

WAITING IN LINE TO GET ONLINE: THE DIFFUSION OF THE INTERNET IN
MEXICO

THESIS

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DEDICATION

This thesis is dedicated to the memory of my mother Bertha Gallegos de Romo (1947-1997), my father Enrique Romo, my sisters Nora Ivonne, Aída Isela, and Luz Elena and my little brother Ricardo and my brother-in-law Pedro. I would also like to dedicate this thesis to my nieces Brenda and Valerie as well as my nephews César and Alejandro. It is also dedicated to my grandmother Ricarda and to all my extended family and close friends. ¡Gracias por todo! I could not have made it without your support and encouragement.

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TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	v
LIST OF TABLES	vii
LIST OF FIGURES	viii
CHAPTER	
I. INTRODUCTION.....	1
II. INTERNET IN MEXICO	15
III. LITERATURE REVIEW	37
IV. THEORETICAL BACKGROUND.....	49
V. METHODOLOGY	62
VI. FINDINGS/CONCLUSIONS	68
APPENDICES	84
REFERENCES.....	93

LIST OF TABLES

Table	Page
2.1 2005 World Internet Users.....	18
2.2 2005 Internet Usage in Central America.....	20
2.3 2005 Internet Usage in South America.....	21
2.4 Registered Domain Names (.MX).....	23
2.5 Residential Mexican Phone Lines.....	26
2.6 Mobile Phone Users (1990-2004).....	29
6.1 Knowledge of Using Internet and Duration of Use.....	73
6.2 Chi-square Test for Internet Use and Duration of Use.....	73
6.3 Internet Compatibility and Helpfulness.....	74
6.4 Chi-square Test for Internet Compatibility and Helpfulness.....	74
6.5 Internet Compatibility and Effects.....	75
6.6 Chi-square Test for Compatibility and Effects.....	75
6.7 Income, Duration of Use, and Internet Adoption.....	76
6.8 Chi-square Test for Income, Duration of Use, and Internet Adoption.....	76
6.9 Education and Duration of Internet Use.....	77
6.10 Chi-square Test for Education and Duration of Internet Use.....	77

LIST OF FIGURES

Figure		Page
1.1	Map of Mexico and Bordering Countries.....	6
4.1	S-curve Representing Rate of Adoption of an Innovation Over Time...	51
4.2	A Model of the Study: Diffusion of the Internet in Mexico.....	61
6.1	Age and Gender.....	68
6.2	Education of Respondents.....	69
6.3	Monthly Income of Respondents (In Mexican Pesos).....	70
6.4	Marital Status of Respondents.....	71

CHAPTER I

INTRODUCTION

The Internet has the potential to revolutionize the way society receives and sends information. Advances in computer software, telephony, and the convergence of technologies have made information available to anyone who can log in and get online. While the use of the Internet is common in much of the developed world, it is still in its infancy in many developing nations. According to Kirkman (2001), almost everyone has heard of the Internet; however, just because they have heard of it does not mean that they know what it is or that they have access to it.

Mexico is considered a Third World nation. As such, it confronts the reality of lagging behind when it comes to technology and Internet diffusion. Although Mexico faces obstacles in different arenas such as technology, it has one of the fastest Internet diffusion rates in the world. In 1994, nearly five percent of the Mexican population owned a personal computer (PC) and .04 percent of the population had access to the Internet. Since then, Internet penetration has grown from one percent in 1998 to 4.7 percent in 2002 (The Multifaceted Nature of the Digital Divide, 2003) to about 12 percent in 2005 (Internet World Stats, 2005). Mexico's Internet, since its inception, has

benefited and connected the nation's major universities. The Mexican Internet as a market represents nearly 30 percent of Latin America, but it accounts for only 0.8 percent of the global Internet environment (Human Rights Education Associates, 1999).

A study in 2001 concluded that 1.6 million companies in Mexico used Internet technology, 1.3 million homes were connected to the Internet, and over 354,000 educational institutions offer Internet technology resources. These growth numbers seem robust, but in reality only 3.7 percent of Mexico's 105 million people were connected to the Internet in 2002 (Thomasson, J., Foster, W. & Press, L., 2002).

As a developing country, Mexico has been lagging behind in technology and Internet services for its population. Emerging Internet trends however point to an explosive growth. Since diffusion rates and penetration levels are growing rapidly in Mexico, it is essential to see how Mexicans are dealing with innovative technological changes. Moreover, it is imperative to find out the attitudes and potential reservations people have toward the Internet. Also, the body of research on this topic is limited. This study will enhance and expand the field of Internet and mass communication studies.

In Mexico, the Internet was born in 1987 when the National Autonomous University of Mexico (UNAM) established the first connection with BITNET through the main campus of the Monterrey Institute of Technology (ITESM) to a server in San Antonio, Texas (Palacios, 2003). As of 2002, Mexico had about 3.5 million Internet users (CIA World Factbook, 2003; Nua Internet Surveys, 2002). Of these, 26% used it for e-mail activities, 25% to do research online, 17% to chat, and 14% for education purposes (INEGI, 2004).

Since the Internet in Mexico was spearheaded by academia, universities are important outlets for exposing people to the Internet. Universities have always been important channels for Internet access in developing countries. Excluding the affluent, however, most of the students are the first ones in their family to attend a higher education institution. At home, most of these students do not have the equipment and facilities that are available to them at school. According to Rodriguez (2001):

Most of the students are the first generation of professionals in their homes.

Many of them do not have the support needed at home to buy or use computer equipment. Typically, students end up doing their homework and studying in the same place where the family gathers to eat and watch television (p. 15).

Also, not everybody has the means and the opportunity to attend institutions of higher learning, so exposure to the Internet can be deferred. Most of the people live day-to-day and would rather spend their money on food, clothes, and paying their bills. The purchase of a computer or activation of a telephone line is not an option for many. This high cost to access limits the amount of time people use the Web for information and purchases. Furthermore, Gibb, Kraemer, & Dedrick (2003) conclude that the cost of computer equipment is a significant inhibitor in Mexico, where a large portion of the population cannot afford a computer. In much of Mexico, the adoption and diffusion of the Internet is limited to only a few. Only those who are situated in a privileged position, or have access to the Internet because of work or school, seem to benefit from it. According to Everett (1998), use of the Internet is likely to be disproportionate and will benefit those with access to it: The young, educated urban dwellers, large corporations, governments, private organizations, and universities.

Mexico's government is getting involved in the task of bringing the Internet to as many people as possible in order to start building an information society. President Vicente Fox announced an initiative in March 2001 to bring the Internet to all Mexicans. His plan calls for a six-year, \$400 million program called e-Mexico (Thomasson, Foster, and Press, 2002). Mexico's effort to respond to technology challenges and its commitment to improving infrastructure to join in the e-revolution makes it an important case study to follow.

In order to understand the growth of the Internet in Mexico, this study proposes to use the framework of diffusion of innovations theory. This approach seems to be the most appropriate in investigating how diffusion of the Internet is transforming Mexico into an information society. According to Rogers (2003), "diffusion as the process by which an innovation is communicated through certain channels over time among the members of a social system" (p. 5). This kind of communication is a bit different because the message is concerned with new ideas. Moreover, when "new ideas are invented, diffused, and are adopted or rejected, leading to certain consequences, social change occurs" (Rogers, 2003, p. 6).

Objectives

Since the study is based on the diffusion of innovations theory, the research will analyze how the Internet travels through certain channels over time to other people. In other words, the research will try to determine how the diffusion of the Internet is taking place in Mexico. The main objectives of the research are to examine the relationships between knowledge of the Internet, perceived characteristics of the Internet, demographic factors, and language and adoption and use of the Internet.

The study will try to determine whether having knowledge of the Internet is related to adoption. The perceived characteristics will consist of factors such as complexity, compatibility, relative advantage, triability, observability, and cost among other factors. Demographic factors will include age, education, income, and gender. Language will also be used to determine adoption rates.

Background

Mexico: Geographic Location and Area

Mexico is located in Middle America, bordering the Caribbean Sea and the Gulf of Mexico, between Belize and the United States and bordering the North Pacific Ocean between Guatemala and the United States. The country occupies a total area of 1,923,040 square kilometers making it slightly less than three times the size of Texas. Its longest border is with the United States and it covers 3,141 square kilometers. Mexico's terrain is diverse including coastal lowlands, central high plateaus, and mountains. Its weather is also diverse ranging from tropical to desert (CIA World Factbook, 2004).

Figure 1.1 Map of Mexico and Bordering Countries



Source: Map of Mexico. Available at

<http://www.cia.gov/cia/publications/factbook/geos/mx.html>

Demographic Profile

As of July 2004, Mexico had a population of about 105 million. Its median age is 25 years, making it a country of young people. Thirty two percent of the population is between the ages of 0-14 years, 63 percent is between 15-64, and only five percent is over the age of 65. Mexico's population growth rate is an estimated 1.18 percent and the average life expectancy at birth averages to 75 years. Mexico is made up of different ethnic and indigenous groups. About 60 percent of the population is mestizo (Amerindian-Spanish), 30 percent belongs to an Amerindian or predominantly Amerindian group, nine percent is white, and the remaining one percent comprises small and diverse ethnic groups. Mexico is the most populous Spanish-speaking country in the world and the second most populated country in Latin America after Brazil. However,

there are about 66 dialects spoken throughout the country. Some of these include Nahuatl, Mayan, Otomí, and Tarahumara (INEGI, 2003). Mexico's literacy rate is over 92 percent and 89 percent of the population is of Roman Catholic faith, six percent is Protestant, and the remaining five percent belongs to various religious organizations (CIA World Factbook, 2004).

Government

Mexico, a federal republic, comprises 31 states and one federal district (distrito federal). Mexico has three branches of government: executive, legislative, and judicial. The president is the chief of state and the head of government and presides over the executive branch. The president's term lasts six years and the president cannot be reelected for a second term.

The legislative branch consists of two chambers. One is the Congreso de la Union (National Congress) and it houses the Cámara de Diputados (Senate) with 128 seats. Ninety-six are elected by popular vote to serve six-year terms, and 32 are allocated on the basis of each party's popular vote. The other chamber is the Cámara Federal de Diputados (Federal Chamber of Deputies). This section houses 500 seats; 300 are elected by the popular vote to serve three-year terms. The remaining 200 members are allocated on the basis of each party's popular vote.

The judicial branch is made up of the Corte Suprema de Justicia (Supreme Court of Justice) and the president with consent of the Senate appoints all the judges. (CIA World Factbook, 2004). The court once had 26 ministers, but in 1994 then president Ernesto Zedillo reduced the size of the Supreme Court to 11 ministers (Staton, 2003).

Mexico has six major political parties. These are the Partido Acción Nacional (PAN), Partido Revolucionario Institucional (PRI), Partido de la Revolución Democrática (PRD), Partido del Trabajo (PT), Partido Verde Ecologista de México (PVEM), and Partido Convergencia por la Democracia (Secretaría de Relaciones Exteriores, 2004).

Economy

A 2004 World Bank Group concludes that Mexico has a free market economy increasingly dominated by the private sector. Mexico also has the highest per capita income in Latin America and is considered a middle-income country, but it still faces huge gaps between the rich and the poor, north and south, and urban and rural populations. It also enjoys a more open economic and political system and is more integrated with the current world economy. Mexico's gross domestic product (GDP) in 2003 was \$942 billion and the gross domestic product per capita was estimated to be at \$9,000 (CIA World Factbook, 2004). Mexico has been a member of the North American Free Trade Agreement (NAFTA) for ten years now and it also belongs to the Organization for Economic Cooperation and Economic Development (OECD).

Even though there has been remarkable progress in the country, it is estimated that about 40 percent of the population live below the poverty line (CIA World Factbook, 2004). Major industries in Mexico include food and beverages, tobacco, chemicals, iron and steel, petroleum, natural gas, mining, textiles, clothing, motor vehicles, consumer durables, and tourism. Mexico's major export partners are the United States, Canada, and Spain. As far as imports are concerned, Mexico's main partners are the United States, Japan, and China.

History

Highly advanced cultures, including the Olmecs, Teotihuacans, Toltecs, Mayas, and Aztecs existed long before the Spanish conquest. The Olmecs were Mexico's first established culture followed by the Teotihuacans. This group lived in what is considered the largest city in the world at the time. It reached 200,000 inhabitants by the year 350 A.D. It was the most urbanized and it became the center for religious, political, and economic activity in Mesoamerica. Mesoamerica is a term used to describe people who occupied the central area of Mexico down to Guatemala and Honduras. The Toltecs lived in the northern regions of the Valley of Mexico. They strongly influenced the Mayas and the Aztecs. The Mayas created complex systems of mathematics, astrology and were master architects and engineers. The Aztecs are the most well known culture of ancient Mexico. Their empire was huge when the Spanish conquistadores arrived in 1519. Hernán Cortés conquered Mexico by capturing Moctezuma, the Aztec ruler, during the period of 1519-23 and founded a Spanish colony lasting almost 300 years (Mexican Embassy, 2002).

During this period, the conversion of the Indians to Catholicism began as well as the elimination of ancient beliefs. Catholic priests arrived to spread their religion among those who they considered infidels or non-believers. The Holy Office of the Inquisition was enforced to investigate and punish, using very cruel methods against those suspected of not being faithful Catholics. Friar Bartolomé de las Casas protected indigenous rights and thanks to his tenacity and dedication the New Laws of 1542 abolished slavery and recognized human rights and their right to property. Nine years later, the first university of the American mainland was opened in Mexico City.

Father Miguel Hidalgo proclaimed independence from Spain on September 16, 1810. In 1822, after defeating the Spaniards, Agustín de Iturbide was proclaimed Emperor of Mexico. Texas declared its independence from Mexico in 1836, starting a war between Mexico and the United States. By 1847 Mexico was defeated and as a consequence lost half of its original territory, including the present states of California, Arizona, New Mexico, and Texas. In 1859, president Benito Juárez established the separation of the Church and the State. Three years later, the French Emperor Napoleon III established an empire under the Austrian prince Maximilian of Hapsburg.

Mexico's social and economic problems resulted in a revolution that lasted from 1910-1920 giving rise to the 1917 constitution. The PRI party was formed in 1929 and controlled Mexico's national government until the year 2000. The July 2000 elections brought a change to Mexican politics. Vicente Fox, an opposition candidate from the PAN ended more than 70 years of PRI rule after winning the elections (History Channel, 2004; Background Notes on Countries of the World, 2003; Presidencia de Mexico, 2004).

Communications Environment

Mexico's constitution provides for freedom of speech and the press. Typically, the government respects these rights, and the mass media are not subject to formal censorship by any governmental agency. Currently, the media are freer and have more independence than they had ever had (PR Passport, 2004). Mexico became one of the first Latin American countries to pass a freedom of information law in June 2002. This law is among the more progressive freedom of information laws found anywhere. It includes a number of innovative features, strong process guarantees, and it prohibits classifying information needed for the investigation of grave violations of human rights

or crimes against humanity (Mendel, 2003). In 2004 Freedom House reported that Mexico is considered a free country when it comes to political rights and civil liberties.

According to the 2004 PR Passport report, Mexico has a total of five news agencies, over 300 newspapers, two main television networks and close to 700 television broadcast stations. Mexico's cable television is dominated by Cablevisión, Cablemás, and Megacable. There are also 25 radio networks with a total about 1,500 radio broadcast stations (AM, FM, and shortwave). The five news agencies are: Notimex, Infomex, Noti-Acción, Notipress, and Agencia Mexicana de Información. Of all these, Infomex is the largest in the country and also has foreign correspondents.

Of the over 300 newspapers, there are about 10 which are considered national. Mexico City dominates the market with more than 30 newspapers. Among the most influential are *La Reforma*, *El Universal*, *Excélsior*, *El Financiero*, and *La Jornada*. *El Nacional* is the official newspaper of the federal government and the largest newspaper group is the Organización Editorial Mexicana (OEM) owning more than 90 newspapers in the country. The second largest is Novedades Editores. Most major newspapers have Web sites.

The government regulates television and radio. The government authorizes the production of programs on state-owned networks as well as on a number of commercial networks. Advertising financially backs all commercial stations. Mexican television stations also represent more than 25 percent of all stations in Latin America, which are affiliated to Telesistema Mexicano—Televisa. However, Televisa has been experiencing major competition ever since Televisión Azteca with 179 stations began broadcasting. Imevisión is a state-run station with two national television networks via satellite. The

government also operates Televisión de la República Mexicana and Televisión Cultural de México broadcasting news, education, and cultural programming to rural areas. (PR Passport, 2004). According to Bills (2004), Televisa, ranked number one, and TV Azteca ranked number 2. The two organizations own music companies, publishing units, soccer teams, and Internet portals in Mexico and the United States.

Mexico has more than 20 radio networks. These include Radio Cadena Nacional (National Radio Network), Organización Impulsora de Radio (OIR), Agentes de Radio y Television (ARTSA). The government runs the Instituto Mexicano de la Radio (IMER), Radio México, and Radio La Hora Exacta. The Education Ministry controls Radio Educación and the National Autonomous University of Mexico runs Radio UNAM. New media such as the Internet is expected to continue to grow reaching numbers of about 12 million users by the end of 2004 (Internet World Stats, 2004).

Teléfonos de México (Telmex), Mexico's former telephone monopoly was privatized in 1990. Telmex was sold to a consortium of Mexican Investors headed by Carlos Slim, Southwestern Bell, and France's Telecom. Since then, Telmex has made an attempt to improve its services and has increased the number of telephone lines and telephones for the general population (Background Notes on Countries of the World, 2003).

Organization of Thesis

This thesis comprises six chapters:

Chapter I—Introduction: this chapter introduces the objectives of the study as well as background information on the diffusion of the Internet in Mexico. This chapter also addresses Mexico's geographic location, demographic profile, government, economy, history, and communications environment.

Chapter II—Internet in Mexico: this chapter provides in detail how the Internet diffused in Mexico. It provides figures on Internet users worldwide, in Latin America, and Mexico. It also addresses the topics of infrastructure, telephony, and Mexico's government initiative to diffuse the Internet to the majority of its population: e-mexico. It also looks at how education affects diffusion.

Chapter III—Literature Review: this chapter concentrates and looks at previous literature written on the subject of Internet diffusion. It also looks at barriers to diffusion in developing countries taking into consideration factors such as income, education, and language among others.

