

# **Mexico's Evolving Outsourcing Market: From Low-Tech to High-Tech**

MGT495 – Senior Thesis in Management

Written by:

Cale Smith

Advisor:

Dr. Ibraiz Tarique

### Abstract

Research suggests that competition driven by globalization has diminished Mexico's position as a low cost outsourcing destination due to their increased wage rates. However, the Information Technology (IT) industry in Mexico is capable of substantiating the value of the higher wages as many multi-national corporations (MNCs) are increasingly outsourcing their sophisticated manufacturing to the country. This thesis addresses the future of the IT outsourcing in Mexico and describes how factors contributing to its success can be improved to develop a sustainable competitive advantage for Mexico. Recommendations are provided based on a synergy of the successes that China and India have experienced in outsourcing.

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## Chapter 1 - Introduction

It is no secret that Mexico is no longer amongst the world's top low cost producers (Farrell et al., 2005). Despite the fact that Mexico borders the United States (US) and the benefits provided by NAFTA, many companies that operated manual labor jobs without the need for an educated workforce have left Mexico in search of substantially lower labor costs and have found a suitable workforce in Asia (Quintin, 2004). Thus, Mexico must continue to develop its competitive advantage and prove to multinational corporations that their higher labor costs in comparison to the world's leading outsourcing destinations have additional value (Siekman, 2001). The Information Technology (IT) industry in Mexico is growing based on the proximity to the United States and the ability to manufacture highly technical products that need to reach the consumer as fast as possible (Friedland, McWilliams, 2000). In this thesis, IT outsourcing mainly entails the manufacturing of sophisticated products, in addition, there is software development and increasingly research and development is taking place.

### Chapter 1.1 - Purpose of Research

The purpose of this thesis is to do a review of research related to the past and present of Mexico's IT industry. Through reviewing a wealth of information, this thesis will answer the question: **What are the recommendations to increase the growth of IT outsourcing to Mexico based on the best practices from China, India, and other Latin American countries?** To further set the background for this research, I will include my own reasons for choosing this topic, provide recent credible references to support the importance of the issue, and briefly expand upon what I will further contribute.

The topic of Mexico's IT industry is of particular interest to me due to several factors. My major of International Management is concentrated in the region of Latin America and ever since first learning to speak Spanish, I have desired to develop an expertise on the region, but in particular on Mexico. In the summer of 2005 I traveled to Guadalajara, Mexico to study business and finance terminology in Spanish. While in the city, I learned of the high level of education at the surrounding institutions and that many students desiring to continue their education came to Guadalajara to do so. These ambitious students are helping Mexico to become more competitive in providing a growing technologically savvy work force to Mexico's own developing companies and multinational corporations looking to manufacture in the country (Sanderson, Hayes, 1990). To see where Guadalajara is located, refer to the Map of Mexico in Figure 1.

Outsourcing is an extremely prevalent topic, but most people currently associate the term with India or China (Reinhardt, Kripalani, Smith, Bush, 2006). Since these two destinations are amongst the leaders in low cost outsourcing, I wanted to examine the trends in Mexico's outsourcing market. Given that Mexico can no longer compete with the other leading outsourcing destinations based solely on labor costs (Farrell et al., 2005), a very relevant topic is to investigate what additional value is added to the higher cost of labor in Mexico. The IT industry is a very logical choice because this industry has yet to fully stand on its own feet (Sandoval, 2004). The IT industry is largely dependent on the US economy with thousands of jobs provided by multinationals which have outsourced their technical manufacturing to the known destination of Guadalajara (Hecht, 2001). Therefore if the United States economy is booming, more high tech jobs will be outsourced to Mexico (Quintin, 2004).



## Chapter 1.2 – Thesis Organization

This thesis is organized into five chapters. The second chapter is the review of literature and research. Within the second chapter, the literature reviewed is organized into seven different themes which include the following: the background of Latin America's struggles, the government of Mexico's contribution, investing in IT, global outsourcing trends affecting Mexico, developing Mexico's competitive advantage, the supply chain, and education. In the third chapter, I introduce Figure 2, which is the conceptual model I created based on my research. My conceptual model gives ten future factors of influence for IT outsourcing to Mexico and the research question is answered within these different factors. The fourth chapter will address the implications for leadership which is organized into practical leadership implications and theoretical leadership implications. The fifth chapter will summarize the findings from this research and give a list of knowledge to take away from this thesis.

Based on my initial review of literature and research, the topic of IT outsourcing in Mexico is of great importance to the future of the country as globalization has shifted trends in outsourcing. The new trends in globalization are the pull towards China as the destination for low cost manufacturing (Quintin, 2004), which forces Mexico to substantiate the value of its higher labor costs. Mexico's IT industry is frequently reported in the news because many MNCs operate there and domestic companies are continuing to grow. However, if research is not done on the future of the industry, no synthesized recommendations can be made. Only one sided recommendations will be given from the aspect of the given profession. There are many factors that influence the IT outsourcing in Mexico and these will be analyzed. What makes this research unique is that my contribution will analyze the successes of the leading outsourcing

nations of China and India and associate those successes with how the future of Mexico's outsourcing industry can be improved.

### Chapter 1.3 - Research Methodology

This thesis synthesizes information from the perspective of economists, political figures, venture capitalists, management consultants, multinational corporations and IT companies in Mexico. To begin my research, I searched through published papers in the *McKinsey Quarterly* and The Center for Latin American Economics at the Dallas Federal Reserve Bank. I selected these journals based on their credibility and because their reports identified the problems facing Mexico. Then I began reviewing current periodicals such as *The Harvard Business Review*, *The Wall Street Journal*, *Business Week*, *Fortune*, *Forbes*, and *Latin Trade*. Through the Pace University library, the Proquest Database was a major source of past articles from *Business Mexico* and the other previously mentioned periodicals. Also, to find the most current articles, searches were performed on Google News which retrieves up to the minute news or periodical feeds based on the keyword. While searching Google and the Proquest Database, keywords such as Mexico's IT industry and Silicon Valley South were used. If the articles affected current and past trends in Mexico in any form, I reviewed them as relevant material. In addition, several handouts were reviewed on Latin America and Mexico from my class "Management Environments: Latin America." The articles reviewed ranged from 1992 to 2006.

### Chapter 1.4 - Supporting Research

According to experts and analysts of the IT industry, there are areas that need improvement in order to grow into a stable and developing industry. My initial research of outsourcing in Mexico pointed to several key problems that prevent Mexico from being a leader

in the outsourcing market. In an article “Mexico’s Export Woes Not All China-Induced” written by Erwan Quintin, a Senior Economist at the Federal Reserve Bank of Dallas’s Center for Latin American Economics, states one cause for Mexico’s decline in the outsourcing market is because “Mexico has yet to find a way to accumulate physical and human resources the way fast-growing countries do (Quintin, 2004, para. 13).” At the rate that China and India have been growing in outsourcing it will be impossible for Mexico to regain its position as a low cost labor destination (Quintin, 2004).

Asia has the upper hand in large capacity manufacturing or manufacturing of low complexity (Quintin, 2004). Mexico must seek to redefine itself to become a global player and continue to grow as a developing economy (Farrell et al., 2005). Research by consulting firm McKinsey & Company pointed to this problem in “Beyond Cheap Labor: Lessons for Developing Economies” by stating, “Countries must evolve to meet the challenges presented by new competitors outside their borders...Mexico and other middle-income countries should focus on creating jobs that add higher value (Farrell et al., 2005, para. 3,5).” In order to do this, Mexico must focus on its Information Technology industry which has slowly been expanding over the last decade (Sanderson, 1990).

Mexico’s government has recognized it needs to continue expanding this industry by increasing investments into institutions such as the United States-Mexico Foundation for Science (FUMEC) (Hispanic PR Wire, 2006). Beyond science, this institution focuses on improving engineering and technology between the two countries (FUMEC Website, 2006). Through FUMEC, TechBA was founded, which is the Mexico-Silicon Valley Technology Business Accelerator (Hispanic PR Wire, 2006). TechBA has been in operation since January 2005 and is helping Mexican companies (from the IT industry) export their products and services to the

United States and other markets (Dolan, 2006). TechBA has been preparing the Mexican companies for this by teaching them about the hard knowledge of the US market and advising them how to market themselves to potential investors (Marshall, 2006). The increasing revenues of this industry have attracted venture capitalists to mingle with these companies for a chance to inject much needed capital to expand growth (Dolan, 2006).

The IT industry has been leading the way for Mexico because the higher labor costs have proven to be warranted (Smith, 1997). The young work force in Mexico has proven their ability to handle complex manufacturing, which in turn has attracted more outsourcing to the country (Hispanic PR Wire, 2006). Mexico has its own IT hotbed located in Guadalajara, the second largest city in the country located in the state of Jalisco (Dolan, 2006). Guadalajara is also known as Mexico's Silicon Valley and is home to some of the country's top educational institutions and multinational corporations (MacDonald, 1992). Many of the recent graduates begin to work for the multinational corporations that are outsourcing their complex manufacturing work to Guadalajara (MacDonald, 1992).

As reported by Dolan, the IT industry in Mexico has sales of \$3 billion per year. These sales have attracted the attention of prospective venture capitalists looking to invest in the future of these private companies (Marshall, 2006). In January of 2006 "Two-dozen software, hardware and life science companies from Mexico had a coming-out party of sorts in Silicon Valley (Dolan, 2006, para. 1)." This exposition was hosted in part by TechBA in an effort by Mexico's government to increase the reach of its country's IT industry (Dolan, 2006). Based on these recent reports, the event proves the relevance of this topic because the leading IT companies are on the verge of receiving much needed foreign capital from prospective venture capitalists to expand their business operations and further the development of this industry.

One of Mexico's most prominent IT companies in the software sector, Softtek was present (Dolan, 2006). Softtek isn't a new company, but is a model for the industry because it's privately owned, has offices throughout Latin America, and is seeking to become a publicly traded company in the United States (Dolan, 2006). Softtek has developed the concept of Nearshoring, which is the company's own word to represent companies outsourcing from the United States to their southern neighbor, Mexico (Dolan, 2006). Nearshoring has become a competitive alternative for companies that want to reduce their labor costs, but do not want to outsource their IT to a country on the other side of the world because of travel costs, uncertainty, or time differences ("Total Cost," 2005). The concept of Nearshoring is exhibited in Table 1.4 below, which was copied from the Softtek website to show a comparison of Nearshoring versus Offshoring. Softtek acquired GE's IT department in Mexico which included 1,000 Mexican educated employees (Smith, 2006). Based on the initial review of articles, this buy out is showing the capability that Mexico's IT industry has and the potential for very strong future growth as more capital becomes available.

Table 1 – Comparison of Nearshoring versus Offshoring

	<b>Offshore</b>	<b>Nearshore</b>
Project Leaders	2 One on-site and one off-site	1 Mobile Project Leader
On Site Team	40%	20%
Off-Site Team	60%	80%
Time Zone Differences	10-13 hours	0 Hours (CST)
Travel (Time + Airfare)	25 Hours + \$2,000 minimum	4 Hours + \$450 average
Voice Communication Cost	\$0.28/minute	\$0.10/minute

## Chapter 1.5 – Background on Mexico

Figure 1 - Map of Mexico



## Chapter 1.6 - Key Facts and Figures

The following facts stated from 2005 from Mexico are from the Central Intelligence Agency's The World Factbook. Mexico is home to over 106 million inhabitants of which over 60% of the population is below the age of 64. Mexico is a very youthful country with the median age being just under 25 years old. Around 40% of Mexicans are living in poverty which amounts to over 40 million people.

The country consists of thirty-one states that make up the federal republic. Nationwide elections are held and there are three branches of government just as in the United States;

executive, judicial, and legislative. The current President is Vicente Fox Quesada who represents the PAN party, he was elected in 2000 and a new President will be elected in July of 2006. Mexico does have a military, but military spending is just under 1% of its GDP, which ranks the country 143<sup>rd</sup> in terms of military spending.

Mexico uses a free market economy system and the currency is the Peso. In 2005, Mexico's GDP (PPP) amounted to slightly over \$1 trillion dollars, which ranks it the 13<sup>th</sup> highest in the world in order of countries (excluding the combined GDP of the European Union). The GDP per capita amounts to around \$10,000 which places Mexico as the 86<sup>th</sup> highest country.

Mexico exported just under \$214 billion dollars in 2005. In order, Mexico exports the most to the United States, Canada, and Spain. Mexico imported just under \$224 billion dollars in 2005. In imports, Mexico imports the most from the United States, then China, and thirdly Japan. The main natural resource Mexico possesses is oil, which is completely controlled by the state run oil company Pemex.

### Chapter 1.7 – Brief Background on Guadalajara

Guadalajara, the second in Mexico's population behind Mexico City has over five million people in the vicinity (MacDonald, 1992). Before becoming known as Mexico's Silicon Valley (Hecht, 2001) the city was known as the birthplace of Mariachi music and tequila. Guadalajara developed the name of Mexico's Silicon Valley due to the presence of MNCs, more complex manufacturing than *maquiladoras*, and the higher education amongst workers (Hecht, 2001). Some of the best universities in Mexico are located in Guadalajara such as the Universidad de Guadalajara and Universidad Autónoma de Guadalajara according to Wikipedia. In addition, a quick listing of bullet points about Guadalajara and its IT industry can be seen below.

