# Best Practices in B2B e-commerce: The case of AT&T and MCI Worldcom in the telecommunications industry

by

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Submitted to the Alfred P. Sloan School of Management in Partial Fulfillment of the Requirements for the Degree of

**Master of Science in the Management of Technology**

At the

**Massachusetts Institute of Technology
June 2000**

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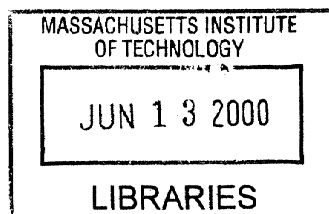
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## ABSTRACT

The evolution of the Internet has deep influence on the way businesses are managed. It not only has great impact on the way businesses approach their customers but also on the interface with their trading partners, employees, as well as their internal businesses processes. Today, developing an electronic business implies the total redesign of the enterprise; in other words it involves the total transformation of the way we do business.

This thesis will address the following main question: How do different companies within the telecommunications industry gain competitive advantage from business to business e-commerce?

The main focus of the study will be to compare and contrast business to business e-commerce practices for two companies within the following matrix:

| *Maturity* | Incumbent | Attacker |
|------------|-----------|----------|
| *Company* | AT&T | MCI Worldcom |

In order to answer the main question I will be focusing on the following issues (for the above mentioned cases):
- What have been their approaches to b2b e-commerce?
- What has been the economic impact, due to the b2b e-commerce practice?
- What are the implications on the corporate strategy level? Have any of these companies redefined their culture and/or business model?
- What is the impact of such b2b e-commerce initiative on the value proposition?
- What appears to be the critical success factors in leveraging B2B e-commerce?
- What have been the constraints and or limitations?

Thesis Supervisor: Henry Birdseye Weil
Title: Senior Lecturer

To my mother, Edith, who always believe in me and support my enterprises

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## 1.0 Introduction

This thesis is written primarily to understand the best practices of business to business (b2b) e-commerce on the global telecommunications industry and their implications for companies, which want to grow through the World Wide Web, using a "digital strategy". Business to business e-commerce is allowing companies to integrate themselves virtually and improve transaction speed. In this document I am not providing forecasts or predictions for the future; instead, the reader will find my conclusions and insights, based on others authors points of view.

The following key questions summarize the focus of this thesis:

- How companies create their strategy by using actual technology?
- How do companies improve their operations by doing business electronically?
- How do companies manage the e-commerce supply chain?
- How do companies use b2b e-commerce to create competitive advantages in building long term customer relationships?
- What are the challenges to an organization's culture brought about by b2b e-commerce?
- Which companies and industries have made the most significant strides in b2b e-commerce?

In order to answer these questions I will focus my analysis on how "traditional" players like AT&T have approached b2b e-commerce compared to new entrants like MCI Worldcom in the telecommunications industry, specially with the importance of the

industry for the actual and future growth of the Internet. As Andy Grove says: "The world runs on Internet time".[1]

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[1] Unleashing the killer App, Downes and Mui

## 1.1 Methodology

The purpose when writing this thesis is to compare and analyze the approach taken by these two companies. As key players in a technology intensive industry, representing both incumbent and attacker approaches, they should provide insights in key success factors in e-commerce.

**Table 1. Companies to analyze within the telecommunications industry**

| Maturity | Incumbent | Attacker |
|---|---|---|
| Company | AT&T | MCI Worldcom |

This research will be conducted by using the following sources of information:

- Articles (journals, newspapers and Internet information).

- Literature (books and write-ups).

- University and Institute research documents.

- Public information either from the companies or industry analysts.

The main tool used in this thesis will be *Porter's five forces model of industry*[2] as a framework to further explain the reason behind the behavior of firms like AT&T and MCI Worldcom in their walk through technological changes. All these changes were influenced by the explosive growth of the Internet and the e-commerce, transforming many of the business concepts at the end of the last decade to enter what is called the "new economy".

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[2] Modern Competitive Analysis, Sharon M. Oster

## 1.2 Synopsis

Section 2 presents the Internet, its origins and main concepts. Here, it is also provided an overview of the Internet as well as b2b and b2c e-commerce and the common views about the benefits of b2b e-commerce.

Section 3 develops the two cases, AT&T and MCI Worldcom, starting with a brief history of these companies and a description of the business environment. The emphasis will be made on the last five years of operations (1995-2000) and specifically on their b2b e-commerce practices and the opportunities that the digital economy offer to this players.

Section 4 presents a Porter's Five Forces Analysis of the Industry in which every aspect of the industry is analyzed and the chapter ends with a discussion of the challenge that the Internet brings to the industry. This is done under a framework that considers aspects such as industry maturity, corporate strategy, corporate culture, and general management approach.

Section 5 explores the new forces: digitization, globalization and deregulation as drivers of the evolution of the telecommunications industry in a digital era and also goes into more detail about what business to business e-commerce means.

Section 6 is dedicated solely to explain in more detail the strategies pursued by both, AT&T and MCI Worldcom in order to answer the questions raised in the introduction of this thesis.

In Section 7 I will discuss the lessons learned and also the impact of the business to business e-commerce and the new opportunities for "brick and mortar" companies. For that purpose I will use the oil industry as an example, and to be more specific, the case of Texaco Inc. and its incursion into the Internet dimension of doing business in the last year.

## 2.0 General Overview

I will start by defining the Internet, briefly presenting its history and the main technologies supporting it. From this point, I move forward to the commercial applications of the Internet, the World Wide Web, and the rise of e-commerce. Finally, I explore the opportunities brought about by the Internet for commerce, and those related to business to business (b2b) in particular.

## 2.1 The Internet

### 2.1.1 Internet definition

"The Internet has been defined as a network of networks, connecting thousands of commercial, university and government computer networks around the globe"[3]. In today's world, networks have created powerful new sources of value that go beyond the acceleration of raw computing power. With the appearance of networks, computers were transformed into communication tools that link users together. This communication capability gave birth to new business opportunities and created new industries.

Two special characteristics of the Internet are openness and scalability. Both characteristics have allowed the Internet to achieve explosive growth. The Internet standards are open and widely used. This openness allowed the Internet to get the critical mass required to benefit quickly from network externalities. On the other hand,

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[3] Haim Mendelsson. A note on Internet Technology. Graduate school of business. Stanford University. Last Rev July 1999.

scalability is the capability to grow and add as many point destinations, locations, and resources without the need to re-engineer or re-design the Net.

In addition to the above mentioned characteristics, the Internet has the following qualities of special importance for business players:

- Ubiquity: the network is accessible by all. The value of the network is higher when it can be used anywhere with available equipment.

- Value added activities: the Network is a powerful tool for delivery of useful information.

- Specialization: The Internet allows firms to specialize in their key capabilities

- Sharing: the efficiency of the network is enhanced when allowing reciprocity

## 2.1.2 Internet basic Technology

Some figures prove the explosive growth of the Internet, see Figure 1.

### Figure 1. Internet worldwide population (1995-2005)
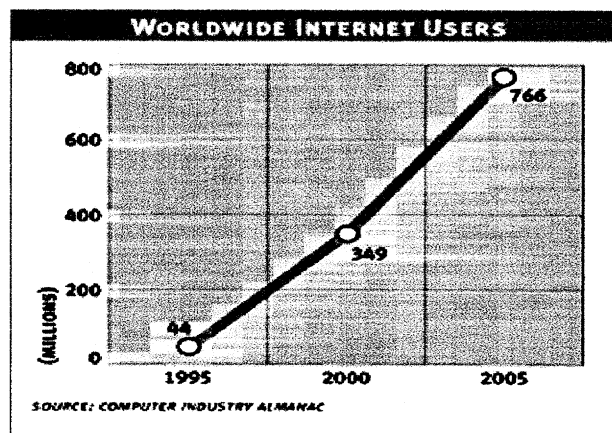
In order to understand clearly how the Internet works, a minimum knowledge of the technology supporting it is required. The purpose in this section is not to provide the reader with specific details about the technology (this is beyond the focus of this thesis) but to provide a reference starting point, in simple words. The main elements of Internet technology defined here are packet switching, the Internet protocol (IP), the transmission control protocol (TCP), the domain name system, and encryption technology.

## Packet Switching

What this technology does is to divide data at the sending computer into several variable-length packets, that contain the information exchanged by the users plus some control information such as the Internet addresses of the source and destination computers and the location of each packet within the overall message. Packet switching allows packets to be sent independently through the network and reassembled at the destination into the original message intended for the recipient[4].

By virtue of its nature, Internet traffic is intermittent. This intermittence is leveraged by packet switching and enables multiple computers to share the network efficiently. However, the packets could be lost if the network is congested due to the fact that the network is shared. Thus, complex processing for packet routing is required through the network. In particular, for Internet telephony applications, video, or Internet based radio, packet loss or delays could result in unacceptable message distortions[5].

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[4] Mendelson Haim. A note on Internet technology. Stanford University, rev 1999
[5] ibid.

The fact that the Internet is a network of networks, or inter-network, has allowed for interconnecting individual networks that do not necessarily use the same packet switching technology. All types of networks are thus connected using specialized computers, called routers, which allow the passing packets from one network to another.

## Internet Protocol and Transmission Control Protocol (IP/TCP)

The standards that allow networks to work together and to be interconnected are the TCP/IP or Transmission Control Protocol/Internet Protocol. Communication protocols define the rules of the game of the network. These rules enable computers to talk and understand each other on the Internet. The Internet Protocol (IP) is the one that makes the numerous heterogeneous networks that form the Internet function as a single, homogeneous network[6]. As a matter of simplification, and to avoid entering into technical details, the IP could be easily understood as the software necessary by any computer on the Internet to be able to send to and receive packets of information from the network.

The other key element of Internet communications is the Transmission Control Protocol (TCP). This protocol is the one that makes the Internet reliable. While IP enables any computer on the Internet to send data to other computers in the Network, it does not guarantee a reliable transmission[7]. What the TCP does is to assure that all delivery imperfections are resolved. It is important to note that both the IP and TCP work

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[6] I Mendelson, Haim. Note on Internet Technology. Stanford University, rev 1999
[7] ibid.

together. All Internet services use TCP/IP to guarantee reliable delivery of information across the network.

## Domain Name System

The numeric IP address is used to identify computers on the Internet and is used internally by the system. Since an IP address is a set of unrelated numbers, it is very hard to remember and makes it difficult for users to memorize it in order to be able to reach or communicate with another party. To surmount this problem, domain names were created. The system that translates a domain name into an IP number is called Domain Name System (DNS). In the United States, domain names are typically formed by three parts and follow the format: *local.organization.domain.* The part that denotes the organization type is the domain. In addition to this, countries other than the US add a two-letter descriptor, after the domain, such as no for Norway, in order to follow similar schemes and allow repeating names to designate hosts in other regions.

## Encryption technology and Security

The Internet has evolved to become widely used for business purposes. Yet by virtue of its being an open system accessible worldwide, security is a major concern. Managing security includes: 1) protecting data against non desired manipulation, 2) providing users authentication, i.e., verifying users' identity for those who are granted access to data, and 3) preserving privacy and confidentiality by making sure that data is only accessible by the intended recipients. The main solutions to the security issue include

the creation of firewalls and encryption. Firewalls, as the name suggests, control access to the network.

Encryption is basically the technology to make the transmitted messages unintelligible to all that are not the intended users. Because of the increased need for secure transmission of business records and other confidential information over the Internet, encryption has become extremely important. Encryption works by transforming the messages to be encrypted called "plaintext" into an encrypted one, or "ciphertext." This ciphertext is then transmitted to the intended recipient. The recipient deciphers the message by using an "encryption key". If an intruder accesses the "ciphertext", he or she can not translate it or "decrypt" it because does not have the correct encryption key. Today, because of the increased volume of electronic commerce, encryption has become extremely important for business engaged in the on-line world. Companies depend a lot on encryption for secure electronic payment systems as well as for digital signatures and digital certificates.

