Evaluating a business strategy for the telecommunications company of the future

by

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M.S. (Computer Science)
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Submitted to the Alfred P. Sloan School of Management and the School of Engineering in Partial Fulfillment of the Requirements for the Degree of

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Abstract

Policy changes coupled with technological convergence and a market demand for a new generation of services are fundamentally redefining the very structure of the traditional telecommunications industry and markets in the United States. While the unprecedented scope and scale of these changes offer unparalleled opportunities, it also invariably attracts a hitherto unknown intensity of competition that will likely render the existing business models and paradigms obsolete.

In this context, what strategy should a firm employ to sustain its market position and possibly even seize new opportunities? Investigating this question - by understanding the environmental forces and the consequent actions by firms will provide useful insights while formulating strategic action. In this effort, we attempt to understand the emerging telecommunications industry structure and evaluate a strategy that is being increasingly pursued in this context, that of One-Stop Shopping.

Thesis Supervisor: Michael A. Cusumano
Title: Professor of Management
Acknowledgments

Any reasonably significant endeavor invariably entails, directly or indirectly, the contributions of several individuals. This thesis is no exception. I gratefully acknowledge the many wonderful people that made this possible. In particular, I wish to thank my thesis advisor Dr. Michael Cusumano, for patiently guiding me through a vast and unwieldy topic; I also wish to thank my accomplished classmates in the Management of Technology program at MIT for so graciously sharing their insights on topics ranging from business strategy to technological convergence. I am also thankful to Professor Stephen Bradley of the Harvard Business School for his perspective and advice on the One-Stop shopping strategy in the telecommunications industry.

I must note, with profound gratitude, the love and support of my parents; more than anything else this has enabled me to pursue opportunities at MIT and beyond.

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May 16, 1997
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Part I: Introduction
Part I Overview:

This part of the document introduces the thesis effort in some detail, including the overall objectives, as well a perspective into the telecommunications industry.

We first defines the purpose if this effort including the motivation, scope and limitations. Subsequently, in Chapter 2, we also presents in some detail the historical background of the telecommunication industry (specifically the long distance industry) in the United States. This information is crucial to understanding the present and the future of the industry.
CHAPTER 1: Thesis Introduction

1.1 Thesis Objective:

The objective of the thesis is to assess the viability of a One-Stop shop strategy in a redefined telecommunications' marketplace. In so doing, we hope to provide useful insights that would benefit in the formidable task of formulating strategy in this industry.

In order to evaluate a strategy, the (emerging) industry structure should first be understood [Porter, 1980]. The lack of any published work on the changing structure of the telecommunications industry compels us to undertake this task prior to strategy evaluation.

1.2 Motivation:

Policy changes coupled with technological convergence and a market demand for a new generation of services are fundamentally redefining the very structure of the traditional telecommunications industry and markets in the United States. While the unprecedented scope and scale of these changes offers unparalleled opportunities - a free-for-all market with annual revenues estimated to be as much as US$ 1 Trillion by 2000 [DRI/McGraw Hill, 1996]², it also invariably attracts an hitherto unknown intensity of competition that will likely render the existing business models and paradigms obsolete.

In this context, what strategy should a firm employ to sustain its market position in the changing landscape and possibly, even seize new opportunities? This is the classical dilemma that incumbents have often

¹ For the purpose of this thesis, this is primarily confined to the telephony (local and long distance) industry.

² This amount is the total expected output of three (converging) industries - telecommunications, computing and media. It is believed that free competition technological convergence, and alliances, will allow telecom companies directly and indirectly to compete in this vast market.
faced unsuccessfully in several industries; the extent and the rapid pace of change in the US telecommunications industry and markets creates an uncertainty that makes it all the more challenging to devise and implement a successful strategy.

A strategy that appears to be increasingly pursued by several of the incumbents as well as new entrants is that of One-Stop Shopping. Such a strategy envisions packaging a set of (different) communication products and services - a bundle, and offering it through a single customer interface usually under a well-known brandname. Thus far the focus has been to address the communication needs of specific consumer segment(s). Several companies are offering local and long-distance telephone service, Internet access and a host of multi-media services under one brandname and directed to consumers in various segments. How successful would such a strategy likely to be? Investigating this question - by understanding the environmental forces and the consequent actions by firms will provide useful insights to formulate strategic action for the future.

1.3 Thesis Approach and organization of document:

In consideration of the vast and unwieldy scope that this topic entails, our approach for this effort has been to focus on the long-distance industry (perhaps the most dynamic segment of the US Telecommunications landscape). Although we treat other telecommunication segments as external, we attempt to incorporate the changes in these segments (primarily the local telephone industry) in our analysis.

At the outset, we present some background information about the US telecommunications industry; this should provide a historical overview of the local and long distance industry. We then present a snapshot of the industry structure prior to the significant policy changes were underway - at a

---

3 The strategy is still largely in its infancy and there is virtually no information regarding its success. While recognizing that success ultimately depends on implementation, our focus is restricted to analyzing the realistic plausibility of the strategy.
time of relative stability (Chapter 2). In the next three chapters, we examine those aspects that are responsible for the transformation of the industry; specifically, we discuss: Policy Changes, Technological Convergence, and Market trends. Studying these three factors individually and their respective impact is in itself worthy of several theses; our effort is therefore restricted to understanding those issues pertinent to business strategy (Chapters 3, 4, and 5). The following chapter attempts to integrate the conclusions from the previous three chapters and define the new competitive environment in terms of opportunities and threats (Chapter 6). In the next chapter we analyze the One-Stop Shop strategy employed in the industry, followed by an assessment about its viability (Chapter 7). We devote the final chapter to articulating our thoughts on this effort of assessing a business strategy in the new marketplace (Chapter 8).

1.4 Limitations:

This thesis essentially attempts to forecast the changing marketplace - one which is still in great flux\(^4\), and examines a strategy that has only recently been undertaken and whose effect is largely unknown as yet. Clearly, the limitations - especially given the scope, scale and pace of change, are obvious. We confine our effort primarily to the long distance industry and evaluate the larger changes as external. We rely mostly on industry analyses, public announcements, and trade magazine articles in addition to our expertise in the industry, for this endeavor.

\(^4\) (The consequences of) deregulation, market requirements, and technology convergence are being debated, and challenged in the courtrooms, boardrooms and the marketplace; the National Information Infrastructure (NII) effort has aptly described this as 'the unpredictable certainty'. [NII, 1996]
CHAPTER 2: Industry Background

2.1 The traditional Telecommunication Services Industry: A Context

Telecommunications include all voice (telephony) and data - including audio, video and text, communications usually offered through a wireline or wireless network. Technically, the traditional telecommunications industry in the United States encompassed distinct industries providing respectively:

- **Local telecommunications**
- **Long Distance telecommunications**
- **Cable Television**
- **Broadcast (Television and Radio)**
- **Wireless telecommunications**

Figure 2.1 depicts these industries and their relative size in terms of approximate revenues ('95).

![U.S. Telecommunication Industry (1995)](image)

*figure 2.1: The U.S. Telecommunications Industry - A perspective*
Local and long-distance Telecommunications:

'Local' and 'long-distance', refer to geographic domains in which the telecommunication services are being offered usually through a wired media. The United States is divided into 161 geographic areas referred to as the Local Access and Transport Areas (LATAs). Telecommunication services offered within a LATA are considered as local (i.e. intra-LATA) while they are considered long-distance if offered across LATAs (i.e. inter-LATA) and also to international destinations. Intra-LATA telecom services in a predefined set of (usually contiguous) LATAs are offered by Local Exchange Carriers (LECs) and inter-LATA services are offered through Long Distance Carriers (LDCs) - also called Inter-eXchange Carriers (IXCs or IECs).

As the simplified graphic (figure 2.2) illustrating the LEC and IXC boundary depicts, the LECs provide the access (circuitry) from customer premises (residence, business etc.) to the IXC premises. The IXC, in providing long-distance telecom services typically has to rely on the LEC to provide services to the consumer. As will be discussed later, this is a critical issue in the new marketplace - often referred to as the Last-Mile problem.

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5 The definition of the operating areas has mostly resulted from the legacy of the previous era; see next section for a brief historical overview of the US telecom industry.

6 They are so called because they provide services within the area served by the local telephone company's exchange - or switch.

7 Although this is typically the case, in some areas, long distance service between LATAs within the domain of the LEC is also provided by the LEC.

8 We use the descriptions Interexchange carriers and long distance carriers interchangeably.

9 Exceptions to this are entities - usually large corporations which connect directly to IXCs.
2.2 Telecommunications\textsuperscript{10} Industry Value Chain

A simplified\textsuperscript{11} supply chain [Porter, 1985] of the traditional (local and long distance) telecommunication industry is depicted in figure 2.3. The main elements of this chain are:

\textbf{Infrastructure Provisioning}

\begin{itemize}
  \item Core Research and Development
  \item Hardware
  \item Software development
\end{itemize}

\textbf{Service Offering}

\begin{itemize}
  \item Application R\&D
  \item Transmission
  \item Application (Custom) Software Development
  \item Packaging
\end{itemize}

\textbf{Service Usage (Consumption)}

\textsuperscript{10} Henceforth, telecommunications industry refers to the local and long distance industry only.

\textsuperscript{11} This simplified version merely attempts to establish the position of the service providers in the context of the industry value chain. A comprehensive depiction of the entire value chain would be unnecessarily complex without adding comparable value.
The functionality (value add) supplied at each of the steps in the chain can be described as follows; the first step is infrastructure provisioning and this comprises core Research and Development, providing hardware and software for the infrastructure required for telecommunications. Typically, this is all done by a single entity such as Lucent Technologies, Alcatel etc. The service offering - the focus of this thesis, is essentially the step that is responsible for providing the telecommunication service or product in the local or long distance marketplace. It comprises several value added steps: basically, using application oriented R & D, the transmission is packaged in terms of a service or product by means of software development. These products and services include basic products (i.e. transmission + voice telephony) or additional enhanced services such as toll-free (800, 888) services, dynamic call routing etc.