## Chapter 1.8 – Quick Facts About Guadalajara and its IT Industry

- Is the capital of the state of Jalisco
- Is Mexico's 2<sup>nd</sup> largest city behind Mexico City
- Jalisco is the birthplace of tequila and mariachi music
- Has become known as Silicon Valley South or Mexico's Silicon Valley
- Home to some of Mexico's best universities such as
  - Universidad de Guadalajara, Universidad Autónoma de Guadalajara
  - Large number of highly educated engineers graduate each year
- Outsourcing IT manufacturing has two shapes in Silicon Valley South
  - Original equipment manufacturers such as:
    - General Electric, Intel, Kodak, IBM, HP, Motorola, Hitachi
  - Major contract electronic manufacturers such as:
    - Flextronics, Solectron, Jabil Circuit, SCI Systems
- Beyond manufacturing, MNCs are increasing their product R&D
- Softtek is Mexico's largest IT company
  - Wants to become listed on NASDAQ in the near future
  - Began the concept of Nearshoring
  - Offers BPO services, IT Infrastructure Support Services

## Chapter 1.9 – Cultural Brief

The following ideas came from reading The Labyrinth of Solitude by Octavio Paz in a previous class. I found Paz's ideas of the Mexican Mentality to be very important to truly understanding the culture. Understanding the history of Mexico is essential to appreciate the



mentality of Mexicans because the history and mentality are strongly interrelated. Despite the fact that women are beginning to work to help support their families more, Mexico is still a male dominated society.

Remembrance is a large part of the Mexican psyche. A large difference between the culture of Mexico and the culture of the United States is Americans are more preoccupied with the years ahead of them. In contrast, the Mexican mentality revolves around the past, as it is impossible to escape from the Indian and Spanish influence centuries ago. The changes from centuries ago can still be seen today especially with the influence of the church in Mexico and many other Latin American countries. In addition, the Catholic Church is a powerful influence because of the amount of money it has and the larger role it plays in the Mexican lifestyle compared to the American lifestyle. The culture is relevant because many small business owners and managers have a different business mentality that as articles will show needs to evolve to meet the needs of globalization. For more information on Mexico's culture, refer to Table 2.

Table 2 – Hofstede’s Cultural Dimensions

<p><b>Power Distance</b></p>	<p>Another Dimension in which Mexico ranks higher than other Latin neighbors is Power Distance with a rank of 81, compared to an average of 70. This is indicative of a high level of inequality of power and wealth within the society. This condition is not necessarily subverted upon the population, but rather accepted by the culture as a whole.</p>
<p><b>Individualism</b></p>	<p>Mexico has a low Individualism ranking (30), but is slightly higher than other Latin countries with an average 21. The score on this Dimension indicates the society is Collectivist as compared to Individualist. This is manifest in a close long-term commitment to the member 'group', be that a family, extended family, or extended relationships. Loyalty in a collectivist culture is paramount, and over-rides most other societal rules and regulations. The society fosters strong relationships where everyone takes responsibility for fellow members of their group</p>
<p><b>Masculinity</b></p>	<p>Mexico has the second highest Masculinity ranking in Latin America (69). This indicates the country experiences a higher degree of gender differentiation of roles. The male dominates a significant portion of the society and power structure. This situation generates a female population that becomes more assertive and competitive, although not at the level of the male population.</p>
<p><b>Uncertainty Avoidance</b></p>	<p>Mexico's highest Hofstede Dimension is Uncertainty Avoidance (82), indicating the society’s low level of tolerance for uncertainty. In an effort to minimize or reduce this level of uncertainty, strict rules, laws, policies, and regulations are adopted and implemented. The ultimate goal of this population is to control everything in order to eliminate or avoid the unexpected. As a result of this high Uncertainty Avoidance characteristic, the society does not readily accept change and is very risk adverse.</p>

Source: Geert Hofstede Cultural Dimensions

## **Chapter 2 – Literature Review**

This chapter will cover articles on the topic of the background on Latin America's struggles, the government of Mexico, investing in IT, global outsourcing trends affecting Mexico, the supply chain, developing Mexico's competitive advantage, and education. The articles are a synthesis of information on Mexico's IT industry from the aspects of economists, political figures, venture capitalists, management consultants, multinational corporations and IT companies in Mexico. All of these articles are reviewed with the purpose of leading back to the past trends and current trends within Mexico's IT industry. The current and past trends will show what has worked, what has not worked, and what could be implemented in order for Mexico to position itself as a growing leader in IT. Through the fusion of previous and current research, an overall perspective of where Mexico's IT industry is heading will be given. This research is essential to furthering the understanding of Mexico's evolving outsourcing market.

### Chapter 2.1 - Background on Latin America's Struggles

Before covering what the government of Mexico has contributed, it is important to understand an ongoing trend in Latin American governments. According to Coatsworth (2006) historically few countries in Latin America have had a continuously stable government. In the past many governments were dictatorships that later turned into democracies at the influential hands of the US government (Coatsworth, 2006). The conservative minded democracies in Latin America were expected to have resulted in high economic growth for the entire region, but these developing nations with high economic potential have yet to measure up to their capabilities after over two decades of stagnancy (Coatsworth, 2006).

Over the last couple of decades, Latin America tried to improve its economy with “the Washington Consensus – balanced budgets, freer trade, deregulation, and privatization (Coatsworth, 2006, para. 12).” Although this made foreign investment jump in the region and saw currencies inflated, the sudden foreign investment pullout in the 1990s left Latin America staggering (Naim, 1995). The majority of the economies in Latin America, especially Mexico has gone nowhere in comparison to other countries, particularly countries in Asia (Lyons, 2005).

For Latin America to increase its international appeal to investors, the Washington Consensus policies proved effective for fast returns (Coatsworth, 2006). The result was more controlled interest rates and exchange rates (Naim, 1995). Based on the articles researched, as much as the governments approach can be faulted, the same can be said of the handling of the foreign investment. Naim states “the euphoria of foreign investors obscured the drag on the region’s economic prospects created by high income disparities, low productivity, low international competitiveness, and most important of all ineffectual public institutions (Naim, 1995, 48).” This well known article points out the problems that weren’t tackled when the incoming flow of investment started.

Although Latin America chose the path of seeking foreign investment to boost its economy instead of investing within itself in education or social problems, this largely failed in the long run because when foreign investment slowed, Mexico still had the same original problems (Lyons, 2005). In comparison to other articles, “Latin America the Morning After” offers insight into the fragile state of Latin America following the massive outflow of foreign investment and the Mexican Peso crisis. Since written, the wide differences in wealth distribution still remain and the taxation system hasn’t evolved to provide enough revenues to the institutions that will meet the needs of the people with low income (Luhnow and Lyons, 2005).

The past trend of conservative governments has shifted back to very liberal governments in Latin America, which has the U.S. reeling to maintain its influence (Coatsworth, 2006). In a lecture on January 25, 2006, to a Latin American Management Environments class, Professor Martin said that the rise of oil prices has given the Latin American nations such as Venezuela much more power and this in turn enables the oil rich country's leader Hugo Chavez to speak his own mind and not just obey Washington's commands. According to the Coatsworth, the conservative government of the US is finding itself less attractive in Latin America due to the trend of governments shifting more liberal. Conservative governments haven't done as much as what was anticipated for Latin America as a whole because the social problems haven't improved tremendously and neither has the economy (Coatsworth, 2006). Mexico is possibly on the brink of shifting to the left due to the upcoming election in July 2006 when current President Fox will step down (Randewich, 2006). The front runner for Mexico's top office is the former Mayor of Mexico City, Andrés Manuel López Obrador (Randewich, 2006). If López Obrador is elected in July, it will shift the government of Mexico from conservative to liberal.

According to Lyons and Barkley, if López Obrador becomes the next Mexican President, he will be very demanding on banks to loan more. This causes uncertainty for the foreign banks in terms of how aggressive López Obrador could be in terms of regulations (Lyons, Barkely, 2006). They continue to imply that López Obrador is mainly fighting for the lower classes and that by improving banks loan practices, those that need loans the most will have a greater chance of receiving them. "The heart of Mr. López Obrador's campaign is a promise to reduce corruption and find ways to improve the prospects of the working class in a country with one of the world's biggest divides between rich and poor (Lyons, Barkley, 2006, A8)." When I interviewed Professor Daniel Martin on the subject, he mentioned that López Obrador's PRD

party runs on a platform for cleaner government and favors the lower classes more over the development of business. However, Professor Martin mentioned it is uncertain whether the politician will live up to his campaign promises and make real change if elected to the Presidential office.

López Obrador represents the PRD, which is the Party of the Democratic Revolution and has become a favorite for the country's less fortunate (Randewich, 2006). President Fox is of the PAN political party, but hasn't accomplished his objectives as expected, partly contributed to the opposition PRI party controlling the majority of the government (Randewich, 2006). Professor Martin mentioned that current President Vicente Fox couldn't meet all the expectations and proved to be a disappointment. "Many are disillusioned at corruption by the PRI, which has ruled the state for decades. It holds more than half the 125 municipalities and dominates state Congress (Randewich, 2006, para. 12)." This is relatable to the US government when Presidential promises cannot be pushed through Congress due to differences between political parties. Based on these articles, it's my opinion that, if López Obrador were to be elected in July, and the PRI maintains its control, it could be difficult for him to push his objectives as well. However, perhaps not as difficult as it was for Fox because this will be the second Mexican President in a row that isn't from the PRI party.

## Chapter 2.2 - The Government of Mexico's Contribution

The focus on the government of Mexico is mainly on the two levels of the national government and the state of Jalisco's government. The first major step the national government took was the reduction in protectionism that led to the inflow of foreign investment and increased competition (Naim, 1995). Later the signing of the North American Free Trade

Agreement, encouraged increased foreign direct investment in the country, increased exports, and increased job creation (Farrell et al., 2005).

Sanderson and Hayes (1990) point out the reasons Mexico's deregulations and privatizations have helped the country to reposition itself as a top candidate for foreign investment. Mexico's government's switch from protectionism to increased attraction of foreign capital marks a reason for the country's improvement (Naim, 1995). Alongside this, the government has sold over seven hundred formerly public companies between the earlier eighties and 1990 (Sanderson, 1990). Due to Mexico's deregulations, the "foreign owned companies can now afford to import the specialized equipment needed to produce high-quality products (Sanderson, 1990, 40)." Based on the articles reviewed, this not only has encouraged growth of foreign operations and investment within Mexico, but has made Mexico's exports more competitive.

The Washington Consensus only led to a quick turnaround in Latin America on the surface of the economy (Coatsworth, 2006). As mentioned earlier, the Washington Consensus had their benefits, but failed to turn around Mexico in the long run and Naim's article doesn't delve deeper into what the government should additionally be doing. This relates to how sudden the surge of growth in Latin America started and the lack of knowledge about the minor details within the nation went ignored (Naim, 1995). The focus was primarily on the improved economic situations and how companies and individuals alike would receive large returns on their capital (Naim, 1995).

Before NAFTA in 1992, Guadalajara had potential to turn itself into one of the leading destinations for IT outsourcing (Sanderson, 1990). Already it was known as Silicon Valley South, but to climb up the technology chain the government must carefully review its policies

(Penalosa, 1998). According to MacDonald (1992) in 1990 the national government took the first step by passing the Computer Decree which has reduced the protectionism and permits foreign imports for PCs. In the long run, this will benefit Mexico's economy, but the downside is that smaller companies have been hurt with increased competition (MacDonald, 1992). The Computer Decree was a minor step in continuing to open the door to the future influx of technology, but in addition this legislation was meant to increase the use of technology throughout the country with more affordable computers (MacDonald, 1992). Based on the research reviewed this harmed some smaller computer companies in Mexico, it also made computers cheaper for small businesses to integrate in their operations.

As mentioned in the introduction, the state of Jalisco is the leading state in terms of attracting investment in the IT industry (Hecht, 2001). Jalisco's government is aware of the benefits of welcoming outsourced manufacturing because the nearby educational institutions regularly churn out well trained graduates that have the skills to work in the IT industry (Penalosa, 1998). In Jalisco, Governor Alberto Cardenas Jimenez took office one year after NAFTA was passed and has implemented a new strategy to better his state's economy (Garza, 1998). The method he has used is to travel to different countries in an effort to target the industries that need to be developed, like IT and tourism (Garza, 1998). Since this approach started around three years ago, it has paid off with more jobs created and nearly a quarter billion dollars worth of FDI (Garza, 1998). FDI is more attractive in Jalisco now that it gives MNCs benefits based on how many jobs they create and their help in developing the infrastructure (Garza, 1998).

Based on my education, outsourcing is when a company moves part of its work force to another country. Outsourcing can entail hiring a foreign workforce to do manufacturing,



research and development, call centers, or business process operations (“Outsourcing,” 2006). This can be done in two different ways. A company can contract a third party outsourcer that is already established or normally large MNCs can set up their own operations in a foreign country to do the same as mentioned above, but keep it in house (“Outsourcing,” 2006). In Mexico’s case, outsourcing manufacturing for IT or consumer electronics is done through original equipment manufacturers establishing a Mexican factory or MNCs using a contract manufacturer that is already established (Siekman, 2001).