## 2.2 The world wide web

In this section I provide an overview of the World Wide Web and the technologies allowing for content management in the Web. I also clarify the main difference between Internet and World Wide Web. The Web or www (short for World Wide Web) can be defined as an "abstract (imaginary) space of information."[8]. The Web is an interactive

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[8] Berners-Lee interviewed by the Press. www.w3.org/people/Berners-Lee/FAQ

service providing more user-friendly ways to organize and deliver information than it was possible with the original set of Internet services.[9]

## Web Technology: How to create and access Web content

Web content management is gaining serious momentum as companies invest in systems to manage and deliver business-critical documents to specific user communities. These systems aim to leverage the benefits of Web technologies that have been promised for quite some time, including greater immediacy of information, platform independence and ease of use for all users[10]. Even though there is no "dominant design" yet for creating content to be used on the Web, there are two main standards that have showed reasonable performance to the actual requirements and characteristics of the Web. The first is the "Hypertext Markup Language", or HTML and the second is the "Extensible Markup Language" or XML.

## HTML

The coding that allows you to see Internet files as magazine-like pages on your screen is called HTML. Hypertext means, basically, the ability of words in text files to jump to other words, references, etc. It is text created with the simplest of word processors and that links to another text document, picture, sound, or video file.

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[9] Mendelson Haim. A note on Internet technology. Stanford University, rev 1999
[10] Messenger Joel. Document Delivery on the WEB. Document World 2, 4 25-27 Sept /Oct 1999

## XML

Many believe that XML will succeed the HTML as the lingua Franca in the Web. XML is emerging as the standard because it provides a standard format for saving content into a database from which print, Web and other multimedia products can be developed without having to re-work their content from scratch. XML allows for easier data content classification, to apply templates to the data and also to create new content products quickly and easily. It brings a lot of promise for the next generation of e-commerce as it combines structured and unstructured information very well[11]. XML is being preferred over HTML for delivering more dynamic data. XML's strongest point is its ability to do data interchange. Because different organizations (or even different parts of the same organization) rarely standardize on a single set of tools, it takes a significant amount of work for two groups to communicate. XML makes it easy to send structured data across the web so that nothing gets lost in translation.

HTML and XML have specific advantages depending on what they are used for. On the one hand, HTML is a great presentation tool for information that does not require a great deal of formatting. It is easily viewed along with all its graphical elements in any browser. Because of this, it is expected to continue being heavily used for Web sites. On the other hand, XML seems to be better at delivering more dynamic data and for applications such as e-commerce. XML makes it easier for two computers to exchange data with each other. Data is described using tags that describe what each piece of data is. XML does not replace HTML because they are designed for different purposes. XML

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[11] Ibid.

is the Web's language for data interchange and HTML is the Web's language for rendering.

**The Internet and the WWW**

In trying to differentiate the WWW from the Internet, we could think of latter as a set of computers and cables, the network of networks previously mentioned, that is able to deliver packets of information anywhere in the world in a matter of seconds. On the Internet, the connections are cables between computers; on the Web, connections are hypertext links. The Web exists thanks to programs that communicate between computers on the Internet. Thus, the Web could not exist without the Internet. The Web has been extremely successful because people do not want to know about programming, computers and cables, but are rather interested in information. People want to use the Net to communicate easily, regardless of how it works. Several business opportunities were created with the take-off of the Web. These opportunities were not only limited to strict communication and selling but to integrated business strategies. The following section presents how businesses started to take advantage of the Web and how they have evolved.

**2.3 Internet E-commerce**

"E-commerce is a dynamic set of technologies, applications and business processes that link enterprises, consumers and communities through the electronic exchange of goods, services, transactions and information"[12].

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[12] Oracle Corporation Web pages.

From now on I will use the term e-commerce for the action of buying, selling, sharing information, linking activities, collaborating and providing services using the Internet. Commercial applications of the Internet started in 1995 with the growth of the user-friendly World Wide Web. Today, business and consumers are embracing the Internet for several reasons; among there are increased productivity, better efficiency, and the creation of new businesses and social opportunities. Companies see the integration of existing businesses and increasing revenues or reducing costs as the primary goals of e-commerce. This research and current evidence however shows that something much more important is happening: new business models are emerging in almost every single industry. These new business models not only attempt to put buyers and sellers together but also aim to integrate their operations in such a way that all participants benefit. E-commerce is helping companies to reduce costs dramatically across the supply and demand value chain. E-commerce is allowing firms to get closer to customers and develop a better understanding of their needs. On the other hand, e-commerce is helping buyers reduce search costs as well as gain access to more information on products and services.

As more and more firms move to the Internet, network effects take place. Since both buyers and sellers benefit from investing to do business in the Internet, it is in their best interest to persuade more and more of their business partners to do the same, thus creating a self-reinforcing cycle[13].

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[13] Survey: Business and The Internet. The economist, June 26th, 1999

E-commerce can be better understood by differentiating business to consumer (b2c) from business to business (b2b) e-commerce.

## 2.3.1 Business to consumers (b2c) E-commerce

Business to consumer e-commerce represents about 20% of the on-line market (Forrester 1999). It is mainly focused on information products and tangibles. In general, the industries that appears to be more likely to move on-line are those with high information content and large intermediary costs relative to the total cost of the product[14]. Entertainment, travel, news and information, financial services, consumer electronics and groceries are the more obvious cases.

Several business models have emerged in this arena. Many existing bricks and mortar companies extend their offerings through the Internet. In this context, companies see the on-line alternative as a distribution and marketing channel. Barnes and Noble's early answer to Amazon.com is an example. There are totally new business models, 100% on-line or virtual, with e-bay as probably one of the most representative examples.

The benefits of e-commerce for consumers are lower prices, more choices, higher information, and lower search costs. Manufacturers on the other hand are likely to increment their sales, but they have to be very cautious at pricing their products since consumers will be able to compare prices at no cost. In other words, manufacturers should have a good understanding of their product or services' price elasticity before committing to a specific on-line price strategy.

Because of the intrinsic characteristics of the Web some new business models will emerge in b2c e-commerce. Market intermediaries will strengthen their position beyond matching supply and demand by building capabilities that allow them to offer personalized and customized marketing and advertising services. Shopping advisors and several other intermediation businesses, such as auctions and aggregators, will evolve. In some cases, this will be valid not only for b2c but also for b2b e-commerce.

### 2.3.2 Business to business (b2b) E-commerce

**Figure 2. Evolution of the Electronic Commerce Market.**
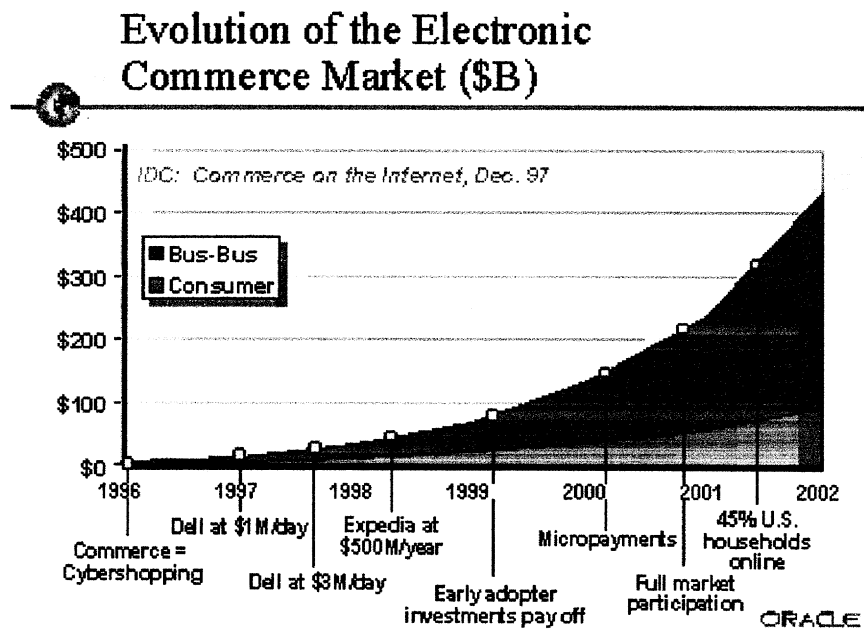


According to the OECD figures, b2b transactions accounted for 80% of the US 26 billion in Internet e-commerce in 1997 and the US 41 billion in 1998.[15] It is expected that b2b e-commerce continue to dominate e-commerce.

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[14] Morgan Stanley Dean Witter. Internet Data Services report. August 11, 1999
[15] Ibid.

The Internet has changed the economics of connecting business. Thanks to the shared nature and openness of the Internet, the costs of participating in business on-line are dramatically reduced. As an example, the cost of participating in an Internet based e-commerce system is one tenth of that of using an EDI (Electronic Data Interchange) system[16] the previous state-of-the art in on-line industry applications. This drop in costs will allow small and medium firms to start conducting their business on-line. The Internet is not only cheaper than EDI, but also less complex and easier to implement.

## Intranets and Extranets

The greater involvement of the parties in a transaction is one of the most powerful features of b2b e-commerce. Unlike EDI, that only allows the interchange of data, b2b e-commerce dramatically enhances features by connecting the operating systems among companies, thus letting them to communicate and share information in real time through the virtual integration of Intranets and Extranets.

## Intranets

An Intranet is the use of Internet technologies within an organization (or company) to achieve better results than the conventional means of data access and transfer. An Intranet helps companies to cut costs and have an easy and fast access to day to day information. An Intranet is different from the Internet in the following ways:

- An Intranet is a network within the organization whereas the Internet is a worldwide network.

- An Intranet has access to the Internet but not vice-versa

## *Extranets*

An extranet is a private network that uses the Internet protocols and the public telecommunication system to securely share part of a company's information or operations with suppliers, vendors, partners, customers, or other businesses. An extranet can be viewed as part of a company's internal network that is extended to users outside the company. It has also been described as a "state of mind" in which the Internet is perceived as a way to do business with other companies as well as to sell products to customers. An extranet requires security and privacy. These require firewall server management, the issuance and use of digital certificates or similar means of user authentication, encryption of messages, and the use of virtual private networks or VPN's that tunnel proprietary information through the public network.

Companies can use an extranet to:

- Exchange large volumes of data using Electronic Data Interchange -EDI.

- Share product catalogs exclusively with wholesalers or those "in the trade"

- Collaborate with other companies on joint development efforts.

- Jointly develop and use training programs with other companies.

- Provide or access services provided by one company to a group of other companies, such as an online banking application managed by one company on behalf of affiliated banks.

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[16] Ibid.

Extranets are currently the core of most Internet b2b commerce. Several features such as customization and community building are brought about by extranets and provide firms with tools to offer better services to their customers.

## 2.4. Key aspects of b2b and b2c e-commerce

Many factors will need to be further considered in order to capture fully the value of b2b and b2c Internet e-commerce. Many of the current state-of-the-art solutions that will help on this will need more proven functionality before they become widely accepted. Some of these factors and challenges are:

- Human resources availability: labor shortage in the e-commerce sector is becoming a reality.

- Operational challenges: companies engaging in business on line will have to face and solve several operational issues, such as the need for a fully shareable and accepted standards for handling secure payments, issues arising from the use of multi-currency and the growth of globalization. How to improve IT capabilities for existing invoicing and inventory systems, efficient and easy order fulfillment, better and high availability systems (24/7), and privacy concerns, also present barriers to be overcome.

- There are also several areas in which the government and the managers of the Internet should collaborate. Some of these areas are intellectual property, commercial law, taxation, free speech regulation, individual privacy, and media regulation.