Chapter IV—Theoretical Background: this chapter establishes the theoretical framework used to conduct the study. It takes a look at the origins of the diffusion theory, its elements, and characteristics. It also takes a look at how communication channels and their components affect the diffusion process. It also addresses the tipping point and critical mass concepts. The hypotheses are also included at the end of the chapter.

Chapter V—Methodology: this chapter explains the methodology of the study. It explains how the survey questions were formulated, the timeframe for the study, the collection of the sample, and the process used to analyze the data.

Chapter VI—Findings and Conclusions: this chapter addresses and presents the findings and conclusions of the study as well as a summary of the findings, suggestions, and recommendations for further research are also proposed.

CHAPTER II

INTERNET IN MEXICO

Internet Background

The Internet, according to Montero and Stokols (2003), was introduced in 1965. It operated by the use of a low-speed telephone line wiring a TX-2 computer in Boston to a Q-32 in Los Angeles. This became known as a Wide Area Network (WAN). Four years later, it became known as the Advanced Research Program Agency by promoting the first network installation code called ARPANET. The ARPANET connected the Massachusetts Institute of Technology (MIT), the University of California at Los Angeles (UCLA), and the British National Physical Laboratory (NPL). At its inception, there were about 20 universities and government research centers connected to the ARPANET.

Then, in 1989, the ARPANET led to the Internet. The Internet was designed to be a “decentralized web of computers” (Montero and Stokols, 2003, p. 61) where all nodes have the same structure and importance within the Web. In 2004, there were about 61 million Americans online. Out of those with Internet access, 92 percent send e-mail, 72 percent get news, and 84 percent use a search engine to find any kind of information (Plunkett Research, 2005).

Technologies, such as the Internet, have revolutionized the way society receives information and data. Advances in computer software, telephony, and the convergence of technology have allowed information to become available to anyone who can log in and get online. According to Burnett and Marshall (2003), the Internet “converges media forms into networks and simultaneously different modes of communication” (p. 45). The Internet and its capabilities have forever changed the way information is viewed and shared among society. The Internet took most of the world by storm as soon as it became easier to use and service providers made it more accessible and affordable to get online.

Internet supporters argue that this medium has the potential to propel globalization. This claim is still debatable due to the fact that different countries behave differently and perceive things each in a very unique manner. Globalization, according to Gibbs, Kraemer, and Dedrick (2003) deals with the “interconnectedness of the world through flows of information, capital, and people facilitated by trade and political openness as well as information technology” (p. 5). As previously stated, different social, economic, and individual outcomes will make it hard for the Internet to truly be the same in every country. Even though it is a worldwide phenomenon, the Internet is still in its infancy and has yet to be developed and show the extent of its capabilities.

Goodman, Press, Ruth, and Rutkowski (1994) agree that if the Internet were a stock, most likely, it would be considered an exceptional success. Following this upward spiral trend, it is obvious that the Internet is one of the fastest diffusing information technologies to date. However, this trend of diffusion has only been reached by developed nations with the resources, the education, and the infrastructure to handle it. According to Wolcott and Goodman (2003) even though the Internet is a phenomenon,

“how an individual person or organization, perceives and uses the Internet depends heavily on local, legal, technological, economic, political, and social conditions” (p. 557). Since the Internet is so new and so different from other innovations, it is difficult to track. Attempts to track or measure the growth of the Internet have been put in place in the form of number of hosts, number of users and the like. However, due to its newness, this kind of measuring cannot capture a country’s individual experience nor fully explain certain diffusion patterns (Wolcott and Goodman, 2003).

Globally, the Internet is catching on. A report Internet World Stats (2005) predicts that about one billion people will have access by 2005. The same report indicates that by the end of 2000, there were about 414 million people connected to the Internet. The United States, along with other developed nations, leads the way in number of users. The United States has played the leader role in providing innovations associated with the Internet. According to A Nation Online (2002), a report of the National Telecommunications and Information Administration (NTIA), the United States has about two million new Internet users per month.

Developed European and some advanced Asian economies have also been able to develop the Internet and to diffuse it among its citizens. About 80 percent of the users are in the developed world. According to Leavey (2003), two out of five persons have access in the developed world, compared to one in 50 in the developing world. Clearly, these countries will benefit the most from major breakthroughs in technology as they are currently on top of the technology game. Table 2.1 illustrates the world distribution of Internet users.

Table 2.1

2005 World Internet Users

REGION	POPULATION (2005 EST.)	LATEST INTERNET USAGE	USER GROWTH (2000- 2005)	PENETRATION (% POPULATION)	% OF WORLD
Africa	900,465,411	12,937,100	187%	1 %	2%
Asia	3,612,363,165	266,742,420	133%	7 %	33 %
Europe	730,991,138	230,923,361	124 %	32 %	28 %
Middle East	259,499,722	17,325,900	228 %	7 %	2 %
North America	328,387,059	218,400,380	102 %	67 %	27 %
Latin America/Caribbean	546,917,192	55,279,770	210 %	10 %	7 %
Oceania	33,443,448	15,838,216	107 %	47 %	2 %
TOTAL	6,412,067,185	817,447,147	126 %	13 %	100 %

Source: Internet Usage Statistics—The Big Picture. Available:

<http://www.internetworldstats.com/stats.htm>

On the other hand, developing countries, like those in the majority of Latin America, are in the dark because technologies and the Internet have not diffused massively. According to Kirkman (2001), in the developing world, the Internet has not penetrated and reached the total population. Rural areas are usually left untouched by technology and innovations. In urban settings, typically those with access to the Internet are the wealthy and privileged. Moreover, the Internet follows “lines delineated by income, gender, social standing, political power, and race within most communities” (p. 192).

The diffusion of the Internet in Latin America has been gradual for the majority of people. As developing countries, their main concern is to try to survive and provide for all their citizens. Governments have to deal with poverty, feeding the hungry, and providing adequate health services and education. This situation is not favorable for thinking about technology, but as these countries realize the importance of the Internet, they are doing their best to adopt and diffuse it to as many as possible. In so doing, these countries will contribute to the explosion of users predicted to reach the 1 billion in 2005. Table 2.2 illustrates totals for Internet usage in Central and South America while table 2.3 reflects Internet usage in South America.

Table 2.2

2005 Internet Usage in Central America

COUNTRY	POPULATION 2005	INTERNET USERS LATEST DATA	USE GROWTH (2000-2005)	% POPULATION (PENETRATION)
Belize	291,904	30,000	100 %	10 %
Costa Rica	4,3001,172	800,000	220 %	19 %
El Salvador	6,467,548	550,000	1,275 %	9 %
Guatemala	12,328,453	400,000	515.4 %	3 %
Honduras	6,569,026	168,600	321.5 %	3 %
Mexico	103,872,328	12,250,000	351.6 %	12 %
Nicaragua	5,766,497	90,000	80 %	2 %
Panama	3,074,146,	120,000	166.7 %	4 %
TOTAL	142,671,074	14,408,600	347.8 %	10 %

Source Internet usage stats for the Americas. Available:

<http://www.internetworldstats.com/stats2.htm>

Table 2.3

2005 Internet Usage in South America

COUNTRY	POPULATION 2005	INTERNET USERS LATEST DATA	USE GROWTH (2000-2005)	% POPULATION (PENETRATION)
Argentina	37,584,554	5,600,000	124 %	15 %
Bolivia	9,073,856	270,000	125 %	3 %
Brazil	181,823,645	18,660,650	273 %	10 %
Chile	15,514,014	4,000,000	128 %	26 %
Colombia	45,926,625	2,732,200	211 %	6 %
Ecuador	12,090,804	569,700	217 %	5 %
French Guiana	194,277	3,200	60 %	2 %
Guyana	877,721	125,000	4,0667 %	14 %
Paraguay	5,516,399	120,000	500 %	2 %
Peru	28,032,047	2,850,000	14 %	10 %
Suriname	460,742	20,000	71 %	4 %
Uruguay	3,444,952	1,190,120	222 %	35 %
Venezuela	24,847,273	2,310,000	143 %	9 %
TOTAL	365,389,570	38,450,870	169 %	11 %

Source Internet usage stats for the Americas. Available:

<http://www.internetworldstats.com/stats2.htm>

Although these figures are impressive and encouraging, they do not come close to the 67 percent penetration rate in North America (Internet World Stats, 2005), which translates, roughly to 183 million (http://www.nua.ie/surveys/how_many_online).

Internet in Mexico

In Mexico, the Internet was born in 1987 when the National University of Mexico (UNAM) established the first connection with BITNET through the main campus of the Monterrey Institute of Technology (ITESM) to a server in San Antonio, Texas (Palacios, 2003). The National Council for Science and Technology financed MEXNET, Mexico's first national backbone. This allowed Mexico to become part of the first national network for the Internet (Thomasson, Foster, and Press, 2002). The National Technology Network (RTN) became the initial network provider for businesses. The backbone linked the regional online networks and connected the United States and Mexico.

The Network Information Center (NIC) Mexico is the organization in charge of assigning and administering the country code top-level domain that consists of two letters assigned to each country (NIC, 2004). Some of its functions include providing registrations and information for the domain (.MX), assigning IP addresses, and the maintenance of databases. According to their Web site, the center was created on February 1, 1989 when the Instituto Tecnológico de Estudios Superiores de Monterrey (ITESM-Monterrey Campus) established the first direct Internet connection. At the beginning, there were not many domain names registered. In 1992, there were only 45. Forty belonged to academia and the other five were commercial. After the WWW boom in Mexico, the numbers began to increase immediately and new categories were introduced. There are six categories registered under the .MX domain. These are:

.com.mx (any entity can use this domain), .gob.mx (any government institutions-federal, state, local), .net.mx (any service provider in Mexico), .edu.mx (any educational or research institutions), .org.mx (any non-for-profit institutions), and .mx. As of October 2004, there are about 102,000 domain names registered. Table 2.4 below illustrates the breakdown of each category.

Table 2.4

.MX Registered Domain Names as of March 16, 2005

DOMAIN NAME	TOTAL
.com.mx	105,097
.gob.mx	2,570
.net.mx	507
.edu.mx	2,689
.org.mx	4,671
.mx	173
TOTAL	115,707

Source: Network Information Center-Mexico. Available:

<http://www.nic.mx/es/Estadisticas.Dominio?type=0>

According to a report by AMD (2003), a much higher percentage of the population has a computer than has access to the Internet. The same report compares how at the beginning of the Internet era about five percent of the population owned a computer but only .04 percent accessed the Internet. In 2002, it was estimated that the Internet penetration ranged from 3.5 million (Central Intelligence Agency World Factbook, 2003) to 4.7 million (AMD, 2003). This small number of Internet users also dealt with the price of computers. Although the market share for PCs in Mexico is highly competitive, one of the biggest barriers to increased PC use is a low annual average income (Fredell, 2002,). Since this poses a problem, many manufacturers and retailers

have developed strategies to increase demand and provide financing options in order to increase sales.

Internet World Stats (2005) estimates that Mexico has about 12 million Internet users representing about 12 percent of the total population. Moreover, a 2004 report by the Internet Mexican Association (AMIPCI) concluded that that 47 percent of people under 25 were Internet users, 42 percent of people between the ages of 25 to 45 were connected, and 11 percent of people over 45 had access to the Internet. This same report projected that by the end of 2004 Mexico will have about 14.9 million Internet users. Of these, 26 percent use it for e-mail activities, 25 percent to do research online, 17 percent to chat, and 14 percent for education purposes (Instituto Nacional de Estadística, Geografía e Informática, 2003).

According to the World Bank (2004) about 54 percent of Mexico's 104 million people live in poverty, with incomes of less than \$4 a day. The average per capita income is \$5,900 a year. Mexico's population lives with huge discrepancies in wealth between the different social classes and ethnic groups. This contributes to the problem of Internet access and the digital divide that exists. The top 20 percent of the Mexican population are referred to as the elite group and they control 60 percent of the nation's income (Gallegos, Pool, and Anderson, 2001). This type of economical imbalance is an obstacle that prevents middle-class and low-income Mexicans from gaining Internet access; they lack purchase power to support a high-tech industry. People with money control Internet technology and a line is drawn between the rich and the poor. A recent study concludes that more than 60 percent of access to the Internet is outside the home in Mexico, (Chacon, 2004). Aside from social status, there are other factors affecting the

diffusion of the Internet in Mexico. Some of these are infrastructure, emerging technologies such as cellular telephones, agreements such as NAFTA, government intervention through programs such as e-Mexico, and education.

Infrastructure

According to Haymond (1998), “The telecommunication infrastructure, in most Latin American countries, is not capable of handling the required information load” (p. 116). This is a crucial aspect for the diffusion of new technologies such as the Internet. Also, since the infrastructure is not in place to hold the amount of information being distributed, and the equipment needed to deliver the information is expensive for both governments and citizens alike, it is difficult to build an information society. Moreover, the Internet is also considered a kind of “technological infrastructure” (Lucas and Sylla, 2003, p. 4) and it competes with other projects such as roads. The lack of telecommunication services is a huge problem in Mexico and Latin America. Rural areas are predominant in these countries and are not equipped to deal with the technological innovations. Capital cities and major urban centers in these countries are where the advances seem to be noticed and where money is spent the most. The larger, urban markets in Mexico make the most profit for the Internet industry compared to rural settings where technology is near non-existent (Thomasson, Foster, and Press, 2002). These urban centers are the ones pushing the penetration levels higher, but at the same time are extremely exclusive. Urban users tend to be male, upper class, professional, white, and somewhat proficient in the English language (Gomez, 2000).

Although these countries are trying to play catch-up with developed countries, their number one source of access to the Internet is via telephones. Dial-up access, for

the most part, is the norm in Latin America. Kirkman (2001) argues that, “Since most Internet access is still delivered over dial-up telephone connections, intuition would suggest that monopolistic and duopolistic arrangements have an adverse impact upon the price of Internet access” (p. 198). This argument holds true for Mexico. As the government begins to deregulate its’ telephone monopolies, and more private companies are appearing on the landscape, the infrastructure is bound to improve and offer better services to the population. Still, it is a long and stressful process because in many places, especially in rural areas, it could take up to a year to get a telephone line. Thus, the growth and diffusion of information technology is extremely slow (Everett, 1998). A survey by AMIPCI, the Mexican Association for the Internet, found that about 42 percent prefer dial-up connection to the Internet. Eighteen percent prefers DSL, and 12 percent prefers a cable connection (AMIPCI survey, as cited on Salazar, 2004). Table 2.5 illustrates the number of residential phone lines in Mexico.

Table 2.5

Residential Mexican Phone Lines

2000	2001	2002	2003	2004
9,034,054	10,063,040	11,069,019	12,220,291	12,578,781

Source: COFETEL: Dirección General de Tarifas e Integración Estadística. Available:

http://www.cofetel.gob.mx/html/5_est/graficas/ineastelefonicas_03.html

As expected, the numbers of traditional landlines is low. Out of every 100, only 14.7 have a telephone at home (Minges, 2003). In other words, an estimated 85% of the population does not have access to a phone. Telmex, Mexico’s former telephone

monopoly was privatized in 1990 and purchased by Carlos Slim. Under his direction, Telmex has made an attempt to improve its services. According to an article on the *Economist* (1999), people would wait on a street for a Telmex car to pass, flag it down and bribe the technician to repair the line. When Telmex was sold, it had about five million lines available to serve more than 80 million people (Roberts, 1996). Services were extremely slow, expensive and unreliable. In addition to physical infrastructure impediments there were also demographic factors that had to be considered. In Mexico there are still a lot of rural areas where there are no paved roads, no existing telephone lines nor cabling (Zehr, 2002).

By the end of 2002, Telmex had turned around years of neglect and irresponsibility and was considered one of the largest national backbone providers for Internet services along with companies such as Avantel and Alestra. Moreover, Telmex was considered the largest Internet Service Provider and telephone provider (Thomasson, Foster, and Press, 2002). Other service providers include Intertext, Alcatel, AT&T, Axtel, Comuni-k, Internet sin Cables, Ipsobox, S.A. de C.V., Iusacell, Kiotec Business, Lipp Captial, S.C., Netaxes, Oficel Webserver, Protel, Redes Internet Guanajuato, Satelites Mexicanos, Sicom, SkyOnline, Teleazteca, S.A. de C.V., Merored, and Telefónica Movi Star (AMIPCI, 2004).

In Mexico, the telecom infrastructure is still under construction (Palacios, 2003). Of course, if compared to that of the United States, it may seem a bit small and fragile. However, when compared to others in Latin America, Mexico ranks highest among them. Mobile telephones and associated technology have allowed people to bypass the cumbersome process of getting a traditional landline.

Cellular (Mobile) Telephones

Mobile communications, like cellular phones, have been successful in replacing the traditional and troublesome phone services. As these services become more advanced and offer alternatives, the population will enjoy access to the Internet without having to pay high fees or even having a computer. This booming cellular market in Latin America could increase Internet access. According to Rodriguez (2001), “Online trade in the Latin America region is expected to be worth \$72 million by 2005 and this trade will be largely dominated by Mexico and Brazil” (p. 12).

A report by the International Telecommunications Union (ITU) concluded that Mexico had 26 million cellular users by the end of 2003. This placed Mexico third after the United States and Brazil (ITU, 2003). This approximation is close to the actual number of cellular users in 2003. A recent report sheds a robust number in 2004. According to the Comisión Federal de Telecomunicaciones (COFETEL), by the end of May, Mexico had about 33 million cellular users. According to a report by AMD, mobile telephony has grown faster than the Internet in Mexico. Due to the cellular telephone’s growth, this has further increased the penetration of the Internet. Mexico has the second highest penetration of Web-enabled mobile phones after Chile among all Latin American countries (AMD, 2003).

As of August 2004, the cellular market in Mexico offers better packages that are more attractive than some of their U.S. and Latin American counterparts. Also, the majority of users prefer a pre-paid system that gives them control and the ability to better monitor time spent on the phone (COFETEL, 2004). These pre-paid cards allow Mexicans access to the Internet at a lower price. Access could cost from six to 13 cents

per minute, depending on the total cost of the card. Another alternative allows nightly and weekend service for students for \$58 to \$85 pesos (Chacon, 2004). Table 2.6 illustrated the number of mobile phone users in Mexico.