Outsourcing is essential to the economy of Mexico. Jobs are the main benefit to the economy, the *maquiladoras* along the US border employ over one million people (“Between here,” 2001). In the IT industry around Guadalajara, the contract manufacturers and MNCs that operate their own facilities provide thousands of higher paying jobs for Mexicans (Siekman, 2001).

The approach Jalisco’s government took to market itself has grown in popularity amongst other developing nations even more after India’s success in outsourcing. More developing nations are competing against each other to attract valuable MNCs that outsource various IT operations to foreign locations. According to Reinhardt et al., for countries to attract new investment, they spend money on advertising their locations, their opportunities, and their benefits to incoming companies. In order to attract more attention, countries use well known figureheads to bring in the outsourcing (Reinhardt et al., 2006). Reinhardt et al.’s article is comparable to what Jalisco was doing in 1998 under the guidance of their governor at the time, Cardenas. Although Bangalore appears to be the world’s leading destination for IT outsourcing, Guadalajara has also proven to be a valid competitor. Jalisco’s government started JalTrade in the late 1990s, which is a program to export more products and services from the smaller

businesses and they are assisted by the government and Multinational Corporations (MNCs) (Garza, 1998). The two articles point out widespread differences because Mexico as a whole was not actively recruiting companies to outsource IT to their country, but based on the articles reviewed, the state of Jalisco was doing it alone without much collaboration from the federal government.

Garza's article shows Jalisco's past methods of attracting FDI from the period after NAFTA to the late 1990s. However, the article mainly points out what the government was doing to bring in new jobs to the state and didn't focus on what the government was doing to help meet the demand of these MNCs with an educated workforce. This is a past trend because there have been educated students graduating from universities around Guadalajara for some time, but the articles I have reviewed didn't point out developments on the education side. Educational initiatives targeting the IT industry didn't come into prominence until the late 1990s or early 2000s (Penalosa, 1998).

Following Jalisco's marketing campaign to increase FDI, Guadalajara's IT industry boomed (Penalosa, 1998). Despite the fact that Guadalajara wasn't new to the IT industry Sandoval pointed out that in 1994 after NAFTA was passed employment grew to over 100,000 jobs, but it couldn't sustain that amount after the turn of the century. Around 25% of that work force has fallen off since its peak days until 2004 (Sandoval, 2004). Some of the jobs that fell off can be accounted for by the shift to Asia of standardized production, but it wasn't China that caused all the job layoffs in Mexico (Quintin, 2004). Mainly this was due to the US consumer tightening their spending during the recession, so some MNCs shifted production overseas or laid off employees in Mexico (Hecht, 2001). However, a trend emerged at this point because companies realized that Mexico's rising labor costs didn't hold additional value (Farrell et al.,

2005). Based on the articles reviewed the trend of outsourcing based on the lowest cost took greater hold which was clearly China's competitive advantage.

Beyond the jobs that are provided through outsourcing from the United States, Mexico is very dependent on the US for additional reasons. Mexico is dependent on the Mexicans that have moved to the US to work and send money home and the remittances in 2005 were around \$20 billion (Green, 2005). Green mentions that these remittances are vital to the survival of many Mexicans and those living in Latin America in general. Based on my personal knowledge of families in Mexico, many times one member of the family will come to the country to work for a period of time in order to send money back to his family and upon returning another family member will go to the United States. In addition, the US is very important to Mexico because the US is Mexico's top trading partner as mentioned in the introduction.

The US economic recession shocked Mexico's Silicon Valley because for several years it had experienced very rapid growth (Penalosa, 1998). Nothing could have stopped the outflow of jobs due to the recession, but this time was a warning for Mexico to reevaluate its position and determine a new comparative advantage (Farrell et al., 2005). Whenever the US recession was to end would the jobs return? However the Mexican government didn't scramble to reevaluate its position, but instead focused on the jobs lost to China (Quintin, 2004). According to Quintin, China has only harmed Mexico in small areas and Mexico needs to focus on improving its education, training, improve the government handling of taxes in order to generate more revenue to improve the country's infrastructure and education. This could in turn attract more FDI.

Quintin, the expert economist on Latin America made a major contribution with his evaluation of Mexico's problem. Mexico's government not generating enough revenue is a major problem for not only the development of the IT industry, but the development of all

industries and the renewed growth of this developing economy (Quintin, 2004). The infrastructure improvements have not been at an expedited pace (Farrell et al., 2004) and the government doesn't show a high commitment to education within the country (Sandoval, 2004). Quintin and Sandoval's article agree on the educational lagging within the country, but Sandoval's article brings in another expert opinion on how the government is faltering.

Within the article written by Sandoval, he interviews an expert on Mexico's IT industry, Dr. Juan José Palacios Lara. Dr. Palacios is a professor at the University of Guadalajara in Mexico and has collaborated on several research projects with the Center for Research on Information Technology and Organizations at the University of California, Irvine. Further ahead in the paper, more of his contributions will be analyzed.

Sandoval reported that Mexico had a program that helped train students without much money in the computer software sector that led to well paying jobs. However, the government hasn't been very proactive with this to keep its momentum going in tough times (Sandoval, 2004). "I know it sounds strange, but I can predict that the government will see the contract manufacturing jobs reappear and pronounce everything OK again and let the real training possibilities fade" states Juan Jose Palacios (Sandoval, 2004, para. 18). Based on this article, Mexico was not continuing to invest more in training its people towards technology in order to have a more stable IT outsourcing industry.

The quote from Dr. Palacios illustrates the lack of continuous funding of the initiatives the national government starts on education, but doesn't keep their commitment. Once tangible results are seen, the programs are dropped, which is the wrong message to send according to Dr. Palacios. In contrast, an article will be reviewed later on how corporations are continuously pouring money into training employees. As mentioned above by Quintin, Mexico isn't

collecting enough money through its taxes. In turn this affects corporations because their training budgets have grown enormously to pick up the slack in the education system to ensure their employees and future employees are highly trained in the IT industry (Emmond, 2005). One thing is for certain, investments by the government must continue at a higher pace than recently and an upcoming article by Costa Rica's President agrees on that point. Following the review of many articles, it is my opinion that Mexico's government has been working to become a leader in IT outsourcing since before NAFTA, but has not continuously increased investment and for this reason it is has not become the leader in Latin America yet.

In an article written by President Arias of Costa Rica this year, he argues how Latin America as a whole needs to change its spending in order to develop the IT industry. In terms of outsourcing, research found that Costa Rica, Chile, and Brazil are all in front of Mexico based on their development of the industry and attraction of investment (Arias, 2005). Arias also faults governmental spending as holding back education because money that could be used for educating a country's future generation is placed into military development. Arias states, "If anything is holding back Latin America, it's not a lack of resources, it's a lack of priorities. The way to strengthen the IT sector is clear: delete corruption, uninstall the militaries and upgrade systems of education and innovation (Arias, 2005, para. 10)." Latin America is notorious for corruption, especially in Mexico, Professor Martin mentions that corruption is so deep rooted within Mexican culture, that it is hard to get rid of. Costa Rica is an example of developing a strategy and sticking to it to become a leader of IT outsourcing (Arias, 2005). However, in comparison to Mexico, Costa Rica didn't have to face a currency crisis like Mexico did in 1994.

According to Transparency International, corruption is defined "as the misuse of entrusted power for private gain." In addition, Transparency International's 2005 Corruption

Perceptions Index ranks countries on a scale of zero to ten, ten being the least corrupt and zero being the most corrupt. On this index, Mexico's ranking is 3.5, in comparison, China is 3.2, Costa Rica is 4.2, India is 2.9, and the United States is 7.6.

Arias offers a valuable contribution and his most relatable point to Mexico is the fact that there is too much corruption. Corruption is not hidden knowledge in Mexico, but Arias's article is the first one I've reviewed that points the finger at corruption for hampering development of the IT industry. Corruption comes throughout all levels from the police to the civil service based on my studies. Any business attempting to establish itself and file the necessary paperwork surely has given *una mordida*, or a small bribe to help expedite the process. However, Arias offers a biased view on demilitarizing the country because it succeeded for Costa Rica. Although Arias referred to Latin America in general and not specifically to Mexico, in my opinion based on Mexico's history, it is very improbable Mexico could dismantle the military because the country has a history of takeovers and armed militias storming the capital. Although none of which has happened recently, Mexico is much bigger than Costa Rica and has greater security risks within the country.

Deregulation and trade opening are key to expanding competition (Naim, 1995). One area that hasn't been covered yet is the red tape in Mexico. "According to a World Bank report, it takes an average of 58 days to start a business in Mexico...it takes 74 days to register a property in Mexico...Mexico's corporate income-tax rate of 34% is twice as high as China's (Farrell et al., 2005, para. 24)." Refer to chart 3.4A to see the details of starting a business in Mexico. As mentioned earlier, corruption runs high in Mexico and those that pay bribes can easily have those times shortened according to Professor Martin.

Based on the research, I believe that it is these policies that continue to hamper the country. The government has unveiled big initiatives in the areas of education and attracting investment, but it still isn't dealing with the fundamental civil service areas. Despite this, Mexico has many domestic IT companies that have started, but to encourage more to open shop the red tape problems must be dealt with.

In response to the need to fight corruption in Latin America, a question emerges of what is currently being done to fight it? According to Moffett (2006) in Latin America, especially South America, more women are entering government positions. Women are also considered to be a better threat in the fight against corruption by voters from within and outside the government (Moffett, 2006). "Eleven countries in the region have passed affirmative action laws setting minimum levels of female representation on party candidate and lists for legislative elections (Moffett, 2006, A8)." This recent trend will most likely spread throughout Latin America in an effort for fair representation and to fight corruption as this article indicates.

Based on a lecture by Professor Martin, the informal economy consists mainly of under the table jobs and drugs. Martin points out the causes of it are a lack of jobs, the costs, and the time associated with trying to start one's own business. Based on my research, in relation to Mexico, this helps the lower classes find jobs, but it also hampers the country because taxes are not collected from the underground economy. Thus there is no contribution by these workers to the improvement of such things like education and infrastructure.

According to another lecture by Professor Martin on February 8, 2006 another main element of Latin America is its underground economy. The underground economy has both pluses and minuses in its relation to the formal economy, but the main benefit is providing jobs to those that cannot find work (Martin, 2006), particularly when nearly 300,000 manufacturing

job losses occurred in Mexico at the start of the century (Farrell et al., 2005). As Margolis (1997) reports, the underground economy must be legitimized by the government. The government in Mexico collects no revenue from the informal economy and it's hard to control because "the informal economy represents between 40% and 60% of the economically active population (Margolis, 1997, 33)."

This article makes an interesting contribution that is in accordance with the *McKinsey Quarterly* article because it faults the government with its red tape for causing an increase in the amount of the population working in the informal economy. The *McKinsey Quarterly* points out that to encourage the level of domestic startups in Mexico, the red tape and long time periods to start a private business must become more fast and efficient. This is another relation to the earlier mentioning of the low quality of institutions and to improve this the governments must focus on improving services to its citizens (Naim, 1995).

These articles have contributed insight into what the Mexican government has done so far to promote the betterment of the IT industry. However, it is shown that there are credible critics of programs and policies that aren't working to their potential. Arias provides insight into how the governments of Latin America can develop better positions within their own IT industry and through IT outsourcing. His reasons are very credible because Costa Rica has emerged as a leader amongst Latin America and Costa Rica's current methods of developing its IT industry will help point towards future trends within the IT industry for Mexico. All the articles point to education as an area that is lacking, but there is a gap in this because none of the articles make recommendations or predictions on what needs to be done with education besides investing more money.



### Chapter 2.3 - Investing in IT

Years before NAFTA was signed, multinational corporations foresaw the need for a growing demand of skilled labor in Mexico's future. "IBM, for example has invested more than \$30 million in projects like postgraduate education in electrical engineering at the University of Guadalajara and advanced computing and software development at Guadalajara's Western Technological Institute (Sanderson, 1990, 34)." Large MNCs like IBM consistently invest in the development of the future workforce which helps to ease the burden of the government to contribute (Messenger, 2004). These investments have helped create industry specific knowledge that gives Mexican engineers a high level of sophistication which has helped Mexico step up the ladder in sophistication (Siekman, 2001).

It is obvious the Mexican government must invest in programs for the IT industry to continue developing, but it cannot do it alone (Sandoval, 2004). "R&D efforts in Latin America have lagged badly, and an annual investment of no less than 2 percent of GDP over the next decade is absolutely mandatory (Arias, 2005, para. 9)." Based on the research, it is my opinion that the private sector must evolve as well with the government and help the government implement ventures to have the best opportunities for growth. IT investment can vary from companies or the bureaucracy integrating technology into their businesses, government investments in the industry, companies expanding their ability to handle complex manufacturing, and MNCs helping smaller IT companies start up (Emmond, 2005).