- Reliability and bandwidth in telecommunications could also limit the growth of Internet businesses. This is an International problem yet the solution stays within the bounds of each and every nation. Obviously several countries will end up with better capabilities than others, thus interfering with globalization because of differing or even incompatible telecom standards.

- With regards to new developments, in particular, for the telecommunications sector, current b2b e-commerce practices are being challenged by the appearance of business models such as aggregators, auctions and exchanges.

Overall, one of the key challenges is to determine how a completely networked world will change the way people deal with each other[17]. The Internet and the new technologies applied in the on-line world make of collaboration a must. However, nobody knows to what extent this collaboration will be used by individual firms and how fast people/customers will adapt to shifting business alliances and partnerships. Without communications networks, there is no Internet. Telecom and e-commerce form a virtual cycle - as communications technology improves the uses of the Internet and the possibilities for extending and building e-commerce expand as well, both in the United States and abroad.

For e-commerce to thrive, certain critical characteristics must be in place. These include stable government, a secure financial environment, a competitive marketplace, open systems and standards; high-speed competitively offered communications, and a climate that fosters innovation. The explosion of e-commerce really began with the World Wide Web, which suddenly opened the Internet, until then, primarily a

government and research tool, to ordinary Americans. Viewed in this way, from the perspective of e-commerce, the transformation of the Internet itself has been dramatic. The United States is the world's leading Internet nation, with over 110,000,000 million users. Currently, the Web comprises about 43,000,000 Web hosts and 1 billion Web pages (a milestone reached in January 2000). It is easy to make the case for the Internet that no technology has evolved so quickly to touch the lives of so many around the world.

In the United States, the landmark Telecommunications Act of 1996 helped speed the explosive growth in telecom investment and e-commerce we're seeing today, by making competition our national policy in all aspects of communications policy. Specifically, the incentives put in place by the Telecom Act has been one of the catalytic factors for deployment of advanced communications networks. In large part, this was because of increased demand for faster access to the Internet, which in turn leads to new possibilities for e-commerce's reach and capabilities. It is a similar point to what is known as Metcalfe's Law - the value of a network grows by the square of the increase in the number of its users. This is as true for the Internet as a whole and for e-commerce as for networks within individual businesses.

And there is a broader point: as management theorist Peter Drucker writes, "In the mental geography of e-commerce, distance has been eliminated. There is only one economy and only one market". This is the concept that telecom companies have lived with for years - what analysts refer to as the death of distance. We're seeing this in

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[17] The Economist: Survey Business and the Internet.  June 26th, 1999

today's competitive long distance market, where prices have come down dramatically in the last few years. Again, the key is competition. The Internet is a global infrastructure in which barriers to entry are low and competition is the rule.[18]

How to be successful in the emerging e-business world is part of the corporation's strategy and the Telecommunications industry plays a critical role. Understanding how incumbents and attackers have risen to the challenge should hopefully provide insights about what makes and will make e-commerce tick. This will be the focus of the following chapters.

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[18] http://www.att.com/speeches/item/0,1363,2742,00.html

## 3.0 The telecommunications industry

### 3.1 AT&T

AT&T Corp. is among the world's premier voice and data communications companies, serving more than 80 million customers, including consumers, businesses, and government. With annual revenues of more than $53 billion and 151,000 employees, AT&T provides services to customers worldwide. Backed by the research and development capabilities of AT&T Labs, the company runs the world's largest, most sophisticated communications network and has one of the largest digital wireless networks in North America. The company is a leading supplier of data and Internet services for businesses and offers outsourcing, consulting and networking-integration to large businesses. It is also the nation's largest direct Internet access service for consumers. Through its recent cable acquisitions, AT&T will bring its bundle of broadband video, voice and data services to customers throughout the United States. Internationally, the AT&T/BT Global Venture -- recently named Concert -- will serve the communications needs of multinational companies and international carriers worldwide.[19]

### 3.2 MCI Worldcom

MCI Worldcom is a new kind of Communications Company. With 1998 revenue of more than $30 billion, MCI Worldcom combines financial strength and a depth of resources to pursue the industry's best growth opportunities with an advanced global network built for the data-intensive era of communications.

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[19] www.att.com/att/

MCI Worldcom's strategy is to capitalize on the industry's fastest growing segments: data/Internet, international and U.S. local phone services. It has a unique set of attributes to pursue this strategy, including:

- Approximately 83,000 employees based in more than 65 countries that have successfully competed against incumbent carriers for every one of the company's 22 million customers;

- "Local-to-global-to-local" networks with facilities throughout North America, Latin America, Europe and the Asia-Pacific region, reducing its reliance on incumbent phone monopolies in the U.S. and around the world and enabling it to deliver greater value and better quality of service control to its customers;

- A long association with the Internet that has enabled it to develop an Internet business with nearly $3 billion in annualized revenues;

- An entrepreneurial management team with a consistent track record for creating industry-leading shareholder value over the past 10 years;

- And commitment to creating innovative services and value for its customers through some of the industry's most recognized brands, including on-net, 1-800-COLLECT, MCI 5 Cent Sundays, 10-10-321, 10-10-220, 10-10-9000, UUNET, and others.


MCI Worldcom is an industry leader that owns and operates its own networks in local cities across the U.S. and around the world. The company's unique set of assets allows its customers to combine voice and data traffic from local U.S. and international locations onto seamless, end-to-end networks.

MCI Worldcom serves millions of U.S. business and consumer customers with a fully integrated package of long distance, local, data, Internet and other communications services.

- Through UUNET, the company has developed the most reliable and widely deployed Internet networks, as well as networking and hosting solutions. The powerful UUNET backbone supports speeds ranging from 56 KBPS to OC-3 and provides local access from more than 1,000 locations worldwide. It also offers virtual private network (VPN), security, customer care, and web hosting and e-commerce services.

- Globally, MCI Worldcom has established itself as a local, facilities-based competitor in 16 countries outside the U.S., with high capacity connectivity to more than 40,000 buildings linked to the rest of the company's network via transcontinental and transoceanic cables.[20]

## 3.3 AT&T, MCI Worldcom and the Industry Environment

AT&T is the second largest Telecommunications company in the world (Global 500) with market value of 152 billion and is ranked 30 in the Global 500 in terms of revenues. MCI Worldcom is the fourteenth largest Telecommunications company in the world (Global 500) with market value of 130.9 billion and is ranked 214 in the Global 500 in terms of revenues. Their main competitors in the business are Nippon Telegraph and Telephone, Deutsche Telekom, Bell Atlantic, SBC Communications, BT, France Telecom, Telecom Italia, GTE, Alcatel, BellSouth, Telefonica, BCE, Ameritech, Sprint

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[20] http://www.wcom.com/about_the_company/corporate_overview/corpinfo.phtml

(Will merge with MCI Worldcom during year 2000), Cable & Wireless, US West, Telstra and DDI.[21]

The telecommunications industry has been at the forefront of incentive regulation reform, and competition has developed faster than in other industries. The telecommunications sector is fascinating in many aspects. First, technology is progressing rapidly. A few years ago the cozy monopolists who ran the industry offered a small variety of "POTS" (plain old telephone services) such as local, long-distance and international calls. The advent of high capacity and intelligent networks has multiplied the number of offerings or "PANS" (pretty amazing new services, such as calling cards, toll-free or paying numbers to call businesses, name or number identification, voice messaging, routing of calls, facsimile, data transfers, home banking, video on demand, videoconferencing, and Internet services). Second, the industry structure too is evolving rapidly. Networks proliferate, and they need to be interconnected: Public switched telephone networks, cable companies, competitive access providers, mobile operators, local area networks linking computers, Internet service providers.[22]

When the telecommunications revolution began over a century ago, none of its leaders could have predicted where it would lead: telephones in nearly every household; the development first of radio, then broadcast television, then cable television; the globe-spanning Internet; portable, personal satellite phones; the digitization of

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[21] www.fortune.com
[22] Competition in Telecommunications, Laffont and Tirole.

communications. The industry accounts for a seventh of the U.S. Economy, a share worth $1 trillion annually.[23]

Thanks to the almost unbelievably fast pace of technological advance in telecommunications, governmental regulators consistently have lagged a step behind the industry. Recent attempts to modernize the U.S. regulatory structure began with the 1984 court-mandated breakup of AT&T. The corporate giant had held a statutory monopoly on U.S. telephone service since 1934. Its dissolution into seven "Baby Bells" that maintained regional local-service monopolies and the AT&T long-distance provider opened the door to a new era in telephony. The first visible change was the unleashing of competition in the long-distance market. By 1990, AT&T had lost a third of the long-distance market to competitors like Sprint and MCI, which promised customers lower rates and better service than they received from the rump AT&T.[24]

Congress attempted to complete the de-monopolization and further the deregulation of the telephone industry with the Telecommunications Act of 1996. The act eliminated the regional Bells' monopolies on local service and, in return, offered the Bells the chance to offer long-distance service once their local markets were sufficiently competitive. Although progress in local competition has been slower than many industry observers would like, it does appear to be increasing. The FCC is expected within the year to rule that New York State's local market is sufficiently open to allow the area's Baby Bell (or incumbent local exchange carrier, in the current industry cant), Bell Atlantic, to offer

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[23] www.policy.com/issuewk/1999/0614_77/Intro77.html
[24] Ibid.

long-distance service. Meanwhile, technological advance has created a new competitor in the telephone market: wireless. Over 70 million Americans now subscribe to wireless telephone services, and the number continues to increase as the costs of wireless phones and airtime drop and quality of service improves. With many wireless providers offering massive packages of airtime, often bundled with such extras as inexpensive long-distance service, voice mail and paging for relatively low, flat rates, it seems inevitable that for many Americans it will soon be a viable option to abandon landline telephony altogether.[25]

Wireless technology also has created competition for another traditional local monopoly, cable television. The Telecommunications Act of 1996, recognizing the new competition from direct broadcast satellite, brought an end to federal cable-rate regulation as of March 1999. The cable industry argues that the deregulation will enable it to improve service to customers and meet satellite's competitive challenge. Consumer groups, however, allege that it will simply allow cable companies, which generally hold municipal charters granting them local monopolies, to soak their customers -- especially because satellite broadcasters are barred by other federal rules from providing local television broadcasts to most subscribers. The successive waves of deregulation, combined with the technological convergence of audio, video and data telecommunications have led to a wave of mergers in the industry. Some, like Bell Atlantic/NYNEX, two of the Baby Bells, have been between companies already operating in the same business. Most, however, like MCI/Worldcom (a long-distance provider and an Internet backbone operator) and AT&T/TCI (a long-distance provider and a cable TV provider) have

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[25] www.policy.com/issuewk/1999/0614_77/Intro77.html

combined companies offering disparate services, creating new corporations capable of providing a wide array of telecommunications services to national -- and increasingly, international -- markets. Industry watchers expect the merger trend to continue, resulting in a world telecommunications market dominated by between five and 10 massive companies. Although many analysts expect that such a consolidation would lead to significant savings due to economies of scale and scope, others are concerned that it would reduce competition and ultimately hurt consumers.[26]

The recent changes in the telecommunications industry -- both those instituted by The Telecommunications Act of 1996 and those made possible by technological advance -- have caused many to call for further reforms in federal regulation of the industry. Many interested parties, including commissioners of the FCC, have urged further deregulation of the telecom industry, allowing competition in the marketplace to control most aspects of the industry. Under most such plans, the government would be relegated to a far smaller role, ensuring that companies compete fairly and enforcing basic consumer protections. A more controversial issue in government regulation of telecommunications is the fate of the radio frequencies of the electromagnetic spectrum. These frequencies, used for almost all forms of wireless communication, including radio, TV, cellular telephones and satellite signals among other applications, have been allocated to licensees by the federal government since 1927. Although traditionally a complicated and drawn-out administrative process was used to choose licensees, in recent years frequencies have been auctioned to the highest bidder. Some reformers say these auctions do not go far enough, and call for the complete privatization of the broadcast

