**	**565.2**	**642.9**

Source: Datamonitor

h. The low figure of 7.8M of potential LA shoppers against 309.1M of the rest of the countries in an estimated 2001, confirms our hypothesis of the very low estimated demand for products sold through e-commerce for these countries.

§ What about the total spending?

The Market Size: Total Online Spending by Latin American Countries, 1999-2005

(US million dollars)	1999	2000	2001	2002	2003	2004	2005
Brazil	121	321	667	1216	2007	3036	4256
Mexico	25	75	174	353	642	1049	1542
Argentina	15	51	122	248	447	731	1094
Chile	7	21	45	84	141	219	312
Venezuela	4	14	35	73	136	227	348
Peru	5	13	27	49	81	121	164
Colombia	7	20	43	83	145	230	336

Other	8	22	46	84	138	203	277
Total	**194**	**537**	**1160**	**2190**	**3738**	**5816**	**8330**

i. Here we see Mexico and Brazil going in front. Brazil because of its growing economy, large population, and a large trade with Europe and other southern countries. However, the proportions are not symmetrical between Mexico and the other leaders. Mexico it is in real low pace compared to Argentina and Chile (regarding population figures for instance)

§ About the on-line proportion:

(All units in millions)	BRA(1)	MEX(2)	ARG(3)	CHILE(4)	VEN(5)	PERU(6)	COL(7)
Total population	169.6	97.5	36.6	15.2	24.0	25.7	21.0
Population between (15 -64)	N/A	58.1	22.0	9.8	N/A	15.9	13.0
On line spending per capita	1.9	0.8	1.4	1.4	0.6	0.5	1.0
On line spending per capita pop. between (15 - 64)	N/A	1.3	2.3	2.1	N/A	0.8	1.5

(1) www1.ibge.gov.br preliminary for the year 2000

(2) www.inegi.gob.mx 2000 census

(3) www.indec.mecon.ar estimated for the year 1999

(4) www.ine.cl estimated for the year 2000

(5) www.ocei.gov.ve estimated for the year 2000

(6) www.inei.gob.pe estimated for the year 2000

(7) www.dane.gov.co estimated for the year 2000

Which compared to the total spending, Mexico still has a low proportion and most of this

low figure of expending has been applied to foreign sources:

Market Size: Mix of Online Spending by Country, 1999-2005

(%)	1999	2000	2001	2002	2003	2004	2005
Brazil	63	60	58	56	54	52	51
Mexico	13	14	15	16	17	18	19
Argentina	8	9	11	11	12	13	13
Chile	4	4	4	4	4	4	4
Venezuela	2	3	3	3	4	4	4
Peru	3	2	2	2	2	2	2
Colombia	4	4	4	4	4	4	4
Other	4	4	4	4	4	3	3
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**

The low proportion of Mexico is due mainly to a couple of factors:

§ First of all the real barrier is cultural, Mexican people does not believe that their on-line transactions and on-line information is safe. Regardless of the cutting edge technology that the major banks have invested in electronic financial transactions. Potential customers don't rely to give their information over the net. (Terrapin and Reforma, July, 2001)

§ The second most important one is that only less of the 10% (circa 1999-2000) of the population owns a credit card and without financial instrument is not possible to do fluent commercial transactions over the Internet, unless other mechanisms as electronic money are delivered.

§ Other problems include the current lack of applications and transaction POS, mobile networks that do not cover the entire country; and the lack of user-friendly systems and interfaces.

§ And the large problem of the delivery of the physical goods, as well as delays, insecure transactions, and erratic handling, are common practices that degrade the possible benefit of the activity.