The consumption segment is comprised of residential, government and business consumers using telecommunication services for a multitude of purposes.
Some of the more important firms in the United States engaged in each of the value add steps are also shown in the figure 2.3. Although the focus of this thesis are the telecommunication service providers, it must be noted that the other elements in the value chain have been critical (complementary) to a service provider's ability to establishing and sustaining a leadership position. Due to the high degree of specialization and investment required at each of the steps coupled with regulatory restrictions, a complete vertical integration strategy was not a plausible option (example providing infrastructure as well as service); however, the advantages of internal software development, has compelled service providers to adopt partial vertical integration (i.e. include software development).

The next section presents a background into the evolution of the telecommunication industry in the United States, from its beginnings to the current era. The focus is primarily on service aspect of the industry (although in some cases, such as the pre-trivested AT&T, the service and manufacturing were inextricably linked and so, it is harder to distinguish between the two). And, although the telecommunications service industry is considered to encompass the whole range of wired and wireless providers— including Cellular, broadcasting, cable etc., the orientation of the next section (in fact the whole thesis) is largely from the traditional telephone company perspective.

2.3 The Telecommunication Services Industry in the United States

Ever since the invention of the telephone, and until the early 80s, one company overwhelmingly dominated the telecommunication landscape in the United States: American Telephone & Telegraph (AT&T).

12 Note that some firms are involved in multiple steps of the chain - i.e. they are partially vertically integrated.
AT&T was started in 1885 by Theodore Vail as a wholly incorporated long distance subsidiary of the Bell System (started by Alexander Bell). The Bell Company was the source of continual technological innovations and its interests were organized as a patent association; manufacturers were licensed, phones and private lines were leased, and local exchange carriers were franchised throughout the country. The Bell System maintained a prominent position in almost all areas of endeavor in the fledgling telecommunication industry for some time. And later, when Western Electric, the largest manufacturer of electrical equipment, was beginning to pose a threat, it was acquired in 1882. (Veitor, 1987).

By the early thirties, the Bell System was almost a monopoly. The Bell companies served about 90 percent of the local traffic, Western Electric did 92% of all telephone equipment sales and AT&T long lines provided virtually 100% of all long distance services.

In 1934 a system of economic regulation by government evolved at the state and federal levels. The goal of this regulation, which was made explicit in the Communications Act of 1934, was 'universal service'. The Bell System therefore became committed to providing universal service - telephone lines all across America. The Bell System essentially adopted a vertical integration strategy to accomplish this goal economically. And until the decade of the 1980s, a unified Bell System with AT&T in control, dominated over 80 percent of the local and long distance service in this country as well as more than 80 percent of the telecommunications equipment industry as well. (Veitor, 1987).

However, AT&T's strategy of vertical integration, while a source of economic efficiency in its bid to provide universal service, also proved to be its

---

13 AT&T Long Distance and the Network Systems (Equipment manufacturing) were part of the same company until Oct. 1996.

14 Each of the regional Bell Companies was designated to offer telecom services within a contiguous region.
undoing. It was subject to a pervasive regulation at the state and federal level and to a plethora of private antitrust lawsuits, as well as a major antitrust suit brought by the U.S Department of Justice. This eventually led to the divesting of AT&T from the Bell System in a stunning fashion by a consent decree, entered in 1982 with the Department of Justice and approved by Judge Harold Greene of the Federal Court. (Temin, 1987).

The divestiture of AT&T was the biggest, and most complex restructuring in the history of business. The breakup took effect, after two years of preparations, on January 1, 1984. AT&T, Bell Labs and Western Electric (Network Systems) were separated from the local Bell Companies (thereafter known as the Bell Operating Companies, BOCs). This ruling referred to as the Modified Final Judgment (MFJ) required the BOCs to operate in their geographically predefined areas, as regulated monopolies while AT&T would operate in a competitive long distance market. The BOCs were also not supposed to compete in the long distance market and also, could not manufacture any equipment. A detailed analysis of MFJ and its impact is respectively provided by Veitor (1984) and Hausman (1995).

Thus the local and long distance markets were separated, and respectively, regulated and competitive; the BOCs and other Local Exchange Carriers (LECs) operated as monopolies in the local market, while the long distance market had (after the divestiture) several new entrants, most notably MCI and Sprint, and also a host of resellers (estimated to be in the hundreds). The long distance carriers had to rely on the BOCs/LECs for access and in fact, nearly 40% of the revenues of the major long distance companies is paid to the LECs for access (Taylor, 1993).

---

15 These include NYNEX, Bell Atlantic, Bell South, Southwestern Bell, Pacific Telesis, US West, Ameritech.

16 The access charge depends on the proximity between the local and long-distance carriers' facilities; AT&T has the closest facilities and its access charges was about 36% of its revenues. [Hausman, 1995].

---

15.THG
Since 1987, however, Competitive Access Providers (CAPs), were allowed in the LATA market and these afforded the Long Distance carriers to bypass the LECs/BOCs\(^\text{17}\). CAPs have sprung up all across the U.S and are present in all major metropolitan areas. There are some 50 CAPs taking in $1.7 Billion a year [Business Week, 96]. The CAPs have, by providing access to customer premises, competing with local carriers while they are also competing with long distance\(^\text{18}\) carriers by providing large private networks for business customers.

The long distance and local markets have grown considerably since the divestiture although, understandably the growth has been much greater in the competitive long distance market. The three main players share about 90% of the $76 Billion long distance market. [Business Week, 1996].

<table>
<thead>
<tr>
<th>Market Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market</td>
</tr>
<tr>
<td>Long Dist</td>
</tr>
<tr>
<td>Local</td>
</tr>
<tr>
<td>$, in Billions</td>
</tr>
</tbody>
</table>

![Figure 2.4](image)

\textit{figure 2.4: Estimated growth in local and long-distance industry}

The size of the telecommunication industry is provided in figure 2.4; as shown, there is expected to be significant growth in both the telecommunication markets by the year 2000. It must be pointed out that while the demand for these (traditionally classified) services may increase as indicated, they may not be offered by the same entities nor in the present form. To understand this better, we must take a look at the changes underway

\(^{17}\) The bypass is available to serve large business customers' long distance needs; and not, typically, for residential customers.

\(^{18}\) For the most part, they do so by leasing lines from the long distance networks!
in the industry. Before embarking on that in the next part of the thesis, we will present in some detail the industry structure prior to these changes.

2.4 A Snapshot in to the Industry prior to the 1996 deregulation

Telecommunication services in the United States are provided by over 1400 entities [Keene & Cummins, 1994, pp. 513], most providing a few services to niche segments while a few provide an extensive portfolio of services to large segments. A legacy of deregulation has been that many of these entities are providing their respective services in predefined geographical domains, often as monopolies (the next section offers more information on the industry). The table 1.1 lists the major LECs in the U.S., their sales and change in market value (giving some idea about the performance).

<table>
<thead>
<tr>
<th>Company</th>
<th>Sales 1995 ($ Billions)</th>
<th>Change in Mkt. value 1986 - 1995</th>
</tr>
</thead>
<tbody>
<tr>
<td>NYNEX</td>
<td>13.407</td>
<td>79.7%</td>
</tr>
<tr>
<td>US West</td>
<td>11.746</td>
<td>341.5%</td>
</tr>
<tr>
<td>BellSouth Corp</td>
<td>17.886</td>
<td>135.5%</td>
</tr>
<tr>
<td>GTE Corp</td>
<td>19.957</td>
<td>233.9%</td>
</tr>
<tr>
<td>SBC Communications</td>
<td>12.670</td>
<td>210.9%</td>
</tr>
<tr>
<td>Bell Atlantic</td>
<td>13.43</td>
<td>117.9%</td>
</tr>
<tr>
<td>Ameritech</td>
<td>13.428</td>
<td>158.2%</td>
</tr>
</tbody>
</table>

*table 1.1: Some of the major LECs and their growth rate.*

There are several hundred IXC service providers but the industry is an Oligopoly dominated (over 90% of revenues) by three players: AT&T, MCI and Sprint. The major competitors in the long distance market and their size and performance is shown in table 1.2.
Company | Sales 1995 ($ Billions) | Change in Mkt. value 1986 - 1995
---|---|---
AT&T | 79.609 | 48.3%
MCI | 17.922 | 325%
Sprint | 12.765 | 205% ('92-'96)

It must be clear from the above tables that barring AT&T, most of the other players - LECs and IXCs, are of comparable size. The market value of IXCs like MCI is also significantly higher than that of the LECs, primarily because of their demonstrated competitiveness.

*Table 1.2: Major IXCs and growth*
2.5 Industry Structure and its attractiveness prior to (1996) reform

This section employs the Porter five-force framework [Porter, 1980] to analyze the attractiveness of the local and long distance telecommunications industry in the US sometime prior to the introduction of the Telecom Act of 1996. This should serve to provide some insight into the industry prior to impact of the changes.

2.5.1 IXC Industry:

- Barriers to Entry:
  1. One of the main barriers to entry in the long distance industry was the cost; the investment required to provide full fledged services is enormous - in the billions of dollars. The payoff is long and unpredictable given the dynamic nature of industry and intense competition.
  2. Although the IXC marketplace has been competitive, regulations barred LECs (especially the RBOCs) from offering long distance services. (In fact, it was only recently that a few of them were even allowed to provide it inter LATA within their calling region).
  3. There is excess capacity in the long distance industry; in fact, it has been estimated that just the three largest networks have enough capacity to carry twice the entire nation’s traffic\(^{19}\) [Hausman, 1995].
  4. The expertise required to support a nationwide long distance network is significant and cannot be acquired easily.
  5. Brandname (Reputation) also appears to be a key factor to competing effectively in the industry.
  6. Exit costs in this industry are also extremely high due to asset specificity (specialized switching, network elements) and the excess capacity that already exists.

Conclusion: High Barriers to entry (primarily due to scale).

\(^{19}\) This capacity is in the long distance networks; it must be noted that access (capacity) to these networks - typically provided by the LECs are a major bottleneck for advanced services.
• Rivalry among current competitors:
Although there are several hundred service providers serving the various segments in the industry, the severe competition is from the three largest providers - AT&T, MCI and Sprint. These three carriers share about 90% of the market share (the breakdown being around 65%, 14% and 10.7% respectively for AT&T, MCI and Sprint). The intensity of competition is reflected in the real cost of a long-distance telephone call, which has dropped by over 40% since competition was allowed in 1984, and their profit margins - under 4%. However, price differentiation has not been a major strategy - this despite the fact that the core long distance (voice) services - including enhanced services as Toll-free and Calling Card, could be considered as commodity services. In fact, there is a price signaling system that prevails with AT&T as the leader. The competition thus far has been on differentiating, mainly through customization value added services, branding, billing convenience, customer service.