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[26] www.policy.com/issuewk/1999/0614_77/Intro77.html

spectrum. Opponents say that such privatization would be an inappropriate use of a national resource of almost incomparable value.[27]

Perhaps the most divisive issue in telecommunications today is universal service support for the wiring of schools, libraries and other institutions for the Internet and other advanced telecommunications services -- better known by its popular name, the e-rate. Supporters of the e-rate say that it is necessary to prevent poorer children from falling behind their wealthier peers' technological sophistication, calling the e-rate an investment in the next generation. Opponents of the e-rate call it a $2 billion tax on American consumers that provides a service of questionable value, as most schools are already connected to the Internet, and the services and equipment bought under the program add little educational value.[28]

## 3.4 The effects of scale and scope in the industry

The newest market now undergoing its "digital media" - a potentially huge industry that could quickly reach hundreds of billions of dollars a year in sales. Digital media convey huge quantities of pictures, sound, and text, in the form of digital information, across telephone lines and satellite links. They provide people, in their own homes, with interactive television (TV they can alter or respond to), home shopping, video movies, database information, and a variety of other services yet to be invented.[29]

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[27] Ibid.
[28] www.policy.com/issuewk/1999/0614_77/Intro77.html
[29] Executive Economics, Shlomo Maital

Digital media are by nature an industry built on economies of scope - once phone or cable links to homes are in place, the marginal cost of delivering another TV channel or home-shopping service to the consumer is very small. It is an industry that could only be created by close cooperation among large firms, as it combines industries that until recently operated quite separately - broadcast and movies, printing and publishing, computers and communications. A visionary scholar, Nicholas Negroponte, forecast its birth over a decade ago.[30]

## 3.5 Telecommunications Act of 1996

The Telecommunications Act of 1996 is the first major overhaul of telecommunications law in almost 62 years. The goal of this new law is to let anyone enter any communications business -- to let any communications business compete in any market against any other. The Telecommunications Act of 1996 has the potential to change the way we work, live and learn. It will affect telephone service -- local and long distance, cable programming and other video services, broadcast services and services provided to schools. The Federal Communications Commission has a tremendous role to play in creating fair rules for this new era of competition.[31]

Considering all the different aspects that affects the industry and also trying to create a framework that helps understand and elaborate on top of it some reasonable conclusions and recommendations, I will use the Michel Porter's Five Forces Model, which will be covered in the following chapter. I will also complements Porter's model

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[30] Ibid.
[31] http://www.fcc.gov/telecom.html

with the interesting concept of the New Forces, brought by Downes and Mui in its book "Unleashing the killer app". The New Forces will be Digitization, Globalization and Deregulation and will be powerful tools to start digging into the actual strategies of the two companies' object of this research.

## 4.0 Porter's Five Forces Analysis of the Industry

### 4.1 Intensity of Competition

Is convenient to start this analysis by measuring the concentration ratio in the telecommunications industry. I am taking the 20 companies from the Global 500 list, and in terms of revenue, these companies add up to 549,362 US Million, and the first four companies, give us a C4 of 37% (200,983/549,362). Thus, is fair to say that the industry is moderately concentrated and therefore coordination opportunities exist (of course clarification have to be made that at a country level, this analysis must be done in order to draw proper conclusions, because the competition mix can be quite different).

Is also interesting to use the concept of the Herfindahl index (HI), which turns out to be 672, which indicates a competitive industry environment where rivalry is intense.[32] In terms of assets we can affirm that companies within the telecommunications industry have specific assets and, similar to the airlines industry, does not have alternative uses in different industries. In the other hand, thinking about the telecommunications industry, assets from one firm can suit easily for another firm within the industry. The industry has high barriers to exit and many of the assets, e. g. fiber optic networks, switches, wireless equipment, etc., are very specific. "Heavy reliance on specific assets encourages firms to stay in an industry even when times are bad, simply because there is nothing else they can do with these assets"[33].

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[32] Modern Competitive Analysis, Oster.
[33] Ibid.

The telecommunications industry is a very competitive environment. The major competitors are extremely large in terms of assets, product distribution and brand name recognition. AT&T is the dominant market leader, however a few strong competitors are successfully acquiring consumers from AT&T's market. There is no cost to switch to an alternative long-distance provider, therefore the primary incentive for acquiring and retaining clients is to offer the lowest price. Competition is fierce within this industry and the providers' primary efforts are focused on minimizing cost in order to offer the lowest priced service.[34]

## 4.2 Presence of Substitute products

Demand for telecommunications is not easy to substitute. The world relies heavily in telecommunications for different uses, from voice to data; local, national and international linkage is done through the global telecommunications infrastructure. Therefore, the substitutes have a low impact on the overall industry, is here where business opportunities may arise. With the new digital technology where voice, data and video can be converted into bits, the turnaround is dramatic for the industry and there will be a high demand for telecommunications services that are not that easy to substitute, specially when transmission of digital information is becoming more important.

In this new century the access to the Internet via broadband services will have a higher impact on world's networks, starting with the World Wide Web. Companies like AT&T

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[34] http://lead.csustan.edu/manage/harris/industry4.html

and MCI Worldcom have a tremendous opportunity to grow and enhance the capabilities of the Net by improving then speed of transmission of digital information. The telecommunications companies have developed different strategies to catch on broadband technology, mainly by Joint Ventures, Alliances, Mergers and Acquisitions worldwide.

There are many substitutes to paying toll charges for long-distance telecommunications transmissions. Among other things, consumers have the option to e-mail, utilize wireless communication (cellular phones and 2-way radio), switch to an alternative provider in the form of dial-around numbers or phone cards, and use postal service. The cost of switching to an alternative provider, if any, is relatively low and often times insignificant. The substitute products stated above are a threat to long-distance communications; however, the long-distance telecommunications parent companies also provide many of these substitute services. Therefore, there is little negative impact of switching to a substitute service so long as the consumer retains the same provider. Recent home and personal usage trends in communications have a negative impact on the long-distance industry but a positive effect on the parent Telecommunications Company.

## 4.3 Buyer Power

Is very intuitive that buyers of telecommunications services have small power to negotiate because the number is quite large. Consumers can not affect or influence changes in the price of the telecommunications services, and we can state that the

impact is low for the industry. Again I must clarify that such a conclusion comes from a broader prospective and must be revised for a more specific case, e.g. at a Country level. Due to the convergence of many industries with the telecommunications, the buyers are growing and demanding new bundled services, but is not easy to forecast if this is going to increase their leverage at this point in time.

Telecommunications industry consumers possess significant leverage. Perhaps their most threatening capability is the ability to switch to an alternative provider at little, or no cost. If a long-distance company is too "pricey" they will quickly loose clients, market share and revenue. Secondly, buyers are extremely well informed as to prices offered by alternative providers. Marketing for long-distance service is intense. Frequent telemarketing, TV advertising, celebrity endorsements, billboards, radio and bulk mail inform consumers of the various long-distance rates and services that are available. Consumers are very informed as to pricing structure and are unlikely to withstand rates that deviate too far from the lowest possible rate.

Although consumers possess significant leverage, long-distance providers are fortunate in that the product they offer is virtually a necessity. Usage may vary but every developed area will employ these services regardless of the cost. This is why the government is so involved in protecting the consumer. Additionally, long-distance providers have an extremely large pool of consumers to target. The impact of loosing a few clients is relatively insignificant considering the billions they still have the opportunity to acquire.

## 4.4 Power of suppliers

Suppliers in the telecommunications industry are fragmented and do not have power to influence the price of the goods they sell. In most cases, companies are monopolies by nature due to the high entry cost and investment in infrastructure. The primary suppliers to the long-distance telecommunications industry would include fiber optics providers, hardware suppliers and employees. The suppliers possess minimal leverage. Many of the hardware and fiber optics providers have been integrated either through acquisitions, alliances or cooperatives. The labor force is unionized and there are periodic labor disruptions within the organizations. Many of the jobs available do not require "extraordinary" skills and therefore most of their labor force may be easily acquired or replaced.

## 4.5 Impediments to entry

The long-distance telecommunications market is on the verge of a significant change. The Telecommunications Act of 1996 enabled cable and local carriers to offer long-distance services. This means that the long-distance company's markets will be opened to more competition. These new competitors are formable opponents. They will be entering the long-distance market and bringing with them the experience of operating in the local and cable communications industries. The new competitors will enter with a brand name, strong customer base already in existence and significant capital.

The business is not very attractive to pull new investors looking for high return. The financial performance is higher in average than the Fortune 500, but seems that the risk is also high, as can be perceived from on table 2, below:

| Industry | ROE % | Return on sales % | Return to investors % |
|---|---|---|---|
| Telecommunications | 21.0 | 6.9 | 7.4 |
| All Industries | 14.1 | 3.9 | 14.1 |

**Table 2. Main indicators for the Telecommunications industry**[35]

The incumbents of the industry have many especial characteristics that make more attractive to enter by mergers and acquisitions and joint ventures than starting from scratch. The same players are performing that type of activities over and over as it can be seen in the most recent years, e.g. AT&T and TCI, AT&T and BT global venture named Concert, etc.

Companies in the industry must take advantage of economies of scale to maintain their cost at a competitive level and get the minimum efficient firm size to enjoy it.[36] This fact increases the barriers to entrants because a new player must sink a lot of money and the pay out period tends to be quite large. Important barriers to entry within the industry are the know-how that has been developed through many years into the companies. These companies have improved their technologies and processes; specifically to be used in their own activities and have the skill set in place to continue developing those skills for the future. Human resources are critical for success because they transfer

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[35] Modern Competitive Analysis, Oster.
[36] Ibid.

knowledge and technology inside the firms and divisions, which is something that I consider, is the culture of telecommunications companies.

Another issues are the preservation of the brand and the company reputation, which takes many years and a new entrant is less likely to survive especially when does not have any background and experience in the business within certain business environment. Is common to find the same players in different countries, especially when local governments are in the process of privatization to sell its telecommunications assets. In these circumstances, when a new opportunity to grow appears, new entrants have almost zero possibility to be considered for those governments for open bidding, and private invitations from the government are used instead.

## 4.6 The challenges that the Internet brings

In the late 1970s, Nicholas Negroponte proposed establishing what he called the MIT Media Lab. In raising funds among industry worldwide, Negroponte showed a single powerful diagram to make his case for the Lab. His figure showed three industries - computers, entertainment and printing - that at the time were slightly interconnected, but operated mainly as separate entities. BY the year 2000, Negroponte prophesied; the three circles would nearly coincide.[37]

Today we see how right was Negroponte on his predictions. Companies in those industries, interconnected through different communications means are merging each other and collaborating to pursue a much better use of digital technology and the

process was accelerated with the appearing of the Internet, specially since the year 1995 when it was born. The convergence of new digital technologies in the past five years has created environment rich enough to support life in all forms - social, familial, and political as well as business. This New World of cyberspace will increasingly be the place where business is transacted, customers are contacted, and wealth created and distributed.

## 4.7 The New Forces

Cyberspace still exhibits characteristics long associated with rapidly settling frontiers, including its lack of and resistance to complex regulation and law, its open and democratic nature, and its primitive living conditions. Some, like John Perry Barlow, hope and expect that cyberspace will always retain these frontier features, as advances in digital technology fueled by Moore's Law and Metcalfe's Law continue to push virtual life further and further from its physical counterpart. If this is the case, then understanding the nature of frontier society is a critical skill for anyone hoping to do business there.[38]

Sustainable competitive advantage, Michael Porter wrote, requires leverage over at least one of the "Five Forces": our customers, suppliers, competitors, new entrants, and substitutes. Surrounding the five forces are three new forces: digitization, globalization, and deregulation. These forces, generated by the interaction of digital technology and

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[37] Executive Economics, Shlomo Maital
[38] Unleashing the killer app, Downes and Mui.