The previous section on government mentioned that many articles agreed that education needs to be improved, but there were no specific references of how to advance it. In accordance with the past investments by IBM, another example is what Intel recently did to improve the education. Intel's CEO Craig Barret, consulted with President Vicente Fox on how to improve

Mexico's place in the global technology horizon through education. Intel's website mentioned the main recommendations were to continue pouring money into the education of Mexico's youth. Not only do the youth need to be better educated, but they need to be computer savvy (Messenger, 2004). Barret is helping Mexico do this with Intel's Computer Clubhouse. Students in Mexico's capital can develop computer competence and not only help their own future, but their country's ("Intel CEO," 2002). The recommendations of Barret are just an example of one MNC trying to help the country improve in the areas it lacks. The Mexican government cannot do it by itself and needs the consultation from industry leaders to continue evolving into a high-tech outsourcing market (Messenger, 2004).

Intel's website outlined how it's broadening its commitment to the country by helping students learn technology in the classroom through educating tens of thousands of their teachers in all grade levels. Beyond increasing the education of Mexico's human capital, Barret recommended the country to encourage funding from the private sector for companies in the IT industry that have the skills, but lack the capital to expand ("Intel CEO," 2002). Barret's recommendation to encourage the increase of private funding to the IT industry is something that Mexico has struggled with. However, the country's immediate answer to this is TechBA, which was mentioned in the introduction. In contrast, Barret was suggesting for Mexico to generate the capital from within to improve its own economy. Then again TechBA aligns US venture capitalists with leading Mexican IT firms (Marshall, 2006). This article goes hand in hand with Dolan's article because the top IT companies look to the US for venture capital because in Mexico it is nearly non-existent.

The government isn't contributing enough money to be a leader in technology in comparison to other countries (Sandoval, 2004). The country should look at India as a role

model because India understood the undertaking of investment (Sandoval, 2004). For an investment to pay off, it takes patience, but to invest in a country's future as India did, it requires patience and continued commitment to invest as much as necessary (Sandoval, 2004). With high investments in the country's future, less highly educated Mexicans will leave the country to look for top jobs (Sandoval, 2004). The country is full of intelligence, it needs to be put to an effective use and pushed to reach its potential (Sandoval, 2004). There aren't enough funds in the country to invest in companies that need the capital; instead these companies must search outside the country for venture capital ("Intel CEO," 2002). Some leading MNCs have programs known as "incubators" that help IT companies get their start (Sandoval, 2004, para. 22). These incubators are limited to the largest MNCs that have substantial amounts of cash to help companies that would otherwise not be able to stand on their feet in a competitive market (Sandoval, 2004).

In order for Mexico to succeed within the IT industry, the entire country needs to revolutionize the way it does business (Messenger, 2004). The IT industry is already well developed with technology integrated throughout its systems, but other industries are not (Penalosa, 1998). The reasons Messenger gives for the falter are from lack of basic computer knowledge, to the costs of computers, and unawareness of what technology can do for a business. Beyond privately owned companies, all levels of the government must be revolutionized with IT in order to step up to the next level because using paperwork is a very inefficient method of carrying out governmental duties (Messenger, 2004). The main segments of businesses that need to consult with IT specialists are the small to middle sized businesses (Messenger, 2004). If these businesses and the government invest in IT, it will allow the economy to grow at a faster rate and become more competitive (Messenger, 2004). In another

chapter of this research, I will point out what needs to be done with small and middle sized businesses for there to be future success in the IT industry. Mexico's IT industry is developed enough to offer these services, but the word must get out to companies beyond the MNCs that technology must be continuously improved (Emmond, 2005).

Companies are planning for future forecasts of thousands more employees to allow output to keep increasing and thus must focus on Mexico's youth (Friedland, McWilliams, 2000). Some companies such as Flextronics began their own schools for the youth so the educated workforce can keep growing (Friedland, McWilliams, 2000). This shows a major investment in Mexico's youth because some companies are taking it in their own hands to ensure quality education. As MNCs continue to make their own pushes for education reform, the government must acknowledge their contributions and continue to improve the public education ("Intel CEO," 2002).

After the Peso devaluation, lending came to an abrupt halt according to Professor Martin. This has hampered the IT industry to a certain extent because it is not an easy process for a startup to receive a loan or capital (Dolan, 2006). Based on the articles reviewed it is my opinion that this also harmed the small to mid sized businesses that couldn't afford the up front costs to upgrade their company with much needed technology. There is a gap in the research because leaders acknowledge the need for Mexico's own venture capital funding and Mexico seems to know this, but realizes its private sector isn't very willing. So a question emerges of how can Mexico develop its domestic venture capitalism and lending?

However as the IT industry recovers from the turn of the century, a trend has emerged of increased technology investment across all industries (Emmond, 2005). According to Emmond in 2005, popular investments companies make in technology are e-learning to train employees,

websites, and customer relationship software. “The secretariat of the economy reports that of the US \$5.8 billion that companies invested in IT last year, more than one fifth US \$1.2 billion came from small businesses (Emmond, 2005, para. 4).” Within Mexico, IT consulting services are growing from consulting to small to mid sized companies (Emmond, 2005). Based on Emmonds article, I conclude that as the availability of capital increases due to the economic recovery in the United States, the integration of technology increases in Mexico.

The trend of increased sophistication is attracting more investment by MNCs because money must be poured in to receive the high quality output (Guthrie, 2006). By pursuing outsourced projects of greater complexity, Mexico is closing in on its peak electronic exporting days last reached in 2000 (Guthrie, 2006). “Mexico’s communications-industry chamber, CANIETI stated there are twelve major manufacturers with factories in and around Guadalajara, and more than a dozen contract plants. Last year, CANIETI reckons investment in the sector topped \$150 million, up from \$63 million in 2004 (Guthrie, 2006, para. 19).” Part of the increased investment was due to the positive effects of the recovering economy, but mainly due to the fact that MNCs recognize Guadalajara as a center of high quality IT innovation (Guthrie, 2006). The trend is not only to produce the products here, but to conceive new cutting edge technology (Guthrie, 2006).

However, within the IT industry, the software development is lagging because of countries in Asia, like India that is way ahead in the game (Emmond, 2005). According to Emmond, the Mexican government’s answer to this is Prosoft, which is a decade long initiative (which started in 2003) to reach new heights for this sector. Prosoft could be considered a joint venture by higher education institutions, the national and state governments, and businesses (Emmond, 2005). Prosoft is focused on bringing software development to Mexico, but this

initiative will be difficult because outsourcing destinations like India control the market share (Emmond, 2005). However, beyond software, Prosoft seeks to expand Mexico's IT industry in general and export more products and services (Emmond, 2005).

The trend of increased investment in IT is not the only one, it seems like these companies have read up on what they are lacking because investment in human capital is increasing (Emmond, 2005). As mentioned earlier, the increased use of "e-learning" has expanded employee capabilities within the workplace so much so that companies can see the increased value in their employees in terms of output (Emmond, 2005, 22-26). This trend is mainly seen within MNCs that desire to add value to their labor costs (Emmond, 2005). These companies take it upon themselves to fill in the gaps of the country's education system (Friedland, McWilliams, 2000). The trend isn't seen as much within small to mid sized businesses because the cost per employee is quite substantial, as one would expect for quality e-learning (Emmond, 2005). As Mexico climbs the ladder in sophisticated outsourcing, the training must also be advanced (Guthrie, 2006). A ripple effect of the training within the IT industry has created growth amongst consulting companies that provide the training and learning services (Emmond, 2005).

#### Chapter 2.4 - Global Outsourcing Trends affecting Mexico

Globalization has caused a shakeup in how business is done because countries have learned how to exploit their comparative advantages. The leaders are the result of their governments analyzing the countries strengths, weaknesses, opportunities, and threats to develop a strategy to become a global player. Based on the literature and research I've reviewed, factors that bring about competitive advantages are costs of labor, education levels, language capabilities, development of infrastructure, streamlining FDI, and geographic location. If

outsourcing is viewed as a giant industry, the countries compete for FDI or to export products or services based on factors like these. It is not solely Mexico versus China. Outsourcing depends upon what the MNC needs and for countries to compete, they must develop their competitive advantage (Farrell et al., 2005). As many MNCs have learned, to operate effectively and minimize risk the best way to outsource any aspect of their business is to diversify among countries (Gibson, 2006).

Due to globalization, the US has shifted from its low complexity manufacturing in Mexico to other countries like China for low cost (Quintin, 2004) and India for high education. Globalization has led to an evolution in labor markets (Gibson, 2006). Farrell et al. concludes that it is impossible for one country to always have the lowest labor costs because a new player will emerge in the globalized economy. Yet Mexico cannot point the finger at China when other countries in Central America have labor costs at less than half of Mexico (Farrell et al., 2005). China's explosion onto the scene of exporting has for the most part harmed other Asian countries and hasn't shown a direct effect versus Mexico (Quintin, 2004).

When the word outsourcing is considered, the word associated most probable would be India because of their leadership in the field (Reinhardt et al., 2006). Many developing economies look at India's success as a global outsourcing destination and are attempting to implement their own country's plan (Reinhardt et al., 2006). India's has a long way to go because it has an extremely low income per capita, but the benefits of outsourcing are the ripple of creating additional jobs that were not originally targeted (Reinhardt et al., 2006). Research done by "India's software industry association, Nasscom, figures that each new worker in the info tech sector creates seven indirect positions, from janitors to security guards (Reinhardt et al., 2006, para. 6)." In my opinion based on the research, another aspect of the ripple effect to

consider in Mexico is the growing number of construction jobs that will be needed. For Mexico to improve its infrastructure and MNCs constructing state of the art buildings, many workers will be needed. Not to mention all of the support personnel for this.

Sometimes companies from the United States fail in their outsourcing attempts to other hemispheres and the failures can result in Mexico's gain (Guthrie, 2006). Part of the reason is because the total costs and risks of offshoring are not always assessed by companies expanding operations into an overseas market (Softtek, 2005). Mexico's proximity to the US market can continue to benefit it because there aren't as many unexpected expenses (Softtek, 2005).

According to Stalk (2006), the shipping period is extremely long and the supply chain coming from the other side of the world may not always be on time. In addition, infrastructure is nearly maxed out on the West Coast of the United States (Stalk, 2006). These constraints require additional human capital to manage the problem and figure out new ways to minimize delays (Stalk, 2006). With exports from China not slowing down into the US, it is possible Mexico could benefit from this by having Chinese exports arrive at their ports and then ship to the US (Stalk, 2006).

Current outsourcing trends are to capitalize on a country's knowledge (Lewin, Peeters, 2006). It is a win-win for MNCs outsourcing to foreign destinations when the education level is high, but the costs are much lower than the home country (Lewin, Peeters, 2006). As the newly hired outsourced employees gain experience, their sophistication capabilities increase and so does their assignments which points out trends in outsourcing are now to develop more sophisticated products instead of just manufacturing existing designs (Lewin, Peeters, 2006). If a company wants to outsource now, in order to be competitive, it needs to utilize the educated workforces available in developing economies (Lewin, Peeters, 2006). Based on the articles



reviewed, this trend has been seen in Mexico in recent years and it has helped to introduce new products to the market at a lower cost because the R&D expenses are lower in Mexico.

The US is concerned about the high trade deficit with China (“China Enlists,” 2006). Although the two nations differ on the actual figure China is asking “the US to lift export restrictions on high technology products that could be used for military purposes, saying those limits are a key reason behind the continued trade balance (“China Enlists,” 2006, A6).” Based on this article, it is my opinion, the Chinese request could be viewed as a threat to Mexico because China is attempting to expand in the products that it exports to the US. As China attempts to step up the technology chain as well, Mexico must strengthen its position as the close range high-tech production destination for exports to the US.

Malaysia is only in the beginning stages of a trade deal with the US, but Southeast Asia is an emerging competitor in terms of electronics outsourcing (Prystay, Fernandez, 2006). According to Prystay and Fernandez, Singapore and Thailand recently reached a deal on free trade with the US. “Malaysia is the US’s 10<sup>th</sup>-largest trading partner...mainly because of the large number of US electronics companies, including Intel Corp. and Motorola Inc., that make or assemble products or components in the country (Prystay, Fernandez, 2006, A10).” However as mentioned earlier, the trend can be substantiated by the MNC desire to diversify its manufacturing destinations (Reinhardt et al., 2006). The focus on these countries of Southeast Asia is minimal in comparison to the widespread news coverage on the US imports from China, but these nations are increasing the competition for exporting to the US (Prystay, Fernandez, 2006). In the next section, how Mexico is developing its competitive advantage will be explored.

Gibson (2006) provides a different view on outsourcing that influences this paper's take on global trends. Gibson reports that total revenue from outsourcing didn't increase in 2005 from the previous year, but declined by \$3 billion. The rise of cheap labor manufacturing in countries like China is a factor for the reduction due to deals not costing as much with cheap labor (Gibson, 2006). This doesn't mean that outsourcing is declining, but offers an opposing interpretation of statistics that is caused by global trends (Gibson, 2006). In my opinion, as outsourcing IT increases, the value of labor is worth much more than standardized low-complex labor. Thus in the upcoming years if developing economies continue to improve the quality of their IT workforce the wage rates will influence these world outsourcing figures.