Conclusion: Intense Rivalry.

• Supplier Power:
There are two key suppliers: manufacturers of hardware equipment, and software developers.

With the recent trivestiture of AT&T resulting in an independent manufacturing entity (Lucent), and aggressive competition from European and Japanese

20 There are over 500 such providers; almost all of them are resellers of the big three - acquiring volume discounts and passing some of the discount to the consumers.

21 It must be pointed out that a key reason for the low margins is also the high cost of access that the carriers have to pay LECs (in the range of 36% of revenues).

22 The motivation for the price signaling can briefly explained as follows: If AT&T indulges in a all out price war, it would eliminate both MCI and Sprint due to its vastly superior resources. In this case, AT&T would once again become a monopoly and subject to intense FCC scrutiny reminiscent of its pre-divestiture days. AT&T does not wish this, and hence is resigned to sharing a small part of the market with Sprint & MCI. With new heavy weights entering the long distance market & MCI/BT merging, this signaling system is unlikely to continue; and ‘true’ competition will prevail.

23 The equipment considered here is primarily switching and other highly specialized systems; it must be noted that, increasingly, with changes in technology and standards, the computer is fast becoming the key piece of equipment that is being required in telecommunication networks. The highly competitive computer market is not considered here.
manufacturers, long distance service providers will have several hardware to choose from. The choice and the high investment typically involved in purchasing equipment will give service providers significant leverage. Software development is critical to a long-distance provider's competitive edge; so most of the service providers have developed internal software expertise, or are in the process of doing so. It is however quite common to outsource software that cannot be developed internally. There are literally several thousand software development firms ranging from big operations such as EDS to small operations consisting of a few people. Offshore software development is also increasingly becoming an attractive option.

**Conclusion: Suppliers have little to no power**

- **Buyers:**
The consumers have significant power; in fact, switching costs are negative (it is common for firms to offer money\(^{24}\) and other incentives to switch from competition). With commoditization of core services, excess capacity in the networks\(^{25}\), buyers of long distance services will continue to exercise significant power. This will be the case across the different market segments in the long distance market: residential, small and medium to large business.

**Conclusion: Buyers have significant power**

- **Power of Substitutes:**
There are currently very few, if any, substitutes if one considers the entire range of long-distance services (i.e. a full service provider). However, there are over 500 Resellers - which essentially purchase capacity from the big three networks at a volume discount, and offer a limited set of services at a cheaper rate. Thus, in specific niches, there are plenty of substitutes but not for full services (or for that matter even relatively sophisticated services such as Enhanced routing etc.).

\(^{24}\) AT&T spent $1.5 Billion in 1995, to induce consumers away from competition.

\(^{25}\) It is estimated that between the three AT&T, MCI and Sprint there's enough capacity to handle twice the entire country's traffic.
Conclusion: Few substitutes

- Overall Industry Attractiveness:

The IXC industry is not attractive at all primarily due to the intense competition and size of the players. Further, regulatory restrictions prohibit larger players who may overcome the barriers. In niche segments, however, the industry is significantly attractive (e.g., WorldCom, primarily a reseller had sales of $3.6 B in 1995 a 62284.5% change since 1986).

For the sake of completeness, we also present a brief industry analysis on the LEC industry

2.5.2 LEC Industry:

- Barriers to Entry

  Regulatory restrictions generally prohibit providing of telecommunication services in the local markets except by the designated monopoly (LEC). CAPs and other alternative carriers have been allowed in small niche segments, however.

  Conclusion: Huge Barriers to Entry.

- Rivalry among current competitors:

  Monopoly; no competition exists (although there is a little in the areas where CAPs are permitted to operate).

  Conclusion: No competition

- Supplier Power

  Same as for the IXC industry.

  Conclusion: Suppliers have little power.

- Buyer Power:

  Consumers have, for the most part, no choice.
Conclusion: Buyers have no power.

- **Substitutes:**
  Few exist; no threat due to regulatory restrictions.

Conclusion: No threats from substitutes.

- **Overall Industry Attractiveness:**
  The LEC business is a highly attractive industry; however, the main barrier to entry - regulation, precludes entry.
PART II: The emerging Industry Structure
Part II Overview:

Before attempting to assess or even formulate strategy, it is imperative to understand the environment (industry structure) in which the strategy is to be successfully applied [Porter, 80]. In order to understand the IXC industry structure, however, we have to first recognize and analyze the forces that are redefining it. Analyzing how these forces are impacting the existing structure would assist in developing an insight into the emerging industry structure. We therefore study the externalities and their effect on the industry structure and based on this, attempt to define the emerging structure in this part of the thesis. This will provide the underpinnings for the subsequent chapters on strategy analysis.

- Approach:

There is no generally accepted framework to comprehensively scan the environment; we follow the advice of Hax [Hax, 1995], and note the three main drivers that we believe are transforming the telecommunication marketplace. We discuss the reasoning behind considering these specific drivers and then discuss each in some detail. Using Porter’s framework, we assess the impact on the industry structure by each of these drivers. This analysis is consolidated and used as the basis to predict the new marketplace.

- The Primary Drivers of Change:

The three primary factors that we believe are redefining the IXC industry are:

- Policy Changes
- Technology Trends
- Market Trends

26 We recognize that the industry structure - especially one which is influenced by technology and innovation as telecom, is continually changing. The change we note here is distinctly more significant - leading to a significant change in the structure.
Motivation for choosing the three factors:

Government Policy:

Ever since the Communication Act of 1934, regulation has played a critical part in defining the industry structure; initially, it created the monopoly structure with AT&T providing all long distance services (and local services through its Bell system companies). And later, in 1984, with the MFJ decision, it was regulation that altered the marketplace - by separating the local and long-distance marketplaces and creating artificial barriers. Services and competition in both the local and long-distance marketplace have been significantly guided by regulatory and policy considerations. Thus, Regulation and government policy has had a profound impact in shaping the IXC industry structure. The passing of the Telecommunications Act of 1996 - billed as the most comprehensive legislative change in the history of the industry, makes it imperative to consider these changes and its inevitable effect on the industry structure.

Technology trends:

Historical data abounds on the prominent role of technology in modifying and even creating new industries or industry segments. The rate of growth in technological innovation has been especially rapid in the field of computing and its technological convergence with telecommunications have essentially restructured the entire telecom operation. The telecommunications firm is highly computerized in its external and internal operations. Developments in network protocols, databases and distributed computing in particular have had significant impact (given rise to the Advanced Intelligent Network - AIN); it is in fact quite accurate to say that the telecommunications network is essentially a (high-speed) computer network. (Information) Technology has also affected and continues to affect other facets of telecom as well. Technological developments have facilitated numerous new and innovative services thus far, and will invariably be required for future generation of
services and products. Technological developments have also attracted new players in the industry value chain (and at times, altered the value chain). Recent technological developments in the converging world of voice, data, audio and video as well as other trends in areas such as transmission, software development etc., will definitely result in such structural changes. Hence it is important to study the technological changes in the industry.

**Market trends:**

The most fundamental reason for an industry to exist to meet some customer demand(s). In a marketplace where the customer is becoming more sophisticated and wielding unprecedented power (see industry analysis in chapter 1), it simply becomes a necessity to keep track of the pulse of the customer needs. Furthermore, recent market phenomena like the explosion in Internet usage reflects the seemingly insatiable demand for a new generation of services, and provide critical insights into emerging consumer trends. Clearly, an understanding of these trends and their effects on the market structure is a precondition to compete; in the context of severe competition that will prevail, this understanding is imperative to even survive.

Thus, their historically significant role and the recent critical developments - the Telecom Act of 1996, the technological convergence and the Internet phenomenon were the basis for choosing the specific drivers. Further, each of these forces are what could be termed as X forces (i.e. have a multiplier effect on the industry) [Grove, 1996]. It must also be noted that these forces - at least technology and consumer demand, are mutually reinforcing and consequently the unprecedented growth.
CHAPTER 3: Policy Changes

3.1 Introduction

- Objective:

In this chapter, we will attempt to understand how the policy changes are shaping the telecommunications industry.

- Approach:

We will first present an overview of the Telecommunications Act of 1996 - the all encompassing bill that underlies the policy changes underway. We examine it from the IXC industry standpoint including those provisions that we believe will impact the industry structure (e.g. LEC entities entering the IXC market). We finally will outline the impact of the policy changes to the IXC market structure.

3.2 The Telecommunications Act of 1996

As evident from the previous chapter, the telecommunications industry in the United States has been highly regulated, except in the long distance market, by the FCC and the state PUCs. In most markets, services have been

27 Despite a 'competitive' environment, the long distance industry was also closely regulated by the FCC. In fact, there were several restrictions that the carriers had to adhere leading many to question whether natural competition exists in the long distance industry. See [MacAvoy, 1996] for a detailed discussion of this topic.

Whether 'real' competition exists in the long distance markets or simply an illusion of competition was created, has been contentious issue; that a price signaling mechanism exists between the three main competitors, with AT&T signaling, is a valid criticism against the existence of true competition; supporters of this theory maintain that AT&T is essentially subsidizing its rivals to prevent establishing a monopoly position that would likely result if it truly competed (sic!): by indulging in a price war, it could drive out its rivals. The FCC and FTC would simply not allow a monopoly to exist and this could lead to a repeat of its predivestiture nightmares. Thus, AT&T, to avoid this scenario, is subsidizing the competition.

However, detractors of the theory point to two facts: it must also be noted that AT&T has been losing share steadily in the long distance market, and the fact remains that the real cost of a long distance call has fallen over 40% since the AT&T divestiture in 1984.
provided by monopolies, and with no compelling reasons to innovate\(^{28}\), the investment in infrastructure and new services has traditionally been limited. [Baumol and Sidak, 1994]. The regulatory framework employed was archaic - the Communications Act of 1934, and impeded the progress in the nation’s telecommunications infrastructure. This presented a serious concern given that such an telecom infrastructure was critical to sustain the growth of an economy that was rapidly transforming from manufacturing-based to services-based.