Coasean economics, exert tremendous new pressure on the competitive environment, superseding the old forces as the focus of planning.[39]

In the next chapter I will state the actual strategies of both companies, AT&T and MCI Worldcom using the traditional Porter's Five Forces Model, and then I will put on top the New Forces (digitization, globalization and deregulation). This approach presents a broader concept of the issue and will prepare the path to draw some conclusions commendations in the last chapter.

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[39] Ibid.

## 5.0 The New Forces

### 5.1 Digitization

Computing power and communications bandwidth, thanks to Moore's Law, are becoming cheap enough to treat as disposable. As costs come down, competitors and the market in general force organizations to move information-intensive activities not only to computer systems but to increasingly public networks, open data-bases, and collaborative environments, where the new economics multiplies their value. In doing so, traditional business principles and industry rules are suddenly brought to light. They soon disintegrate, leading to a period of chaos followed by the rise of new, but less stable, relationships.[40]

This is the main reason why the strategy of the telecommunications companies has changed dramatically. If voice can be digitized and the infrastructure let the digital information move at an acceptable speed, it means that the traditional twisted wire solution to reach homes and offices is not anymore the perfect mean to transport the bits. Now the solution is sitting among the various options that are available, as wireless communications, satellite systems and broadband.

This is the more compelling event that is making such a convergence of telecommunications industry with other companies, via strategic alliances, joint ventures and mergers and acquisitions in order to offer a wide range of solutions and become more flexible to the different market conditions. This issues lead us to the concept of

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[40] Unleashing the Killer App, Larry Downes and Chunka Mui

networks, in which companies and consumers are circulating zillions of bits of information through a wide range of channels that needs to be managed effectively and addressing one important thread what it is the security.

Telecommunications companies are fully aware of this fact and by all means are trying to maintain open ears not only to incumbent companies with proven technologies, but also the new technologies that are out in the market every day. The dilemma of the telecommunications companies starts when they try to figure out in which extent they should integrate (both horizontally and vertically) in order to maintain or gain sustainable competitive advantages and maintain leadership in the marketplace.

Due to the phenomenal explosion of the Internet and specially its effects on the business to business e-commerce taking place among different organizations, the telecommunications companies are in front of a huge business opportunity to serve and complement those customers by offering total solutions that include but are not restricted to:

- Internet Access Services

- Website Hosting

- Electronic Messaging Services

- Fully managed network protection

- Software on demand

- Video on demand

- Internet telephone services

These offerings are a clear consequence of the transformation that is taking place in the marketplace. Traditional brick and mortar companies in various industries are gaining more understanding of the possibilities that the Internet offers to improve their operations. In the other hand, pure Internet companies, which are growing explosively worldwide, area very important target for offering and selling all the wide variety of services as those presented above. According with the growth projections of the Internet and the increasing transactions taking place among companies (b2b e-commerce), telecommunications companies play a crucial role in the development of these networks.

## 5.2 Globalization

The world can be thought of as a very large network, and as Metcalfe's Law has shown us, the attraction of such a network is irresistible. Improvements in transportation and communications have taken many businesses long considered local to global status, sometimes overnight. In capital markets, for example, globalization is old news, acknowledged as long ago as 1974, when the United States permanently abandoned the gold standard and chose instead to allow its currency to float with the international market. Today, trillions of units of currency are traded electronically every day. National banks are unable to have an impact on exchange rates even when they want to intervene.[41]

The impact of globalization is felt through the production and distribution life cycle. In upstream activities, it is now common to have component sourcing and assembly

provided by a global network of partners and suppliers. For time-sensitive processes, industries as varied as manufacturing and finance take advantage of the earth's rotation by passing work back and forth between Asia, Europe and the Americas, engaging in 24-hour operation. Downstream, customers are already used to the idea of borderless commerce. Given the chance, they are more than willing to shop on an international basis for everything from entertainment to software to cars and electronics, end even for many goods and services traditionally considered national or even local.[42]

Is hence clear that telecommunications companies are a huge source or services for the global industries, by providing the network and adding value to companies by helping them outsource their information management systems. This phenomenon will take place in the future more dramatically due to the globalization effect and the underlying change of the business model of companies that the borderless Internet has added to the market.

## 5.3 Deregulation

Regulation exists in some form for every industry. It often begins as an attempt to restore consumer leverage to markets where, because of scope of monopoly conditions, Adam Smith's "invisible hand" of supply and demand appears not to be operating to regulate price. Such regulations, and the bodies responsible for them, are

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[41] Ibid.
[42] Ibid.

often captured by the industries they are regulating and become a tool for reducing competition and freezing out new entrants - the very opposite of their objective.[43]

The move for deregulation is generally stimulated by a wide spread belief of buyers and sellers that the cure has become worse than the disease, a recognition that the free market, thanks to plunging transaction costs, is now the better regulator of an industry than government. Sometimes, as in the case of U. S. railroads earlier this century and banking today, deregulation follows a realization that some substitute has become available from an unregulated set of providers, making it difficult, if not impossible, for the regulated players.[44]

In international telephone calling, for example, regulated prices encouraged the rise of companies that used technologies like leased data lines, satellites, and automated callback systems to circumvent local monopolies. The success of these companies encouraged the national telcos to sign a pact in early 1997 to open markets and reduce inter-company charges. Deregulation will spur additional competition and the development of more technology. The net result is that consumers will save as much as a trillion dollars over the next 10 to 12 years.[45]

The Internet is the more unregulated place to do business. It offers the unique opportunity that being so young and global is not easy to create today a regulated environment as in other networks. This creates both, opportunities and threads that

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[43] Ibid.
[44] Ibid.

need to be addressed and solved by telecommunications companies that are going to use this force to compete fiercely in order to enjoy the first mover advantage if the moves are done right. The opportunities comes from the fact that being first there, knowing and managing the Internet network will create an strong position for telecommunications companies when the times comes for regulations. This early control gives them a very powerful leverage to maintain "control" over the network by "locking in" their customers to the services provided.

The threads are there also, because every country could try to create norms and regulations for the Internet, interpreting differently the need for control, creating barriers for commerce and hence for telecommunications companies to do business "smoothly", complicating the whole view of the network. This issue, even unlikely, because the World Wide Web is a public environment, must be considered and monitored closely for the industry, at a country level through the evolution of the Internet to a more mature stage.

### 5.4 What is business to business e-commerce?

The challenge today is to identify the opportunities existing behind the b2b activities, considering not only the traditional forces to look for profitable arbitrage conditions, but also to analyze carefully the new forces that impact in great scale the where, how and when do business. The Telecommunications company's strategies must be very focused and clear, identifying their core competencies and technologies in order to capture market share in a sustainable way.
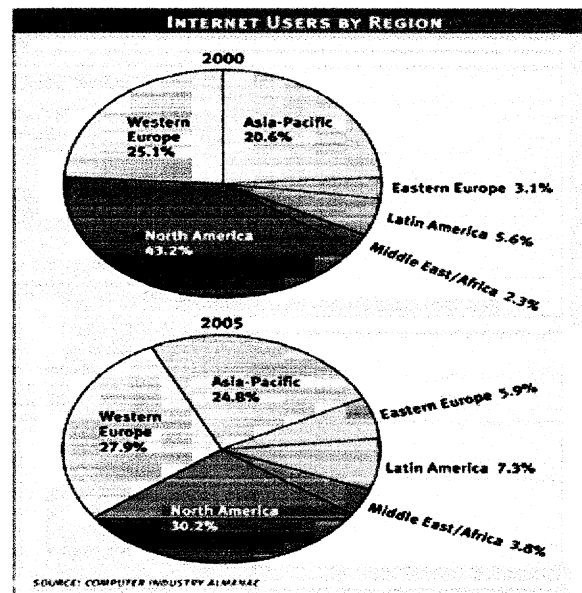
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[45] Ibid.

It is a good point to clarify then, the true meaning of business to business e-commerce. Following is the Internet usage in top 15 countries of the globe:

| INTERNET USAGE IN THE TOP 15 COUNTRIES | | |
|---|---|---|
| Online Population in Millions, 1999 | Total Population in Millions, 1999 | Percentage of Total Population Online |
| U.S. 110.8 | 273 | 40.6% |
| Japan 18.2 | 126 | 14.4% |
| U.K. 13.9 | 59 | 23.6% |
| Canada 13.3 | 31 | 42.9% |
| Germany 12.3 | 82 | 15.0% |
| Australia 6.8 | 19 | 35.8% |
| Brazil 6.8 | 172 | 4.0% |
| China 6.3 | 1,247 | 0.5% |
| France 5.7 | 59 | 9.7% |
| South Korea 5.7 | 47 | 12.1% |
| Taiwan 4.8 | 22 | 21.8% |
| Italy 4.7 | 57 | 8.4% |
| Sweden 3.9 | 9 | 43.3% |
| Netherlands 2.9 | 16 | 18.1% |
| Spain 2.9 | 39 | 7.4% |

TOTAL POPULATION DATA ARE JULY 1999 ESTIMATES.
SOURCE: COMPUTER INDUSTRY ALMANAC, CENTRAL INTELLIGENCE AGENCY



INTERNET USERS BY REGION

2000
Western Europe 25.1%
Asia-Pacific 20.6%
Eastern Europe 3.1%
Latin America 5.6%
Middle East/Africa 2.3%
North America 43.2%

2005
Western Europe 27.9%
Asia-Pacific 24.8%
Eastern Europe 5.9%
Latin America 7.3%
Middle East/Africa 3.8%
North America 30.2%

SOURCE: COMPUTER INDUSTRY ALMANAC

**Figures 3,4. Internet usage in the top 15 countries, and by Region.**

The figures reveal that most of the activities to attack the b2b e-commerce is going to happen in the traditional developed countries, where the infrastructure is heavily deployed and the markets are more mature to absorb their implications. B2b is a unique opportunity for actual brick and mortar companies to take advantage of the Internet by improving their operations and reduce its transaction costs, both internally and externally. The different opportunities varies among the following opportunities:

• Improve internal communication systems within the company, as a tool for transferring individual's knowledge.

• Put in place a flexible but strong information system, updated, ready to use and available for all the key employees in the company.

- Leverage the Intranet with its Customer's in order to put in operation a supply chain system that gives advantages not only to the company but also to its customers.

- Leverage the Intranet with its Supplier's in order to gain in terms of connectivity and efficiency in the planning and execution process of its procurement activities either with products or services.

- Leverage the Intranet with its Competition in order to share mutual information and procedures that concerns the entire industry, without affecting individual strategies, and take advantage of this powerful shared resource of information for the industry to where the company belongs.

- Revolutionize the role of the information technology departments inside the companies, which must play a more active role in the way the new economy behave and function.

Those are merely examples of how to take advantage of the integration provided by the Internet and the new role of the telecommunications industry as an integrator of those functions to improve the network performance and gain positive network effects. With this concepts in mind, is the way the two companies, AT&T and MCI Worldcom should be analyzed, in order to see through their strategies and compare how they are coping with them to capture the business to business environment. Is clear that their approach is got to be into their actual core competencies or there must be some intentions to gain new competencies to capture these business opportunities.

The companies object of this study, both incumbent and attacker had their own strategies, but something that is common is the way they have grown by mergers, acquisitions, joint ventures and strategic alliances. In the following chapter, I will capture the most important activities performed by those companies and how this has impacted their corporate strategies.