Table 2.6

Mobile Phone Users (1990-2004)

Year	Users (thousands)
1990	63.9
1991	160.9
1992	312.6
1993	386.1
1994	571.8
1995	688.5
1996	1,021.9
1997	1,740.8
1998	3,349.5
1999	7,731.6
2000	14,077.9
2001	21,757.6
2002	25,928.3
2003	30,097.7
May-04	32,712.6

Source: COFETEL, Dirección General de Tarifas e Integración Estadística, (2004).

Available:

http://www.cofetel.gob.mx/html/5_est/celulares/telecelular.htm

As the government opens up and allows competition, trust, and freedom, the number of potential Internet users will continue to thrive. For example, a Freedom House Study (2000) concluded that the population in Mexico lives with a moderately restrictive Internet access. The same report indicates that about 40 percent of the countries in the world have moderately restrictive Internet use, including South Korea and India. In

comparison, 46 percent of the nations have the least restrictive access to the Internet. These include countries such as the United States, Germany, and Great Britain (de Beer and Merrill, 2004).

NAFTA

The North American Free Trade Agreement (NAFTA) played an important role in the growth of the Internet in Mexico. NAFTA is a regional agreement between the Government of Canada, The Government of the United States of America, and the Government of the United Mexican States to implement a free trade area (What is NAFTA?, 2004). This agreement was established in January of 1994 and centers around three main points:

- 1) The entrance of U.S. and Canadian capital into Mexican telecommunication companies
- 2) Development of the principle that permits Mexican companies to enter the U.S. market (with about 30 million Latinos)
- 3) The end of large telephone and television monopolies (Mont, 1999. p. 93).

NAFTA promotes the cooperation of international telecommunications regulations. This move gave Mexico the opportunity to partner with Canadian and U.S. companies to build a more reliable and stable infrastructure much needed in its telecommunications market.

Government

The government is the first source people turn to whenever they need answers and information to help them understand and become aware of their situation and their place in the world. Governments are supposed to educate, inform, and take care of their citizens. In Latin America, years of oppression, unstable democracies, militaristic states,

and institutionalized dictatorships have taken their toll on citizens. Now, however, governments are starting to actively look for ways to change their courses of action and reverse their patterns. Proactive thinking has allowed innovation and technology to come into the forefront of these countries. For example, in Mexico, according to Smith and Forest (2001), “Mexican mogul, Carlos Slim, Latin America’s richest man, thanks to his ability to spot lucrative investment opportunities in the 1990s, when Mexico began privatizing state assets, acquired a controlling stake in the telephone monopoly Teléfonos de México” (p. 161). This move allowed him to turn around the former monopoly and make it profitable while providing access to more people. Mexico’s government has taken the initiative to move the country toward the next step of diffusion. President Fox in March 2001 called for a six-year, \$400 million program (Thomasson, Foster, and Press, 2002).

Although technology and the Internet are slowly diffusing in Latin America, Mexico and Brazil seem to be at the front of the pack. Brazil has been extremely favored by Spain’s Telefonica and by an open government supporting technology and innovation. According to Rich (2000), France’s Global One and a national long-distance carrier, Embratel Participacoes, are developing Web-host services to keep up with the needs of their existing clients and to drive Internet traffic across their data. However, Chong and Micco (2003) point out that if these Latin American countries were to explore and invest in information technologies to promote development, they would have to understand how these technologies work and determine if they are not wasting their money.

e-Mexico

In March 2001, Vicente Fox, Mexico's president launched e-Mexico. This ambitious \$400 million initiative has the goal of taking the Internet to every one of Mexico's citizens (Koss, 2001). The president believes that Mexico can truly join the ranks of developed nations by providing all citizens, organizations, and businesses with the tools to access the benefits of the networked economy (James, 2002). Its main goals are to develop Mexico's IT and communications industry, to promote an adequate regulatory framework for the use of electronic media and e-commerce, to provide IT and Internet education in all schools, and to digitize government services (Avila, 2002). Spinetta (2002) found the following:

The strategy of e-Mexico is to increasingly offer services in the way of education, health, and business training online, preparing a new generation of citizens. At present, most Mexican Internet users are between 25 and 34 years-old, and use the Internet for an average of 11 hours per week, but only 13 percent of these users is from lower-income groups (p. 2).

The main categories of e-Mexico can be classified into the following sub initiatives: e-economy, e-education, e-government, and e-health, each with distinctive objectives and working groups. The government created a committee to oversee the coordination of e-Mexico. The Secretary of Communication and Transport (SCT) heads this committee and the Minister of Economics rank second in the list. According to Avila (2002), the e-Mexico program relies on 17 strategies incorporated into the seven principal categories of development: telecommunications infrastructure, IT infrastructure, e-government, e-health, e-education, e-commerce (for both small and medium-sized

enterprises-SMEs), and e-commerce legal framework. Some of these strategies include developing a domestic IT industry, providing training programs for SMEs on the benefits of IT, developing skills in both managers and staff to administer digital supply chains, reforming legislation to support the use of electronic, optical, or any other IT media to change procedural law, education, health, human rights, and to use the Mexican government as a model for the use of IT.

Considering this huge undertaking, the Fox administration has set aside 25 years to complete e-Mexico. According to the e-Mexico Web site, this national system is a national project, not an administration initiative. By this, they mean that the project is ongoing regardless of who the next president is, hence assuring Mexico participation in the worldwide information society. This project will allow an integrated, interactive society, where every citizen can live in an environment full of equality and opportunities both domestic and abroad while respecting and preserving Mexico's multicultural heritage (e-Mexico, 2004).

Once fully executed, e-Mexico is expected to be the largest e-Learning network in North America and one of the largest such online programs in the world (Avila, 2002). This effort by President Fox shows his commitment to bring Mexico into the 21st century with a more reliable, responsible and clear vision for its citizens. According to Scheeres (2002), the less the citizens interact with public servants, the less corrupt governments will be.

Education

Another factor influencing the diffusion of the Internet in Mexico is education. The educational system in Mexico is sometimes inadequate and does not follow a

consistent, systematic curriculum. The quality of education is at times low, especially in the rural areas of Mexico where illiteracy rates are at 21 percent; this is double the national average. On the other hand, the richest 10 percent have had 12 years of education, and the poorest 10 percent have only had an average of two years of education (“Cramming them in,” 2002). Most of the support for rural schools comes from the people who live in the area. The community pays for classrooms and teachers and small committees are formed to address problems that may occasionally arise. According to Zehr (2002), city schools tend to get more funding and attention because the principals and administrators live close to the education offices and have a more direct access to their representatives and administrators.

President Fox has committed to raise education spending from 4.5 percent to 7.5 percent of Mexico’s GDP (Cramming them in, 2002). Also, Fox plans to “improve four hemispheric projects designed to promote equity and quality in education, strengthen secondary education, bolster teacher training and expand to improve education indicators” (Education-Key to Development, 2003, p. 54). In order for Internet technology to take place and prosper in Mexico and its educational system, a considerable amount of funding is needed. Eighty percent of funding for education comes from the federal government (Zehr, 2002). According to Wolf, Navarro, and Garcia (2001), as the Internet increases in its use as a learning tool in schools with computers, finding cost-effective ways of gaining access to the Internet is key. However, one of the biggest problems is that most of the access and training in technologies related to the Internet takes place at universities and higher education institutions. The problem

here is that the majority of the population does not have access to these institutions (Gallegos, et al, 2001).

The e-Learning component of e-Mexico proposes to connect more than 17 million schools, libraries, and digital community learning centers within the 2,500 municipalities, creating a more unified national education network reaching millions of people daily (Avila, 2002). Another factor that is tied to education is the language barrier. Many indigenous people do not speak Spanish. Also, the majority of Mexicans do not speak any language other than their native Spanish. Yet, a lot of the software and the interfaces used are in English (Dholakia, Dholakia, and Kshetri, 2003). However, this concentration of the English language being used has not stopped Mexico from making the Internet more accessible and understandable. Mexico's Internet technology offers several Spanish language portals and search engines, such as Yupi, T1MSN, and Yahoo Mexico (Thomasson, Foster, and Press, 2002).

The Zapatistas

The reality in Mexico is that Internet adoption and access is limited to a minority of the people. Only those who are situated in a privileged position of access to it benefit the most. There have been exceptions to this rule. Marginalized communities that have been ignored for years have just recently found a niche and a voice to describe their chaotic and precarious living situation. Through collaborations, they have been vocal about their issues and consequently have been getting attention from people of other nations and at last, from their own government. In Chiapas, Mexico, the Ejército Zapatista Liberación Nacional (EZLN) received a lot of attention from the world not only because of their struggle, oppression, and resistance to the Mexican government, but

also because they were able to digitize their revolution. As soon as its movement gained strength from both domestic and international followers, their movement took cyberspace by storm. The Zapatista Army of National Liberation was able to transmit its message massively to the world (EZLN, 2005). People became aware of their substandard living conditions, of their government's neglect, and of years of oppression. This example of an indigenous group using technology and the Internet to aid them in their pursuit of equality and justice serves as a reminder that the Internet and technology are within reach no matter what stage of development a given country is in.

CHAPTER III

LITERATURE REVIEW

The Internet as an innovation, for the most part, has diffused rather quickly among people in the world. The Internet has opened cyberspace to anyone with access to the hardware and software needed to connect to the backbone networks. In this same manner, the Internet and its innovativeness has changed everyday life for the people with access, has captured the imagination of society, and has also caught the attention of the media (La Rose and Hoag, 1996). The formulation of diffusion studies began in the 1940s. In the 1950s, these studies proliferated in different fields. By the 1960s, the research expanded into developing countries. There was an introspective criticism of diffusion studies by the end of the 1970s. The diffusion studies done during the 1980s focused on new media technologies that were interactive, and during the 1990s diffusion studies started focusing on the Internet (Rao, 2002).

La Rose and Hoag (1996) argue that the Internet as an innovation is one of the most complex ever introduced on a large scale. As a result, researchers of diffusion have incorporated the Internet into their study fields. For example, Leung and Wei (1999)

believe that the growing diffusion research provides a perspective to understand social change, especially the role of technology in the changing process. Rogers' (2003) studies on diffusion have also attempted to decipher the diffusion and adoption of new ideas, practices or newly introduced information and communications. Studies done in the late 1990s also dealt with how an innovation experiences some type of failure before it can ever make any progress toward a successful implementation or diffusion (Fidler, 1997).

Rogers and Singhal (1996) agree that diffusion is fundamentally a communications process. In this process, mass media and interpersonal channels play crucial persuasive and informing roles. Because of the nature of diffusion research, it has been widely studied across a broad spectrum of disciplines, which include engineering, management, marketing, social sciences, and agriculture among others (Rogers, 2003; Higgins and Hogan, 1999). Nonetheless, Schneider and Foot (2004) believe that when it comes to the Internet scholars need to use both familiar methods and also develop innovative approaches accounting for the uniqueness of the Internet. Following this frame of thought, this study will look at how diffusion has played a critical role in the development and adoption of the Internet. Of course, there are a lot of factors that either facilitate or prevent diffusion and adoption of technologies such as the Internet. There are pros and cons of adopting the Internet. There are barriers and benefits to diffusion, and to some degree characteristics of adopters influence the rate of diffusion as well.

Diffusion

If society is to understand how the Internet has diffused, those studying it need to combine old and new methods to get to the core of diffusion. According to Johnson (2001), "researchers have described innovations in terms of their attributes, or perceived

characteristics, based on respondents' subjective judgments, which play a significant role in the diffusion of innovations" (p. 345). Some of the more traditional methods used to decipher the Internet and the Web has been surveys (Yun and Trumbo, 2000), experiments (Iyengar, 2002), and focus groups (Stromer-Galley and Foot, 2002) among others. Schneider and Foot (2004) identified three sets of innovative approaches when it comes to Web-related and Internet research. The first one uses a rhetorical analyses of Websites based on texts and images (form and content) to contribute to the understanding of the communicative aspect of the Web. The second approach is structural. Structural studies use individual Websites as a unit of analysis focusing on the structure of the site. This particular approach enables understanding of network structures on the Web. The third is sociocultural. This approach highlights the attention to hyperlinked context and the aims and strategies of the Website—in other words, Web production of sites, its goals and identity. As the Internet diffuses to more people, the number of approaches and those studying it will continue to develop as well.

A study by Kumar, Ganesh, and Echambadi (1998), concluded that diffusion patterns across countries vary and are influenced by characteristics such as mobility, labor force numbers, and cosmopolitanism. Other factors influencing diffusion among countries include timing of entry of the innovation, geographical proximity to where the innovation was originated, and cultural or economic similarity. Kumar et al. (1998) also identified the concept of time lag. This helps diffusion of innovations because potential adopters in the lag country have extra time to understand the innovation's relative advantage, judge if its compatible with their needs, try the product because of possible lower prices, and observe the innovation more through increased availability in other

markets or mass communication. Developing countries that have been successful in diffusing information and communication technologies (ICTs) such as the Internet have the ability to “catch up, keep up, and get ahead” (Martínez-Farías, 2003, p. 13).

Along the same lines, Golder and Tellis (1998) described the process of adoption of an innovation. According to their report, most consumers are usually informed about an innovation before purchasing it or acquiring it. At this stage, the media helps the innovation or the product as it is being introduced to the masses. Secondly, an innovation at first is expensive. Even though information about it is available, it is only attractive to wealthy consumers. As prices drop, the rest of the people respond. Lastly, consumers through observation learn that the latest, hottest innovation is expensive. However, if they wait long enough, they can get today’s hot item at a fraction of the price tomorrow.

Furthermore, Geroski (2000) argues that sometimes it takes a long period of time for new technologies to be adopted by those who are likely to benefit the most from them. The problem here is that the diffusion process is a social phenomena. People try to think before they act and this can be slow and unpredictable for some of them.

The Internet today is such a fascinating and constantly changing innovation that it has created its own market niche and evolution pattern. According to Wellman (2004), the Internet has evolved in three stages. The first age of the Internet was open-ended and infinite in scope. In this stage, the Internet was a technological marvel. “Communication dominated the Internet, by asynchronous email and discussion lists and by synchronous instant messaging and chat groups” (p. 124). Everybody was supposed to be connected, without boundaries, time, or space. During this first era, analyses were perfect. Internet

advocates considered it democratic and ignored how differences in power and status might affect interactions at different levels.

The second age of the Internet began around 1998. Government policymakers, commercial and academic interests realized the need for “systemic accounts of the Internet” (Wellman, 2004, p. 125). There were more Internet users and it was embedded more into everyday life. As it continued to grow, the Internet became a tool of the masses rather than the plaything of computer scientists.

The third age of the Internet started in 2004. It consists of more focused and theoretically driven projects. According to Wellman (2004):

The evolving personalization, portability, ubiquitous connectivity, and wireless mobility of the Internet are facilitating a move away from interactions in groups and households, and towards individualized networks. The Internet is helping each person become a communication and information switchboard, between persons, networks, and institutions (p. 127).

The diffusion of an innovation such as the Internet might seem as if happened overnight. However, it did not spread instantaneously. According to Rogers (2003) and Grubler (1996), an innovation follows an S-shaped pattern. The innovation then spreads out by means of a hierarchy to the periphery. This peripheral group learns about it and moves to adopt if it fits their lifestyle. Later, if it proves to be useful, others tend to imitate or adopt the innovation completing the cycle of diffusion.

Pros and Cons

The Internet has not been consistently used around the world. Developed and Third World countries have interacted with it differently. The growing body of Internet

and ICTs researchers have cited numerous reasons as to why people might accept the notion of the diffusion of the Internet and why others simply see it as something negative that might potentially hinder their lifestyle. First of all, a global digital divide exists. According to Balamounte-Lutz (2003), the New Economy will only reinforce the gap between rich and poor nations and will bring about inequalities within countries. Likewise, Martínez-Frías (2003) believes that if care is not taken to ensure ICT provision tailoring it to the group that needs it, there is a danger to increase and reinforce alienation and marginalization. Also, if the Internet and ICT facilities are available, they are restricted to urban areas and elites due to cost.

Nie, Hillygus, and Erbring (2002) have associated Internet use with negative social involvement, including less time with family and friends, less social involvement, and more loneliness and depression. Moreover, Haythornthwaite and Wellman (2002) claim that the Internet is a solitary activity, harmful to social interactions with others. These drawbacks or negative unintended consequences associated with the Internet might potentially hinder the diffusion of the Internet (Johnson, 2001). Another negative argument about the diffusion of the Internet is that it may not contribute to economic development the same way it did in industrial countries (Balamounte-Lutz, 2003).

On the other hand, Lenert (2004) believes that the Internet diffusion and ICTs can bring about positive changes and create new opportunities. In developing countries, access to the Internet and other ICTs may allow them to develop faster and perhaps ensure sustainability by preventing monopolies from forming and allowing participation of previously excluded groups through transparency (Balamounte-Lutz, 2003; Martínez-Frías, 2003). As far as social interactions diminishing because of Internet use, it has been

found that these negative associations are not valid (Kraut, Kiesler, Boneva, Cummings, Helgeson, and Crawford, 2002). A study by Chen, Boase, and Wellman (2002) also reported on the frequency of contact with relatives and friends face-to-face, on the telephone, and through email. They concluded that email was used most with friends than family and locally the telephone was used the most.

Baym, Zhang, and Lin (2004) argued that even though social Internet users had integrated it into their daily lives, “face-to-face communication clearly remained their dominant mode of interaction” (p. 306). Wellman (2004) concluded that Internet diffusion and use have not lured people away from in-person contact. Also, according to Hampton and Wellman, (2003) people with Internet access knew the names of three times as many neighbors, spoke with twice as many, and visited the homes of their neighbors at least once a day. Also, thanks to the diffusion of the Internet, those with access to it can have an opportunity to be exposed to information and ideas from outside their own national culture (Halavais, 2000) and could bring about social change (Lenert, 2004).

Despite the negative perceptions of opponents, the Internet has arrived and shows no signs of going away. It is slowly penetrating into developing countries that are learning to apply it to the best of their interests. Diffusion typically follows a pattern, however there are barriers that might prevent it from happening.