- Following is a comparison of the expenditure share by product segments:

Market Size: Total Online Spending by Category in Latin America, 1999-2005

(US million dollars)	1999	2000	2001	2002	2003	2004	2005

Books	28	67	132	230	372	564	789
Videos	4	10	22	43	76	123	180
Music	5	16	36	72	128	208	303
Software	10	32	68	120	193	282	375
Consumer Electronics	18	38	68	112	175	254	343
Apparel	6	20	48	94	166	266	387
Peripherals	9	23	46	80	129	194	268
Personal Computers	70	172	336	597	915	1,296	1,773
Travel	15	58	153	321	592	963	1,395
Groceries	16	58	140	279	496	792	1,141
Other	13	43	109	242	495	873	1,374
Total	**194**	**537**	**1,160**	**2,190**	**3,738**	**5,816**	**8,330**

- The product share percentage is:

Market Size: Mix of Spending by Category in Latin America, 1999-2005

(%)	1999	2000	2001	2002	2003	2004	2005
Books	14	13	11	10	10	10	9
Videos	2	2	2	2	2	2	2
Music	3	3	3	3	3	4	4
Software	5	6	6	5	5	5	5
Consumer Electronics	9	7	6	5	5	4	4
Apparel	3	4	4	4	4	5	5
Peripherals	5	4	4	4	3	3	3
Personal Computers	36	32	29	27	24	22	21
Travel	8	11	13	15	16	17	17
Groceries	8	11	12	13	13	14	14
Other	7	8	9	11	13	15	17
	100	**100**	**100**	**100**	**100**	**100**	**100**

§ The on-line PC market looks like the most profitable segment in LA now and in the future. In this segment Mexico may have the largest opportunity because of the condition as manufacturer country. Travel activities are also a growing industry aligned to the Mexican growth due to the fact that tourism is one of its three larger industries.

This may suggest that in this segment, the e-tourism may be leveraged properly.

Shopping Usage: Number of Online Buyers, 1999-2005

(In millions)	1999	2000	2001	2002	2003	2004	2005
Brazil	0.9	1.6	2.7	4.1	5.9	8.3	10.8
Mexico	0.2	0.4	0.8	1.3	2.1	3.1	4.3
Argentina	0.1	0.2	0.5	0.8	1.3	2.0	2.8
Chile	0.1	0.1	0.2	0.3	0.5	0.7	0.9
Venezuela	0.0	0.1	0.2	0.3	0.5	0.8	1.1
Peru	0.0	0.1	0.1	0.2	0.3	0.5	0.6
Columbia	0.1	0.1	0.2	0.4	0.6	0.9	1.2
Other	0.1	0.1	0.2	0.4	0.6	0.8	1.0
Total	**1.4**	**2.8**	**4.9**	**7.7**	**11.8**	**17.0**	**22.7**

§ This table shows the low proportion of of-line services from Mexico, regarding the total population (800K out of 100M) confirming our hypothesis of having a poor performance of the industry.

Shopping Usage: Percentage of Users Who Buy Online, 1999-2005

(%)	1999	2000	2001	2002	2003	2004	2005
Brazil	15	19	23	26	30	33	37
Mexico	14	19	22	25	28	31	34
Argentina	12	18	23	27	31	35	39
Chile	11	16	19	23	26	30	34
Venezuela	11	16	19	22	24	27	30
Peru	10	13	15	17	19	22	25
Columbia	11	14	17	20	22	24	27
Other	7	10	13	16	18	20	22
Average	**13**	**18**	**21**	**24**	**27**	**31**	**34**

§ This figure is more dramatic for Mexico, which shows a low usage of the on-line services, but in the other side, has a large growing population that doesn't favor the buying of domestic products.

§ Leverage produced by the e-economy (if we can name it in this context) it is not relevant in Mexico. The causes are multi-factorial and most of them because domestic companies -**are not competitive enough to generate wealth** to the Mexican region, -

the financial infrastructure doesn't allow a fluid exchange of funds, and - the e-enablers are unable to empower a proper level of competitiveness.

Lets take a look to the current players who are leveraging the Mexican companies to catch a piece of the global cake.

3. Economic support and demand structure of e-services

The financial infrastructure and financial engineering in Mexico, although is changing rapidly, still has some drawbacks that don't allow the e-industry to growth.

§ Based on the low proportion of the credit card holders in Mexico (about 10%) electronic money is working up, but with a slow coverage. On the other side, wire transfers have high interest rates. The culture of trust in electronic transactions is very deficient and still expensive.