### Chapter 2.5 - Developing Mexico's Competitive Advantage

Outsourcing in Mexico has slowly been evolving due to globalization and the competition that it brought (Quintin, 2004). Countries with specific comparative advantages have emerged as leaders as mentioned in the previous section. In an overall view of Mexico's outsourcing market, it has been caught in between trying to maintain low cost manufacturing (Quintin, 2004) and trying to develop its sophisticated IT manufacturing (Siekman, 2001). Low cost manufacturing is still present in the country due to the fact that it's next door to the United States. However there are certain barriers the country must overcome such as its education and infrastructure to evolve into a more sophisticated manufacturing destination throughout the country ("Between here," 2001).

Despite China being the low cost manufacturing leader (Stalk, 2006), Mexico still maintains its *maquiladora* production along the US border. In contrast to the wages in the US, the Mexican labor rates are at least a third of what is paid in the US ("Between here," 2001) and it is my opinion that *maquiladoras* may offer benefits for small to mid sized US businesses that

don't have the economies of scale to outsource to China. According to Professor Martin, there are two major risks associated with outsourcing along the US border. First, the attrition rate is extremely high as people will move from factory to factory in search of better wages or as they attempt to cross into the US for much higher wages. Second, there are high amounts of crime along the border due to violence and drug cartel, which are looking to control channels of distribution into the US.

However, IT outsourcing to Guadalajara became an inviting alternative based on several factors. Based on the news I've read, crime is not as rampant in Guadalajara as it is along the border. However, the one crime risk faced by the IT industry is the occasional robbery of their exports in transit to the US. The attrition rate was extremely low because the labor pool was more educated and was less likely to try and cross the US border (Siekman, 2001). The growth of large MNCs largely benefits communities because many services are provided to employees like transportation to and from work, medical attention, education help and attracting women to work (Siekman, 2001). Leading MNCs with large sources of revenue can easily offer additional services to their employees to keep attrition low.

Where the *maquiladoras* have disappointed, the sophisticated IT outsourcing in Mexico has improved upon. *Maquiladoras* line the US-Mexico border with the purpose of exporting into the US. However according to *The Economist*, "since they are often foreign-owned, and are bent on shipping products out as cheaply as possible, they have historically had little or no interest in developing infrastructure and local education ("Between here," 2001, 29)." According to a lecture by Professor Martin on March 1, 2006 the foremost benefit they offer is providing jobs to the Mexicans that have shifted north. Mexico's border towns have evolved into industrial manufacturing cities to supply the US with goods ("Between here," 2001).

Two different articles separated by twelve years denote that the past trends in Guadalajara haven't been completely overcome in terms of the thought process. In 1992, MacDonald states the downside of Guadalajara is that "it also suffers from its reputation as a bastion of conservatism that is resistant to the changes that have swept Mexico since Carlos Salinas de Gortari took office in December 1988 (MacDonald, 1992, para. 17)." Companies must improve their business approach in order to be competitive in a market that is increasingly becoming global because many small businesses don't think outside the box for their own company and hamper themselves; they don't like to change the way they do business (Emmond, 2005). Yet twelve years later in 2004, Messenger alludes to stubbornness in how business thinking is done. According to an IT consultant, "There is a lack of forward thinking among senior executives here...in order to compete, they are looking to cut costs. This strategy is doomed, particularly when you are up against China, Mexico's most dangerous competitor (Messenger, 2004, 58)." On the face, Guadalajara has evolved into a more sophisticated IT outsourcing destination, but in terms of thought process, not much has changed among the leading business decision makers (Messenger, 2004).

For lost jobs to return and outsourcing to increase, these factories must seek to upgrade and produce more sophisticated goods (Siekman, 2001). "Mexican firms will have to offset higher wages and benefits with brains, ingenuity, and productivity (Siekman, 2001, para. 7)." Sophisticated products are always changing and Mexico's comparative advantage is being neighbors to the US and being able to ship rapidly compared to Asia (Guthrie, 2006). IT manufacturers that incurred layoffs due to the US recession or due to the outflow of labor to a cheaper destination were faced with a major dilemma of either sit, do nothing and hope the jobs return or upgrade their entire process from technology capabilities to human capital (Guthrie,

2006). Companies here understand to be successful they must innovate and do much more than just assemble products in Mexico for their operation to be a success. (MacDonald, 1992).

MacDonald's article written over ten years ago has since proved true because the globalization caused a shift in trends and Mexico has since evolved to a high-tech outsourcing destination.

Factory managers were forced to strategize how to match up Mexico's labor cost with a significant value. Hitachi's manufacturing plant in Guadalajara was no exception. Guthrie (2006) reported Hitachi decided to move forward with greater efficiency and complexity. In 2003, along with their venture partner IBM, Hitachi Global Storage Technologies opened a plant that began handling extremely complex technology (Guthrie, 2006). The plant manufactures an extremely small component of hard drives called sliders (Guthrie, 2006). Training employees is extremely essential to their success, up to ten weeks of project training (Guthrie, 2006). The example of Hitachi shows how MNCs are forced to step up their sophistication capabilities. Based on this report, it's my opinion that as this trend spreads throughout the IT and consumer electronic manufacturing in Guadalajara, it will result in the return of jobs from the peak years due to a new competitive advantage.

Guadalajara's climb up the sophistication chain gives it strength over its outsourcing competitors. This statement is proved by Friedland and McWilliams article. IT products such as computer components have a shorter life cycle and the faster a MNC can get their product to the US retail stores, the better (Friedland, McWilliams, 2000). A trend is emerging within globalization and IT, for products to hit the market during their prime selling period, it must happen quickly (Farrell et al., 2005). This trend complements the concept of Nearshoring because companies still produce IT products at much cheaper rates than in the US and the transit time is extremely short in comparison to offshoring in Asia (Friedland, McWilliams, 2000).

According to Friedland and McWilliams, the trend of contract manufacturing helps speed up the time of bringing products to the marketplace and allows more products to be developed within a shorter time frame.

Siekman mentions that when new products are developed in the US, after the production begins to generate revenue, production can shift to the complex production facilities in Mexico. “Original equipment manufacturers or OEMs, cut back on manufacturing and focus more on design and marketing (Siekman, 2001, para. 25).” This movement allows more sophisticated manufacturing in Mexico and uses Mexico’s highly educated engineers to conceive new products (Siekman, 2001). Instead of only shifting production to Mexico once a product has become developed, new products are being created in Mexico and then shipped to the United States (Siekman, 2001). As mentioned earlier this is supplemented with intensive training for the workforce to handle more complex assignments as technology changes.

Based on the articles the trends show Mexico is improving its competitive advantage, but largely due to the corporations pushing for it. The government is increasingly aligning itself with leading corporations to develop their competitive advantage of being a highly sophisticated IT outsourcing country that can deliver products to the largest consumer market in a very short time. To develop this competitive advantage the infrastructure developments are ongoing and smaller businesses must improve their supply chains with technology.

### Chapter 2.6 - Supply Chain

As mentioned in the previous section, Mexico’s competitive advantage is the ability to get price sensitive goods quickly to the US market. In order to continually do this, the country must continually look at ways to improve its supply chain.

Companies are attracted to outsource when they can use quality parts from Mexican based suppliers, which can reduce costs and time instead of importing parts for production (Penalosa, 1998). However only stating this would be misleading because Asia is the main supplier to the goods that Guadalajara produces (Farrell et al., 2005). Mexico also doesn't have the market to supply the MNCs that are coming, most of the parts have to be imported because the quality isn't there (Penalosa, 1998).

There are many smaller businesses that have the capability to supply the IT industry with parts, but developing the domestic supply chain is taking time (Penalosa, 1998). Penalosa mentions that the government and CANIETI are promoting the establishment of companies that produce goods necessary for IT companies. This can include packaging materials, user guides, building materials, and anything else that is needed for the IT industry to assemble complex goods (Penalosa, 1998). The growth of the IT industry has had a ripple effect onto surrounding domestic businesses because they must grow rapidly in order to supply large order quantities that continue to grow (Penalosa, 1998).

For the smaller and mid sized businesses to be a success two things are happening. First, there is an encouragement for business owners to change their ingrained thought process to adapt to the changing market faster (Emmond, 2005). As mentioned earlier, many businesses are very conservative in decision making because things have always been done one way (Emmond, 2005). Second, for these businesses to stay afloat they must integrate technology and invest into improving their supply chain (Emmond, 2005). Shipping companies are benefiting from this because they offer supply chain consulting services to small and mid size companies (Emmond, 2005).

The supply chain concept that Wal-Mart perfected is available in variations to all businesses regardless of their size and the supply chain options are endless (Emmond, 2005). According to Emmond, there are many preconceived notions such as supply chain management (SCM) would be extremely expensive, but according to companies like UPS or Fedex, the timeframe to recoup an upfront investment is only a couple of years. Other problems business owners are unaware of are the inventory costs for holding their products (Emmond, 2005). “If done properly, these ‘costs’ are really investments, with payoffs in higher efficiency, lower expenses, higher levels of customer satisfaction and the potential for reaching new markets (Emmond, 2005, 31).”

Based on the research I conclude that the continued development of the small to mid sized domestic businesses in Mexico will allow for a faster supply chain and a higher economic benefit for Mexico in terms of profits retained within the country. In turn, this speeds production at the larger exporting companies and their products can arrive in the US retail stores faster. The supply chain development is key to maintaining and improving Mexico’s competitive advantage because other outsourcing countries have long transit times (Stalk, 2006).

### Chapter 2.7 - Education

Besides corruption, Latin America is also known for the widespread differences in wealth (Naim, 1995). The unequal distribution greatly hampers the education of the lower and middle classes because these groups often don’t have enough money for their children to continue their secondary education (Luhnow, 2005). Based on my own knowledge of education in Mexico, the education levels in many rural areas are much lower among the parents, which contribute to their children following the same path of choosing work over secondary education. In addition, the other contribution to the low education levels in rural areas is the poverty and low income which



forces the youth to work and help support their family. Thus the gap in wealth is highly correlated to the gap in education. The wealthier families can afford to send their children to school to earn a diploma, but the less fortunate cannot always enjoy the same benefit.

The Latin American history of low taxation has hampered education (Luhnow, 2005). “Latin American nations grew up relying on raw materials, cheap manual labor to exploit them and low government taxation. The system concentrated land ownership and wealth in a few hands, deprived governments of money to spend on education and offered little incentive for the elite to invest in human capital or technology (Luhnow, 2005, A1).” In comparison to previous articles reviewed that point out current problems within Mexico, this article proved how Latin America’s history caused the lack of education. Again this returns to the current problem of the wide unequal distribution of wealth because what historically caused the problem of low education still exists today (Luhnow, 2005). By concentrating the government’s power amongst the wealthy, the betterment of the entire country was ignored and the elite classes addressed their own needs (Luhnow, 2005).

Very few Mexicans young and old have college degrees (Luhnow, 2005). On top of this, due to the low government revenue, they were unable to fund every child with a full day of school as hours were shortened years ago to accommodate everyone in primary education (Luhnow, 2005). The low government revenue was caused by the government’s main income coming from sales tax instead of coming from income tax (Luhnow, 2005). In Mexico, with the minority of people being extremely wealthy, the sales tax is more of a burden for the rest of the population (Luhnow, 2005). My opinion based on this article is if the government were to restructure the tax system, more revenue would enable increased investment into the educational system in all areas such as primary, secondary, and college education.

In a recent interview, President Fox spoke about an educational initiative known as Enciclomedia. He states:

“It is an electronic blackboard, digitalized, computerized and connected to the Internet that the very students operate, and its provoking a revolutionary change within the education system. With this, our children aged nine and ten are going to learn English, dominate English, and learn computing and dominate information technology, and they will learn culture, music, art, to develop the emotional part of their brain. This will be in all schools, in the indigenous communities, in the rural communities and the last Rincon of the country (Hall, 2006, para. 13).”

This new initiative by the government is accelerating towards widespread inclusion (BusinessWire, 2006). The Mexican government hired Gilat for its satellite services to help bring the program live at a rapid pace (BusinessWire, 2006). In addition, with Gilat’s implementation services, high speed Internet will also be provided to “more than 140,000 classrooms” (BusinessWire, 2006, para. 2) once fully implemented. Satellite technology is used to maintain Enciclomedia’s learning resources up-to-date in all schools nationwide so teachers can have the most relevant information to educate Mexico’s youth (BusinessWire, 2006).

### Chapter 2.8 - Conclusion

Mexico’s IT outsourcing has certainly evolved into a high-tech destination because of the value added through increased complexity. Based on expert opinions, the government must show more commitment to the education of the country’s youth and the development of infrastructure throughout the country. However, it is difficult to do this when the government doesn’t take in enough money through taxes and the high amount of Mexicans working in the informal economy which isn’t taxed.

Corporations have played an integral part in developing Mexico's competitive advantage through their own investments into the country to improve education and infrastructure. Without corporations as a partner, the government would be struggling to offer a sophisticated IT industry. The corporations have helped shape the education curriculum and have increased their sophistication capabilities through employee training and higher investments in high technology manufacturing equipment.