Barriers to Diffusion in Developing Countries

One of the most important barriers in a non-English speaking developing world is that the Internet’s language is English. Hongladarom (1998), Numberg (2000), Kiiski and Pohjola (2002) agree that the Internet is basically an American development, and it

naturally spread most rapidly among the other countries of the English-speaking world. Undoubtedly, the disproportionately high use of English on the Internet or the Web will continue to expand faster in English-speaking countries than in most other language communities. The dominance of the English language on the Web has made it a status symbol in many nations.

Cost is also imperative if a technology such as the Internet is to diffuse among a certain group. Bottomley and Fildes (1998), Maitland (1998), and Nunberg (2000) concluded that price affects the rate of adoption. Income is another factor. Kenny (2003) argues that 59 percent of the population in low-and middle-income countries is rural, compared to 24 percent in high-income economies. This disparity will slow the Internet from diffusing to Third World countries.

Most developing countries have neither the infrastructure nor the human resources necessary to fully exploit the potential of the Internet and ICTs (Martínez-Frías, 2003). Also, according to Sahay and Avgerou (2002) and the World Bank (2004), more than half the world's countries currently have a developing status. Most people in the USA had telephone and computer access prior to the Internet, making the cost of connecting to the Internet not a big issue. However, when it comes to less developed countries, the story changes completely. Telephone lines per capita average 2.6 per 100 people in low-income countries, where a large number of people also lack access to electricity (Kenny, 2003). Peha (1999) also asserts that in developing countries there are still vast areas with little or no basic telephone infrastructure. Because of this reason alone, the diffusion of the Internet is almost impossible to accomplish because in these countries most Internet access is still delivered over dial-up telephone connections (Kirkman, 2001). Also, aside

from technology issues and infrastructure, researchers of technology have identified fear as a possible barrier to diffusion (Gattiker and Howg, 1990). People might be fearful when it comes to technologies such as the Internet or computers simply because they have not been properly instructed on how these technologies work.

Education or the lack thereof is also a barrier to the diffusion of innovation. Evidence has shown that those who benefit the most from the Internet and ICTs are those who are better educated and highly skilled. They are hired in greater numbers and their pay differentials are increasing over unskilled, less educated colleagues (Autor, Katz, Kreuger, 1998). Yet another factor that might inhibit diffusion is that students are the first generation of professionals at their homes. Many of them do not have the support needed at home to buy or use computer equipment. According to Rodriguez (2001), students end up doing their homework and studying in the same place where the family gathers to eat and watch television. In contrast, the majority of students in the United States with access to the Internet use it for school research and schoolwork. These same students also use email and instant messaging to contact teachers or classmates about schoolwork (Lenhart, Simon, and Graziano, 2001).

Even though these barriers affect diffusion, there are also positive aspects that could potentially help development in Third World countries. First and foremost, Internet connections will mainly benefit government agencies, universities, and major industries (Nunberg, 2000) opening up commerce and research and development avenues with economic potential. Furthermore, Kiiski and Pohjola (2002) also believe that developing countries can benefit from the diffusion of the Internet by being able to communicate with other computers connected without regard for geographical location.

This capacity will help them disseminate information, will become a medium for interaction, and a possible market place for goods and services. In addition, Kenny (2003) believes that the Internet will provide a powerful new tool in the battle against global poverty by creating new jobs and by helping schools acquire new pedagogical tools. Therefore, the Internet and its diffusion appear to be a technology promoting growth and development.

According to McLellan (2001) the Internet and ICTs can lead to development and can also reduce world poverty. Consistent with this idea, Kripalani (2004) in his article of new technologies in India agrees with the notion that new technologies can ease chronic poverty. On the same token, Chambers (2004) details how new technologies and innovation can bring about equality, commerce and economic growth, human health, and education to developing countries. On a lighter note, Perse and Dunn (1998) argue that connecting to the Internet offers information, entertainment, electronic mail, and access to the World Wide Web (WWW). The services in question are more affordable and most offer computer buyers free software and several hours of free connect time. Of course these services and opportunities are most likely to occur in developed nations, but the opportunity for developing nations to enjoy such technology rewards seems a bit closer each day.

Another important advantage developing countries gain from the Internet is the opportunity for self-representation. Mohammed (2004) believes that small developing countries may self-represent on the WWW for purposes of international trade, investment promotion, preservation of national identity, and promotions of news from their point of view to a potentially international audience. This need to self-represent globally allows

nations to be positively represented, ending a cycle of underdevelopment and misrepresentations (Manley, 1987). However, developing nations and their governments have slowly implemented computerization and networks due to the high costs associated with technology (Jain, 2002).

The diffusion of the Internet in developing countries is following a similar pattern to that of the more developed nations. It is slowly diffusing and gaining momentum as more governments align their resources with the private sector to provide access to their citizens. There are many factors embedded in the diffusion process, some of which were mentioned above.

Those with access or knowledge of the Internet can have a tremendous effect on how others around them perceive the innovation. As previously stated, those who have first access to an innovation, in this case the Internet, tend to be upscale, better educated, and typically younger than non-adopters (Atkin and Jeffres, 1998). Previous research concluded that adoption of a new innovation is directly related to adoption of other technologies such as PCs, cable, and CDs (Reagan, 1987). A later study by Lin (1998) found a new kind of adopter: the likely adopter—typically a young, computer literate innovator who will adopt the new innovation only when his financial situation is more solvent.

The diffusion of the Internet in developing countries is happening slowly due to factors that were not an issue in the developed world. Most of the developing nations have to worry about infrastructure and the many divides: educational, economical, technological, and language among others. However, it is happening and it is becoming a reality to many people. As the Internet takes its place in the developing world, it can

potentially be a tool that can reverse years of oppression and bring about economic growth that would eventually give them a stronger voice and a new status in the international arena. As these nations observe and learn from more developed countries, they have the advantage to bypass the experimental stage and be at the same level as developed countries by closing the technology gap. Taking longer to adopt and diffuse the Internet among their people may create opportunities to compete at a much more leveled playing field. The diffusion of the Internet in developing countries can be a great equalizer.

CHAPTER IV

THEORETICAL BACKGROUND

Diffusion of Innovations

This study is based on the diffusion of innovations theory. According to Kim and Galliers (2004), using the diffusion of innovation theory to understand the growth of the Internet is key because this kind of research explores and explains why new innovations may diffuse quickly while others may not.

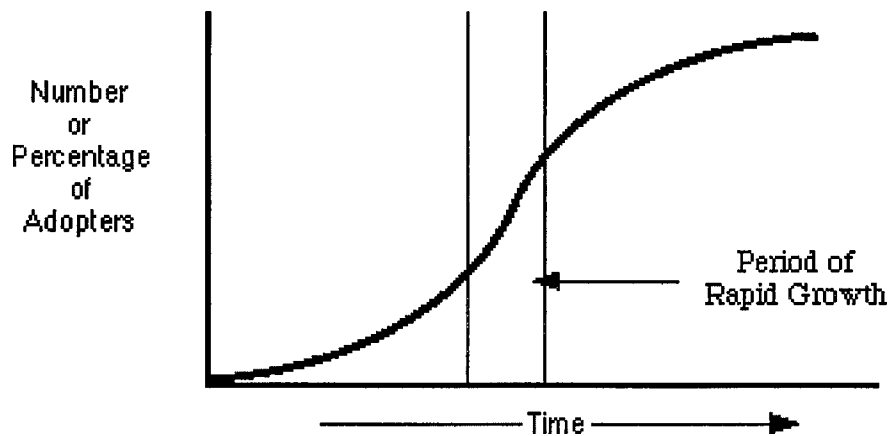
Rafaeli and Newhagen (1996) discussed the Internet and why communication researchers should study this technology. Rafaeli said that communication researchers needed to do so because the Internet is new, loaded with content, and has the potential to become a great business possibility. For example, having the ability to purchase or sell any imaginable object or service online. Also, everything related to it is a novelty, and is in constant evolution. There are always new gadgets on the horizon and the content always changes according to the needs of the culture. Rafaeli also added the fact that individuals can find anything on the Internet from pornography to news, from scientific journals to entertainment, and from the public to the private.

Newhagen, believes like Rafaeli that those are excellent ideas as to why researchers should investigate the diffusion of the Internet, but he goes on to add that the Internet needs to be analyzed in order to understand and answer questions at cultural and societal levels. According to Carr (1996), the Internet embodies a number of technologies—e-mail, databases, chat rooms, information and education resources, and it exhibits elements that constitute a community—language, symbols, rituals, interaction, and other elements of communication. Surry (1997) argues that the diffusion theory is not yet well defined and comprehensive. Moreover, one of the main reasons that there is not a unified theory of diffusion is because it was introduced fairly recently. Couros (2003) elaborates that diffusion theory represents a “complex number of sub-theories that collectively study the processes of adoption” (p. 3).

Origin of Diffusion Theory

The original diffusion research was done around 1903 by a French sociologist under the name of Gabriel Tarde. He plotted the original S-shaped diffusion curve. This curve is extremely important because most innovations have an S-shaped rate of adoption (Rogers, 2003). The S-shaped curve illustrates the period of rapid growth, the innovation's rate of adoption will generally stabilize and eventually decline. Through the slope of the S-curve, Tarde could identify innovations with a fast rate of adoption (steep slope) and those with a (gradual slope) slower rate (Couros, 2003). S-curve is illustrated in Figure 4.1.

Figure 4.1: S-curve Representing Rate of Adoption of an Innovation Over Time



Source: Diffusion theory and instructional technology. Available at:

<http://www.gsu.edu/~wwwitr/docs/diffusion>.

Multi-step Theory (Theory of Diffusion of Innovations)

Two sociologists at Iowa State University, Bryce Ryan and Neal Gross did early diffusion research. They published the results of their hybrid corn study right after World War II; at a time when there was a technological boom in agriculture practices. They were able to show that diffusion was a social process where evaluations of an innovation spread from earlier to later adopters (Rogers, 2003). The findings allowed them to develop a model for diffusion research. The model consisted of four parts. These were:

1. The innovation-decision process for an individual farmer, including the sequential stages of awareness, trial, and adoption;
2. The roles of information sources/channels about the innovation;
3. The S-shaped rate of adoption, a curve that was tested as to whether it fit a normal distribution; and

4. The personal, economic, and social characteristics of various adopter categories.

Until the 1960s, only rural sociologists were interested in the diffusion model, but social scientists in areas such as public health, economics, geography, marketing, political science, and communication soon began to use it as well (Valente and Rogers, 1995)

Elements of Diffusion

Rogers (2003), defined diffusion “as the process by which an innovation is communicated through certain channels over time among the members of a social system” (p. 5). Moreover, when “new ideas are invented, diffused, and are adopted or rejected, leading to certain consequences, social change occurs” (p. 6). The innovation has to be perceived as new to the adopter and it can be a technology such as the Internet, a cellular phone, or it can also be an idea, or an approach. In addition, Midgley and Dowling (1978) interpreted innovation to be “the degree to which an individual is receptive to a new idea and makes innovation decisions independently of communicated expressions of others” (p. 236). The four main elements to the diffusion of innovations are the innovation, the communication channel, social system, and time (Rogers, 2003).

Innovation Characteristics

Innovation can be any item, thought, or a process that is perceived as new and has not been used before by the group or individuals. An innovation, according to Rogers may have different characteristics. These include relative advantage, compatibility, complexity, trialability, and observability.

Relative advantage refers to how individuals perceive the innovation and if it's advantageous and appropriate to their lifestyles. During this phase, an individual or a

group must ask himself or herself if the innovation offers any benefits beyond the innovation that came before it. For example, “key attributes of online communication—include timeliness, interactivity, and capacity—should present dimensions of relative advantage over such traditional media as television” (Neuendorf, Atkin, and Jeffres, 1998). Relative advantage is also expressed as social prestige, low initial cost, economic profitability, and an increase in reward and a decrease in discomfort (Rogers, 2003).

Compatibility is a notion where the innovation is thought of as being consistent with existing values, experiences, and needs of potential adopters (Rogers, 2003). Compatibility depends on social and cultural values and beliefs or the individual’s need for the innovation. If a previous experience with an associated innovation is positive and provides a familiar standard, the degree of uncertainty decreases. However, a negative experience with one innovation can be detrimental and can potentially block adoption of future associated innovations.

Complexity is a stage where the potential adopter determines if the innovation is hard to use or understand. If the complexity of the innovation is extreme or troublesome, the innovation is likely to not be adopted. The simpler the idea or the technology is, the higher the adoption rate is likely to be.

Trialability is also a crucial step when determining adoption such as that of the Internet. If people have the opportunity to use the innovation before having to actually purchase it, they are most likely to adopt it. New ideas that can be tried on installment plans are generally adopted more rapidly than innovations that are not divisible (Rogers, 2003, p. 258). In this stage, potential adopters understand the relative advantage, and the compatibility factors and can overcome the complexity of the innovation.

Observability is another characteristic of an innovation. Here, others in the group can actually see the results of the innovation. As a result, the observability of an innovation as perceived by members of a social system is positively related to its rate of adoption (Mwaura, 2003). According to Rogers (2003):

The easier it is for individuals to see the results of an innovation, the more likely they are to adopt it. Such visibility stimulates peer discussion of a new idea, as friends and neighbors of an adopter often request innovation-evaluation information about it (p. 16).

Communication Channel

The communication channel is the medium in which the new idea travels from one person to another or from a medium to the individual (Rogers, 2003). These communication channels may include the Internet, radio, television, newspapers, film, books, magazines, interpersonal exchanges, and telephones to name a few. If the exchange of ideas happens between two individuals or groups that are similar, it is then called homophilous. This usually occurs with individuals who belong to the same group, live or work in the same area, and typically share the same interests. Rogers also highlighted that interpersonal channels are more efficient when one tries to persuade another to accept a new idea. However, in order for diffusion to occur, heterophily must be present. This means that the interacting individuals or groups come from a different background and have different ideas, beliefs, or levels of competence when dealing with an innovation. If the individuals who are interacting have the same amount of knowledge about an innovation, diffusion cannot take place because there is no new information to

exchange. “The very nature of diffusion demands that at least some degree of heterophily be present between the two participants (Rogers, 2003, p. 19). Regardless of the medium or the different communication channels, individuals can make the decision to adopt an innovation as a collective group or independently.

Time

Time refers to how long it takes for a particular group to adopt an innovation and also to the rate of individual adoption. Time is extremely important because it deals with a five-step process that identifies the innovation-decision process. This process goes from knowledge of the innovation, in this case, the Internet, to forming an attitude about the innovation, to a decision to adopt or reject it, to implementation and use of the innovation, and to the confirmation of the decision (Rogers, 2003).

Knowledge occurs when an innovation is first introduced to the individual or group. Since this is the first time that the innovation is exposed to the public, there is no true knowledge about it. The individual or the group simply becomes aware of it. At this stage, due to the lack of information, there is no pressing need to purchase or try the innovation.

The next stage is persuasion. Here, individuals or groups form a favorable or unfavorable attitude toward the innovation (Rogers, 2003). At this stage, an individual decides to put a little more time and interest to find out more about the innovation. Usually, at this point, people feel good about the innovation, but can’t decide if it is useful or not. This stage is simply to gather information only. Individuals or groups cannot decide to adopt at this stage.

The third stage is decision. At this stage, interested individuals begin to question the nature of the innovation and whether it would be useful in their daily lives. Questions such as: How could I use it? Do I need it? Would it be to my advantage? arise. If the answers to these questions seem to be positive and seem like they might change their lives, they are willing to try the innovation. However, if after doing a lot of research and the innovation seem to not benefit their lifestyle drastically, people might have to ask their peers for advice. This leads to the next stage in the innovation-decision process.

Implementation occurs when a group or individual puts the innovation to use (Rogers, 2003). The innovation gets put to use for a limited basis. This trial period is used to decide whether the innovation is a good match for their lifestyles, needs, and whether it is something that they can easily access.

The final stage is confirmation or adoption. Here, groups or individuals use the gathered information in previous stages to decide to adopt the innovation and embrace it for the future. Within this stage though, there is another layer that might not be good for the innovation. If for some reason the group or individual changes his/her mind about the innovation or if it doesn't fulfill their needs, they might opt to reject it (Rogers, 2003). This rejection or discontinuance of the innovation is always a possibility when dealing with something that has not diffused massively and it's not common to the rest of the group. According to Szabo (2002), "Innovation is successfully diffused when it is used by large numbers of people making fundamental changes in the way they conduct their activities or enterprises" (p. 1471).

Social System

A social system consists of a group of individuals who together complete a common goal. This same system has the ability to facilitate or to block the diffusion of innovation within the system. According to Katz (1961), “It is unthinkable to study diffusion without some knowledge of the social structures in which potential adopters are located as it is to study blood circulation without adequate knowledge of the veins and arteries” (Katz, 1961, as cited in Rogers, 2003, p. 25). People who are the first ones to experiment with an innovation are called opinion leaders. These opinion leaders are “key players in the interpersonal aspect of the diffusion process” (Vanderslice, 1996, p. 5). Opinion leaders are technically competent, are socially accessible, and conform to the system’s norms. Moreover, they are also exposed to external communication, are more cosmopolite, have a higher social status and are at the center of interpersonal communication networks (Rogers, 2003). Yet another person who has the ability to diffuse an innovation within a group is the change agent. Change agents try to influence clients’ innovation-decisions in a direction favorable by the change agency.

Characteristics and Categories of Adopters

Adopters are also a constant during the diffusion process. Their characteristics help researchers of diffusion understand who they are and how they use the innovation. People adopt innovations for many different reasons and at various times. Rogers (2003), classified five categories of adopters. These are innovators, early adopters, early majority, late majority, and laggards.

The Tipping Point

The tipping point is the “culmination of a build-up of small changes that effects a big change” (Gladwell, 2000, p. 17). Gladwell initially used this term in the study of epidemics where a virus reaches the point of affecting a large number of people—“like AIDS in 1982” (p.21). Later on, Gladwell adjusted his idea to include and explain how an innovation moves from its original stage to its popular growth in a rather short time. Valenti (2000) in reviewing Gladwell’s work defines the tipping point as the moment when an idea, trend or social behavior crosses a certain threshold before it catches on.