Recognizing the inadequacy of this framework, efforts were underway since 1979, both in the Congress and the FCC, to reform the Act of 1934. These efforts culminated on February 8, 1996, when a radical telecommunications bill was signed into law by President Clinton.

Christened the Telecommunications Act of 1996\(^{29}\), it was perhaps the most momentous and comprehensive piece of legislation passed in the history of the US telecommunications industry, radically alters the entire industry. Although the focus of the bill is the four telecommunications industries: Local Exchange Carriers (LECs), IntereXchange Carriers (IXCs), Cable TV and Broadcasting, it will also significantly impact Competitive Access Providers (CAPs), Resellers of telecom services, Internet Service Providers (ISPs) and other value added service providers that rely on the traditional telecommunications industry. It is estimated by Gartner Group [Gartner, 1996], that the Telecom Act of 1996 will affect approximately 12 percent of US Gross Domestic Product (GDP).

The main objectives of this legislation are “...to promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies.” [Telecom Act, 1996]

\(^{28}\) The pricing established by the FCC and the PUCs ensured comfortable margins to the monopolies.

\(^{29}\) The telecommunications Act of 1996 was overwhelmingly passed by Congress in Feb. 1996.
Essentially, these objectives are to be accomplished by facilitating a truly competitive environment - removing all the artificial barriers between all the domains of the telecommunications industry: local and long distance, cable, wireless and broadcasting; such a competitive marketplace will, it is assumed, offer incentives to innovate and benefit the consumers and the economy.

The Act is comprised of six titles, addressing respectively - in the following order: telecommunications services, Broadcasting services, Cable services, Regulatory reform, obscenity and violence (the Communication and Decency Act), and Miscellaneous provisions (including billing, charging toll, consumer information exchange etc.). The scope and breadth of the Act is significant; in the interest of brevity and relevance, we will focus only on the major points and those issues that we feel bear a reasonable impact on the business strategy of an IXC.

1. Long Distance Carriers (IXCs) - previously forbidden to offer services in the LATAs, can now also compete in the local access markets (i.e. LATA) and offer local telecommunication services (including information services) immediately.

2. Local Carriers (such as the RBOCs and other LECs) can compete in the long distance markets (i.e. inter-LATA), again offering the whole array of services, including information services. In order to avail of this opportunity, however, the local carriers have to meet certain requirements stipulated by the law towards creating a level playing field. These are discussed in the next subsection. Local companies can however offer long distance services outside their LATAs immediately, without the preconditions imposed for

3. Local companies (in any form -either directly or subsidiaries) cannot acquire more than 10% stake in cable companies in their operating LATAs.

4. No restrictions will be placed on manufacturing of telecommunications equipment.
5. There will be no restriction on the types of services (e.g. information) that can be offered by the local carriers.

6. Since carriers with (residential) access (i.e. LECs) will have an unfair competitive advantage (due to the last-mile problem), the access should be available for all competitors\(^\text{30}\).

7. Immediate increased ownership of radio stations in local markets (appropriate limit to be determined by FCC based on the market size). Also, an entity may own enough TV stations to reach 35 percent of the national audience.

Rate regulation in the cable industry will end by March 31, 1999; cable companies can offer other services (such as telephony) after that time.

- **Eliminating existing handicaps:**

As mentioned in the previous chapter, the LECs are uniquely positioned in the existing telecommunications landscape, the LECs are uniquely positioned in that they have direct physical connectivity - the local loop\(^\text{31}\), to consumer locations (homes and offices). The IXCs on the other hand, are connected to the consumer locations through the LEC facilities (at POPs or Points of Presence)\(^\text{32}\). Thus, if IXC and LECs were allowed to compete in each others markets today, the LECs would be in a decidedly advantageous position: it'd be easier for the LECs to offer IXC service than for the IXCs (and others) to offer LEC services [Note: Actually, there will no longer be a distinction between local and long-distance services; hence the above statement could be understood to mean offering both local and long distance services, i.e. the LECs will be better positioned than IXCs to offering both these types of

\(^{30}\) Obviously, there is significant opposition by the LECs to this proposal, and it is being intensely debated (as are most of the items in the new telecom bill).

\(^{31}\) This term is used in popular parlance and essentially refers to the physical bi-directional connection to the telephone switch - forming a loop.

\(^{32}\) This, however, is not entirely true - some businesses are directly connected to IXCs or possibly through CAPs; but residential customers invariably are connected via the LEC.
services]. This is due to the inordinate amount of investment - both time and cost\textsuperscript{33} that the IXCs will have to make in order to establish parity with the LECs in terms of physical connectivity to consumers\textsuperscript{34}. In order to create a level playing field - necessary for effective competition, the Telecommunication Act of 1996 requires the LECs\textsuperscript{35} to meet certain obligations prior to be allowing entry in to inter-LATA services. The main class of obligations are briefly outlined:

1. **Interconnection**

The LECs are required to allow interconnection to any carrier, for an access fee (to be determined by FCC). This means that an IXC can purchase access from the LECs - effectively having direct physical access to the consumer premises. This interconnection obligation has been the subject of much contentious debate and lawsuits.

2. **Unbundling**

Unbundling refers to offering the distinct LEC services individually if so required by the other carriers, and resellers; specifically, local loop transmission, switching and other services are required to be offered separately\textsuperscript{36}.

Items 1 and 2 essentially focus on the issue of essential facilities - i.e. those facilities that are essential to providing telecommunication services. The Act

\textsuperscript{33} Estimate of the cost to lay direct connections (fiber cable) per residence have ranged from $1000 to $1500; the time for this installation, is expected to be considerable: realistically 10 years to wire the whole country (per residence estimates unavailable).

\textsuperscript{34} A strategy (refer to Chapter 6) that has been employed - using wireless access, precludes the need for such physical connectivity, But there remain (other) problems with wireless, notably the need to possess spectrum rights and bandwidth availability.

\textsuperscript{35} Actually, the obligations of the BOCs are a little different (more) than other LECs. We will note any significant differences.

\textsuperscript{36} Switching and transmission are necessary underlying functions in order to provide any telecommunication services. Usually, carriers accomplish some of these functions themselves; hence they may just require only a few (not all) functions.
attempts to ensure there is no monopolistic position - hence undermining any competition, with reference to these essential facilities.

3. Information Access

The LECs will provide access to telephone numbers for competitors, directory listing for other carriers' customers, non-discriminatory access to emergency services (911), directory assistance, and operator call-completion services. It will also provide access to information necessary for signaling, call routing and completion; it will notify all concerned of any changes in its network.

4. Other competitive measures

The LECs will also provide for local number portability (wherein the telephone numbers are transferable across the traditional LATA boundaries e.g.: a customer could use her Boston telephone number, say 617.555.1111 even when she transfers to Worcester i.e. her number in Worcester will remain 617.555.1111)37, Dialing parity (i.e. dialing from a local phone to use company X's services will not be an more difficult than dialing to use similar services offered by the incumbent - the owner of the wire).

- Eliminating other handicaps:

While the above obligations only pertain to the LECs, the Act also requires all other entities (IXCs etc.) wanting to participate in the telecommunications industry to essentially comply with the following two conditions:

1. Interconnect/interface with other carriers/entities

   This essentially stipulates that a carriers may choose to lease facilities - and prevent the large investments that would be otherwise required, to offer services. This allows multiple choices to consumers and as a result, usually benefit the marketplace.

37 Initially, number portability will be within LATAs but later it will be across LATAs.
2. Refrain from implementing proprietary features, functions and capabilities.

This is to prevent any attempt - using indirect means, to make it difficult for interconnection to the IXC. Such a policy would expedite the development of open standards that will facilitate the use of any function(s) for a reasonable cost.

3.3 Strategic Implications

In this section, we analyze government policy - specifically the Telecom Act of 1996, and its implications on business strategy.

- Lowering barriers to entry:

The Act's primary (stated) purpose is to eliminate the existing, artificial barriers in the telecommunications industry, and thereby promote competition. Although the Act has focused on the adjacent industries (i.e. LECs, IXCs, Cable and Broadcasting), it also paves the way for entities from outside the traditional telecommunications industry (e.g. computer manufacturers, software companies) to enter the industry. Thus, Deregulation as well as the attempts to provide a level playing field essentially lowers the existing barriers to entry.

- The LECs entering the IXC industry will have to first comply with the obligations before entering the IXC market; this would give the IXCs a time advantage over the LECs.

- By requiring all carriers and entities to avoid deploying proprietary interfaces, and to facilitate interconnection, the Act is setting the stage for the inevitable development of Standards. Typically, the telecommunication standard bodies such as the International Telecommunications Union (ITU), ANSI-T1, etc., are notoriously slow in the development of standards; however, with the redefinition of the
industry structure (see chapter 6), new standard bodies and consortia have been engaged in defining standards, and successfully completed in a remarkably less time (e.g. PICS - the Platform for Internet Content Specifications was defined by the WWW Consortium at MIT in a record seven months).

- **New markets:**

As a result of the deregulation, incumbents will face increased threat in their existing markets, but at the same time new market opportunities will be available; it appears, that this situation - especially in the case of IXCs and LECs where the barriers to entry for the incumbents to enter each others markets were lowered, is unstable and will likely lead to an all or nothing result. [i.e. companies will offer services in both markets or will cease to compete in the industry; no longer will companies be in just one markets *]. Furthermore, the competitor in the new market will most likely (at least in the short term) lease bandwidth from the incumbent in that market (i.e. LECs will lease lines from an IXC to enter the IXC market and vice versa). Such a ‘cannibalization’ arrangement could be contentious even with the FCC overseeing such deals.

- **Emergence of new issues with deregulation**

Contrary to a somewhat popular (and perhaps, naive) opinion, the Act does not signal the end of all regulation. Even though increased deregulation is an implicit goal of the Act, the nature of the telecommunications services - like Universal service, implementation of interconnection rules (at the local loop), information sharing etc., will require governance and regulatory bodies like the FCC, state PUCs (and also the government) will inevitably continue to undertake an important role even in the future. Although the Act spells out the general guidelines, the specifics are still largely to be worked out. Given the complexity and enormous impact that most of the issues entail, it is
necessary that an impartial entity conduct the debate and oversee the implementation agreed upon. As Branscomb et al observe, a (new and critical) role of the government agencies in the context of the future information industry would be leadership and articulation [NII, 1996].