The MNCs have invested millions in IT, but this trend takes time to spread throughout the smaller companies. Increasingly more companies are investing in technology from newer computer systems to supply chain management systems. As Mexico evolves into a more high tech manufacturing destination, so will its smaller companies. The trends in global outsourcing have shaped Mexico's technological evolution because it cannot remain a low cost outsourcing destination after the Peso's exchange rate rose against the US Dollar.

Mexico's competitive advantage is that it's next door to the United States. With this, Mexico is able to ship products rapidly in comparison to the shipping periods from Asia. Mexico thus is able to handle the production of highly sophisticated products that have a short life cycle. Mexico's competitive advantage has been developed through the improved infrastructure and education. The youth of the country is also a factor in the future growth of the nation because there will be a labor supply. Refer to Table 3 for a summary of the findings from this chapter.

Table 3 – Summary of Findings From The Literature Review

Background on Latin America's Struggles	<ul style="list-style-type: none"> <li>• History of political instability.</li> <li>• Economies have barely improved over last twenty years.</li> <li>• Foreign investment was favored over improving institutions.</li> <li>• Current trend of governments becoming more liberal.</li> <li>• Mexico has upcoming Presidential election in July.</li> </ul>
Government of Mexico's Contribution	<ul style="list-style-type: none"> <li>• Reduction of protectionism.</li> <li>• NAFTA led to increased jobs and foreign investment.</li> <li>• Jalisco is the leading Mexican state in IT.</li> <li>• Corruption has hindered the domestic business expansion.</li> <li>• Needs to spend more on education and infrastructure.</li> </ul>
Investing in IT	<ul style="list-style-type: none"> <li>• MNCs investing heavily in training employees</li> <li>• Investing in the youth for technological future</li> <li>• Venture capital comes mainly from outside Mexico</li> <li>• Small businesses and government are slower to invest</li> <li>• Technology is being integrated into all industries in Mexico</li> </ul>
Global Outsourcing Trends Affecting Mexico	<ul style="list-style-type: none"> <li>• China is the leader of low cost production</li> <li>• MNCs no longer outsource to one country only</li> <li>• US has new free trade agreements in Southeast Asia</li> <li>• Outsourcing is dependent upon competitive advantages</li> </ul>
Developing Mexico's Competitive Advantage	<ul style="list-style-type: none"> <li>• Manufacturing became more efficient and complex</li> <li>• Focus on products with short life cycles</li> <li>• Add value through highly sophisticated manufacturing</li> <li>• Product innovation is key to future of the industry</li> </ul>
Supply Chain	<ul style="list-style-type: none"> <li>• Majority of components are imported from Asia</li> <li>• Smaller businesses need to be more productive and efficient</li> <li>• IT industry growth causes ripple effect onto other industries</li> <li>• Improve quality of domestic suppliers to IT industry</li> </ul>
Education	<ul style="list-style-type: none"> <li>• Unequal distribution of wealth causes education gaps</li> <li>• Education is lower in rural areas</li> <li>• Weak tax system has hampered the nation's education</li> <li>• Enciclomedia initiative will improve teaching and learning</li> </ul>

## Chapter 3 – My Contribution

### Chapter 3.1 - Introduction

As mentioned in the introduction, this chapter seeks to answer the research question:

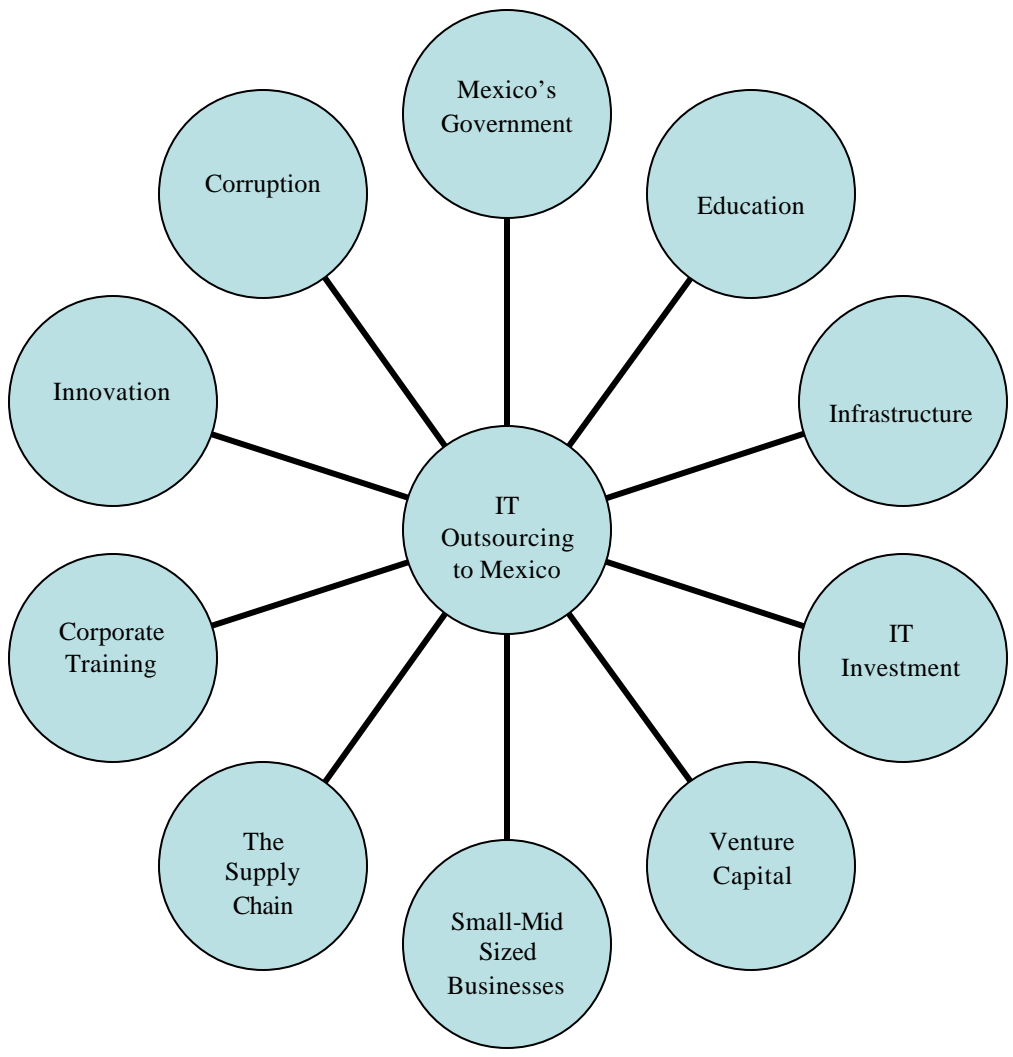
**What are the recommendations to increase the growth of IT outsourcing to Mexico based on the best practices from China, India, and other Latin American countries?** The growth of the IT industry due to increased outsourcing in Mexico has led to more widespread coverage on the industry. However, there is a lack of information on future recommendations for the growth of IT outsourcing to Mexico. Many of the articles gathered in the previous chapter provide specific insight to a particular topic and through the synthesis of all this related information the future predictions are gained. The future of the IT industry is strongly interrelated with the current and past trends because what was done to improve the IT industry during these periods will carry over into the future, but improvements can be made.

Like Mexico, China and India each have their own problems in such areas as education and infrastructure. However, these countries are leaders in outsourcing and, in particular India is the primary leader in IT outsourcing (Reinhardt et al., 2006). By examining certain successes within China and India and relating the findings to improving IT outsourcing to Mexico, a substantial contribution can be made. If China and India don't have relatable successes, other countries success examples will be used. In addition, other sources such as interviews will be used to support recommendations.

Figure 2 shown below is my model for the future of the IT outsourcing to Mexico. I concluded upon these ten factors through the synergy of information in the literature review. The model illustrates the ten significant factors to the IT industry and each factor will be

evaluated in the following pages of this chapter. In this chapter, problems will be identified or the current state of the factor will be addressed. Not every factor will relate to the successes within China and India, but several key experts that have been mentioned in this paper will be interviewed to gain their perspectives and add to the quality of my thesis.

Figure 2 - Factors That Will Shape the Future of IT Outsourcing to Mexico



As shown in Figure 2, these ten factors are influential to the future of IT outsourcing to Mexico. After reviewing literature and research, I concluded upon these factors in order to develop my conceptual model. Small-Mid sized businesses, the supply chain, and corporate

training aren't covered in depth as much as some of the other factors are due to their strong relation to many other factors. However, no matter which factor has the greatest influence on the future growth of IT outsourcing to Mexico and which factor has the least influence, they will all play a part in the future development. If Mexico in terms of its businesses, government, and people concentrate on these factors and help institute change, Mexico has the potential to become a leading developing nation. However, Mexico cannot expect to overtake India as a strong IT outsourcing destination, but it can also be a very successful outsourcing destination because the country is full of potential that has not been fully realized.

### Chapter 3.2 - Mexico's Government

Mexico's government has made advances with President Fox in office, but not to the extent expected. Partly due to his inability to push his agenda through the PRI controlled Congress. As the Presidential election approaches in July of 2006, President Fox is left a sitting duck and no significant changes such as deregulation or taxation can be made. The front runner Andrés Manuel López Obrador of the PRD and Felipe Calderón of the PAN who is close behind in polls would both face the same challenge Fox did of pushing their agenda through the dominant PRI.

Although MNCs constitute the majority of outsourcing to Mexico, to increase the future growth of IT outsourcing, the government needs to focus on the smaller businesses. In Mexico, "Small and medium sized businesses still complain of a lack of access to credit (Mexico Country Report, 2006, 88)." López Obrador has noticed this issue and if he is elected, he must make it a priority for banks to increase their loans to smaller businesses and individuals. Smaller businesses with easier access to capital will be able to integrate technology into their operations.

Thus, with increased technology and supply chain management (SCM) these smaller businesses will be one step closer to becoming suppliers of MNCs operating in Mexico.

I interviewed Dr. Erwan Quintin, a Senior Economist at The Center for Latin American Economics within The Federal Reserve Bank of Dallas. In response to improving lending to small businesses, Quintin acknowledges it's difficult to implement, but "improving the enforcement of property rights to create an environment where banks can lend is the best solution." Quintin mentioned another solution to increase lending to small businesses is "subsidies to (and government guarantees for) small business loans would help." In turn, this will help the government because as more businesses have access to capital and participate in the formal economy, the government will generate more tax revenue.

Both China and India have a Ministry of Science and Technology, but Mexico doesn't have that type of federal ministry. For Mexico to move forward, a federal Ministry of Science and Technology must be established to move the entire country towards a brighter future in terms of realizing technological potential. The mission for China's Ministry of Science and Technology includes investigating areas in the country that are lacking in technology, improving the technology, allocating resources for the development of technology, and the overall management of Science and Technology to continue growing (Ministry of Science and Technology of the People's Republic of China, 2006). In addition, the Ministry of Science and Technology oversees programs like the R&D Infrastructure and Facility Development and the National High Tech R&D Program (China's Ministry of S&T, 2006). China and India are ahead of Mexico in terms of having national oversight for the development of technology and innovation.



If Mexico's government implements this ministry, there will be federal oversight and implementation of national initiatives to develop IT throughout the country. Existing programs for the betterment of technology in the country should be placed under the oversight of the recommended Ministry of Science and Technology. An example is TechBA, which is currently directed underneath the Ministry of Economy (Dolan, 2006). Technology initiatives should all be managed under one roof where a strategy for Science and Technology can be developed for Mexico. The creation of a Ministry of Science and Technology should be placed in the hands of experts with a strong background in the field in order to more effectively develop technology initiatives nationwide. Thus the government will be more capable to make bolder programs such as the development of smaller businesses, increased innovation through R&D, and improved education with technology. This will help increase Mexico's appeal as a strong destination of R&D outsourcing in the future.

Mexico's government has made significant progress, but there is more to improve upon in the areas of taxation and red tape. As mentioned in the literary review, Quintin suggested Mexico must improve its tax system. In order to improve the tax system in Mexico, Professor Pinto suggests "lower rates and enforce collection to facilitate payments." What this means is to reduce all of the income tax rates across the board in order to encourage all Mexicans to pay taxes. Recently Mexico has been mandating businesses to pay their taxes online and in the near future individuals will be required to file their taxes online (Mexico Country Report, 2006). Professor Pinto is very confident in the upgrade to using computers for Mexico's tax collection. Quintin, suggested for enforcement to be successful, the tax system must be made straightforward and easier for everyone to understand.

The other area of deregulation is to significantly decrease the amount of red tape within the government. Professor Pinto reasons that the government hasn't improved upon the "incredible inefficiencies" in areas such as starting a business because the administrations haven't honed in on these issues. The effects of the high amounts of time to push paperwork through the bureaucracies are corruption and the expansion of the underground economy. As Professor Martin mentioned, most people operating in the informal economy want to be part of the formal economy, but are simply burdened by the amount of time and the associated expenditures with opening one's own business. Further ahead, I give a more detailed recommendation on how the government should improve upon these inefficiencies.