Critical Mass

According to Rogers (2003), the critical mass happens when “enough individuals in a system have adopted an innovation so that the innovation’s further rate of adoption becomes self-sustaining” (p. 343). Basically, as innovations gain adopters, the rate of adoption accelerates. Although critical mass had its origins in physics, its simple concept has allowed it to expand to different areas ranging from epidemiology to political movements. This concept helps understand human behavior so well because individuals typically base their actions on how they perceive the behavior of others (Rogers, 2003). Also, the more people on the network, the greater the incentive to join as diffusion accelerates without a plateau (Leung and Wei, 1999).

Different theorists provide different examples of how diffusion takes place in a particular group or among individuals. These diffusion theories can be directly applied to how the Internet has diffused and has been adopted in different parts around the world.

SIGNIFICANCE

As a developing country, Mexico has been lagging behind in technology and Internet services for its population; however, emerging Internet trends point to an explosive growth. Since diffusion rates and penetration levels are growing rapidly in Mexico, it is essential to see how Mexicans are dealing with innovative technological changes. Moreover, it is imperative to find out the attitudes and potential reservations people have toward the Internet. Since the body of research on the diffusion of the Internet in Mexico is limited, this study will enhance and expand the field of Internet technology and mass communication studies.

HYPOTHESES

The research will examine how the Internet has diffused and is diffusing in Mexico. Based on existing literature and the theory of diffusion of innovations, it is hypothesized that:

- H1: Those who are aware and use the Internet will most likely adopt it than those who do not.
- H2: There will be a relationship between perceived characteristics of the Internet and its adoption level.
 - H2a: There will be a relationship between Internet complexity and adoption.
 - H2b: There will be a relationship between relative advantage and Internet adoption.
 - H2c: There will be a relationship between compatibility and Internet adoption.

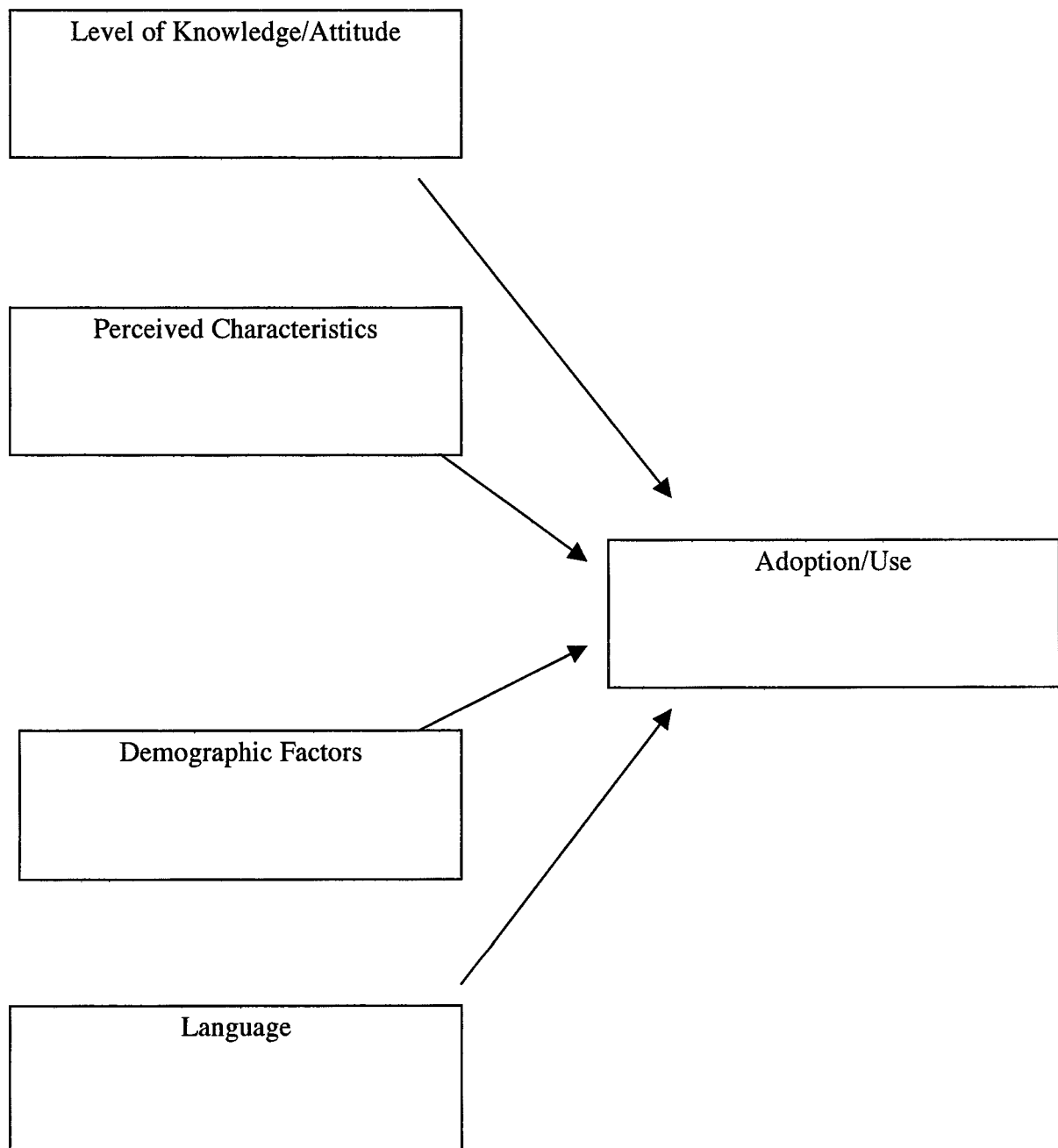
H2d: There will be a relationship between trialability and Internet adoption.

H3: Those who know/use the Internet will be demographically different than those who do not.

H4: There might be a relationship between languages known and Internet adoption.

The researcher developed the adoption model for this study as demonstrated in Figure 4.2.

Figure 4.2: A Model of the Study: Diffusion of the Internet in Mexico



CHAPTER V

METHODOLOGY

Sample

The survey method was used in order to examine and to provide the most adequate information about the diffusion of the Internet in Mexico. One hundred questionnaires were administered to residents of Ciudad Juárez, Chihuahua; Monterrey, Nuevo León; and Mexico City. It was a convenience sample and the survey participants were contacted via email, personal visits, and through professional and personal contacts in the country. Prior to the survey, the researcher visited these cities in order to make sure that the contacts had a clear vision of the research. Survey participants included university students, professionals at different levels, and homemakers among others. The researcher tried to ensure that every socioeconomic level was represented in order to get a better idea on the subject of the Internet.

The study was carried out throughout the month of December of 2004. The survey questions were based on previous Internet diffusion research in order to determine how the Internet grew in Mexico and how people access the World Wide Web (WWW).

Participants in the study had three options to submit their completed questionnaire. First, participants could attach on e-mail the completed questionnaire. Second, they could send it via regular mail. Lastly, the researcher had the opportunity to personally administer some surveys collecting the data on the spot. If the respondents decided to submit their surveys via regular mail, the researcher provided envelopes and the needed postage to guarantee the highest number of responses. The survey was developed in English and was later translated into Spanish. Seventy-one completed questionnaires were returned. Out of all the returned questionnaires, nine were emailed.

Survey Questions

Prior to the development of the questionnaire, the researcher conducted two informal focus group discussions in Mexico City and Ciudad Juárez to determine if the questions were reliable and accurate in determining the diffusion of the Internet. The purpose of these focus groups was to initiate a dialogue about Internet issues. The informal focus groups consisted of students, white-collar professionals, blue-collar workers, people interested in technology, and some people that had just recently discovered the Internet and its capabilities.

The informal focus groups addressed issues such as knowledge about and attitudes toward the Internet. In particular, the researcher opened up the session with a very basic question: Do you know what the Internet is? From that point on, the discussions touched on related topics such as e-mail, access, cost, how they heard about it, why they were motivated to use it, relevance, computer ownership, alternative methods, Internet cafés, and Internet uses among other topics. The groups consisted of a set number of participants in order to allow and carry on an engaging conversation where

all had the exact time to opine and be heard. Therefore, it was pre-decided that 10 participants would be a good number. There were a total of seven females. Females were extremely inquisitive and more curious than the men, even though they were in the minority in both locations. The group members' ages were varied and ranged from 16 to 55.

Having these informal focus groups allowed the researcher to calibrate the questions in a manner that the questionnaire would make the most sense for the participants and for those who agreed to be contacts if questions or misunderstandings occurred. Although the researcher is currently living in the United States, the contacts and focus group participants were easy to find and were eager to participate.

Upon completion of the focus groups, the researcher made some modifications to the questionnaire and correct minor oversights. For example, the researcher asked a few questions pertaining to computer ownership. Also, instead of just asking if they knew what the Internet was, the researcher asked for possible adoption reasons. Participants had questions and seemed extremely interested in the topic of education and access to the Internet. Therefore, a question was added to address this concern. After the questionnaire was completed, it was pre-tested among a group of people that included students and professional people to avoid misunderstandings or inappropriate responses.

A combination of open and close-ended questions is included in the questionnaire [attached at appendix A (Spanish) and B (English)] to allow some flexibility in the answering process. Also, some of the questions included items on a Likert-scale. Examples of this scale include how the Internet has influenced their lives (positively, neutral, and negatively), the level of complexity (extremely hard to use, hard to use, easy

to use, extremely easy to use), and how helpful the Internet has been to them and those around them (extremely helpful, helpful, little helpful, not helpful at all).

Upon receipt of all completed questionnaires, the researcher coded the surveys and used SPSS software to analyze the data.

Definition of Terms

Demographics: Demographics included gender, age, monthly income (in Mexican pesos), education, occupation, marital status, and the number of people living in a particular household. Monthly income included five categories: less than \$10,000 pesos (1), \$10,001-\$15,000 pesos (2), \$15,001-\$20,000 pesos (3), \$20,001-\$25,000 pesos (4), \$25,001 pesos and over (5). Education included eight categories such as elementary school, junior high school, high school, technical school, some college, bachelor's degree, some graduate school, and graduate degree. Occupation included eight categories such as student, self-employed, employee, supervisor, professional, homemaker, retired, and technical occupation. Those who worked for others included both the private and public sectors. Marital status included five categories: single, married, divorced, widowed, and living with a partner. Living with a partner describes those two people regardless of sex living together and equally sharing their income.

Language: Language included the ability to speak a language other than Spanish. The options given were English, French, Portuguese, and Italian. Participants were asked to rate their English ability using a five-point scale: Very comfortable (1), somewhat comfortable (2), neutral (3), somewhat uncomfortable (4), very uncomfortable (5). Moreover, language was also measured by rating the participants' opinion on whether knowing English or another language helped them surf the Internet more comfortably.

Level of Knowledge/Attitude: This category was measured by asking the participants if they were aware of what the Internet was and if they knew how to use it.

Perceived Characteristics: This particular category was measured by using different components. These included complexity, relative advantage, compatibility, and trialability.

Complexity, or the stage where a potential adopter determines if the innovation is hard to use or understand, was measured by asking if the level of education was important to determine how to use the Internet and if Internet users require special skills or extensive training to use it. Also, the Internet's complexity was measured on a four-point scale: Extremely hard to use (1), hard to use (2), easy to use (3), and extremely hard to use (4). Lastly, participants were asked to determine what made the Internet difficult (software, hardware/equipment, and surfing). Relative advantage was measured by asking if the Internet was better than television, newspapers, magazines, telephone, mail, and textbooks among others. A question asking if the Internet has made it better or easier to communicate with others was also used to measure relative advantage. Compatibility was measured on a four-point scale and asked if the Internet was: Extremely helpful (1), helpful (2), little helpful (3), and not helpful at all (4). Trialability was measured by asking how long an individual needs to try the Internet before adopting it to their lifestyle (1 week, 2 weeks, 3 weeks, or 4 weeks).

Adoption was measured by finding out how long people have been using the Internet, whether they had access to it at home or elsewhere, how many hours and days out of the week they accessed the Internet, if they foresaw not using the Internet in the

future, and whether how the Internet had affected their life in a positive, neutral, or negative way.

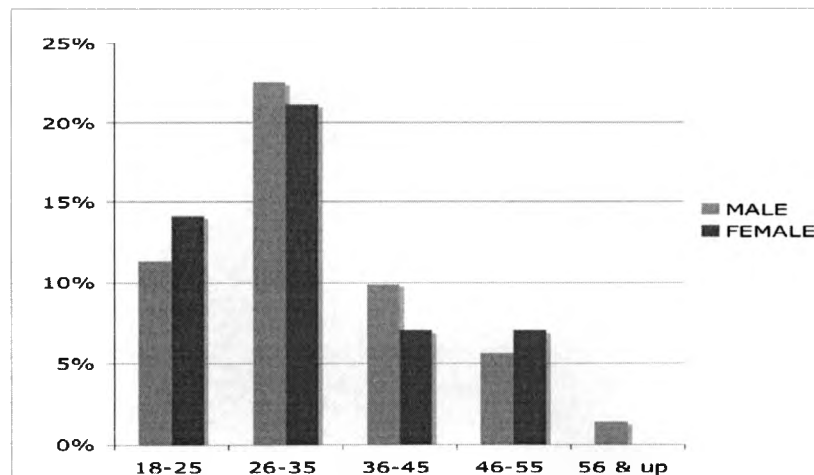
CHAPTER VI

FINDINGS/CONCLUSIONS

Audience Profile

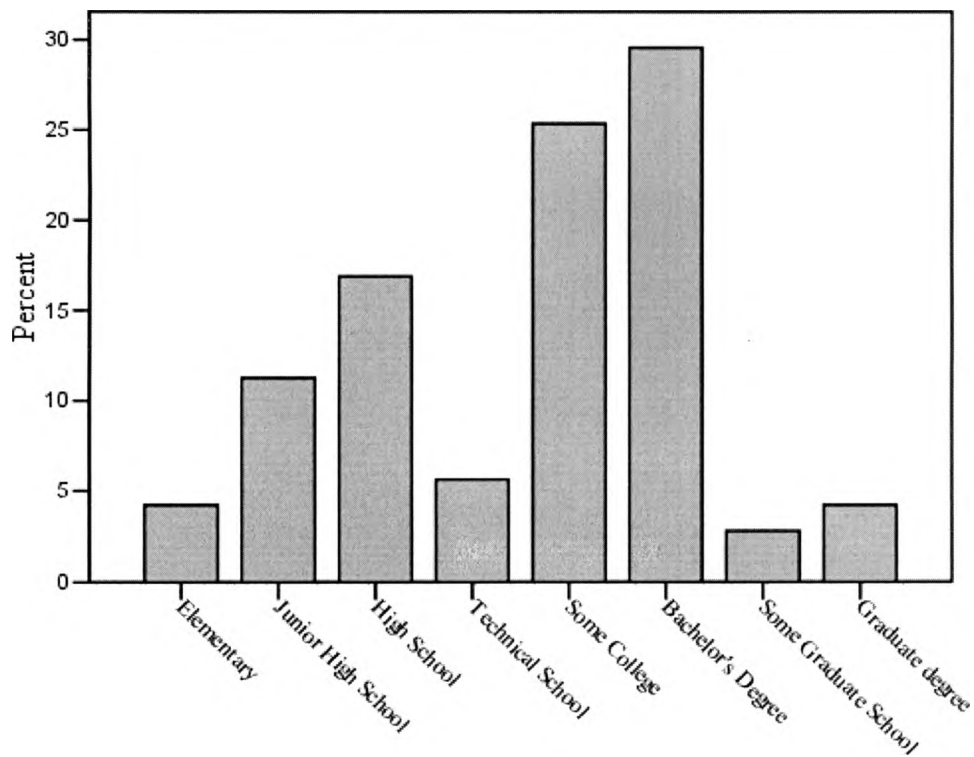
Survey responses ranged in age from 18 to older than 56 years. The largest age group in the sample was between 26 and 35 years old. This particular group was composed of 51 percent men and 49 percent women. The second largest age group was 18 to 25. The 36 to 45 year old age group followed, then by the 46 to 55, and lastly the 56 and older group respectively (Figure 6.1).

Figure 6.1. Age and Gender



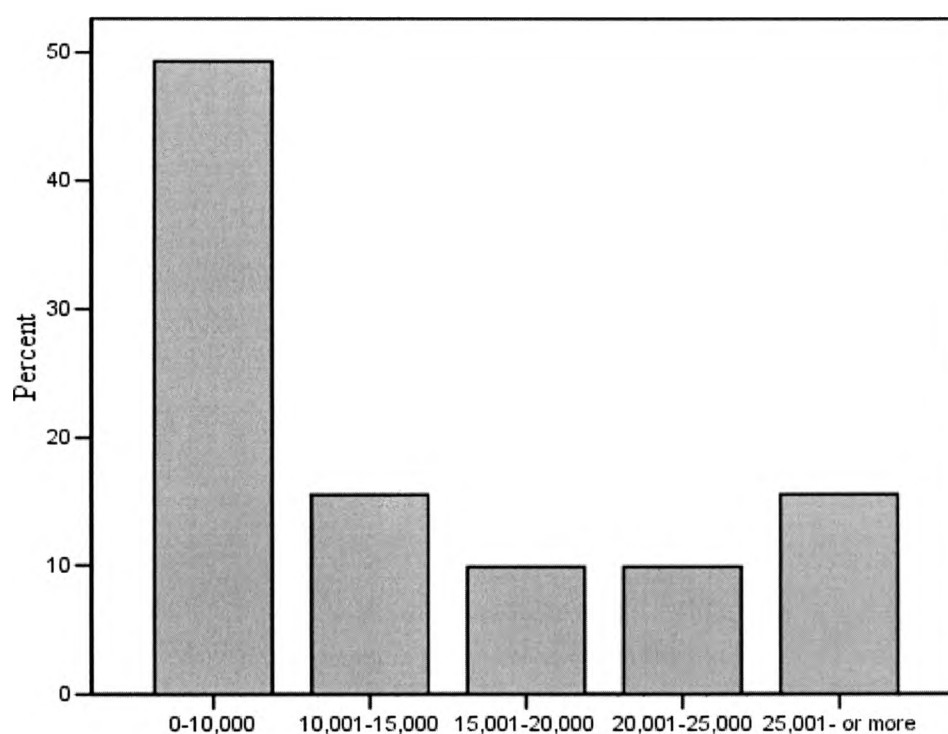
Thirty percent of the respondents had a bachelor's degree followed by those with some college education (25 percent). The group that followed fell under the high school category with a 17 percent (Figure 6.2).