In addition to policy, the legal ramifications of the regulatory changes (and other changes as well) present an upheaval; the current anti-trust laws in force - the Sherman and Clayton Acts are all inclusive and simply outdated to deal with the issues emerging in the new context.

As the telecommunications industry is moving towards deregulation, independently there has been what could be described as a technological convergence; new technologies can provide multi-media services that were previously possible only employing separate technologies. These changes were not accompanied with as much publicity as the deregulation but are as significant and arguably are leading to the industry convergence (Chapter 6). These key technology trends are discussed next.
CHAPTER 4: Technology Trends

4.1 Introduction

• Chapter Objective:

The technology in telecommunications has been revolutionized over the past few decades. And, as will be clear from this chapter, the distinction between the technologies employed in telecommunications and other industries such as computing is, for most part\(^{38}\), non existent [Katz, 1997]. In fact, the telecommunications operation is based on a computing infrastructure. This technological convergence has been an extremely important reason for modifying the industry structure thus far\(^{39}\), and as we shall see in Chapter 6, continues to be a compelling reason for the emerging structure.

The questions we attempt to answer in this chapter are:

- What are the (major) technological trends that could impact the industry structure?
- How are they impacting the structure and why?

• The Approach:

At the outset, we shall list some of the technological advances that we believe are contributing to significantly altering the structure of the industry. Subsequently, we will examine the larger technological trends that are evident in the telecommunications-related domains; finally, we will attempt to understand how all these changes are affecting the telecommunications industry structure.

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\(^{38}\) Although a significant part of US telecom infrastructure has been transformed or transforming to digital, parts of it are still analog switching networks.

\(^{39}\) From a mostly vertically integrated structure, the industry evolved specialized niches due to technology (and regulation) changes. For instance, as technology allowed separation of switching and other routing decisions, a number of vendors - previously only computer manufacturers, entered this industry. E.g.: Tandem Computers, etc.
Our treatment of technological trends will reflect our objective to understand the structural impacts rather than understanding the technology itself.

4.2 Technology Advances

4.2.1 The fundamental change: Digitization of Voice, Data and Video

The ability to transmit and manipulate voice, data and video\(^{40}\) without the need to distinguish\(^{41}\) between them represents a fundamental change that is underlying several of the other technology advancements that are redefining the marketplace. This transformation has primarily been facilitated by Digital coding (i.e. representing all information in forms of discrete (binary -1 and 0) signals). Digitally coded signals offer several benefits over their traditional the non-digital (analog) counterparts essentially leading to better quality at a lower cost.

Traditionally, voice and data were treated separately. Voice was represented as an analog - continuously varying, signal that was transmitted in real-time using a dedicated (wired or wireless) channel for the entire duration of the transmission. This was the approach used in the original telephone networks. Data\(^{42}\) was also transmitted on the voice networks using analog modems. However, the subsequent digital conversion of the telephone networks integrated voice telephony and the bit-oriented world of data\(^{43}\). With advancement in data compression techniques, video signals were also transmitted digitally instead of using analog technology. Voice, data and video have been integrated in carrier transmission for many years. However,

\(^{40}\) These are the three widely accepted basic types of 'content'.

\(^{41}\) Semantic assessment of information content, i.e. whether it is data or a voice conversation, is irrelevant for transmission as well as for the purpose of storage and low-level manipulation.

\(^{42}\) Data communication emerged when there was a need for computer-computer communication; this was considerably after the voice communications - and networks designed for that purpose, were already established.

\(^{43}\) The local loop is still typically analog - almost universally in residences, and requires that information is sent in analog form to the local end office where it is converted into digital.
it is only recent that full integration is occurring, i.e. end-to-end digital. We will look at these aspects:

Transmission of Voice & Data:

Emergence of new technologies such as ADSL, Asynchronous Transfer Mode (ATM) and revival of technologies such as ISDN are fueling the way for ubiquitous integration in the transmission of digitized voice, data and video. Technologies such as Hybrid Fiber Coax (HFC) are being used to transmit telephony (voice) in addition to just video, audio and data in the Cable industry. Television is also heading digital with HDTV, and wireless services are being converted to digital as well with the introduction of PCS\textsuperscript{44}. These new digital technologies - mostly based on coax, fiber and optoelectronics, all address a long standing problem: they afford a higher transmission bandwidth - the amount of information that can be carried on the physical media, than was previously possible (these technologies are briefly discussed later in this chapter). This is perhaps the single most important benefit of digital transmission - and will be required to support the new type of services (see next chapter) which require video, text and voice to be transmitted.

Compression and security techniques have also facilitated increased safe transmission of these huge amounts of information. Essentially, the ability to carry more information means the cost of carrying information is reduced; in fact, the cost per voice channel has fallen annually by about 10 percent [NII, 1996]

Manipulation of voice, data, video, graphics:

- With conversion of voice into digitized information, it can be also be easily manipulated. Today's Personal Computers have speakers to play audio, display graphic video, can easily accomplish voice-to-text and vice versa, can store voice prints; software is available for voice recognition.

\textsuperscript{44} The digital wireless - PCS industry employs digital techniques although the matter of the exact approach (Code division versus time division) is the subject of great controversy.
Video conferencing cards and associated equipment along with the high resolution monitor screens permit the easy reception of video streams. Multi-media software that integrates voice, text, and video abound. In fact, the global computer network - the Internet and applications on it such as the World Wide Web (WWW) have only been made possible due to such integration. [NII, 1996]

4.2.2 Other technology trends

4.2.2.1 Computing Trends:

As mentioned earlier, computing has played a significant role in the development of telecommunications technology and services.

- The Price/Performance of hardware:

Advances in the power of general purpose processor are easy to observe; speeds of processors have continued to more than double every two years, and memory sizes have grown at equal rates. The use of advanced silicon integrated-circuit technology has allowed the price to fall at the rate of 15 to 25 percent per year. [NII, 1996]. This increased power at reduced price has led to several advances in functionality and ease of use; a consequence is that computer sales have grown steadily and it is estimated over 35% of the population owns a PC. The cost and power are also making the PC enormously appealing to telecom service providers.

- Rapid and relatively inexpensive software development

Most functionality is implemented in software and has generally been independent of hardware for a while now; with improvements in software developments like Object Oriented Programming and CASE tools, the increase in productivity, ease, and relatively low cost of development is leading to rapid availability of software in all areas of
telecommunication service deployment - from order entry to billing to of course, the core telecom services themselves.

- User Interfaces:

Graphical User interfaces provide an easy interface to users and have contributed significantly to the prevailing speed of adoption of computers. The growth of the World Wide Web (see next chapter on consumer trends) is a perfect testimony to the power of user interfaces.

- Networks:

The connectivity between computers distributed at different locations (a network) has essentially made it possible to leverage significant computing resources in a very efficient manner.

- Standards:

Standards facilitate interoperability between computing platforms developed by different vendors. This in turn allows companies to use any combination of platforms that are best suited without having to worry about their interoperability. Standards in most aspects of software and hardware already exist and being established in new areas such as digital audio.

The above trends in computing have persisted for a while now and are anticipated to progress further, and are the fundamental underpinnings for the several higher level trends outlined below. These improvements in computing have also transformed the telecommunications industry: the telecommunication network can be considered a computer network for all practical purposes; the concept of the Advanced Intelligent Network - using the principle of distributed computing affords the flexibility to develop and rapidly introduce new features giving it a competitive edge.
All back office systems - from order entry to billing to customer service to network management are all invariably based on computing platforms.

4.2.2.2 Emerging Application trends

- **The Internet**

  The global Internet is a connection of several million computers around the world. Building on the union of data networks and computers, the Internet has become the new global communications infrastructure for businesses and residential consumers. With high powered and easy to use applications such as the World Wide Web, Internet Telephony etc., Internet is already profoundly changing the various aspects of our lives (more information on the Internet is found in the next chapter).

- **Computer Telephony Integration**

  Computer Telephony integration essentially refers to the merging of data networks with telephone networks and extend the capability of telephony devices and computer systems to communicate with each other [Shapiro, 1996]. It encompasses many technologies such as interactive voice processing, voice mail, auto attendant, voice recognition, text-to-speech conversion, facsimile, simultaneous voice data signal processing, video conferencing, predictive dialing, audiotext, call centers, help desks, collaborative computing and traditional telephone call switching and call control. Another application that deserves special mention is Internet Telephony.

- **Internet Telephony**

  Internet Telephony allows the use of Internet for voice telephony. Although this industry is still in its infancy and does not pose an immediate threat, it is only a matter of time that improvements in the
underlying technologies as well as the introduction of standards and new architectures will make it a significant alternative to the traditional telephony services. With the Internet unlikely to be regulated this may be an exploding marketplace - a fact that is not lost to several carriers who're already beginning to venture into this segment despite the obvious cost of cannibalization.

4.2.2.3 Broadband Technologies:

A number of broadband - defined as high bandwidth (or data carrying capacity) technologies have emerged; these technologies will provide increased speed, bandwidth and interactivity. Some of the key technologies are described briefly:

- **Frame Relay:**

  Frame relay is a fast packet switched service that allows data transmission speeds from as low as 9.6 Kbs to 1.544 Mbs (equivalent to the T-1 transmission standard). It provides an economical means of linking multiple locations and networks over one high speed capacity line; applications include the following: bulk file transfers, messaging, text imaging, Computer Aided Design (CAD), and multimedia transmission.

- **Asynchronous Transfer Mode (ATM)**

  ATM is a technology that provides high speed information transfer capability and near real-time multi-media communications among multiple locations. ATM access speeds range from 45 Mbs to 155 Mbs and is suitable for a variety of applications including wide area transport of voice, data and video, collaborative computing and distance learning. It involves a high initial cost, especially when compared to frame relay.

- **Cable Modems**
The existing wired infrastructure used by the cable networks is capable of much higher bandwidths than the telephony access infrastructure is. However, presently this transmission is only in a broadcast mode in a single direction. Cable modem technology will allow bi-directional transmission of multimedia information. Time Warner and US West are aggressively pursuing their introduction, and several trials are already underway.