## 6.0 Analysis of the strategies of AT&T and MCI Worldcom

In order to develop a coherent reasoning, and trying to untangle the series of strategic steps done by these organizations in their pursue for dominance of the market, I will start by answering some of the questions that were formulated at the introduction of this thesis. Then I will elaborate my own reflections and points of view regarding their actual strategy and I will combine it with some examples captured from the public information available for these two companies. Telecommunications companies and their customers around the world are facing a change as profound as the one that roiled the computer industry when PC's came along 20 years ago, or the gas industry when electric wires were strung along city streets 70 years before that, or the horse-and-buggy industry when railroads crisscrossed the land 40 years before that.

As more and more of the world's telecommunications companies add "competition" to their vocabularies, the economic edifice built on Bell's magnificent invention is beginning to crack. The industry has the next challenges: It has to digest new laws that open up monopolies to competition for the first time. It has to install a billion phone lines worldwide. Most daunting of all, it has to feed the world's voracious appetite for data by completely revamping its networks. Upgrading their networks is costing U.S. phone companies about $40 billion a year. Global investment in the next four years is expected to top $600 billion, according to the International Telecommunication Union in Geneva. This huge investment is flowing because the rules that govern telecommunications companies are relaxing during a technical revolution, opening fabulous opportunities for those who move quickly. Annual global spending on telecommunication services,

already $726 billion, is expected to grow to $1 trillion by 2001. Meeting this demand will be a stretch for executives accustomed to a different pace. Telecommunications is one of the few industries to have been either government-owned or government-regulated everywhere almost since its inception. In most places, it is still a monopolistic, fat, inefficient business. But to hasten investment, governments are slowly beginning to let competition into this cloistered kingdom.

What governments aren't doing, technology is. Telecommunications are changing from an industry that was all about voice to one that is mostly about data. The Internet--that most democratic of networks is spawning new, privately managed data networks modeled on its technology. In the coming decade, almost all the growth in telecom will come from data traffic--computer files, video, graphics, and even voice, all translated into the ones and zeros of computer language. According to analyst William Vogel of Montgomery Securities, corporate spending on telecom in the U.S. alone will grow from $90 billion last year to $150 billion in 2001--by which time perhaps 80% of the total will be for data traffic.

The shift to data means huge adjustments for telcos and their customers. To share the cost of building the new data networks and to extend their reach around the globe, the world's giant phone companies, AT&T, MCI Worldcom, British Telecom, and Bell Atlantic are eyeing each other lasciviously, forming global alliances whose membership seems to shift everyday. While the big get bigger, bubbling below is a caldron of small entrepreneurial companies creating telecom services. Corporate customers, meanwhile,

will be challenged to stay abreast of technology that can slash their time to market--or give competitors a killing edge.

The industry is metamorphosing into an unfamiliar one, with new rules and new players, companies with no history, companies that five years ago were unknown but that today might be the new lord of the Internet (MCI Worldcom, which now carries most of the traffic on America Online and CompuServe) or even a name on a baseball park (3Com, a manufacturer of switches for data networks). For some, change like this is exciting. For others, it is terrifying.[46]

MCI Worldcom and AT&T are transforming themselves with an aggressive growth strategy centered on connecting them directly to its customers using facilities which they own or control, especially since the Telecommunications Act of 1996. Worldcom has been trying to build the leading supplier of long-distance, data, and wireless services to corporate customers by repeating vertical and horizontal integration. Specifically, Worldcom is betting on wireless. On the other hand, AT&T spent more than $110 billion to buy cable-TV companies, which will give AT&T the digital multimedia network of the future for both home and business.

## 6.1 Technology strategy and its impact on their business model.

As the industrial giants of our time struggle to reinvigorate themselves through downsizing, reengineering, joint ventures, and other prescriptions, the importance of technological innovation has not been adequately addressed. Innovation is at once the

creator and destroyer of industries and corporations. Over the years, new technologies have made industrial giants out of many upstart firms, invigorated older ones that were receptive to change, and swept away those that were not. Today, when competitiveness hinges on the ability to develop or adapt new technologies in products, services and processes, understanding the dynamics of industrial innovation and change is essential for survival and success.[47]

Technology means the processes by which an organization transforms labor, capital, materials, and information into products and services of greater value. All firms have technologies. A retailer like Sears employs a particular technology to procure, present, sell and deliver products to its customers, while a discount warehouse retailer like PriceCostco employs a different technology. This concept of technology therefore extends beyond engineering and manufacturing to encompass a range of marketing, investment, and managerial processes. Innovation refers to a change in one of these technologies.[48]

Both companies accelerate revenue growth through new products and bundled services, spreading the risk in a highly competitive industry over a broader range of markets. Specially, their motivations of acquisitions are mainly caused by necessities to reduce exposure to regulatory uncertainties and avoid expensive termination charges domestically and internationally. Through acquisitions, both companies immediately obtain complementary resources including broadband access networks and fast-

[46] http://library.northernlight.com/SG19990714110008653.html?cb=13&sc=0#doc
[47] Mastering the dynamics of innovation, James M. Utterback, introduction.

growing value-added applications. For instance, Worldcom has pinned their hope on two technologies: DSL and MMDS, an emerging wireless technology[49]. Besides, the most important addition to Worldcom's portfolio will be Sprint's PCS technology. AT&T strengthened newer technologies like IP switching and local fiber/cable plant as a result of its acquisitions activities. As for technology familiarity, Worldcom has executed its acquisitions in base or new-familiar segment, specifically playing safe for acquisitions. AT&T's acquisitions have been performed in new-familiar segment except for foreign carriers acquisitions done in base segment.

Both companies' acquisitions yield substantial inroads to new growth markets such as data, Internet, wireless, and network integration services. As for market familiarity, Worldcom's acquisitions follow the same logistics as that of technology familiarity and AT&T's acquisitions have been done in base or new-familiar segment. AT&T is being aware of the communications revolution, in which technologies, applications and devices are converging. This convergence has a huge impact on the actual economy and the society in many different ways and also brings more competitors to the arena at a speed that would have been unthinkable just a few years ago.

For AT&T, is clear that new technology generates new competition. And new competition in turn generates new technology. That is the way it works in any free market. With those dynamics in mind, AT&T believes that there is a three-point call action for the telecommunications industry: First, telecommunications companies must

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[48] The innovator's dilemma, Clayton M. Christensen, introduction.
[49] http://www.wcom.com/about_the_company/press_releases/display.phtml?cr/19991005

deliver on the promise of open markets. Second, the Internet must be free of unnecessary regulation and third, there must be global standards for the communications services of the 21st century.

AT&T seems willing to cooperate in every way possible to see those points realized and their actions in the marketplace are reflecting those convictions. Lets take a look at the global venture that AT&T launched with BT in order to provide better service for its customers and economic growth for its shareholders.[50]

In March 30, 2000, AT&T, BT and Microsoft announced plans to cooperate in the wireless Internet industry to meet the needs of customers for mobile multimedia services. The companies will collaborate to conceive, develop and deploy new wireless broadband applications for consumer and business markets around the world. Based on Microsoft's platform for mobile data services, the applications will be capable of being deployed on BT's and AT&T's existing and next-generation high-speed mobile data networks.

On April 5,2000 AT&T and BT jointly announced plans to invest $2 billion over three years to deliver seamless, global e-commerce services via a network of 44 Internet Data Centers in 16 countries. The centers will be directly connected to the world's most powerful and wide-reaching IP backbone and will provide the wide range of co-location, Web hosting, application and networking professional services that are now critical

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[50] http://www.att.com/speeches/item/0,1363,2532,00/html

success factors for companies ranging from startups to dot-coms to "clicks and mortar" businesses.[51]

This move of AT&T shows how important is to be open to create strategic alliances in order to offer a more integrate set of solutions to the customers and be able to increase the breadth of the products and services offerings. This approach goes on line with their belief on open markets, especially today, in Internet time.

AT&T's is strongly focused in quality, and their biggest efforts are aimed to build and invest in a global infrastructure, using their partnership with BT in the Concert enterprise. A key advantage is that AT&T can have more control over the costs, technology, and capability of the global infrastructure than others who do not have that kind of assets. The company is the global leader in providing managed/outsourcing and networking professional services and also designs builds and operates the best corporate networks in the world.

The company is adding services and capabilities on top of that and is moving from infrastructure into the e-business service space. To the extent that e-business and e-commerce are network based, AT&T have real advantages and benefits to offer customers. Trying to break the last-mile bottleneck, AT&T gobbled up cable companies TCI and MediaOne to gain broadband access to more than 17 million homes. Similarly, Sprint and MCI Worldcom paid fire sale prices for multipoint multichannel distribution

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[51] http://www.att.com/press/item/0,1354,2772,00.html

services (MMDS) licenses, hoping to re deploy this wireless technology for high-speed access in 60 million homes.[52]

The prior examples are a clear signal of the intention of AT&T to keep ahead and maintain alliances and joint ventures as a heavy part of their strategy, which in turn affects directly its business model for future growth by joint venturing and acquiring new technologies.

MCI Worldcom in turn has been strongly sending messages to the media, claiming their status as the preeminent Communications Company for the digital generation. Their plans include a major initiative to build upon its industry leadership in advanced global data and Internet Services. MCI Worldcom is fundamentally shifting its corporate strategy, business initiatives, product focus and sales practices to expand its leadership position beyond high-growth, high-speed data and Internet services. The company is announcing a sweeping initiative to extend the network and transport services MCI Worldcom is so well known for to include a broad range of value added services to facilitate e-commerce and e-business.

The move leverages MCI Worldcom's existing strengths in its extensive global network assets, vast resources and experience in data communications and Internet operations, as well as 83,000 employees worldwide. This shift aptly positions the company as the communications industry leader enabling the new data-centric economy.

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http://www.forrester.com/ER/Research/Report/MarketOverview/0,1338,9049,FF.html[52]

The company wants to provide a range of seamless, end-to-end services for both emerging and established "e-companies," and existing brick-and-mortar companies who are adding "e" capabilities to become "click-and-mortar" companies. The services are part of five core service sets, which include network and access, hosting, an e-business "toolkit," turnkey web solutions, and custom web solutions. The initiative builds upon and extends the industry leading Internet transport and access capabilities provided by its UUNet business unit.

MCI Worldcom has been betting on wireless investments (e.g. Sprint's wireless division fills a long-standing hole in MCI Worldcom's strategy). Also, as a fully integrated telecommunications company, is positioned to take advantage of growth opportunities in global communications.

The example shows how both companies, AT&T with BT and Microsoft, and MCI Worldcom with UUNet are pursuing their technology strategies by growing and partnering with key companies (either joint venturing or by acquisitions).

## 6.2 Improvement of internal operations by doing e-business

Both companies challenge to smoothly combine the acquired firms based on business and geographical proximity and continuously have the acquired key managers lead new organizations. However, Worldcom seems to struggle with sales force integration. Besides, Worldcom is likely to separate UUNet from the mother ship in order to realize

its full potential and focus on emerging services like content distribution[53], although it is counter to MCI Worldcom's bigger-is-better strategy. AT&T is struggling with cultural clashes as result of the mixture of the tradition-bound phone company, two maverick cable players, and a relatively new chief executive officer.

For AT&T and MCI Worldcom, one crucial concern is to apply internally e-commerce activities. In this way, the organizations learn how to leverage the Internet, Intranet and Extranet for its own internal activities. But, what happens when the old corporate culture meets the new technology?

The world many of us know best is the world we learned about growing up in the 40's to the mid- 90's, a linear world, a world where most people worked 9 to 5, and were confined to one place while they worked. We were not multi-tasking as much; we did not have the universe of knowledge and information at our fingertips through the Internet. We had to drive to the library and sift and sort and take time — much more time to gather information. Many feel as if this old world is colliding with a faster, crazier, world in which we are breathless with the power to access any information anytime, anywhere, and anyway.