Figure 6.2. Education of Respondents



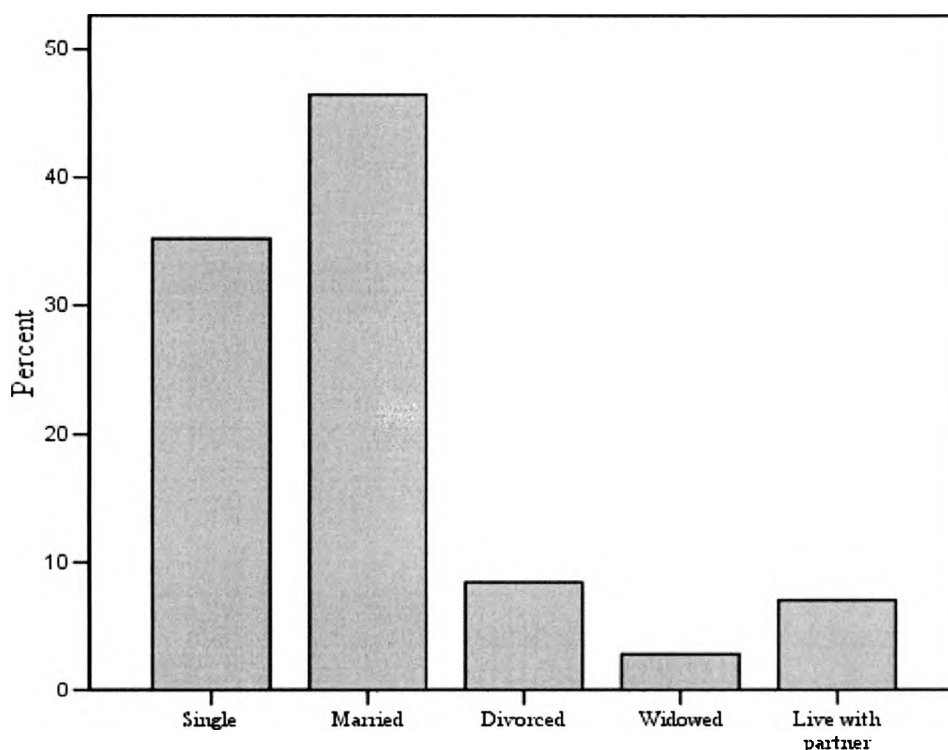
Most of the people who responded to the survey (49 percent) had a monthly income of up to \$10,000 pesos. Sixteen percent had a monthly income of \$10,001 to \$15,000 followed by 14 percent who earned a monthly salary of \$25,001 or more (Figure 6.3).

Figure 6.3. Monthly Income of Respondents (in Mexican Pesos)



A large number of respondents were married (47 percent). The second largest group included those who were single (35 percent), followed by those who were divorced (nine percent), and those who lived with a partner (seven percent). This particular group included anyone who lived with a significant other and who share all their earnings (Figure 6.4).

Figure 6.4. Marital Status of Respondents



The majority of those who accessed the Internet did so at work (39). Other places where people accessed the Internet were schools (19) and Internet Cafés (13). Other places mentioned include the homes of friends and relatives. Overwhelmingly, most of those who access the Internet use it for email (47) and entertainment (12). Other uses include school, research, shopping, and banking, as news source, chat and for sports

information. Also, these adopters of the Internet first became aware of its existence through their place of employment, media, school, followed by friends and family, respectively. When asked what made them adopt the Internet to their lifestyle, most responded work followed by school, family, friends, and the media.

Hypothesis (H₁): Relationship between Level of Awareness/Use and Internet Adoption

Hypothesis (H₁) investigated whether awareness and use of the Internet led to adoption. Two of the factors tested in this hypothesis were awareness of the Internet and knowing how to use the Internet. Crosstab correlations and Chi-Square tests were used to test this hypothesis. A significant difference was found between people who knew how to use the Internet and had used it for a longer period of time ($P < .000$). For example, of the 64 people who used the Internet, 25 had been using it for four to six years and 15 users had been using it for seven years or more. Awareness of the Internet was measured by asking if they had heard about the Internet. Awareness of the Internet was not significantly related to the adoption variables. It may be noted that only four out of 71 were not aware of the Internet and six out of the 71 had not used the Internet. H₁ was partially significant (see Tables 6.1 and 6.2).

Table 6.1

Knowledge of Using the Internet and Duration of Use

Know how to use	Don't Use	Less than 6 months	6-12 months	1-3 years	4-6 years	7 + years	Total
Yes	5	2	3	12	25	15	62
No	6	0	0	0	0	0	6
Total	11	2	3	12	25	15	68

Table 6.2

Chi-square Test for Internet Use and Duration of Use

	Value	df	Sig.
Pearson Chi-square	34.10	5	.000

Hypothesis (H₂): Relationship between Perceived Characteristics and Internet Adoption

Hypothesis (H₂) included several sub-hypotheses that were analyzed separately.

H_{2a} investigated whether the complexity of the Internet was directly tied to its adoption.

However, H_{2a} was not supported. H_{2b} stated that there would be a relationship between relative advantage and Internet adoption. One of the questions tested was whether the Internet was better to get information than the television, newspapers, magazines, and the telephone. Most (22) preferred the Internet to newspapers, many (16) preferred the Internet to the telephone, and some (15) preferred the Internet to television and magazines. However, two people indicated that they preferred the Internet to textbooks. However, these factors were not significantly related to Internet adoption.

H_{2c} stated that there would be a relationship between compatibility and Internet adoption. The adoption variable that was significant ($P < .006$) dealt with how helpful users thought the Internet was. Of those who accessed the Internet, most (26) found that the Internet was extremely helpful while 25 found it to be helpful. Only nine people found the Internet to be of little help to them and those around them (see table 6.3 and 6.4)

Table 6.3

Internet Compatibility and Helpfulness

Compatibility	Don't Use	1-3 hours	4-6 hours	7-10 hours	10 + hours	Total
Extremely helpful	0	9	10	0	7	26
Helpful	2	12	4	6	1	25
Little helpful	0	6	3	0	0	9
Total	2	27	17	6	8	60

Table 6.4

Chi-square Test for Internet Compatibility and Helpfulness

	Value	df	Sig.
Pearson Chi-square	21.60	8	.006

When asked the question of whether the Internet had positive, neutral, or negative effects on them, most (21) found the Internet to be a positive influence in their lives while a smaller group (5) found it to be neutral ($P < .006$). H_{2c} was also partially significant (see Tables 6.5 and 6.6).

Table 6.5

Internet Compatibility and Effects

Compatibility	Positive	Neutral	Total
Extremely helpful	21	5	26
Helpful	15	10	25
Little helpful	2	7	9
Total	38	22	60

Table 6.6

Chi-square Test for Internet Compatibility and Effects

	Value	df	Sig.
Pearson Chi-square	10.07	2	.006

H_{2d} examined how trialability might lead to the use and adoption of the Internet. When the survey participants were asked whether using the Internet before purchasing it in order to get acquainted with it was a good idea, most said yes. However, since most of the respondents were already users, it turned out not be significant. Overall, H₂ was slightly supported.

Hypothesis (H₃): Relationship between Demographics and Internet Adoption

Hypothesis (H₃) suggested the relationship between demographics and possible Internet adoption. The demographic factors tested were: gender, age, income, education, occupation, and marital status. Crosstabs and Chi-square tests were performed to test the hypothesis. A significant difference was found between income and duration of use of the Internet ($P < .037$). The largest number of Internet users (32) had an income of \$0 -

\$10,000 and most of them had been using the Internet between four and seven years (see tables 6.7 and 6.8).

Table 6.7

Income, Duration of Use, and Internet Adoption

Income	Don't Use	Less than 6 months	6-12 months	1-3 years	4-6 years	7 or more years	Total
0-10,000	8	1	2	3	12	6	32
10,001-15,000	2	0	1	3	5	0	11
15,001-20,000	0	1	0	3	2	1	7
20,001-25,000	0	0	0	3	3	1	7
25,001-more	0	0	0	0	3	7	10
Total	10	2	3	12	25	15	67

Table 6.8

Chi-square Test for Income, Duration of Use, and Internet Adoption

	Value	df	Sig.
Pearson Chi-square	38.93	25	.037

The level of education was significantly related to the duration of use of the Internet ($P < .025$). Those who had used the Internet longer had either some college or a bachelor's degree and typically accessed the Web one to three hours a day (See tables 6.9 and 6.10).

Table 6.9

Education and Duration of Internet Use

Education	Don't Use	Less than 6 months	6-12 months	1-3 years	4-6 years	7 or more years	Total
Elementary	2	0	0	0	0	0	2
Junior High School	3	1	1	0	3	0	8
High School	1	1	1	2	2	3	10
Technical School	3	0	0	1	0	0	4
Some College	1	0	1	5	9	2	18
Bachelor's	1	0	0	4	9	7	21
Some Graduate school	0	0	0	0	0	2	2
Graduate degree	0	0	0	0	2	1	3

Table 6.10

Chi-square Test for Education and Duration of Internet Use

	Value	df	Sig.
Pearson Chi-square	53.11	35	.025

Occupation was significantly related to the duration of use of the Internet as well.

For example, employees used the Internet between one and three years on average

($P < .016$). Most of the homemakers ($P < .012$) had been using the Internet between four to

six years. The majority of those who are not in a supervisory position but are degreed

professional (10) had been connecting to the Internet between four to six years while the others (7) had done so for seven years or more ($P < .021$). H_3 was partially supported.

Hypothesis (H_4): Relationship between Languages Known and Internet Adoption

Hypothesis (H_4) considered the relationship between language and Internet adoption. The language factors that were tested included: ability to speak a language other than Spanish, ability to speak English and level of comfort of the English language, and whether knowing English helped people adopt the Internet. Duration of use and speaking a language other than Spanish were significantly related ($P < .001$). Out of the 41 people who speak a language other than Spanish, 16 have been using the Internet between four to six years and 14 have been using the Internet for more than seven years. The language that was cited the most (40) was the English language. Out of those who speak English and feel either very comfortable or somewhat comfortable with their English abilities, most have been using the Internet anywhere between four to seven years ($P < .024$). Moreover, the majority of those who speak English and are regular users feel that most of the Web sites are in English ($P < .027$) and do not foresee themselves not using the Internet in the future. No significant differences were found in any of the other variables. H_4 was partially supported.

Conclusion and Discussion

This study tried to investigate the patterns of Internet diffusion throughout the different demographics in Mexico. It was hypothesized that socioeconomic variables such as gender, age, education, income, occupation, and marital status were related to Internet adoption in Mexico. As stated earlier, income, education, and occupation were the only variables directly related to Internet adoption. This finding reflects the same

patterns that similar studies have indicated—those who adopt the Internet in Mexico, for the most part, are educated (Zehr, 2002), with a higher income (Palacios, 2003), male, fluent in English, and are typically supervisors or in positions of authority. Moreover, this study also reflects the trend found in other studies where people who use or know about the Internet have already adopted it into their lifestyle more so than those who do not.

Those who make over \$25,000 Mexican pesos a month (\$2,254 U.S.) have been regular users for seven years or more and are more likely to connect at home whereas the majority of the people who have had access to the Internet make up to \$10,000 Mexican pesos a month (\$902 U.S.). Their average use of the Internet falls between four to six years. This reflects that those who have adopted the Internet and used it from home are those with a higher income. A 2004 study by Chacon concluded that 60 percent of access to the Internet is outside the home in Mexico. This supports the finding that the majority of the people in this study accessed the Internet from work, school, and Internet Cafés.

Education was also a significant finding in this study. Those with access and higher Internet adoption rates were college educated and used the Internet more than those with less education. This is consistent with previous research findings (Rao, 2003; Atkin and Jeffres, 1998).

Contributions

This study has contributed to the limited body of knowledge regarding the Internet and its diffusion in Mexico. Some of the findings in this study were similar to previous studies in that income, education, and language are factors influencing the adoption of the Internet. It is important to note that this study concluded that a large number of the people who participated had a monthly income of about \$900 U.S.

Although considered low, the majority of them had access to the Internet through their work, school or public access places. Since the majority accessed the Internet in public places for emailing, it will be a good idea for those who provide Internet services to provide users with accessible and better facilities that are less expensive.

Language was also directly related to Internet adoption levels. Since the majority of the respondents who used the Internet on a regular basis were comfortable with their English abilities, it is significant to mention that at least among this group, English was necessary to comfortably navigate the Web. This noticeable trend, especially in a country where English is not predominant and could be considered a barrier, leads to believe that more people are learning English and see it as an advantage when it comes to the Internet. This could very well be associated with Mexico's proximity to the United States and witnessing first hand how the Internet has conveniently helped those with access to it.

Limitations

One of the drawbacks of the study was that the sample was small, not random, and not representative of the population. This factor alone made it insufficient to generalize about adoption in Mexico as a country. Moreover, studies have also shown that Mexicans who use the Internet may do so elsewhere such as work or in school, and may not necessarily have Internet services at home (AMPICI, 2004). So, has the Internet diffused in Mexico? According to this research, it has diffused, albeit slowly, among the population of Mexico. As expected, diffusion of the Internet was found among those who knew about it and used it regularly, were fluent in English, and met certain demographic characteristics (such as income and education).

As far as the instrument used to test participants, it would be wise to use a more concise and limited number of questions addressing more relevant realities and needs the population deems more important. It also needs to be further developed and tested to make sure that it elicits the kind of information that might reflect actual behaviors of people in Mexico with regards to the Internet.

Because the sample was not random, the participants lived in urban areas, and for the most part were college educated, results of this study may not be generalized to the whole population of Mexico. Moreover, since most of the participants were users of the Internet, the results were biased and did not reflect what might be occurring in remote or rural areas in Mexico. Perhaps if the sample included an equal number of Internet users and non-users the findings would have been more significant.

Recommendations

The Internet, an innovation that has proved to be a phenomenon, has revolutionized the way people associate with their peers not only locally, but across the globe as well. Researchers believe that the Internet will have a significant impact on economic growth for all countries (Huang, Kesser, Leland, & Shachat, 2003). It is recommended that a more in-depth study be conducted in order to determine how the Internet is diffusing in places where technology, capital, and infrastructure are scarce and where people are located in remote rural places.

Since the number of respondents limited this study, it is also recommended that future studies use a larger random sample that is more representative of the population. It is also suggested that the sample includes a large number of Internet users and non-users. Another recommendation is that further research be done to find out whether the Internet

is relevant and necessary. For example, include indigenous and rural communities to find out whether the Internet has had any effect in their daily lives. Along the same lines, it will be important to note how Mexico as well as other developing countries might encounter and deal with language and cultural barriers when approaching the Internet and its diffusion.

It is important to note that the pattern of Internet diffusion in Mexico follows a pattern similar to other developing countries such as India and Brazil where access happens more at public places. Developed nations like the United States follow a different model where most of the people access the Internet at home. It is recommended that future studies concentrate on this trend by addressing issues such as ethnicity within Mexico and geographic location in order to determine how to diffuse the Internet to demographically diverse populations within the country.

It will also be a good idea to determine how the people of Mexico feel about the government's plan to bring access to the information society and make the country an important player in economic issues worldwide. The issue of infrastructure should also be addressed in order to find out how it contributes or delays the spread of the Internet in Mexico.

There are very few research studies related to the diffusion of the Internet in Mexico. Perhaps it will be a good idea to also see how Mexican-Americans and residents of Mexico differ in terms of use and adoption of the Internet. Along those same lines, another study could help determine how Internet diffusion is taking place in other developing countries throughout Latin America. This could be used as an index to compare and predict trends and maybe bypass some barriers preventing adoption.

Although the present Internet activity in Mexico may seem small when compared to other countries (12 percent), it is definitely growing and gaining momentum. Mexico has the ability to catch up at a faster pace and at a relatively low cost. As developed nations test new Internet technologies and equipment, Mexico can bypass this stage and directly move into the adoption phase. By not reinventing the wheel and emulating those practices that have proven successful in other places, Mexico could benefit in a relatively shorter time.

The Internet has helped bring many people and countries together, but it has also promoted an Internet gap between the wealthy and the poor creating an uneven diffusion. The Internet still reflects inequalities of class, gender, and in some instances race. In Mexico, the Internet has the potential to become an instrument of inclusion and transformation. As a country, Mexico is attempting to mobilize Internet technologies to achieve higher adoption levels to the masses. However, at this moment in time, unless people belong to an upwardly mobile group, or have access to the Internet regardless of where the access is from, the Internet cannot help transform nor positively affect their chances for a better life. If Mexico wants to consider the Internet as an equalizer it must first address the needs of the people in order to provide the opportunities and the access needed for a more wide spread diffusion of the Internet.

APPENDICES

APPENDIX A: Questionnaire in Spanish

Hábitos de usuarios de Internet

El siguiente cuestionario forma parte de una investigación llevada a cabo para obtener información sobre los hábitos de los usuarios de Internet en México.

A continuación siguen las preguntas. Favor de leerlas cuidadosamente y contestarlas de la mejor manera posible. Cualquier información aquí contestada será estrictamente confidencial y anónima.