§ Import laws and rules are not well defined, taxes may vary, are subjective and dependable on the different points of entry.

§ Charging, shipping (transportation), handling and delivering, are still three **bottlenecks** for the e-industry in Mexico, and although the sale or e- interaction is being done efficiently through electronic means (Internet, EDI, etc) the physical delivery is still in primitive stages of efficiency.
Deliveries can take weeks instead of 2-3 days as promised in the advertising.
Inventories are not well stocked; many e-commerce stores are selling off-inventory goods, which produce long delays in the delivery, and situations of fraud.

§ Inventory managing is the key factor to be successful in a virtual store. Many virtual companies don't have enough stock or have a diversity of products (i.e. *decompras.com* a virtual store with home base in Monterrey, kept more that $US2M in stock for many months to be able to supply the variable demand during the 2000 Christmas, (i.e. items like TV sets of different sizes), diminishing their profits but trying to keep the delivery dates under control, selling only what they had in inventory).
Having excess of inventory or high diverse items is due to uncertainly of the non-thrust suppliers, most of them not used to fulfill the orders on time or having mistakes on the deliveries.

§ The JIT concept still misses the big picture, and opportunity costs, mainly among small and medium company suppliers of virtual stores. They don't have an e-culture of being on time and accurate in their deliveries.
Again, there is a **non-trust culture** behind these activities that deteriorates the economy

of the process.
Many of them become out of business precisely because of this lack of a modern collaborative (linkage and leverage) culture.

Conclusions of the leverage factor

The main limitations of the e-industry, regarding a performance index of leveraging, in economic aspects and demand structure are:

- § Poor electronic financial support for **charging** and payment of small transactions.
- § Poor **shipping and transportation** processes, mainly to out-metropolitan areas.
- § Poor legal **regulations** of e-transactions.
- § Lack of **telecom value added** infrastructure.
- § Lack of **inventory** resources and **supply chain** management interaction.

In summary, a **lack** of **trust** could be the critical factor to limit leveraging, limiting the appropriate flow of goods, information and money, basis of the e-economy.

Although by the end of 2001 the total B2B transactions over the Web are expected to generate more than $US 170 billion in revenues (IDC study reported in Computerworld 1999) worldwide, we calculate that just a little portion of this (extrapolated from Datamonitor on global e-commerce for year 2001) will be shared by LA countries and from this total, only a 15% (or about $US 174M) will correspond to Mexico, and much less will be left in the country as local revenues due to **inefficient production chains**.

IDC Latin America (2000) calculates that 70% of the commerce in LA will be among companies; 45% of the biggest companies are on-line, and almost 30% of them can perform financial transactions on-line. This makes a good possibility.

Also a new trend on economic blocks has shown that most of the trade for the coming years will be done intra-blocks like NAFTA, EEU, South cone, etc. which is a positive factor for the Mexican economic growth.

The Learning Factor

In order to have a winner supplier-producer-client cycle, the e-industry must promote a **learning process**, which enables the participants, leverage them through proper connectivity and generates a truly and successfully dynamic industry.
Without this factor, the industry s not robust neither sustainable.

Follows, we will deploy the players who can link and leverage the producers in Mexico. They are the key ingredients to generate a competitive industry in the country.

The players.
The main players in the e-industry in Mexico are:
Artikos, Adquira, Agronegocios, Construmix, GNX, LatinB2B, Latinexus, MiCarga.com, Transora, all of these companies are B2B, x2x, marketplaces, or e-commerce providers. And some facts regarding this issue are:

- Ø As general trend in LA, the main vertical portals are trying to consolidate their operations. We believe that in the long term just a few of them will survive: AOL Latinoamerica, Univision, Alo, Globo, iG and Ciudad Internet, and the Mexican based: Terra-Lycos, Esmas, T1MSN, and Todito.
- Ø In the near future, all Mexican players might be in alliance with entertainment chains or telecommunication providers: as the Todito-Azteca partnership, Terra-Lycos-Telefónica Española, Esmas-Televisa, and T1MSN-Prodigy-Telmex.
- Ø After the dot-com turmoil in the USA and the EEC, Mexico has suffered a real and devastated sequence of breakdowns. And not only the direct ICT´S companies have been affected, but also the complementary industries like the publicity sector. Last year they spent only $US 20M in direct publicity and have planned no more than $36M for 2001; this is too low compared to USA+Canada $9,562M by year 2001. (WSJ. May 2001).