- **Asymmetric Digital Subscriber Line (ADSL) Technology**

ADSL technology increases the bandwidth of twisted copper pairs that are embedded in the telephony network to rates ranging from 1.5 Mbs to 6.144Mbs downstream (with potential for improvement up to 9 Mbs) to the customer end and upto 640 Kbs in the other direction. This will make it useful for accessing information from Internet and remote locations with the existing infrastructure.

- **Wireless PCS**

Digital wireless called the Personal Communication Services (PCS) will afford a high bandwidth channel for voice and data services with the significantly appealing benefit of mobility. This is the next generation of wireless after cellular, and is already being introduced rapidly after the recent FCC auction of the PCS spectrum which was only recently released. The auction generated about $10 Billion in revenue for the FCC indicating the high strategic benefit that is being associated with PCS.

### 4.3 Strategic Implications

- **Substitutes:**

  The developments in the field of Computer Technology Integration is essentially providing very sophisticated telephony functionality at a very
low cost directly to the user’s desktop and customized by the user. This will obviate the need for traditional implementation of such services provided by the IXCs.

The phenomenon of the Internet is providing an alternative mechanism for conducting business supplanting the need for dedicated data networks. As the specific example of Internet Telephony indicates, the Internet could also begin to serve as the basis for the Telephony services, and coupled with the developments in Computer Telephony integration, it could soon provide a superior alternative.

- PCS will provide high speed voice, data, and video services using digital wireless technology. While coverage and standards are still a problem, PCS has the enormous appeal in that it affords mobility in addition to the service offering.

**Barriers to entry:**

- Higher bandwidth, reliability

With the introduction of advanced transmission and switching technologies such as SONET and ATM, the quality of higher and reliable bandwidth is increasingly becoming the norm. It is expensive to deploy some of these technologies (such as ATM) since it incurs the significant cost of associated equipment and facilities and support mechanisms initially (although subsequently, the marginal cost is expected to be low).

- Cost of substitutes

The cost of implementing substitutes such as Internet Telephony is significantly low compared to implementing this in the traditional fashion by the telecommunication providers. This can pose a significant threat when substitution is considered to be close to the original since it lowers the barrier to entry.
• Eliminating technology barriers

With improvements in cable modem technology, cable companies can provide telephony services (in addition to its cable services) - possibly of higher quality due to the higher bandwidth available on its existing infrastructure.

• Intensity of Rivalry (Commoditization):

The availability and use of the same technology would result in several of the core service offerings becoming commodities. Voice telephony, Calling Card, and toll-free services, or just transmission are increasingly considered as commodities since there is no qualitative difference between them despite different implementations.

• Customer Power:

The commoditization of some of the core services due to the availability and use of sophisticated technology is contributes to an increase in customer power. These services are the large revenue earners and the lack of differentiation would make it easy for a customer to switch carriers. Rapid improvements, decreasing prices and growth in acquisition of Personal Computers by the consumers coupled with other trends such as Computer Telephony Integration affords consumers unprecedented power. Consumers will become technically savvy and more demanding and the availability of very appealing substitutes will further increase their power to negotiate in the context of services.
CHAPTER 5: Market Trends

5.1 Introduction

- Chapter Objective:

Our (implicit) model now addresses the other side of the classical economic equation - Demand.

What trends in consumer demand are going to affect the market structure?. That is the question we will attempt to answer in this chapter. Consumer demand ultimately dictates the success in any marketplace; it is no exception in the telecommunications industry. In fact, the significant market power that the IXC consumers appear to possess and exercise - demonstrated by the high churn rate (> 30%), puts them in an unusually strong position to affect the course of the industry. Switching costs in this industry are presently negative (i.e. there is an economic incentive to switch carriers) but this in itself has not significantly influenced the churn as large incumbents such as AT&T, are discovering to their dismay (AT&T spent a whopping $1.5 Billion paying consumers to switch from other carriers). Hence, it becomes crucial to understand the market trends and how they influence the industry structure.

- The Approach:

In our quest to understand the market trends, we will first consider the popular consumer trends that appear to be more than transitory in nature. Although, some of these trends are emerging from what could be technically considered outside the traditional market domain of IXC services, it would be simply foolish to ignore these trends since they are already affecting the industry; specifically, we are referring to the Internet phenomenon. It is too important, may even be suicidal, to ignore.
We shall also examine surveys that are expected to reveal the consumer orientations; we primarily rely on a relatively thorough study conducted by the Yankee group, as well as information and analysis in the popular press. We will employ this information to evaluate how it could affect the structure of the industry.

5.2 Market Trends

- The Internet:

The most visible trend in the marketplace is the Internet and applications implemented on it such as the World Wide Web. We carefully examine this phenomenon and understand the underlying consumer preferences:

The Internet - a globally interconnected network of some 18 Million computers has been around for over a decade. It was primarily used for electronic-mail and to a lesser extent, message sharing (Usenet) by academics but has recently transformed to a mainstream phenomenon. In fact, while the demand for information services has grown about 20% per year, connections to the Internet approximately grew about 10-20% a month in the last few years, a pace that is expected to continue through the end of the decade, reaching more than 125 million computers - and 160 Million users worldwide. [Salomon, 1996]. So why did Internet usage grow so dramatically is a short period of time? The most important reasons, apart from the falling costs of computers (and the actual low-fixed cost of using the Internet) making for this remarkable growth has been the appeal of the new - second generation of applications that have presented audio, video and text in an integrated fashion. Specifically, it has been an application called the World-Wide Web (WWW), based on the paradigm of hypertext where in (video, data and text) documents are organized as a collection of multimedia objects (typically the size of a few screens of content) each of which has pointers to other relevant objects (documents). Using these pointers, a user can easily
navigate through the hyperspace without having to concern about the location of the documents; in fact, the documents can be stored on any WWW server on the Internet, and a user, by simply following the pointers\textsuperscript{45}, can traverse the Internet - perhaps going from country to country\textsuperscript{46} in the process. This scheme has had remarkable success and even non-technical users can - and do navigate the Web (as it is popularly known) easily. The browser applications that actually facilitate the navigation on the Web have encountered unprecedented popularity. Netscape, perhaps the most popular browser, (with about 58% market share) has 'sold'\textsuperscript{47} more copies of software than any other in history.

The Web has turned almost overnight in to a repository of an extraordinary amount of multimedia information ranging from on-line journals in fields as diverse as physics and the classics; collection of pictures including the library of Congress Vatican exhibit (over half a million people visited this exhibit), and audio recordings of contemporary music to the weather information. In addition to the information itself, the Web has, as would be expected, has also spawned a commercial enterprise that is significant in terms of the range of services and products offerings - again ranging from airline tickets to used-cars to books to music\textsuperscript{48}. And the virtual marketplace is not local but rather the cyberspace is encompassing almost all parts of the world. This availability of a truly global marketplace for a product, service or information is amazing and simply unprecedented in the context of human history. It also completely discards the existing business model - for e.g. the distribution channel is completely redefined, and the end consumer can

\textsuperscript{45} This entails typically of selecting (clicking) on a highlighted object (that represents the pointer).

\textsuperscript{46} Since documents may be stored on servers in different countries.

\textsuperscript{47} Netscape largely gave away its browser for free; this should however not be construed as the (sole) reason for its popularity. It is a common marketing practice in the software industry to reach the mass market segments.

\textsuperscript{48} Problems such as security on the Web has precluded any significant amount of actual financial transactions although it is slowly beginning to change with assurances of safety; for e.g. AT&T assures safe transactions using the AT&T credit card.
potentially have direct contact with a product manufacturer. With the
availability of several construction software, it is simple to create a home page
(a location on the Web where information about the entity its
product/service resides) and the flexibility of the Web itself affords creative
ways to make it easy for access by consumers. It has actually become difficult
to find a commercial (and even non-commercial) entity without its own
home page. The Web has been growing at such an alarming rate that recently
fears of an information overload have been expressed and new approaches
e.g. WebCasting, have been proposed to alter the existing architecture and
accommodate the expected growth [Business Week, 1997]. WWW took
approximately 6 months to reach 10 Million users and is expected to be about
38 Million in 18 months. [ANS, 1997].

Thus, these successes of the Internet could be attributed to the ingenious
WWW; it has already made a profound impact on almost all aspects of our
lives, and with new and creative uses emerging everyday, it promises to
continue to do so.

One of the key revelations from the Internet and the WWW experience is the
enormous appeal of content (information, services, products etc.) presented
through an easy to use multimedia interface. Interactive Multimedia -
facilitated through a processing and transmission infrastructure that
integrates voice, data and video, heralded in no uncertain terms the direction
of the future customer requirements.

More fundamentally, the popularity of the Internet and its applications
revealed that customers prefer Interactive multimedia services, that are
simple to use and affordable.

- **Other Market trends:**

We now examine two surveys that should lend some insights into consumer
trends in the marketplace:
1. Price Waterhouse/Kenan Systems Survey

A recent opinion survey [TelecomAM, '97] of 1005 consumers was conducted by Opinion Research Corporation for the partnership of Price Waterhouse EMG Group and Kenan Systems to assess their preferences with respect to their telecommunication needs. The results:

- 55 percent of consumers want a single source and single bill for all voice, data, wireless, video and Internet services.

- If they had to pick only one company for all their telecom needs, almost two-thirds would pick a traditional landline telephone company or long-distance company rather than a new type of entrant.

- 40 percent would pick a local exchange company and 21 percent a long-distance company for their integrated service supplier.

- 31 percent of consumers most prized uninterrupted service, 21 percent want prompt response to complaints and queries, 21 percent are looking for a single point of contact, and 14 percent said they wanted a bill that's easy to understand.

- Some 26 percent said they had changed their long-distance company in the past 12 months. Of that group, two thirds said they switched for a better price.

- The survey also showed a lot of room for growth in advanced services. Some 24 percent said they didn't take cable service, 60 percent don't buy cellular/wireless phone services and 72 percent don't buy Internet services.
2. Yankee Group Survey on Consumer Markets:

The annual Yankee Group survey on consumer behavior [Yankeevision, 1996] across three major product/service categories - home entertainment, PC/On-line and Telephony, provides valuable insights into these three markets (in various stages of maturity) as they are about to enter important periods of transition. We believe that it is particularly useful to examine complement products and services (as the growth of Internet should suggest).