Si tienes alguna pregunta, favor de comunicarte con:

Enrique Romo
2104 Cullen Avenue # 208
Austin, Texas 78757
512.921.4013
Correo electrónico: er1042@txstate.edu
eromo@mail.utexas.edu

1. Género (1) Mujer (2) Hombre
2. Edad (1) 18-25 (2) 26-35 (3) 36-45 (4) 46-55 (5) 56 o más
3. Ingreso Mensual
(1) \$0- \$10,000 (2) \$10,001-\$15,000 (3) \$15,001-\$20,000
(4) \$20,001-\$25,000 (5) \$25,001 o más
4. Escolaridad
(1) Primaria (2) Secundaria (3) Preparatoria
(4) Escuela Técnica (5) Licenciatura Incompleta (6) Licenciatura
(7) Maestría Incompleta (8) Diplomado o Maestría
5. Ocupación (puedes tener más de una respuesta)
(1) Estudiante (2) Trabajador por cuenta propia (3) Empleado
(4) Gerente (5) Ama de casa (6) Jubilado(a) o pensionado(a)
(7) Profesionista (8) Técnico
6. Estado Social
(1) Soltero(a) (2) Casado(a) (3) Divorciado(a) (4) Viudo(a)
(5) Unión libre
7. ¿Cuántas personas viven en tu hogar?
(1) 1 (2) 2-5 (3) 6-8 (4) 9 o más

8. ¿Sabes lo qué es el Internet? (1) Sí (2) No *
- * Si la respuesta es no, favor de pasar a la pregunta 14.**
9. ¿Cómo escuchaste acerca del Internet?
- (1) Amigos (2) Familia (3) Trabajo
(4) Medios de comunicación (5) Otro/especificar _____
10. ¿Sabes cómo usar el Internet? (1) Sí (2) No
11. ¿Cuánto tiempo tienes usando el Internet?
- (1) No lo uso (2) menos de 6 meses (3) 6-12 meses
(4) 1-3 años (5) 4-6 años (6) 7 años o más
12. ¿Crees que el nivel de educación es importante para entender/usar el Internet?
- (1) Sí (2) No
13. ¿Crees que el Internet requiere que los usuarios tengan aptitudes especiales para usarlo? (1) Sí (2) No
14. ¿Tienes una computadora/organizador en casa? (1) Sí (2) No *
- * Si la respuesta es no, favor de pasar a la pregunta 18.**
15. ¿Tienes acceso al Internet en casa? (1) Sí (2) No
16. Si la respuesta es sí, en que año empezaste a usarlo en casa? Año _____
17. ¿Qué tipo de conexión utilizas principalmente para acceder (conectarte) a la red?
- (1) No lo uso (2) Dial-up (línea telefónica) (3) Satélite
(4) Cable (5) ADSL Prodigy Infinitum o similar (6) Prepago
(7) Teléfono Celular (8) Otro/especificar _____
18. ¿Desde qué lugar o lugares accedes (te conectas) principalmente al Internet? (puedes tener más de una respuesta)
- (1) No lo uso * (2) Escuela (3) Trabajo (4) Internet Café
(5) Terminal Pública (Kiosko) (6) Amigos/familiares
(7) Otro/especificar _____
- * Si la respuesta es no, favor de pasar a la pregunta 35.**
19. ¿En que año empezaste a usar Internet en cualquier de estos lugares?
- Año _____
20. ¿Cuántas horas a la semana accedes (te conectas) a Internet?
- (1) No lo uso * (2) 1-3 horas (3) 4-6 horas (4) 7-10 horas
(5) 10 horas o más

21. ¿Cuántos días a la semana accedes (te conectas) a Internet?
 (1) 1 (2) 2 (3) 3 (4) 4 (5) 5 (6) 6 (7) 7 (8) No lo uso
22. Cuando entras a navegar en Internet, ¿para qué lo usas? (puedes tener más de una respuesta)
 (1) Correo electrónico (2) Espectáculos (3) Educación
 (4) Investigación (5) Compras (6) Servicios bancarios (7) Trabajo
 (8) Leer Noticias (9) Otro/especificar _____
23. ¿Te ves no usando Internet en el futuro? (1) Sí (2) No
24. ¿Crees que el acceso a Internet es caro? (1) Sí (2) No
25. ¿De qué manera a influenciado tu vida el Internet?
 (1) Positivamente (2) Neutral (3) Negativamente
26. ¿Qué/quién te motivo a adoptar el Internet a tu estilo de vida?
 (1) Trabajo (2) Escuela (3) Amigos (4) Familia
 (5) Medios de comunicación (6) Otro/especificar _____
27. Favor de completar la siguiente frase, “Yo opino que el Internet es mucho mejor para recibir información que la/el...”
 (1) TV (2) Periódico (3) Revistas
 (4) Teléfono (5) Otro/especificar _____
28. ¿Crees que el Internet ha facilitado la manera en que la gente se comunica?
 (1) Sí (2) No
29. ¿Crees que el Internet es?
 (1) Demasiado difícil de usar (2) Difícil de usar
 (3) Fácil de usar (4) Demasiado fácil de usar
30. Si alguien va a acceder (conectarse) a Internet por vez primera, ¿crees que necesiten entrenamiento extenso? (1) Sí (2) No
31. En tu opinion, ¿cuál es el aspecto más complejo del Internet?
 (1) Software (2) Hardware/equipo (3) Navegar en Internet
32. ¿Crees que sea una buena idea que la gente tenga la oportunidad de usar el Internet antes de pagarlo/comprarlo para así familiarizarse con sus habilidades?
 (1) Sí (2) No

33. ¿Cuánto tiempo crees que sea necesario para decidir si vas o no a adoptar el Internet a tú estilo de vida?
(1) 1 semana (2) 2 semanas
(3) 3 semanas (4) 4 semanas
34. ¿Qué tan útil crees que sea el Internet para las personas que conoces?
(1) Demasiado útil (2) Útil
(3) Algo útil (4) Nada útil
35. ¿Hablas algún otro idioma aparte del español? (1) Sí (2) No *
*** Si la respuesta es no, favor de pasar a la pregunta 38.**
36. Si la respuesta es sí, ¿qué idioma? (puedes tener más de una respuesta)
(1) inglés (2) francés (3) portugués (4) italiano
(5) Otro/especificar _____
37. ¿Qué tan cómodo te sientes con tú ingles?
(1) Muy cómodo (2) Algo cómodo (3) Neutral
(4) Algo incómodo (5) Muy incómodo
38. ¿Crees que el saber inglés te puede ayudar a navegar en Internet?
(1) Sí (2) No
39. ¿Crees que la mayoría de la información en el Internet está en inglés?
(1) Sí (2) No
40. ¿Crees que el saber otro idioma aparte del español te ayuda cuando navegas en Internet?
(1) Sí (2) No

¡Muchas gracias por tú participación. Te lo agradezco mucho!

APPENDIX B: Questionnaire in English

Internet users' habits

The following survey is part of a research study being used to research Internet users' habits in Mexico.

Following are some questions. Please read carefully all the questions and answer them as candidly as possible. All the information provided will be confidential.

If you have any questions, please contact me at:

Enrique Romo
2104 Cullen Avenue # 208
Austin, Texas 78757
512.92.4013
email: er102@txstate.edu

1. Gender (1) Male (2) Female
2. Age (1) 18-25 (2) 26-35 (3) 36-45 (4) 46-55 (5) 56-Older
3. Monthly Household Income (In Mexican Pesos)
(1) \$0- \$10,000 (2) \$10,001-\$15,000 (3) \$15,001-\$20,000
(4) \$20,001-\$25,000 (5) \$25,001 or more
4. Education (1) Elementary (2) Junior High School (3) High School
(4) Technical school (5) Some college (6) Bachelor's degree
(7) Some graduate school (8) Graduate degree
5. Occupation (1) Student (2) Self-employed (3) Employee
(4) Supervisor (5) Homemaker (6) Retired
(7) Professional (8) Technical
6. Marital Status (1) Single (2) Married (3) Divorced (4) Widowed
(5) Live w/partner
7. How many people live in your household?
(1) 1 (2) 2-5 (3) 6-8 (4) 9 or more
8. Have you heard about the Internet? (1) Yes (2) No *
*** If no, go to question 14.**
9. If yes, where did you hear about it? (1) Friends (2) Family (3) Work
(4) Media (5) Other/specify _____

10. Do you know how to use the Internet? (1) Yes (2) No
11. How long have you been using the Internet?
 (1) Do not use it (2) less than 6 months (3) 6-12 months
 (4) 1-3 years (5) 4-6 years (6) 7 or more years
12. Do you think that the level of your education is important to understand how to use the Internet? (1) Yes (2) No
13. Do you think the Internet requires users to have special skills to use it?
 (1) Yes (2) No
14. Do you have a computer at home? * (1) Yes (2) No *
*** If no, go to question 18.**
15. Do you have access to the Internet at home? (1) Yes (2) No
16. If yes, when did you first start using it at home? Year _____
17. How do you access it? (1) Do not access it (2) Dial-up (3) satellite
 (4) Cable (5) Prodigy (6) Pre-pay (7) Mobile phone
 If you don't access it, please go to question 18.
18. Do you access the Internet in any of the following places (circle all that apply)*
 (1) Do not access it * (2) School (3) Work (4) Internet Café
 (5) Public Terminal (Kiosk) (6) Friends/relatives (7) Other/specify _____
*** If no, go to question 35**
19. What year did you start using the Internet in one or more of these places?
 Year _____
20. How many hours a week do you access the Internet? (1) Do not access it
 (2) 1-3 hours (3) 4-6 hours (4) 7-10 hours (5) More than 10 hours
21. How many days per week do you access the Internet? (1) 1
 (2) 2 (3) 3 (4) 4 (5) 5 (6) 6 (7) 7 (8) Do not access it
22. What do you use the Internet for (check all that apply) (1) Email
 (2) Entertainment (3) Education (4) Research (5) Shopping
 (6) Banking (7) Work (8) Other/specify _____
23. Do you foresee not using the Internet in the future? (1) Yes (2) No
24. Is access to the Internet expensive? (1) Yes (2) No
25. How has the Internet affected your life? (1) Positively (2) Neutral (3) Negatively

26. What made you adopt the Internet to your life style? (1) Work (2) School
(3) Friends (4) Family (5) Media (6) Other/specify _____
27. Complete the following, "I think the Internet is better to get information than."
(1) TV (2) Newspaper (3) Magazines (4) Telephone
(5) Other/specify _____
28. Has the Internet made it easier/better to communicate with others? (1) Yes (2) No
29. Do you think the Internet is? (1) Extremely hard to use (2) Hard to use
(3) Easy to use (4) Extremely easy to use
30. If someone is using the Internet for the first time, do you think they need extensive training?
(1) Yes (2) No
31. In your opinion, what do you think is the most complex aspect of the Internet?
(1) Software (2) Hardware/equipment (3) Surfing
32. Do you think using the Internet before purchasing it in order to get acquainted with its capabilities is a good idea? (1) Yes (2) No
33. How long do you think you need to try the Internet before deciding whether or not to adopt it?
(1) 1 week (2) 2 weeks. (3) 3 weeks (4) 4 weeks
34. How helpful do you think the Internet is to those around you?
(1) Extremely helpful (2) Helpful
(3) Little helpful (4) Not helpful at all
35. Do you speak a language other than Spanish? (1) Yes (2) No
36. If yes, what is that language? (circle all that apply) (1) English (2) French
(3) Portuguese (4) Italian (5) Other/specify _____
37. How comfortable are you with your English ability?
(1) Very comfortable (2) Somewhat comfortable (3) Neutral
(4) Somewhat uncomfortable (5) Very uncomfortable
38. Do you think knowing English helps you when surfing the Internet?
(1) Yes (2) No
39. Do you think that most of the information on the Internet is in English?
(1) Yes (2) No

40. Does knowing a language other than Spanish make it easier for you to use the Internet? (1) Yes (2) No

Thanks a lot for your assistance and cooperation.

REFERENCES

- AMD. (2003). Mexico. The AMD Global Consumer Advisory Board (GCAB). Retrieved August, 23, 2004, from <http://www.amdgcab.org>.
- AMIPCI. (2004). Directorio de Internet en México. Retrieved October 1, 2004, from, http://www.amipci.org.mx/directorio/index.html?tipo_busqueda=categoria&categoria=5&PHPSESSID=9656f6e4f636a212909fa667faa5af56.
- AMIPCI. (2004). Hábitos de los Usuarios de Internet en México. Retrieved November 15, 2004, from, http://www.emexico.gob.mx/wb2/eMex/eMex_Habitos_de_Internet_en_Mexico_2004?page=1.
- Atkin, D. J., & Jeffres, L. W. (1998). Understanding Internet adoption as telecommunications behavior. *Journal of Broadcasting and Electronic Media*, 42, (4), 475-491.
- Autor, D., Katz, L., & Kreuger, A. (1998). Computing inequality: Have computers changed the labor market? *Quarterly Journal of Economics*, 113, 1169-1214.

- Avila, A. (2002). E-Mexico project overview: Telecom trends in Mexico 2003. Retrieved September 11, 2004, from http://64.233.161.104/search?q=cache:uM9wWky0fXgJ:egov.alentejodigital.pt/Mexico/E-Mexico_Overview__Aug._12_.doc+e-mexico+project+overview:+telecom+trends+in+Mexico&hl=en&ie=UTF-8.
- Background Notes on Countries of the World. (2003). *Mexico*. Retrieved November 19, 2004, from http://www.web7.epnet.com/citation.asp?tb=1&ug=sid+1367A6FE%2D943E%2D49E1%2D8ABC%2D6D80826AAA90%40sessionmgr3+db+aph+cp+2+A10F&_us.
- Baliamounte-Lutz, M. (2003). An analysis of the determinants and effects of ICT diffusion in developing countries. *Information Technology for Development*, 10, 151-169.
- Baym, N. K., & Lin, M. (2004). Social interactions across media. *New Media and Society*, 6, (3), 299-318.
- Bills, L. (2004). *TV Azteca S.A. de C.V.* Retrieved November 24, 2004, from http://www.hoovers.com/tv-azteca/--ID_53615--/free-co-factsheet.xhtml.
- Bills, L. (2004). *Grupo Televisa, S.A.* Retrieved November 24, 2004, from http://www.hoovers.com/grupo-televisa,-s.a./--ID_51043--/free-co-factsheet.xhtml.
- Bottomley, P. A., & Fildes, R. (1998). The role of prices in models of innovation diffusion. *Journal of Forecasting*, 17, 539-555.

- Burnett, R. & Marshall, P.D. (2003). *Web Theory: An Introduction*. New York, NY: Routedledge.
- Carr, V.H. (1996). *Technology adoption and diffusion*. Retrieved September 30, 2004, from <http://www.au.af.mil/au/awc/awcgate/innovation/adoptiondiffusion.htm>.
- Central Intelligence Agency World Factbook (2003). *Mexico*. Retrieved June 1, 2004, from <http://www.cia.gov/cia/publications/factbook/geos/mx.html>.
- Central Intelligence World Factbook. (2004). *Mexico*. Retrieved November 19, 2004, from http://www.web7.epnet.com/citation.asp?tb=1&_ug=sid+1367A6FE%2D943E%2D49E%2D49E1%2D8ABC%2D6D80826AAA90%sessionmgr3+db+aph+cp+2+A10F&_us.
- Chacon, L. (2004). Van contra el rezago de Internet en el hogar. *Reforma*. Retrieved October 1, 2004, from http://web4.infotrac.galegroup.com/itw/infomark/481/462/55415992w4/pur;=rcl_1FME_0_CJ12097205&dyn=14!xrn_46_0_CJ120972056?sw_aep=txshracd2598.
- Chambers, J. (2004). How technology can lift the world. *Global Agenda*, 2, 148-150.
- Chen, W., Boase, J., & Wellman, B. (2002). The global villagers: Comparing Internet users and uses around the world, in Wellman and Haythornthwaite (eds) *The Internet in everyday life*, 74-113. Malden, MA: Blackwell.
- Chong, A., Micco, A. (2003). The Internet and the ability to innovate in Latin America. *Emerging Markets Review*, 4, (1), 53-73.

- COFETEL. (2004). Direccion general de tarifas e integracion estadistica. Retrieved September 15, 2004, from http://www.cofetel.gob.mx/html/5_est/celulares/telecelular.htm.
- Couros, A. (2003). Innovation, change theory and the acceptance of new technologies: A literature review. Retrieved October 4, 2004, from http://www.educationaltechnology.ca/couros/publications/unpublishedpapers/change_theory.pdf.
- Cramming them in: More Latin Americans are being educated, but not well. (2002). *Economist*, 363, (8272), 34.
- De Beer, A.S., & Merrill, J.C. (2004). *Barriers to media development*. Boston, Mass.: Pearson Education, Inc.
- Dholakia, N., Dholakia, R.R., & Kshetri, N. (2003). Internet diffusion. *The Internet Encyclopedia*, 1-42.
- Education—Key to Education. (2003). *Americas*, 55, (6), 54.
- e-Mexico. (2004). *Acerca del sistema*. Retrieved June 8, 2004, from http://www.e-mexico.gob.mx/wb2/eMex/eMex_Resumen_ejecutivo_del_sistema_Nacional_eMexic.
- Everett, M. (1998). Latin America On-line: The Internet, development, and democratization. *Human Organization*, 57, (4), 385-394.
- EZLN. (2005). Ejército Zapatista de Liberación Nacional. Retrieved April 5, 2005, from <http://www.ezln.org>.
- Fidler, R. (1997). *Mediamorphosis: Understanding New Media*. Colorado: Pine Forge Press.

- Fredell, E. (2002). Mexico: Moving toward a true digital economy. *International Trade Administration ExportIT Market Research*.
- Freedom House. (2004). *Freedom in the world 2004: Global freedom gains amid terror and uncertainty*. Retrieved November 24, 2004, from <http://www.freedomhouse.org/research/survey2004.htm>.
- Gallegos, H., Pool, M., & Anderson, R. (2001). Access in Mexico. *Trends in Latin American Networking*. Retrieved June 6, 2004, from <http://www.lanic.utexas.edu/project/tilan/reports/rtf359/mexico1.html>.
- Gattiker, U. E., & Howg, L. (1990). Information technology and quality of work life: Comparing users with non-users. *Journal of Business and Psychology*, 5, (2), 237-260.
- Geroski, P. A. (2000). Models of technology diffusion. *Research Policy*, 20, (4-5), 603-625.
- Golder, P. N., & Tellis, G. J. (1998). Beyond diffusion: An affordability model of the growth of new consumer durables. *Journal of Forecasting*, 17, 259-280.
- Gibb, J., Kraemer, K., & Dedrick, J. (2003). Environment and policy factors shaping global e-commerce diffusion: A cross-country comparison. *Information Society*, 19, (1), 5-18.
- Gladwell, M. (2000). *The tipping point: how little things can make a big difference* (1st ed.). Boston: Little Brown.
- Gomez, R. (2000). The hall of mirrors: The Internet in Latin America. Retrieved September 14, 2004, from http://www.tele-centros.org/recursos/lat_mirr.html.