The Todito.com case may be a good case, but still in a process of growing up and mainly due to the alliance with the entertainment giant TV-AZTECA. (Information Week, May.5.2001)

Number of page hits/day:	1.8 Million
Number of e-mail accounts:	515,000
C.Vs on the job-hunting page:	146,000
Number of visitors by day:	140,000
Number of persons looking for dating/day:	21,700
Number of visits to the enterprise channel/day:	10,000
Number of companies looking for personnel/day:	6,800
Number of simultaneous night chats:	1,000
Number of companies affiliated to the ent.channel:	700

As we can see, this portal is quite successful in number of hits, and although its figures are not quite large; currently, this is one of the few portals capable to produce positive results. By the end of year 2000 Todito.com had profits of US$4.5M.

This is not a common case in Mexico; many other portals are still on the red bottom lines like decompras.com, etc.

A large corporation in Mexico in the construction industry has a B2C, B2B portal with approx. 20,000 hits/day but about only 1 effective sale/day during some beginning months of 2001.

As was deployed above, most of the times limiting the offer to the current inventory is not a good strategy to growth but on the other side the non-trust culture limits largely all possibilities to success and to be able to close the learning cycle and improve substantiality and sustainability.

The Leadership Factor

Finally, the enabling e-technologies are capable to achieve leading positions for the companies that use them in planned e-activities. Although most cases are just at the leverage level, there are some samples where companies have gained leading positions by an appropriate use of emerging technologies to support their business strategy.

"… in the USA a company will not be competitive five years from now, unless it has near real-time information architectures inside it.." Red Herring. July 2001.

§ In Mexico, for instance, there are cases like IMSA e-business in Monterrey (large corporation of the construction industry, energy, steel, etc). They have produced savings on: logistics, suppliers, payments, dealers, and b2E (something that they have implemented and called *business to employee*, where they connect the human resource systems to the employees) between $20M and $30M. They are also controlling the 20,000+ dealers through their web-based system (although some of the smaller ones are still in the process of equipment upgrading with plans to enroll the web-system very soon). Also they are trying to connect their 6000 worldwide suppliers, having between 13 and 14% savings among suppliers-client chain transactions, this leverages them on leading edges difficult to equalize by the competitors.

§ The firm Eficentrum (part of Carso group, owners of Telmex among others) has saved up to 20% through its e-activities and expects to duplicate their savings for next coming years.

§ Latinexus, a joint effort of the Mexican Alfa Group, Cemex, and Brazilian Bradespar and Votorantim, although without great profits yet, are expecting to extend its system to a

vast amount of medium size suppliers and dealers in the near future.

§ Microsoft has plans to connect large retail stores in Mexico such as Wal-Mart and Sears with thousands of small family business through their e-commerce portals.

All these cases represent a clear situation of leadership achieved by the use of e-business; however, these isolated cases have been found for large corporations only. For SMEs we don't have documented and satisfactory cases of success.

General Conclusion

Using our four key success factors for having a competitive robust and sustainable industry, we can summarize that linkage is low, leverage is out of international performance metrics; learning cycle is not completed yet neither understood by the users, and leadership based on Internet based enablers is still far from being effective, specially for SME´s.

We have shown that Mexican e-industry is still in a primitive level compared to other developing countries in LA, although the lately political and social changes in the country may produce different results in the near future.

Some industrial entrepreneurs are expecting this, in spite of weakest linkages as energy production and distribution, which may blow up all signs of progress of this embryonic e-industry.

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