As learned through the literature review, the informal economy is a major aspect of life in Mexico. Yet, Mexico has had mixed reactions to it in the past. However, it is imperative the country steps up and regulates it in order to have some sort of control and revenue from this unaccounted economy. The best example to follow is what Peru's government is started doing almost a decade ago in terms of regulating the underground economy. Peru's government had "registered 280,000 'unipersonal companies,' giving people such as street vendors legal rights and the government tax revenue...creating limited number of street-vending points...enforcing the new and not very complicated laws (Bowen, 1997, 38)." Bowen continued to mention that in Peru, street vendors paid the government for use of a specific street location each month. Mexico should start with what Peru did as a basic model for easy to understand regulation that will help legalize many informal economy workers such as street peddlers. Although this solution wouldn't serve every aspect of the informal economy, it would be a starting point for Mexico to generate more revenue and improve the lives of those that work in the informal economy.

### Chapter 3.3 - Education

Lending to students in India is quite accessible which is encouraging more students to pursue higher education (India Country Report, 2006). In contrast, Professor Pinto mentioned that student lending in Mexico is “almost non-existent,” however he did point out that education at public universities is free. Despite free education at public universities in Mexico, the struggle is more for students that cannot continue school because they must help support their family and the tough competition to enter public universities. However, with loans more available in India, students can travel abroad easier to the United States to study. Vastly improved student lending in Mexico will not happen in the near future, it will take time because the banks need to gradually improve their loaning methods as pointed out earlier in this chapter.

The literature review section on education pointed out that Mexico needs to graduate technologically savvy students to continue growing the IT industry. Yet my recommendation is to also strengthen the business education in universities towards global business. The growth of sophisticated outsourcing to Mexico will require more knowledgeable and capable Mexican managers. It is already well known that Mexican engineers are highly trained, but as the IT industry continues to expand more global managerial skills will be needed.

Focus on improving business knowledge and offering local courses in business education for smaller business owners to improve their managerial practices. One concern presented in the literature review is that small business owners have struggled to change their way of thoughts and haven't responded rapidly to globalization. Business education should center around expanding business globally and how to improve quality and efficiency to become suppliers of MNCs.

The education in Mexico has struggled as noted in the literary review, but the most recent initiative of Enciclomedia is a noticeable improvement. Through integrating technology into the classroom and the use of satellite technology to continuously feed the teachers with updated information (Hall, 2006) the future looks much brighter for Mexico's youth.

### Chapter 3.4 - Infrastructure

Infrastructure in Mexico has improved from what it was years ago, but the demands placed upon the infrastructure by outsourcing calls for improvements. Professor Pinto pointed out the main areas still lacking in infrastructure are the "ports, airports, highways, and border crossings." In comparison to Mexico, India is faced with the challenge of improving poor infrastructure throughout the country, yet India developed a strategy to overcome its infrastructure problems and entice MNCs to outsource to the country.

India has land set aside specifically for companies looking to export according to the US Commerce Department's India Country Report. This land is known as the Special Economic Zone, Export Processing Zone, and the Software Technology Park (India Country Report, 2006). These locations offer incentives such as tax breaks for a decade and half, permission to repatriate all profits, and infrastructure tailored specifically to each of the different zones (India Country Report, 2006). In comparison, Mexico has "three technology parks (Horowitz, 2003, para. 8)." The three locations are Monterrey Technology Park, Apodaca Technology Park, and Guadalajara Technology Park (Horowitz, 2003). Mexico should follow the incentives mentioned above that India is using to encourage investment in the country for the purposes of exporting. In the future when these technology parks are filling up, more parks should be developed throughout the country in areas with talent.

### Chapter 3.5 - IT Investment

The government needs to continue investing in IT to in order to become more efficient. If Mexico's government does this aggressively, it can become a leader among developing nations. As mentioned earlier, the government is mandating businesses to send their taxes in online. The push for electronic taxes is helping the government to become more efficient. Yet, the question emerges of how can the government require citizens to file taxes online in the near future if they don't have computers? A solution Mexico's government is implementing are "projects such as the e-Mexico initiative, which has a goal of installing 10,000 Digital Community Centers with Internet connectivity around the country (Mexico Country Report, 2006, 40)."

According to a Mexican government website on e-Mexico, the initiative entails bringing the entire country together technologically. With the help of the digital community centers, citizens that don't have access to the Internet or computers will now be able to. In addition, e-Mexico promotes the public to get easy access to public information from the government. The program aims to improve communication efficiency among the various aspects of the government which will help to reduce waiting times. Also, the e-Mexico initiative has been created in part to improve education with technology because now students will have access to computers and the Internet.

The government push for e-Mexico needs to be expanded to include the civil service and bureaucracy. For example, as mentioned in the literary review, "it takes an average of 58 days to start a business in Mexico...it takes 74 days to register a property in Mexico (Farrell et al., 2005, para. 24)." Below Chart 3.10A is a copy of The World Bank's detailed explanation of the

time and cost of starting a business in Mexico. Thus the length of time and the added expense triggers development of the underground economy.

Table 4 – Starting a Business in Mexico

Nature of Procedure	Proc #	Duration (days)	US\$ Cost
Obtain authorization for company name (Ministry of Foreign Affairs)	1	2	53.02
Notarize company deeds	2	1	844.59
Register at Public Commercial Register	3	28	122.00
Register with the Hacienda	4	16	0.00
Register with IMSS	5	1	0.00
Register with federal tax authorities for payroll tax	6	7	0.00
Notice of opening of mercantile establishment	7	1	0.00
Register at the SIEM	8	2	36.13
File a notice with INEGI	9	1	0.00
Total	9	58	\$1,055.74

Source: World Bank Group, Doing Business in Mexico

The recommendations are for Mexico to hire IT consultants to implement technology that will speed the process of starting a business and to reduce the number of procedures. If the process to start a business is done electronically that will dramatically reduce the amount of bribery as there will be little paperwork. In the majority of developing nations there are similar conditions, on average it takes 13 procedures and 48 days in China and 11 procedures and 71 days in India (“Starting a,” 2005”). Mexico could move to the forefront of starting a business in a developing nation by reducing the number of procedures by combining them to become more efficient. Although Australia and Canada are developed countries, there are only 2 procedures and 2 to 3 days of waiting to open a business (“Starting a,” 2005). The lesson for Mexico is that more deregulation needs to take place in the country’s bureaucracy to make the process of opening a business more efficient.

### Chapter 3.6 - Venture Capital

As mentioned in the literature review, the Mexican venture capital industry is pretty much non-existent. Thus, TechBA was created to help spur the venture capital investment from the US. Buckman (2006) reports that although venture capitalists in the past typically only looked for companies in their immediate vicinity they are now expanding their investing practices throughout the world. Yet through TechBA, the process has been to bring Mexican companies to America to showcase their business to the American venture capitalists. Mexico must strategize methods to attract venture capitalists to its Silicon Valley South.

China and India are ahead of the game in attracting global venture capitalism to their newly introduced technology companies (Buckman, 2006). China has been a hot area of investment recently as “Venture-capital firms raised \$4.07 billion last year world-wide to invest in China, nearly five times the average of the previous three years (Aredy, 2006, C14).” Aredy also points out that so much investment has been coming into the risky startups in China that analysts are cautioning that the investment may be building too quickly. Nonetheless, these Chinese startup companies are receiving much needed capital to help them expand rapidly. The result can be a much more advanced IT industry in China’s near future.

Based on the inflow of capital into China, Mexico needs to develop a venture capital industry of its own in Silicon Valley South to help the upsurge of Mexican technology companies. Intel’s CEO, Barette even noted this when he consulted with President Fox in 2002 (“Intel CEO,” 2002). This issue is an interesting subject for future research related to Mexico. However, as TechBA grows within the next few years and more venture capitalists are attracted to Mexico’s developing IT industry, the possibility of venture capitalists locating offices in Mexico is much greater. As stated in the previous chapter, Mexico’s IT giant, Softtek aspires to

become listed on NASDAQ in the near future. When this happens, a greater awareness of the IT industry in Mexico will be created. A greater awareness can benefit Mexico by increasing venture capital inflows to their technology companies.

### Chapter 3.7 - Small-Mid Sized Businesses

As mentioned in the government section, if the lending from banks improves, so will the smaller businesses. Many need capital to continue to expand. When I was in Mexico, a small business owner I lived with owned a baking company that was very successful in selling locally. However, with a loan he could easily expand from his house into a small factory and rapidly expand. As stated in the previous chapter, the MNCs point out that local small businesses need to improve their product quality and operating efficiency in order to become suppliers. The potential for improved quality and efficiency is there, but many smaller businesses are lacking the capital to implement technology that can help them expand.

Loans to smaller businesses will help Mexico in general as more money is retained within the country because they are domestic businesses. As the IT industry expands, the ripple effect produces bigger waves which means a greater demand for more supplies for exports. When the smaller businesses attain the resources to implement technology to improve the efficiency and quality of their production, they will be favored suppliers to MNCs. Thus MNCs will not have to import the majority of products, and if coming from Asia, transport them from the ports.

### Chapter 3.8 - The Supply Chain

Mexico needs to become more than just a high tech manufacturing destination. It can do this by working to domestically integrate its supply chain. Mexico supplies about 10% of the components for IT and consumer electronics manufacturing and the rest is imported (“Doing



eBusiness,” 2005). The supply chain is directly related to the growth of the smaller businesses. As smaller Mexican businesses integrate technology, there will be a rise in the amount of Mexican components that go into IT manufacturing. However, there are some areas that Mexico will not be able to win over because Asian countries are already very dominant in production. Mexico must analyze which industries it is close behind in and then focus on developing the smaller businesses within.

### Chapter 3.9 - Corporate Training

Beyond the government’s investment in IT, the MNCs must continue to invest in their human capital. As mentioned in the literary review, this is increasingly being done through e-learning. Mexican companies that are capable of handling more sophistication are able to compete much better on the global market. For smaller companies that aren’t MNCs, they can take courses at local universities, which is not as costly as developing e-learning. Continued corporate training is essential to the development of Mexicans that aren’t well educated engineers or college graduates. There are many support jobs that with training can vastly improve the workers capabilities and productivity.

### Chapter 3.10 – Innovation

Mexico has stepped up the sophistication ladder in terms of its manufacturing, especially in the IT and the Consumer Electronics Industries. More MNCs need to be enticed to outsource their R&D to Mexico because product innovation adds considerable value to the labor. This can be done in two different ways, either the original equipment manufacturers that are operating in Mexico can outsource their R&D to their Mexico operations or MNCs can outsource their R&D to contract manufacturers. There is more design taking place in Mexico as companies utilize the

highly trained engineers. Just as Mexico's engineers are used to spur innovation, the same is happening in India at a greater extent.

Mexico is a good location to outsource IT, but in comparison to other IT dominant countries like South Korea or India, it didn't invest in an IT strategy years ago. AMITI is the Mexican Association of the IT Industry. Fuenes Lovis, the Vice-President of AMITI suggested that Mexican companies need their own competitive position instead of following the competition in IT ("Entrevista con," 2005). He also mentioned that South Korea, became much more technologically advanced than Mexico by spending 7% of its GDP on IT in the country over twenty years ago ("Entrevista con," 2005). Lovis makes an excellent point that Mexico needs to make its own innovations to develop a sustainable competitive advantage for its IT industry.

Knowledge@Wharton recently did a study on the topic of "What's Driving India's Rise as an R&D Hub?" Their findings of India's successes can be related to how Mexico can benefit as well. The success India has experienced as an IT outsourcing destination has led MNCs to outsource some of their R&D work to the country as well ("R&D in India," 2005). This has been done for reasons such as to tailor products to the region and to export the developed products throughout the world ("What's Driving," 2005). Research and Development has been increasingly outsourced to India due to the very capable workforce that offers a high number of engineers, spoken English, and cheaper labor ("Contract Research," 2005). In contrast, R&D outsourcing to China is based more on making goods tailored towards the Chinese market ("R&D in India," 2005).

What this entails for Mexico is that the more the IT outsourcing develops in the country, the greater outsourcing R&D will take place. Currently R&D is taking place in Mexico, but at a

smaller extent than India. “Intel recently opened their first design center for semiconductor design in Guadalajara (Mexico Country Report, 2006, 25).” Mexico has the advantage of being neighbors with the United States and being close to all of Latin America, thus products can be shipped fast. The majority of goods manufactured in Mexico are exported to the United States, but MNCs in Mexico should also focus their innovation towards Latin America. Products can be designed in Mexico specifically for the Latin American market.

An MNC outsourcing its sophisticated R&D to Mexico doesn’t have to worry much about knockoffs in contrast with China and when the product design is finished, it can be manufactured in Mexico and rapidly shipped to the United States for sale. “Chinese lax intellectual property rights laws to date have deterred many MNCs and Chinese companies from locating anything except basic R&D in the country (Gadiesh, DiPaola, Leung, Caruso, 2006, 3).” This is an additional benefit to Mexico because it is an incentive for MNCs to outsource their highly technical R&D to a country without these problems. Mexico is ahead of China and India in terms of product copyright protection and the government should continue to resolve any weaknesses and enforce any knock off production because it is a tremendous advantage that MNCs are not concerned about the issue as they are in China.