The survey segmented the consumer population into three groups: Technically Advanced Families (TAFs), Near -TAFs and Non-TAFs. TAFs are early adopters of new technologies and products, and more importantly they are likely to influence the purchase decisions of their neighbors. They account for about 15% of the general population. Their average household income is the highest ($74,000 per annum) and are the youngest of the segments. The Near-TAFs, presumably less eager than TAFs in adopting new technologies represent about 32% of the general population while the Non-TAFs make up the remaining 53%.

We outline some of the key findings from this survey:

- PCs and other items such as modems and CD-ROM drives are nearing the saturation point among TAF households. The ownership rates in the larger near and non-TAF segments remain stalled at considerably lower levels; less than 6% of the non-TAF households currently own a PC. The failure of the PC to succeed on a truly mass scale is largely attributable to high prices; despite the significant advances in terms of performance, functionality and usefulness, the PC's continue to cost between $1500 and $2000, a significant investment to a non-TAF household with an average income of $33,000.

- In terms of home entertainment products such as Color TV, VCR, Camcorder, DBS etc., the ownership levels among all three segments is not much different.
- In the most mature of the markets, telephony, it was found that the TAFs are the first to adopt enhanced telephony services such as calling card, toll-free numbers etc.; except for less advanced features like Call waiting, and caller ID, the non-TAF segments lagged significantly behind TAF users. An interesting observation was the dramatic growth between 1994 and 1996 - nearly doubled (from 8.8 to 16.5%), in multiple residential lines among TAF households. Within the TAF group, multiline penetration has exceeded 40% due to Small office/home office and on-line applications.

- It was found that among all segments there was an increase in demand for convenience and time savings (rather than technology).

- Interactive Computing products and services will account for half of the maximum high technology market; telecommunications products and services, and entertainment services will account for the other half (split 22% and 28% respectively).

5.3 Strategic Implications

- Portfolio of Offerings:

  The demand already exhibited for Internet based services, its projected growth and its pervasive influence in every sphere of human activity attracts a variety of players to offer such services and benefit from the amazing growth opportunities.

  As also noted, customers seem to display a preference for an integrated offering of all their telecommunication needs; this opportunity will likely cause the players in the industry to extend their existing portfolios (especially since some of these newer services are not radically different than their current portfolio).
• Customers appear to value convenience, simplicity and ease of dealing with the carrier; these facts should lead to restructuring the organizations and services, to ensure improved customer service. Customer service will be an important differentiator.

• Customer Power:

The indication that customers do not discern a qualitative difference in the core services offered by the different carriers essentially reduce such services to a commodity status. In such a case the consumer will have significant power and often exercises it - as demonstrated by the high churn rates between carriers.

• New Entrants:

The demand for new services such as Internet and also integrated offerings will also likely attract new entrants into the industry and may also result in non traditional alliances formed to complement their expertise and provide such services.

• Intensity of Competition between existing incumbents:

The increasing commodotization of general IXC services will lead to severe competition between the players. This would lead to innovation and a search to find new factors of differentiation.
CHAPTER 6: The emerging Industry Structure

6.1 Introduction

- Chapter Objective:
The main objective of this chapter is to understand how the drivers discussed in the previous chapters are collectively defining the emerging industry structure. We also identify the opportunities and threats in the redefined industry. This will be the basis for the evaluation of strategy in the next chapter.

- The Approach:
We will first attempt to consolidate the effects of the three main drivers discussed on the industry structure. In the previous three chapters, we articulated the potential impact the individual changes discussed could have on the industry structure. We now attempt to compile the structural changes that have occurred, are occurring and could potentially occur in the future as a result of the factors we considered.

In order to ensure that the emerging structure is clearly understood, we will employ a framework suggested by Andy Grove [Grove, 1996], one that encompasses the Porter five force framework as well as add an additional force - that of complements (identified by Bradenburger and Nalebuff [Bradenburger, 1995]). This approach will assist in understanding any changes that are occurring outside the domain of the traditional industry boundaries (and hence not captured by the Porter’s framework) but with implications to the IXC industry.
6.2 The emerging industry structure

The analysis of the drivers of change in the previous chapters, however brief, clearly illustrates their transformational impact on the telecommunications industry. The forces of technological advancement (primarily the ease in integration of voice, data and video for transmission and manipulation), and customer demand have been mutually reinforcing and also changing, albeit slowly, the industry structure for a while now but it is the landmark legislation - the Telecom Act of 1996, that is decidedly accelerating the transformation of the industry structure. As we will show in this chapter, the oligopoly in the IXC service business will inevitably cease to exist in its current form and a new telecommunications industry structure will emerge.

Table 6.2 outlines the potential impact to the structure identified in the previous chapters. As is clearly evident, the forces virtually affect all aspects of the industry structure.

<table>
<thead>
<tr>
<th>Force</th>
<th>New Entrants</th>
<th>Intensity of Rivalry</th>
<th>Supplier Power</th>
<th>Customer Power</th>
<th>Substitutes Avail.</th>
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Table 6.2: Potential impact to the industry structure (A + indicates Impact)

49 Actually, even currently (i.e. at the time of writing this thesis) it is evident that the structure has already changed (and will likely change more with every passing day); As mentioned before, I use the word 'current' to describe the time prior to regulatory changes.
We now use the Porter/Grove framework to present the emerging industry structure in detail.

6.2.1 Porter/Grove framework:

1. Threat of Entry
The IXC industry is attracting entrants from several other industries as well as new entities directly entering the industry. In fact, there have already been some formidable entrants to the industry. The primary reasons for this:

   - Lowering Barriers to Entry
   - Expected Retaliation from IXCs
   - High entry deterring price

We examine each of these reasons to better understand the underlying structural changes.

Lowering barriers to Entry

The barriers to entry have been lowered due to several factors:

Economies of Scale:

There have always been significant economies of scale in the IXC transmission business; in fact, it has been estimated that the marginal cost of using transmission for a call is nearly zero [Hausman, 1995]. With the advent of broadband technologies like SONET, ATM etc., the ability to carry more data will further increase the economies of scale. While this in itself would not lead to lowering the entry barrier (in fact it would lead to raising the barrier), it has done so in conjunction with lowered initial investment (see below).

[Assessment: Increased economies of scale].
Product Differentiation:

Brand Identification

While brand identification is still very important (the key players like AT&T and MCI have nationally recognized names), and especially in the context of integrated offerings that are consumers are demanding it must be noted that the brand name has itself not compensated for lack of other competitive factors. AT&T has been consistently losing market share despite one of the most well known brand names. With more innovative product offerings, and simplicity even lesser known brands have had major successes (e.g. Sprint’s Sprint-Sense). Resellers like MFS/Worldcom, virtually unknown, have also demonstrated this clearly with a growth rate of over 62,000% in the last decade.

Customer loyalties

The larger incumbents in the IXC industry such as AT&T have a large customer base: 80 Million customers. However, loyalty is not assured as has been amply demonstrated by the high churn rates between the carriers. Customers are simply seeking the best deal and are more willing to switch.

[Assessment: Reduced product differentiation].

Capital Requirements:

The capital requirements in the industry have been dramatically reduced by the Telecom Act of 1996; no longer are huge investments required to enter the IXC market - in fact, this is a continuation of the existing policy except that the LECs can and have taken advantage of this. NYNEX for example is leasing long distance lines from Sprint to enter the IXC market [TelecomAM, Feb96]. To provide an extensive portfolio of IXC services - other than transmission, will still require quite some investment thereby precluding small players from entering anything other than the plain vanilla services long distance voice calling.

[Assessment: Capital requirements significantly reduced].
Switching Costs

Switching costs are pretty low in the IXC marketplace despite the incumbents trying very hard to maintain and grow their customer base through programs which reward customer loyalty (e.g. ). There is still regular churn (over 40% with some of the carriers) indicative of the consumers perceiving a low switching cost.  
[Assessment: Switching costs reduced].

Access to Distribution Channels

The distribution channel requirement in this industry, like most service industries, cannot be monopolized; it is rather easy to have access to the distribution channels. Further, with the proliferation of the WWW and Internet, traditional distribution channels are obsoleted.  
[Assessment: distribution channels easier].

Government Policy

With the telecom Act of 1996, the LECs are free to enter the highly lucrative IXC market once they have fulfilled their interconnection obligations. [e.g.] Other entities such as Cable companies can also offer IXC services. This is perhaps the biggest barrier that supported the oligopoly condition. There, however, continues and will likely continue, the issues regarding universal services and so, which may not be settled for a while.  
[Assessment: Artificial barriers removed; competitive landscape emerging].

Other considerations:

1. The improvements in Cable modem technology will allow cable companies to offer high bandwidth telephony services.
2. The emergence of substitutes like Internet Telephony have also facilitated entrance of several (small) companies in niche segments.
3. Experience in providing IXC services - in managing the sophisticated networks and managing a demanding customer base, is typically a significant barrier to new entrants. However, with leasing, part of this experience could be forgone since the provider undertakes the responsibility.

*Expected Retaliation from IXCs*

Due to the deregulation, the IXCs can and have already entered the LEC and Cable industries. AT&T, MCI and Sprint have already entered local markets around the country. MCI with MCI Metro has already offering service in several cities. Sprint is offering local service in six states. The significance of this entrance is magnified by the fact that these industries provide what could be considered as complementary products (i.e. local and long distance services⁵⁰; see section on complements). Given the consumer preference for integration of complements, this could spell the deathknell for the LECs (especially considering that a significant number of consumers appear to prefer the IXC providing the integrated package over the LEC). Hence LECs are compelled to enter into an offensive mode and offer the package themselves.

*High entry deterring price*

The cost of entering the industry is reduced due to the possibility of leasing the long distance lines; with the market expected to grow and the possibility of integrating complementary products (i.e. vertically integrate) the revenue opportunities are also growing significantly thereby increasing the entry deterring price.