How is this changing the culture of our businesses and workplaces? Probably in more ways than we can even discern right now. Because we are going through it, we are living it, many of us may not even have the time to slow down and look at the transformation we ourselves are co-creating.

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[53] B. Hannigan, etc., "UUNet Must Break Away From MCI Worldcom," Forrester Report, April 3, 2000.

Intranets have become more like a miniature version of the Net within a company rather than just a way to store directories and newsletters. Many of them have powerful search engines and sophisticated sites that provide employees with vital information 24 by 7, whether they are in the office or on the road.

Now if a hot AT&T news item prompts a customer to call a member of their sales force, the account executive is armed with all the information they need to answer a customer's questions," says Pat Traynor, Marketing Vice President for AT&T Global Services. Traynor was instrumental in launching the AT&T Information Knowledge Exchange or IKE as it is known internally, a site on the company's intranet that carries vital information about services targeted to AT&T's Global customers, the company's largest and most sophisticated clients.

Prior to company Intranets, Traynor explains, we relied on email broadcast distribution. But there was no really good way of storing the information — no systemic archiving. They are not just disseminating information the way you do with broadcast emails, company Intranets make it possible to create sites targeted to very specific knowledge communities. So they, at AT&T can create sites that put the information in context thereby making it more useful and more valuable.

Intranets appear to have a positive effect on culture because it's easier for employees to become proactive when seeking out the information they need to do their jobs. Since all of the information is on the network, it is a lot easier to access. Employees have no

reason to sit in a wait and receive mode, they can proactively go out on the intranet and find out about other services offered within the company, gain access to subject matter experts, and basically access whatever they need to provide answers to their customers.

Prior to the AT&T Intranet site, if a customer read about something like the AT&T/BT venture in the news, and they called an account executive wanting to know what it will mean for their business, the account executive would oftentimes have to use their best judgement. Now with IKE, the account executive has access to critical and customer ready information about the venture. Questions and answers are posted, along with links to all the press releases and analysts reactions. This gives to global customers a very good feeling and a good impression about the company.

Originally IKE was designed for an audience of 4000 people within AT&T Global Services. Now 14,000 people within the company are returning to IKE on a regular basis. IKE is just one example of how vital an Intranet can be in accomplishing knowledge management and shifting the modus operandi and thus the culture of a business.

Another strong example of the achievements of AT&T to improve its internal operations is telework. AT&T's focus on telework grows out of their core business -- communications. But by allowing people to work at home, the policy also achieves social and environmental benefits. And by sharing its telework program on their external

web site, AT&T provide practical tools to encourage others to do the same. In their 1998 highlights, the company shows tremendous improvements in terms of waste minimization; much of it comes from the change in the internal culture about doing things.[54]

Through AT&T's internal systems, conversion to intranet-based employee documents and paperless systems saved over 11 million sheets of paper. Externally, consumer electronic billing saved about 4.5 million sheets of paper. These are only estimates -- currently AT&T can not accurately capture the true impact of information technology upon paper reduction. Telework itself also allowed the company to maintain the information required satisfying high standards in their customer service and at the same time improve employee's quality of life. Following are some statistics that show true benefits that the program bring:

- 29% of AT&T's managers' teleworked one or more times a week.

- 55% teleworked one or more times a month.

- The environmental impact of these telework arrangements:

  - Prevention of 55,000 tons of carbon dioxide, 380,000 tons of hydrocarbons, 2.9 million tons of carbon monoxide and 200,000 tons of nitrogen oxides.

  - Savings of 5.6 million gallons of gasoline.

  - The economic impact of these telework arrangements:

    - An estimated savings of $500 million in cash flow from 1992 to 1998 due to office space reductions.

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[54] http://www.att.com/ehs/report98/toc/98ehsdraft9.doc

- The social impact of these teleworking arrangements:

  - 69% of AT&T teleworkers -- those who telework one or more times a week -- say they are more satisfied with their job

  - 75% of these same teleworkers say their personal and family lives are improved.

Another area in which AT&T is working very hard is the reduction of their paper expenses, by using their network more efficiently, but there's no guarantee that communications technology will automatically align with social and environmental progress to promote sustainable practices. For example, in principle, data transmission via the Internet should cut down on paper usage. But in fact, many people simply print information from the Web, reducing the potential for savings.

AT&T have encouraged their employees to use electronic communications, and in the EH&S department alone, they have been able to cut paper usage by 300,000 sheets a year through an employee communications campaign broadcast on an intranet Website and through e-mail. But without raising user awareness, AT&T can't be sure that new technologies will cut waste and enhance social well being. This is why AT&T seeks, as much as possible, to reduce costs by encouraging the use of their communications technologies throughout the company.

## 6.3 The creation of competitive advantages through e-commerce

The web is now 5 years old, actually the Internet is close to 30, and it is clear we are at the end of the beginning. We are entering a new phase. The Internet is here to stay and

the global networked economy is real. As Tom Wurster says in his book "Blown to Bits", existing value chains, competitors and hierarchical business structures are all dissolving.

The success of the Internet and the e-commerce in the long-term depends largely in the ability to provide better back offices, or in other words to provide an outstanding customer support 24 hours a day, 7 days a week. Back offices are key to responding to customers and ultimately to succeeding in the market. A study from Jupiter Communications shows that it typically takes around 5 days to respond to customer e-mail. This is not exactly instant messaging. It clearly impacts credibility of companies and user loyalty.

On the net, e-mail is one of those back office processes that can make or break when it comes to customer service and support. Everybody involved with the net needs to feel they have a customer service role to play. There is a need to work toward providing end-to-end customer service, which integrates the best of traditional call center services with the net to provide personalized continuous feedback. Problems must be addressed before they occur - Forrester call this Tier 0 support. This is the stage where you preempt online problems by offering users new services that combine the online help function (FAQ's, chat, callback) with artificial intelligence and customer relationship management resources. This is hard, thoughtful work - but if done well - it can mean the difference between a terrific customer experience and a mediocre one.

Another big issue for back office - is that this is where you need to deal with the physical world: order fulfillment, delivery and shipping, returns, bricks and mortar. It is the other network. Over time, the blending of in-store activities and e-commerce is sure to become more and more the norm. Right now there is a lot of hype around the "brick and clicks" phenomenon. But once again, there are some underlying truths emerging through the hype.

Companies treating the Internet as a distribution channel that must be integrated with all their other channels are already finding great success in the market. They can leverage offline relationships to gain online customers - and vice versa - creating a virtuous circle of customer relationship management. For AT&T, the belief is that the key to ensuring long-term success via the back office - rests ultimately on the network. The nets drive successfully the physical strategy. The most successful online companies are leveraging existing data networks to exploit the connectivity of the Internet and the IP. Businesses have invested heavily for years in what is called Intranets - but are also known by many other names - Private Data networks, Frame Relay Networks, WANs, LANs.[55]

Now the challenge is to extend these internal networks to small branches, remote workers, partners, suppliers and, even customers. To extend the edge of the corporate network environment. Much of this is taking place through IP - enabling private data networks with MPLS functionality and Ipsec for public Internet access. Besides adding users, AT&T is also adding more sophisticated and complex applications to these new

hybrid networks. For example, Voice over IP is an application that is gotten a lot of hype. AT&T has been making progress at advancing this technology to the point where they are using it internally to reach 28 locations around the world as well as 10 U.S. sites.

At the retail level, the AT&T GENS Voice over IP service in Japan continues to be very popular - driving millions of minutes to the net. AT&T is also got a Settlement Bypass Program underway offering close to toll-quality calling. Chile, Taiwan, China, Korea, Brazil, Philippines, Venezuela and Poland are using more and more thousands of minutes of the service.

The idea is to keep the best of both worlds, to add the power of the IP protocol without sacrificing performance and security. For AT&T that is an important reason to build a platform that "keeps the promise of the Internet". To comply with this promise, AT&T have defined five basic initiatives:

First, creation of infrastructure. AT&T is building multiple forms of access (dial, dedicated, wireless, broadband), building a critical mass of high-quality users (cable modem, AT&T WorldNet), high-capacity bandwidth, etc.

Second, building out their own IP platform to where customers need it.

Third, is broadband. That is the reason why AT&T have launched cable AND DSL initiatives. Both are required to support the needs of business end-users.

Fourth, the creation of Virtual Private Networks solutions. The truth is VPNs can deliver real cost savings. More importantly they are improving operational efficiencies and

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[55] www.att.com/speeches/item/0,1363,2532,00.html

expand markets. The virtual private network solution delivers on the need to provide secure network solutions for private applications and the economic benefits and openness of IP technology. This is the way private networking converges with public IP networking. Extranets are becoming a reality thanks to the evolution of virtual private networking. One good example is the success of the Automotive Network Exchange and how all of the systems integrators, service providers and small suppliers to the Big Three car companies are all working together in a high-performing and secure environment.

Fifth, is the creation of Internet Data Centers. AT&T announced its intent to build up 26 Internet Data Centers around the world, making more than 1 million square feet of conditioned, next generation central office space available. AT&T have several centers up and running on key markets like New York, Silicon Valley, San Diego and the United Kingdom.

AT&T has also made clear that it will deliver local phone and high-speed data services over fixed wireless facilities in markets where it doesn't have a local phone affiliation with cable operators. AT&T spokesman Mark Siegel says the company might also use DSL "on a selected basis" for high-speed data only, noting that the company's commitment to its wireless strategy remains the main focus as an alternative to cable distribution.[56]

In the case of MCI Worldcom their focus has been in what they call generation d, a cultural and strategic program for the education of its customers. Its main purpose is to

promote the use of the Internet and also explore the possibilities behind it, and also the importance of speed to make many other things to perform e-commerce activities. In the burgeoning economy of the Web, for MCI Worldcom, the Website is only as good as the host is, and only as secure as the network. Clearly, choosing a worldwide leader in Web hosting has its benefits. So does trusting valuable e-commerce data to a secure network from end-to-end. MCI Worldcom believes that doing business on the Web is about far more than speed and site design. It's about security and trust.

For MCI Worldcom the importance of the BackOffice is again an issue and the company is taking advantage of this need by including in their portfolio all the features that the generation d needs. The message for MCI Worldcom customers is heavily charged with recommendations about the importance of having the most technically advanced dot.com destination on the Web, but also keeping a great performance in order to repeat sales. So, the offer is the hosting service and its reliability.

MCI Worldcom has information on their Website[57] to guide the e-customers in the process of identifying ways to make profits out of their own sites. They offer an analysis of the customer infrastructure and give them recommendations about their needs and how to improve the presence on the web. The customer can send some basic information without any obligation to purchase or buy, and MCI Worldcom answers them back with a full offer of possibilities about new ways to take advantage of the e-commerce. This is a very easy to use communication process in which the company

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[56] http://www.cedmagazine.com/ced/0003/0003c.htm
[57] http://www.wcom.com/generationd/ecommerceform.html

also increases their database and start to have a closer contact with possible customers and also gain in terms of trust.

Customers within the generation d (as MCI Worldcom calls them) are receiving real value. Customer feel more comfortable about starting a business relationship with MCI Worldcom and also to put their business in their hands because of their total solutions offering. The approach taken by MCI Worldcom heavily emphasizes the fact about the importance of the use of the technology instead of the technology itself. Many companies have great technology and impressive sites but are still struggling to come up with creative solutions to impact the bottom line. Times are changing for e-commerce, and e-based companies have to show results by performing in terms of revenues.