### Chapter 3.11 – Corruption

Mexico must continue to try and shed itself of the corruption that hampers business. The Mexican government is stepping up anti-corruption measures on all levels of government and the Secretariat of Public Administration is charged with fighting it (US Commerce Dept. Mexico Country Report, 2006). Corruption is actually more prevalent in China and India according to the Transparency International Figures that were mentioned in the previous chapter. Costa Rica is a better model of success as it is the least corrupt Latin American nation as ranked by

Transparency International. A nation known as one of the least corrupt nations throughout Latin America has recently been in the news as previous Presidents have been charged with corruption. How does this relate to decreasing the corruption in Mexico?

Daniel Martin is an adjunct Professor at Pace University for International Environments: Latin America. He has years of experience operating in Latin America in the pharmaceutical industry. I interviewed Professor Martin on corruption due to his past work experiences in Latin America for MNCs and based upon his own dealings with corrupt government officials. He acknowledges the difficulties Mexico faces to eradicate corruption because it's very deep rooted in the country. Martin said "Corruption must be fixed from the top" and in order to do this Mexico must "make a major example out of someone." Yet in order to make an effective example Martin mentions it's mandatory to "then have a solution such as firing and prosecuting" the offending government official and set the tone for anti-corruption as to "anyone else doing it will be prosecuted." Based on his comments it is obvious that Costa Rica is making examples out of top government officials. According to the US State Department Investment Climate Statement on Costa Rica, corruption is becoming a major issue in the country and they are actively battling it. However, Costa Rica still faces problems in strictly enforcing corruption as several of those being prosecuted have managed to leave the country (US State Department, 2005). So for Mexico to succeed in fighting corruption, it must prosecute high level offending government officials and then prevent them from escaping Mexico while on trial or investigation.

Corruption can also be reduced through the regulation of the informal economy. As mentioned in the government section, the best solution is to follow the regulations that Peru implemented. "Without formality, street vendors are at the mercy of bribes-taking police and

inspectors and have little recourse against those who cheat or steal from them (Bowen, 1997, 38).” Hence regulation will help the street vendors that already are struggling to make enough to support their families.

The bribery within Mexico’s public institutions must be resolved as well. Mainly bribery is due to the amount of red tape and the lack of technological integration to streamline processes. The long process to start a business causes bribery in order to get the paperwork done. As mentioned earlier, if the government expands the e-Mexico initiative to the bureaucracy and civil service, the entire country will benefit in reduced bribery. All types of registering such as a business or a property should be included in a new initiative like I’m suggesting.

## **Chapter 4 – Leadership Implications**

### Chapter 4.1 – Introduction

Following the wealth of information given in the literature review and my contribution, the implications for leadership are given in this chapter. The leadership implications will consist of practical and theoretical. The practical implications will give stakeholders from MNCs, the government, and small businesses an overview of how to practically use this knowledge. On the other hand, the theoretical implications will give ideas for future research based on areas in which knowledge is lacking.

### Chapter 4.2 – Practical Leadership Implications

For practical leadership implications, I will make suggestions for leaders of three different areas to implement. The three areas are leaders within MNCs, government leaders, and small business owners.

#### Leaders within MNCs

- Use extensive training for employees to increase manufacturing sophistication
- Develop more products to sell within Mexico and Latin America
- Reevaluate the costs and quality of local suppliers to make possible changes annually
- Continue working with universities to develop needed technical skills
- Diversify R&D locations and outsource some R&D to Mexico

#### Government Leaders

- Restructure the tax system
- Expand e-Mexico to bureaucracy and civil service

- Focus on developing more lending to small businesses
- Improve rural education to increase the future supply of educated workers
- Focus on improving the efficiency of the civil service
- Fight corruption within the government
- Continue to develop and improve the infrastructure
- Create a Ministry of Science and Technology and place technology initiatives within it
- Begin to regulate the informal economy
- Develop a domestic venture capital industry

#### Small Business Owners

- Take business courses at local educational institutions
- Improve efficiency through use of technology
- Don't rely on traditional business methods, adapt businesses to globalization
- Seek out loans in order to expand and implement technology
- Use consulting to implement SCM
- Maintain low inventories which will result in reduced costs

### Chapter 4.3 – Theoretical Leadership Implications

Based on the articles reviewed and my answer to the research question, there are many areas that are lacking research. The following research suggestions are all relevant to the current state of Mexico's development.

- How a Ministry of Science and Technology can benefit Mexico?

As I mentioned in the third chapter, Mexico doesn't have a Ministry of Science and Technology in contrast with China and India which both do. Extensive future research on this

topic could become a proposal to the Mexican government to create this ministry. Currently, many technology initiatives like TechBA are managed by the Ministry of Economy, but this is outside of their management expertise. Also a best practices approach to China and India's Ministry of Science and Technology could be more extensively reviewed and applied to Mexico.

- Restructuring the tax system

In the literature review, Quintin's article pointed out the need to change the tax system. Many people avoid paying their taxes due to high rates they cannot afford or because they aren't part of the formal economy. Professor Pinto mentioned to me that one third of Mexico's taxes are from their state owned oil company Pemex, which is heavily taxed. This needs to be readjusted and so does the individual tax collection. An in depth quantitative research project on this topic should seek to provide feasible solutions for Mexico to realistically implement.

- Solutions to the inefficiencies in Mexico's government

The government is markedly inefficient in bureaucratic and civil service areas, but seeking to improve. The previous administrations mainly focused on improving the economic position of the country. The government hasn't focused on such things as reducing the amount of time to open a business, cutting down red tape, reducing regulations, and costs and waiting times. All of these things also encourage corruption as earlier stated, thus by recommending solutions to improve the efficiency, reduced corruption will also be a benefactor.

- Developing an effective plan to regulate the underground economy

The informal economy if regulated can help generate much more government revenue. Also more citizens will be protected. I mentioned Peru's regulations of street vendors as a feasible model for Mexico, but a more extensive research project can evaluate this. More



researched solutions need to be developed on this subject and presented to the government for implementation so both sides can benefit; the government and the informal economy workers.

- Developing a venture capital industry within Mexico's Silicon Valley

As noted, there is no domestic venture capital industry to support the Mexican tech startups. These companies and mainly the leading companies are now looking to the United States for venture capital through TechBA. However, additional research should examine how the past Mexican financial crises have hampered this type of loaning. Then solutions to expanding domestic venture capitalism within Guadalajara should be developed. This would most likely entail foreign firms establishing Mexican offices or entrepreneurs opening offices in Mexico. With the possible listing of Softtek on NASDAQ, more attention will be drawn to Silicon Valley South.

- Improving Mexico's domestic IT supply chain

In the third chapter, the Economist Intelligence Unit pointed out that around 90% of consumer electronics and IT components are imported for manufacturing in Mexico. More research can more extensively examine how to improve domestic suppliers to MNCs. In addition, realistic predictions should be made to identify how much more input Mexico can develop to have a more domestic-based supply chain.

- Development of rural education

Mexico's latest program, Enciclomedia aims to include rural education, but will it work as planned? That would be an interesting question in several years to evaluate that implementation of the program. However, rural education in general must be evaluated in depth because there is high potential in these areas, but many don't receive as much education due to

income disparities. Solutions to improving the education rate and increasing the number of rural students in universities are areas of educational interest.

- The effectiveness of President Fox

Following the July election and after Fox officially steps down, his in office effectiveness should be thoroughly researched. As noted in this thesis, many experts have concluded his term didn't live up to the hype. However, research can conclude improvements and failures made in his term in areas such as education, social welfare, and the economy.

- Solutions for improving Mexico's micro economy

Articles reviewed noted Mexico's focus on the overall economy to improve FDI. However, this resulted in the lack of attention for the micro economy and unimproved institutions. Further research of this subject should examine the areas that are lacking within the micro economy. Then solutions to improve these institutions must be given.

- Mexico's dependency on the United States

As reviewed earlier, Mexico's number one trading partner is the United States. The US recession hit Mexico extremely hard. A quantitative analysis of Mexico's dependency on the US could shed more light on the subject. In addition, solutions for Mexico to diversify and reduce its dependency on the US should be given. Latin America appears to be inviting for increased trade, but must be evaluated to determine areas where Mexico could trade more.

## Chapter 5 – Summary

Mexico is clearly evolving into a high technology outsourcing destination. The country is home to Guadalajara or otherwise known as Mexico's Silicon Valley. It is there where many MNCs operate in the form of contract manufacturing and original equipment manufacturing. Beyond IT and consumer electronics manufacturing, more products are being created within Mexico.

The government has made substantial improvements, but there are vast inefficiencies to overcome for Mexico to realize its potential as an IT outsourcing destination. A prime area of inefficiency is the civil service which is plagued with long wait times, costs, and too many procedures. Mexico must now focus on aggressively modernizing the areas that were previously ignored. In the past, the trend was to make changes to shape the macro forces of the economy and attract FDI. Now the current trend is to overhaul the country by investing more in technology through programs such as the e-Mexico initiative. Slowly these technology based initiatives will help to improve the inefficiencies within the government.

The infrastructure of the country has markedly improved since NAFTA in 1994 was passed. However, more roads are in need of resurfacing and the various infrastructures used to enter and leave the country must be modernized. This in turn will help the supply chain for both imports and exports to become faster.

The education still suffers in the rural areas. The newest government initiative, Enciclomedia seeks to put all students and teachers on the same page whether they're in an urban or rural location. However, the country has a long way to go in terms of getting the majority of youth educated through high school and providing a college education to those who want it.

There is a strong correlation between the education rates and the unequal distribution of wealth; the wealthy are more educated. In higher education, to help meet the needs of the consumer electronic and IT industries, universities have adopted their curriculum following pressure from MNCs operating in Mexico. MNCs have also stepped up their employee training in order to manufacture with greater sophistication. A focus on education in Mexico is vital to the country's future since Mexico is comprised of a young population and the youth have the potential to fill many demanding jobs in the future.

Due to Mexico's neighboring location to the United States, it will always have an advantage of attracting outsourcing. Mexico's proximity to the US is a competitive advantage because it can quickly ship goods with short product life cycles to the US consumers. For Mexico to benefit more, small businesses need to adapt to globalization, increase their technology, and business practices in order to become quality suppliers to the MNCs. However, for Mexico to continue growing into a highly sophisticated outsourcing destination more innovation must take place to diversify from being primarily a manufacturing destination.

There are many areas in need of the government's attention to improve the future economy of Mexico. Some of these areas are the tax system, the informal economy, and rural education. In the past, these areas weren't viewed as important as was developing the country to be more attractive for FDI. Now what the government previously didn't focus on are major factors to the development of Mexico as I have found in this research. In addition, corruption on all levels must be aggressively targeted and improving the efficiency within the government will play a major role in this.

In July of 2006, a new Mexican President will be elected. The front runner is currently Andrés Manuel López Obrador of the PRD and behind him, Felipe Calderón of the PAN. With a

new President in office, the near future will show if they live up to their campaign promises such as López Obrador's of making banks lend more to individuals and small businesses.

This research has synthesized a wealth of expert opinions and created a model of factors for future growth. The additional insight of the best practices model of leading outsourcing destinations, China and India, and other Latin American countries, Costa Rica and Peru provides a model for Mexico to follow. The future holds substantial opportunities for continued research based around this subject that can help Mexico develop its IT industry and the country as a whole. This research has shown that Mexico has a great future potential and to achieve it, there are many areas that must be focused on now for the future to be as bright as its potential.

## Chapter 5.1 - Knowledge to Take Away from the Thesis

### Points about IT Outsourcing to Mexico

- Silicon Valley South is in Guadalajara Mexico, which is the country's IT hotbed and has a highly educated workforce, many universities, low crime, and a very low attrition rate.
- Consumer Electronic and IT outsourcing to Mexico is mainly done through original equipment manufacturers or contract manufacturers.
- IT outsourcing in Mexico mainly entails the manufacturing of sophisticated products, in addition there is software development and increasingly R&D is taking place.
- MNCs in Mexico are seeking to obtain value added labor with highly sophisticated manufacturing and increased product design.
- In outsourcing, Mexico's competitive advantage is bordering the United States which allows it to rapidly ship highly sophisticated products that have short life cycles.

### Points on the Future of IT Outsourcing

- The factors that will shape the future of IT outsourcing to Mexico are: Mexico's Government, Education, Infrastructure, IT Investment, Venture Capital, Small-Mid Sized Businesses, the Supply Chain, Corporate Training, Innovation, and Corruption.
- Lending is still struggling which has hampered the development of smaller businesses. Presidential Candidate Andrés Manuel López Obrador aims to fix this through regulation.
- Smaller businesses with more access to capital will be able to integrate technology and improve their efficiency and quality to become suppliers to MNCs.
- Mexico's Government needs to establish a Ministry of Science and Technology to oversee all technology initiatives.
- Inefficiency within the civil service is a major cause of corruption and expansion of the informal economy.
- The government needs to restructure the tax system in order to take in more revenue to better the country overall and to implement more technology initiatives.

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