- Goodman, S.E., Press, L.I., Ruth, S.R., & Rutkowski. (1994). The global diffusion of the Internet: Patterns and problems. *Communications of the ACM*, 37, (8). 27-31.
Retrieved August 23, 2004, from <http://www.som.csudh.edu/cis/lpress/sy.htm>.
- Grubler, A. (1996). Time for a change: On the patterns of diffusion of innovation. *Daedalus*, 124, (3), 19-24.
- Halavais, A. (2000). National borders on the world wide web. *New Media and Society*, 1, (3), 7-28.
- Hampton, K., & Wellman, B. (2003). Neighboring in Netville: How the Internet supports community and social capital in a wired suburb. *City and Community*, 2, (3), 277-311.
- Haymond, R. (1998). Internet accessibility in Latin America. *Educational Technology Research and Development*, 45, (3), 116-117.
- Haythornthwaite, C., & Wellman, B. (2002). *The Internet in Everyday life*. Malden, MA:Blackwell.
- Higgins, S. H., & Hogan, P. T. (1999). Internal diffusion of high technology industrial innovations: an empirical study. *Journal of Business and Industrial Marketing*, 14, (1), 61-75.
- History Channel. (2004). *Mexico*. Retrieved November 19, 2004, from http://www.historychannel.com/perl/print_book.pl?ID=23762.
- Hongladarom, S. (1998). Global culture, local cultures, and the Internet. *The Electronic Journal of Communication*, 8, (3-4). Retrieved October 23, 2004 from http://www.cios.org/getfile/HONGLA_V8N398.

Huang, H., Keser, C., Leland, J. & Shachar, J. (2003). Trust the Internet and the digital divide. *IBM Systems Journal*, 42, (3), 507-518.

Human Rights Education Associates (1999). *Development Mexico: Internet use is growing, but only for a few*. Retrieved June 19, 2004, from <http://www.huridoscs-tech@hrea.org>.

Instituto Nacional de Estadística, Geografía e Informática. (2003). Indicadores de Internet. Retrieved June 1, 2004, from <http://www.inegi.gob.mx/est/contenidos/espanol/tematicos/mediano/med.asp?t=ti&nf138&c=4867>.

Instituto Nacional de Estadística Geografía e Informática [INEGI] (2003). *Principales lenguas*. Retrieved November 22, 2004, from <http://www.inegi.gob.mx/est/contenidos/espanol/tematicos/mediano/len.asp?t=ml&en11&c=3338>.

International Telecommunications Union. (2003). *Cellular subscribers*. Retrieved September 15, 2004, from <http://www.itu.int/ITU-D/ict/statistics>.

Internet World Stats (2005). *Internet usage stats for the Americas*. Retrieved March 24, 2005, from <http://www.internetworldstats.com/stats2.htm>.

Internet World Stats (2004). Mexico. Usage patterns. Retrieved September 14, 2004, from <http://www.etcnewmedia.com/review/default.asp?SectionID=11&CountryID=74>.

- Iyengar, S. (2002). Experimental Designs for Political Communication Research: From shopping malls to the Internet. Paper presented at Workshop in Mass Media Economics, Department of Political Science, London School of Economics, 25-26 June. Retrieved October 18, 2004 from:
<http://pcl.standrod.edu/common/docs/research/iyengar/2002/expdes2002.pdf>.
- Jain, R. (2002). Editorial preface: The Internet in developing countries. *Journal of Global Information Technology Management*, 5, (1), 1.
- James, J. (2002). *IT landscape in Mexico*. Retrieved September 11, 2004, from
<http://www.american.edu/ksb/mogit/country.html>.
- Johnson, D. J. (2001). Success in innovation implementation. *Journal of Communication Management*, 5, (4), 341-359.
- Kim, C., Galliers, R.D. (2004). Toward a diffusion model for Internet systems. *Internet Research: Electronic Networking Applications and Policy*, 14, (2), 155-166.
- Kenny, C. (2003). The Internet and economic growth in less-developed countries: A case of managing expectations? *Oxford Development Studies*, 31, (1), 99-113.
- Kiiski, S., & Pohjola, M. (2002). Cross-country diffusion of the Internet. *Information Economics and Policy*, 14, (2), 297-310.
- Kirkman, G. (2001). Out of the labs and into the developing world: using appropriate technologies to promote truly global Internet diffusion. *Journal of Human Development*, 2, (2), 191-237.
- Koss, F.A. (2001). Children falling into the digital divide. *Journal of International Affairs*, 55, (1), 1-10.

- Kraut, R. S., Kiesler, B., Boneva, B., Cummings, J., Helgeson, V., & Crawford, A. (2002). Internet paradox revisited. *Journal of Social Issues*, 58, (1), 49-74.
- Kripalani, M. (2004). The digital village. *Business Week*, 3889, 60-63.
- Kumar, V., Ganesh J., & Echambadi, R. (1998). Cross-national diffusion research: What do we know and how certain are we? *Journal of Production and Innovation Management*, 15, 255-268.
- LaRose, R., & Hoag, A. (1996). Organizational adoptions of the Internet and the clustering of innovations. *Telematics and Informatics*, 13, (1), 49-61.
- Lazarsfeld, P. F., Berelson, B., & Gaudet, H. (1944). *The People's Choice: How the voter makes up his mind in a presidential election*. New York: Euell, Sloan, and Pearce; reprinted 1948, 1960. New York: Columbia University Press.
- Leavey, (2003). The Internet remains a mystery to most people. *UN Chronicle*, 40, (4), 34-36.
- Lenert, E. (2004). A social shaping perspective on the development of the world wide web. *New Media and Society*, 6, (2), 235-258.
- Lenhart, A., Simon, M., & Graziano, M. (2001). The Internet and education: Findings of the Pew Internet and American Life Project. Retrieved October 20, 2004, from <http://www.pewinternet.org>.
- Leung, L., & Wei, R. (1999). Who are the mobile phone have-nots? *New Media and Society*, 1, (2), 209-226.
- Lin, C. A. (1998). Exploring the personal computer adoption dynamics. *Journal of Broadcasting and Electronic Media*, 41, (1), 95-112.

- Lucas, Jr. H., Sylla, R. (2003). The global impact of the Internet: Widening the economic gap between wealthy and poor nations. *Prometheus*, 21, (1), 3-23.
- Maitland, C. (1998). Global diffusion of interactive networks: The impact of culture. *The Electronic Journal of communication*, 8, (3-4). Retrieved October 23, 2004, from http://www.cios.org/getfile/MAITLAND_V8N398.
- Manley, M. (1987). *Up the down escalator: development and the economy, a Jamaican case study*. Washington, DC: Howard University Press.
- Map of Mexico (2004). *Map of Mexico*. Retrieved November 24, 2004, from <http://www.cia.gov/cia/publications/factbook/geos/mx.html>.
- Martínez-Frías, J. (2003). The importance of ICTs for developing countries. *Interdisciplinary Science Review*, 28, (1), 10-14.
- McLellan, F. (2001). Information technology can benefit developing countries. Retrieved October 25, 2004, from http://web26.epnet.com/citation.asp?tb=1&_ug=sid+BCOA0022%2DD03F%2D45B0%2DA22C%2D15EB39978BFE%40sessionmgr5+db5+aph+cp+2+8E.
- Mendel, T. (2003). *Freedom of information: A comparative legal survey*. Retrieved November 24, 2004, from http://portal.unesco.org/ci/en/ev.php-URL_ID=14138&URL_DO=DO_TOPIC&URL_SECTION=201.html.
- Mexican Embassy Online (2002). *History and Culture of Mexico*. Retrieved November 19, 2004, from <http://www.mexican-embassy.dk/history.html>.
- Mexican Phone lines: Residential and non-residential. COFETEL (2004). Retrieved September 15, 2004, from http://www.cofetel.gob.mx/html/5_est/graficas/ineastelefonicas_03.html.

- Midgley, D. F., & Dowling, G. R. (1978). Innovativeness: The concept and its measurement. *Journal of Consumer Research*, 4, 229-242.
- Minges, M. (2003). Informe sobre el desarrollo mundial de las telecomunicaciones 2003. International Telecommunications Union (ITU).
- Mohammed, S. N. (2004). Self-presentation of small developing countries on the world wide web: A study of official websites. *New Media and Society*, 6, (4), 469-486.
- Mont, C.G. (2000). The social uses of the Internet in Mexico: A case study. *Telematics and Informatics*, 16, 91-99.
- Montero, M., Stokols, D. (2003). Psychology and the Internet: A social ecological analysis. *CyberPsychology & Behavior*, 6, (1), 59-72.
- Mwaura, C. W. (2003). An investigation of the innovation-decision process of faculty members with respect to Web-based instruction. Retrieved September 29, 2004, from www.oln.org/conferences/OLN2003/papers/Catherinemwaura_presentation.pdf.
- National Telecommunications and Information Administration (2002). *A nation online: How Americans are expanding their use of the Internet*. Retrieved September 11, 2004, from <http://www.nita.doc.gov/ntiahome/dn/html/execsum.htm>.
- Network Information Center (NIC) Mexico. (2004). History. Retrieved September 11, 2004, from <http://www.nic.mx/es/NicMexico.Historia>.
- Network Information Center (NIC) Mexico. (2005). Domain names. Retrieved March 16, 2005, from <http://www.nic.mx/es/Estadisticas.Dominio?type=0>.

- Neuendorf, K.A., Atkin, D., & Jeffres, L.W. (1998). Understanding adopters of audio information innovations. *Journal of Broadcasting and Electronic Media*, 42, (1), 80-94.
- NUA. How many online? Retrieved September 14, 2004, from http://www.nua.ie/survey/how_many_online.
- Nie, N. H., Hillygus, D. S., & Erbring, L. (2002). Internet use, interpersonal relations, and sociability: A time diary study, in Wellman and Haythornthwaite (eds). *The Internet in everyday life*, 215-243. Malden, MA: Blackwell.
- Nunberg, G. (2000). Will the Internet always speak English? *The American Prospect*. Retrieved October 22, 2004, from <http://www.prospect.org/web/page.ww?section=root&name=ViewPrint&articleID=4287>.
- Palacios, J. (2003). The development of e-commerce in Mexico. A business-led passing boom or a step toward the emergence of a digital economy? *Information Society*, 19, (1), 69-79.
- Peha, J. M. (1999). Tradable universal service obligation. *Telecommunications Policy*, 23, (5), 363-374.
- Perse, E. M., & Dunn, D. G. (1998). The utility of home computers and media use: Implications of multimedia and connectivity. *Journal of Broadcasting and Electronic Media*, 42, (4), 435-457.
- Plunkett Research, Ltd. (2005). *Typical daily Internet activities, U.S.* Retrieved April 1, 2005, from http://www.plunkettresearch.com/technology/ecommerce_statistics_1.thm.

- PR Passport (2004). *Understanding Mexican Media*. Retrieved November 23, 2004, from <http://www.prpassport.com/mediamexico.htm>.
- Presidencia de México (2004). *History of Mexico*. Retrieved November 23, 2004, from <http://www.presidencia.gob.mx> and <http://www.elbalero.gob.mx>.
- Rafaeli, S., Newhagen, J.E. (1996). Why communication researchers should study the Internet: A dialogue. *Journal of Computer-Mediated Communication*, 1, (4). Retrieved September 30, 2004, from <http://www.ascusc.org/jcmc/vol1/issue4/rafaeli.html>.
- Rao, S. (2002). Diffusion Lecture. Lecture presented to theories of mass communication (MC 5303) class at Texas State University, San Marcos, Texas.
- Rao, S. (2003). Urban digital 'haves' and 'have nots' in India: What difference do Internet access and usage make? *International Communication Bulletin*, 38, (3-4), 12-25.
- Reagan, J. (1987). Classifying adopters and nonadopters for technologies using political activity, media use and demographic variables. *Telematics and Informatics*, 4, 3-16.
- Rich, J.L. (2000). Building the Latin American Internet. *New York Times*, 150, (51595), W1.
- Roberts, T. (1996). Window on technology and the poor. *Los Angeles Times*.
- Rodriguez, A. (2001). The digital divide: The view from Latin America and the Caribbean. *67th IFLA Council and General Conference*. August 16-25, 2001. Mexico: Universidad Nacional Autonoma de Mexico.
- Rogers, E. M. (2003). *Diffusion of Innovations* (5th ed.). New York: The Free Press.

Rogers, E. M., & Singhal, A. (1996). Diffusion of innovations. In Salwen, M., & Stacks, D. (eds). *An Integrated approach to communication theory and research*.

Mahwah, NJ: LEA.

Sahay, S., & Avgerou, C. (2002). Introducing the special issue on information and communication technologies in developing countries. *The Information Society*, 18, 73-76.

Salazar, L. (2004). Prefieren telefonía al utilizar Internet. *El Norte*. Retrieved October 1, 2004, from,

http://web4.infotrac.galegroup.com/itw/informark/481/462/55415992w4/purl=rcl1_FME_0_CJ122031769&dyn=4!xrn_16_0_CJ122031769?sw_aep=txshacd2598

Scheeres, J. (2002). Mexico wants an e-revolution. *Wired News*. Retrieved May 14, 2004, from <http://www.wired.com/news/business/0,1367,50622,00.html>.

Schneider, S. M., & Foot, K. A. (2004). The Web as an object of study. *New Media and Society*, 6, (1), 114-122.

Secretaría de Relaciones Exteriores (2004). *Partidos Políticos*. Retrieved November 19, 2004, from <http://www.sre.gob.mx/mexicano/general/partidospoliticos.htm>.

Smith, G., & Forest, S. A. (2000). Slim's new world. *Business Week*, (3671), 161-165.

Spinetta, A. (2002). *E-Mexico shows promise*. Retrieved May 18, 2004, from <http://www.centerdigitalgov.com/international/story.php?docid=3030000000018556.0>.

Staton, J. K. (2004). *Lobbying for judicial reform: The role of the Mexican Supreme Court in institutional selection*. Retrieved November 19, 2004, from <http://www.repositories.cdlib.org/usmex/prajm/staton>.

- Stromer-Galley, J., & Foot, K. A. (2002). Citizen perceptions of online interactivity and implications for political campaign communications. *Journal of Computer-mediated Communication*, 8, (1). Retrieved October 20, 2004, from <http://www.asusc.org/jcmc/vol8/issue1/stromerandfoot.html>.
- Surry, D. W. (1997). Diffusion theory and instructional technology. *Instructional Technology Research Online*. Retrieved September 30, 2004, from <http://www.gsu.edu/~wwwitr/docs/diffusion>.
- Szabo, M. (2002). Educational reform as innovation diffusion: Development of a theory and test of a model using continuing professional development and instructional technology. *Informing Science* 1465-1480. Retrieved September 30, 2004, from <http://64.233.104/search?q=cache:1hCEwcilw0cj:proceedings.informingscience.org/IS2002Proceedings/papers/Szabo154Educa.pdf+history+of+diffusion+theory&hl=en&ie=UTF-8>.
- The beauty of being Telmex. (1999). *Economist*, 351, (8116), 62.
- The Multifaceted Nature of the Digital Divide (2003). Retrieved June 20, 2004 from <http://www.amdgcab.org>.
- Thomasson, J., Foster, W., & Press, L. (2002). The diffusion of the Internet in Mexico. *Latin America Network Information Center, University of Texas at Austin*, 1-74. Retrieved July 1, 2004, from <http://64.233.161.104/search?q=cache:0UmH614B0wMJ:lanic.utexas.edu/project/etext/mexico/thomasson/thomasson.pdf+the+diffusion+of+the+internet+in+mexico,+thomasson&hl=en&ie=UTF-8>.

- Valente, T. W., & Rogers, E. M. (1995). The origins and development of the diffusion of innovations paradigm as an example of scientific growth. *Science Communication, 16* (3), 242-274.
- Valenti, C. (2000). The little things count: The source of trends can sometimes surprise. ABC News. Retrieved October 1, 2004, from http://abcnews.go.com/sections/business/TheStreet/hottopics_000803.html.
- Vallejo, R. (2000). Mexico: The 21st century IT marketplace. *Connect-world Latin America, Fourth Quarter*. Retrieved February 22, 2004, from http://www.connect-world.com/past_issues/latin_america/2000/fourth_quarter/r_vallejo_EMBASSY_MEXICO_USA_2000.asp.
- Vanderslice, S. (1996). Listening to Everett Rogers: Diffusion of Innovations and WAC. *Language and Learning Across the Disciplines*. Retrieved September 30, 2004, from <http://www.64.233.161.104/search?q=cache:ily3noAMuxQJ:wac.colostate.edu/lla/v4n1/vanderslice.pdf+history+of+diffusion+theory&hl=en&ie=UTF-8>.
- Wellman, B. (2004). The three ages of Internet studies: ten, five and zero years ago. *New Media and Society, 6*, (1), 123-129.
- What is NAFTA? (2004). Retrieved on May 14, 2004, from http://www.nafta-secalena.org/DefaultSite/resources/index_e_.aspx?ArticleID=282#1.
- Wolcott, P., Goodman, S.E. (2003). Introducing the global diffusion of the Internet series. *Communications of the Association for Information Systems, 11*, 555-559.

- Wolf, L., Navarro, J.C., & Garcia, N. (2001). *Make technology work for education in Latin America and the Caribbean*. Retrieved May 20, 2004, from <http://www.iadb.org/sds/doc/edu&techsummary.pdf>.
- World Bank (2004). Poverty in Mexico : an assessment of conditions, trends and government strategy. Retrieved October 9, 2004, from <http://www.bancomundial.org.mx/bancomundial/SitioBM.nsf/vwCatPubBM/EC8E821DBC82165006256EDF0068D254?OpenDocument&pag=6.1&nivel=6>
- World Bank (2004). Data and Statistics: Poverty. Retrieved November 18, 2004 from <http://www.worldbank.org/data/databytopic/poverty.html>
- World Bank Group (2004). *Mexico Country Brief*. Retrieved November 22, 2004, from <http://www.web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/LACEXT/MEXICOEXTN/0,,menuPK:338407~pagePK:141132~piPK:141107~theSITEPK:338397,00.html>.
- Yun, G. W., & Trumbo, C. (2000). Comparative response to a survey executed by post, e-mail, and Web form. *Journal of Computer-mediated Communication*, 6, (1). Retrieved October 20, 2004, from <http://www.asusc.org/jcmc/vol6/issue1/yun.html>.
- Zehr, M.A. (2002). Educating Mexico. *Education Week*, 21, (27), 7.

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