While AT&T is a phone giant which traces its corporate history back to the late 19th century, Worldcom has grown from an obscure long-distance reseller to the world's preeminent Internet-era telecom. Both companies, who possess different talents and backgrounds, have currently faced cutthroat competition and the endless price wars making their core business, long-distance services, alone unattractive. Through a series of acquisitions, the two companies hope to thrive by providing consumers and business customers with bundles of services including local, wireless, and global e-commerce services.

Both companies concern about consistency with the policy underlying the ownership limits constrained by FCC. In so doing, the companies have different perspectives on brand management. While AT&T insists importance of providing all services under the AT&T brand immediately following the merger, MCI Worldcom is willing to perpetuate valuable brand properties of acquired firms[58].

These companies possess their own latent risky factors, although they seem to steadily grow through a series of acquisitions. As for MCI Worldcom, analysts think that it has paid too much for Sprint resulting from technical problems and cultural mismatching[59]. Moreover, MCI Worldcom is struggling with integration of its acquisitions, customer skepticism, inconsistent services, wary regulators, and conflicting lines of business[60]. On the other hand, as happened in AT&T's technology of voice over cable might not be perfected fast enough for AT&T's cable investment to pay off before long-distance revenues erode. In addition, AT&T's business units do not appear to operate with synergy effects in voice, data, wireless, and Internet services[61].

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[58] Businessweek Online, "Some Sorry Scores form AT&T's California Test bed," October 18, 1999.
[59] Business Week, "The Main Event: Bernie vs. Mike," October 18, 1999.
[60] J. L. Freeze, etc., "MCI Worldcom's Encore," Forrester Report, Vol. 3, No. 7, December 1998.
[61] Bob Wallace, "The Next Frontier," Issue 774, Section: Telecom, Information week, February 21, 2000.

## 7.0 Lessons learned and the impact in the oil industry

The oil industry is clearly a typical "brick and mortar" industry in which the leading edge technology finds a difficult environment to be adopted quickly, specially when the results have impact on the business only on the long run. I will start by explaining the impact of the appearance of the Internet and the b2b for companies in the oil industry and then I will describe more specifically the lessons learned in a specific medium size company. The company chosen will be Texaco Inc., within the whole spectrum of companies in the oil industry.

## 7.1 The Oil Industry and the business to business e-commerce

Following is an excerpt from a presentation of Sir John Browne, Chief Executive Officer of BP Amoco, speaking at the NATO seminar on Technology at Old Dominian University in Norfolk, Virginia in October, 1999:

"Another form of technical progress is the development of electronic commerce - the ability to buy and sell all sorts of products, services and information on screen. That activity is still in its infancy but, for a company such as BP, which lives by buying and selling not just products but also our services and skills it has the potential to transform the whole competitive landscape."

"The first steps are in the area of procurement, where e-commerce gives us the ability to see prices transparently, to unbundle services, to expand the number of players involved and to reduce transaction costs. That's just the start, and of course the real opportunity and threat of e-commerce come when the whole nature of the business

you're doing starts to change. Many people are working in this area but I think it is fair to say no one knows where it will lead. You can only rely on instinct - and my sense is that, as it develops, e-commerce will be a revolutionary force and the world in which we've operated and traded will never be the same again".[62]

The first aspect that comes up when reading an statement like that is the fact that the Internet and the b2b is still a unclear area for most of the industries. This represents a potential for companies like AT&T and MCI Worldcom among others to become the expert consultant for developing the new capabilities needed in the marketplace for traditional companies.

The second aspect to consider is that whoever develops the best solution can reduce its transaction costs first and perhaps provides services to other companies in terms of b2b e-commerce, either in procurement or other parts of the supply chain. This competitive advantage could last just an small period of time, but is something that companies in the oil industry, which is the case we are analyzing, can take advantage of.

Recently the biggest companies within the oil industry have being very active in terms of acquiring and developing Internet capabilities to strive with the b2b e-commerce issue. Following there is a recent example that help illustrate the situation:

"Plans were announced today to create a new Internet based on-line exchange set to revolutionize the traditional marketplace where ship owners, shipbrokers and cargo owners conduct business. The new company, LevelSeas.com, will offer a 'life-of-the-

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[62] http://www.bpamoco.com/_nav/pressoffice/indexs.htm

voyage' solution for all sea borne wet and dry bulk commodity shipping. It will provide comprehensive freight management services encompassing market intelligence, online chartering, pre and post fixture activities and risk management tools, including freight derivatives. LevelSeas.com has the backing of BP Amoco, Cargill, shipbroker Clarksons and the Royal Dutch/Shell Group - investors who represent significant shipping volume and expertise - and will accelerate industry-wide adoption of the new marketplace. Shell International Trading and Shipping Company Limited's Vice President of Shipping, Jan Kopernicki said: "We think this will act as a real catalyst for change in the industry – and change for the better. Nothing else offers a seamless service to take us from the start to the end of a voyage". LevelSeas.com will provide greater market access, lower costs and greater efficiencies in today's shipping environment, delivering significant value to a broad community of large and small industry players, including intermediaries. Gary Weston, Chairman of Clarksons shipbroking commented, "The advent of LevelSeas.com provides a real opportunity to create an electronic market place for the shipping industry. We believe LevelSeas.com will provide liquidity as well as a level playing field for all participants to trade on. This is an environment in which Clarksons can assist our clients in making the move to on-line trading."

LevelSeas.com will be uniquely positioned to cater to the freight needs of international businesses, which rely on ocean transportation as a critical link in their global commodity supply chain. According to consulting firm Booz Allen Hamilton, the global bulk ocean transportation market has an annual turnover in excess of a US$100 billion. This industry is ideally suited for an online marketplace that can bring together buyers

and sellers of freight across the world and streamline the present substantial administrative burden.

Said Tom Intrator, Vice-President, Ocean Transportation Division of Cargill, "LevelSeas.com will combine the latest Internet technology together with deep shipping expertise to provide the central point for what is today a complex and dispersed global industry. We see this as a tremendous opportunity to fundamentally change the way the industry and we manage our freight business. LevelSeas.com is committed to developing further strategic alliances and relationships with other businesses in the industry to ensure its position as the recognized industry standard."[63]

This is just one example of the excitement and uncertainty created inside the oil industry, and many other are yet to come in the future as the technology is transferred and adopted through the whole industry.

## 7.2 Texaco joins Global Internet Marketplace

If blue ship companies do not engage in a short period of time in the b2b marketplace they could suffer in the future the loss of competitiveness because of the reduction in transaction costs as a compelling event push the entire value chain. The company can get advantage of the b2b e-commerce to reduce transaction costs with its vendors, but in the other hand its customers are doing the same move in order to reduce their cost of goods sold, thus affecting the margins. This game will be beneficial for the companies that really understand and put in operation agile b2b systems and platforms to go many

steps ahead and leverage its power to compensate the high pressure put by its customers in the other side of the value chain.

"Petrocosm Corp. today announced that Texaco Inc. has joined Petrocosm marketplace as a founding member of the first, global Internet marketplace created and owned by the energy industry. The Petrocosm marketplace first announced Jan. 19 will launch in the second quarter at www.petrocosm.com. It will offer an open marketplace for companies of all sizes to buy and sell products and services that span the petroleum industry supply chain: drilling equipment, electrical supplies, pipes, valves and fittings, as well as professional, engineering and construction services. Companies in the energy industry will be able to leverage this Internet marketplace to achieve cost savings and generate new revenue streams, ultimately gaining a competitive advantage. Our equity participation in the Petrocosm marketplace is a highlight in Texaco's growing portfolio of strategic e-business alliances," said Gregory M. Vesey, Vice President, e-business for Texaco. Gregory M. Vesey continued, "The new business model behind Petrocosm will transform the traditional customer/supplier relationship by creating a limitless marketplace that can be easily accessed by both the largest and smallest companies around the globe. This open, independent model will provide significant opportunities for cost savings and increased market efficiencies for buyers and sellers - key objectives in Texaco's e-business strategy."

"Ever since the creation of Petrocosm marketplace two months ago, we've seen tremendous interest from players in every part of the energy supply chain," said new

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[63] http://www.bpamoco.com/_nav/pressoffice/default.asp

Petrocosm CEO Norman Chambers. "We're very pleased to welcome Texaco as a founding partner with Chevron, Ariba and Crosspoint Venture Partners. We look forward to working with Texaco and value their early recognition and understanding of the rewards this marketplace can bring to the energy industry."

Is remarkable the fact that the investment that took place in the new technology of b2b e-commerce and the Internet was deployed very fast, specially taking into consideration how these kind of companies are used to decide. It is not easy to imagine how the culture is going to absorb these new challenge, and it is also curious that the majority of the companies within the oil industry are suffering the same process, and to accomplish the objectives, many have created new divisions specialized in e-commerce. In the case of Texaco, for instance, a whole new division, with its own budget was created and many of the employees participating were brought from Internet companies in order to get the technology transferred as soon as possible to the rest of the firm.

Blue chip companies are much more open to accept guidance and support from telecommunications companies like AT&T and MCI Worldcom in order to put the "nuts and bolts" in place into a coherent system. This business relationship can create a strong lock-in that brings benefits to suppliers, the company and its customers and helps to the take off the b2b e-commerce.

# References

Business Marketing. *The Net Marketing 200: Top 50.* August 1999 issue.

CommerceNet. *Worldwide Statistics.* www.commerce.net/research/stats/wwstats. 1999

Christensen, Clayton M., **The innovator's dilemma**. Harvard Business School Press. 1997

Downes and Mui, **Unleashing the killer App.** Harvard Business School Press.1998

Financial Times Survey. *Electronic Business.* Wed, October 20, 1999

Forrester Research. Lief, Dolberg and Lanpher. *Anatomy for New Market Models*-Report. February 1999

Forrester Research. Bell, Schadler, Dolberg and Sharrad. *Building and Extranet Strategy.* March 1999, report.

Forrester Research. Walker, Brown, Smith, Ciardelli and Worthen. *Pumping Up Intranet Portals.* September 1999, report.

Forrester Research. Erwin, Modahl, Johnson. *Sizing Intercompany Commerce.* July 1998, report-volume one number one.

Forrester Research. Dolberg, Cheema and Sharrard. *Resizing On-line Business Trade.* November 1998.

Forrester Research. Dolberg, Boehm, Chatham and Ritter. *The Commerce Integration Imperative.* July 1998. Volume 1 number 3.

Forrester Research. Dolberg, Temkim and Lanpher. *Best of the Business Web.* August 1998. Volume 2 number 2. Reinhardt Andy. *Log In, Link up, save big.* Www.businessweek.com 1998

Hagel and Singer. *Net Worth.* Harvard Business School Press.1999

Hof, Robert. *The Click Here Economy*. www.businessweek.com. 1998

http:// www.w3.org/people/Berners-Lee/FAQ

Internet Society. *All about the Internet.* 1999. http://info.isoc.org/internet/

Kelly, Kevin. *New Rules for the New Economy.* Wired Magazine. September 1997. Archive 5.09

Laffont and Tirole, **Competition in Telecommunications.** The MIT Press, 2000

Maital, Shlomo, **Executive Economics**. The Free Press, 1994

Manson, W.B. *It's Not easy Being B2B.* CIO Magazine, October 1, 1999

Mendelson, Haim. *A Note on Internet Technology.* Stanford University-Graduate School of Business. S-OIT-15. Rev July 1999

Morgan Stanley Dean Witter. *The Internet Data Services Report.* August 11, 1999

Oster, Sharon M., **Modern Competitive Analysis.** Oxford University Press, 1999

The Economist- Survey. *Business and the Internet.* June 26th, 1999

The Economist. *Big, Boring, Booming.* 10th May, 1997

Timmers Paul. *Business Models For Electronic Markets.* European Commission, April 1998

Utterback, James, **Mastering the dynamics of innovation**. Harvard Business School Press. 1994