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⁵⁰ Complementary products are those that are used together by the consumer; local and long distance services are complementary in that respect. In fact, local can be considered as a strong complement to long distance since long distance service invariably require the local service (not the other way around). This notion of complements may not be the same as what is generally assumed. But we use complements to refer to products that consumers use together, by preference or otherwise.
Assessment of Threat to Entry:
The barriers to entry have been significantly lowered especially for some entities such as the LECs, and Cable companies who were simply barred from entering the industry previously. The IXC industry was open to other competition previously but it is only now that such formidable (several of the LECs have revenues comparable to that of the major incumbent IXCs) competitors could enter the industry; as a result, several have already entered or announced intent of entering; almost all RBOCs have entered the IXC market, albeit in a small way. It must be noted that there have, however, been difficulties for the LECs to offer long distance services due to the inability to convince the state PUCs that they are actively promoting competition in their previous LEC market. BellSouth and Ameritech were recently not allowed to provide inter-LATA services in Georgia and Michigan[TelecomAM, 3/24/97]. Thus, the emerging industry will invariably comprise the LECs notably the RBOCs and will likely attract others such as Cable service providers. Alliances between Cable companies and LECs (such as Time Warner and US West) and merging LECs (such as NYNEX and Bell Atlantic, and Pacific Bell and SW Bell) will likely be strong competitors in the industry as well.

With emergence of potentially close substitutes such as Internet Telephony, there could be new alliances (between Internet Telephony software providers, LECs etc.) also competing in the IXC market.

2: Intensity of Rivalry:
The intensity of rivalry between the competitors has already increased and promises to continue in the near future. Factors contributing to this intensity are discussed next:

Numerous and Equally balanced competitors
The number of competitors have increased as have a number of equally balanced competitors. The Oligopoly is already obsoleted due to the entrance of comparably large entrants such as the LECs and the Cable Companies. Although as stated earlier, some of the LECs have not been able to enter due to their obligations they will inevitably enter soon. The potential competitors in the new marketplace will include the likes of NYNEX, BellSouth, Bell Atlantic, Time Warner, GTE - comparable to the incumbents in size and resources.

[Assessment: Numerous equally powerful competitors]

Industry growth

The IXC industry is expected to grow around 33 % by 2000. The long distance market size is expected to be over $100 Billion by end of the century.

[Assessment: Attractive market growth].

High fixed Costs

Among those competitors who own the facilities there has been a high fixed cost incurred. And with carriers investing to extending their services to include cellular and so on, the trend continues among core infrastructure providers. The various strategies firms have adopted to position themselves favorably include investing in new (and expensive) technologies (such as ADSL, ATM etc.), new infrastructure, licenses and so on. For example, to provide services such as PCS wireless, Sprint incurred an investment of about $8 Billion (including $2 Billion for purchasing the PCS spectrum rights). Even smaller resellers like LCI have recently invested $100 Million in infrastructure [Telecom AM, 3/97].

[Assessment: Significant investment by the players in the industry].

Lack of Differentiation and Switching costs

The commoditization of core IXC services and low (negative) switching costs have lead to severe competition thus far. Differentiation based on
costs such as Sprint Sense while initially successful was quickly countered by others. Carriers are seeking ways to offer differentiation by customization of services and offering bundles of complementary products but there has not been any clearly differentiated basis.

[Assessment: No significant differentiation; low switching costs].

**Capacity Augmented in large increments**

The excess capacity in the core network is being further increased by the deployment of new technologies such as ATM and SONET by all the major carriers; emerging technologies such as Wave Division Multiplexing (WDM) could potentially increase network capacity by a factor of six. Despite the anticipated growth in existing services, the capacity will continue to be excessive perhaps even more than before.

[Assessment: Excess Capacity will exist in the IXC network].

**Diverse Competitors:**

The technological advances are leading to the development of close substitutes (like PCS and Internet based applications). This is leading to the entry of new and diverse competitors (like Internet Telephony providers) in niche segments.

[Assessment: Diverse competition in niche segments].

**3: Suppliers**

There are numerous equipment suppliers and software developers as well as system integrators. The remarkable growth poised by these industries has attracted numerous niche players. There are also large players such as Nortel, Ericsson, Lucent and so on. The changes in technology have only afforded new opportunities for revenues. There are no longer (regulatory)
restrictions on purchase of equipment etc. as well. Hence, the power of the suppliers will continue to remain low in the foreseeable future.

[Assessment: Power of suppliers low].

4: Power of Consumers

The consumers stand to benefit the most from the emerging industry structure. With increased and intense competition assured in the IXC and LEC portions of the market, and facilitated by advances in technology and the elimination of regulatory barriers, the range and quality of services will likely be significantly improved. In this new structure therefore, consumers (despite not being concentrated as such) will be able to exercise considerable power in that the industry players will accede to the dictates of individual consumers. Already one observes price discrimination followed by the larger IXCs.

[Assessment: Power of consumers higher than ever].

5: Availability of substitutes

This is the one of the single most important changes in the industry. All the three forces are contributing to the development of close substitutes. The Internet has already spawned several substitutes that have encountered significant growth, and given its economic structure and the trends in technology, policy and consumer demand it is likely to continue to be the dominant source of new substitutes.

Consumer demands for low cost, simplicity, and convenience coupled with powerful functionality has led to the enormous growth of the user base for Internet applications such as the email, WWW and Internet Telephony that are increasingly becoming close substitutes. With the present economics\(^5\) of the Internet, the new products and services on the Internet are considerably inexpensive compared to the traditional

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\(^5\) The Internet was, until recently, a public funded network; although this has since changed, the economics of the Internet have not changed significantly and the marginal cost for using the Internet is zero.
counterparts. This low cost of Internet based substitutes is a primary driver for their current popularity rather than their relative quality itself. However, this consumer demand is propelling innovation (largely based on the technical integration of voice, data, and video) which is causing an improvement in the quality of the substitutes. This mutually reinforcing cycle is resulting in a credible threat to existing incumbents. Consider the case of Internet Telephony, an example of the voice and data convergence that allows long-distance calling over the Internet. Although it is still in its infancy and is mostly confined to a restrictive architecture that requires the use of computers equipped with sound cards, there are rapid changes almost every day and it could easily pose a significant threat in the future. With improvements in the underlying converging technologies, it is rapidly evolving a new technical architecture that could closely match the regular long distance services in terms of the quality of service and ubiquity. This, when combined with the economics of the Internet, pose a significant threat to the IXC industry as will other such emerging services over the Internet such as video conferencing etc.

The deregulation policy has ensured that there will not be any interference to regulate the Internet and other substitutes and that market forces will dictate the outcome. Recent comments from the FCC support this position and it is unlikely that the government will protect the onslaught of substitutes.

[Assessment: The power of substitutes will grow significantly].

6: Power of Complements

This force is also having a significant profound impact on the industry structure. Let us consider how this sixth force is being influenced by each of the external forces:

- Consumer Demand

The trends in consumer requirements have clearly exemplified the desire for complementary products offered in an integrated package. An example
would be local and long distance telephone services, natural complements (i.e. long distance telephone service would invariably require local telephone service) traditionally offered through different entities. Offering in an integrated product form greatly simplifies the user interface (dealing with a single entity etc.) and as the consumer surveys in chapter 4 reveal, it is preferred by consumers. Thus local services become a powerful complement to long distance services, i.e. by virtue of the customer perceived superiority of the integrated offering, local services exercise a significant power with the IXC (since the IXC’s individual offering is not as desirable as the integrated offering, the IXC has to depend on the local services).

As technology affords more sophisticated services in the future, this trend for integrated offerings that simplify the user interface will likely assume greater importance. And the services (i.e. complements) that are tied in with those offered by the IXC industry will exercise inordinate power. As discussed at length in chapter 4, a consumer trend that has been overwhelmingly evident is the popularity of multimedia services. Interactive multimedia services invariably include the (IXC) component - transmission (e.g. video conferencing, WWW, video-on-demand). services. As will be discussed later in this chapter, this trend is in fact leading to the convergence of different industries. Thus consumer demand is increasing and will likely continue to increase the power of complements.

- Regulation:
The elimination of regulatory barriers facilitates the offering of complementary telecommunication products such as local and long distance, through a single entity. This was not possible prior to the Telecom Act of 1996. With the stated intent of the policy makers to encourage competition, there will be no such barriers and complementary products will likely be offered in a bundled form as already evident in the
industry (see next chapter for a more detailed discussion on the topic of bundling).

- Technology:
  Technological convergence of voice, data and video have already facilitated the offering of complementary products such as email, voice-mail, video conferencing etc. Cable TV, paging, local and long distance and other such combinations of complements will be offered in an integrated fashion from an ordering, maintenance and support, and billing standpoint. Thus technology will allow the integration of complements in compliance with consumer demand.

[Assessment: Power of Complements will be significant due to consumer demand. Technology and policy trends will facilitate the integration of complements in a simplified fashion].

6.2.2 The emerging industry structure: An analysis

As the above analysis reveals, the new IXC industry has been affected in significant ways by the changes in Policy, Technology and Consumer trends. The industry barriers are much lower attracting formidable competition such as the LECs, despite the intense rivalry already prevailing in the industry and the emergence of close substitutes. Yet, the force of the complements and the entrance of the IXCs in the local marketplace almost compel LEC to enter the IXC marketplace. Thus the IXC marketplace, in overall terms, is more attractive than before and has more competitors now.

Despite the structural changes that promise to make the IXC business more competitive, with lower prices, much more differentiation and a competitive local business as well, the actual changes thus far have been less promising. The difficulty some of the LECs are facing to enter the market, and the cautious approach to introducing new services due to the lack of sound
economic viability are among the prime reasons for this slow progress [NII, 1996].

6.2.3 Effects beyond the IXC boundary:

The Grove/Porter framework described the dramatic shifts in the IXC industry; but it did not explicitly identify the equally, if not more, dramatic changes across this industry boundary. The discussion was restricted to complements. We now identify these changes occurring outside the domain of the IXC boundary but nonetheless having significant impact on the future of the IXC industry itself.

6.2.4 The convergence of Local and Long Distance (IXC) Industries:

Essentially, the distinction between local and long distance industries ceases to exist. Apart from the removal of the regulatory barriers the key reason for this is what could be described as the convergence of complements. The local and long distance services are usually necessary complements (i.e. both local and long distance are required together) and the customer base for most of the local and long distance services is the same due to this fact. Given that the customers prefer the local and long distance services (among others; refer chapter 4) offered as an integrated package by one entity, both IXCs and LECs are competing in each others traditional domain in addition to their own. Thus, they are both competing in the IXC and the LEC marketplace. Effectively, there is no distinction between local industry and IXC industry, and they converge into one larger industry. Although, this convergence may take a while before it is completed, it is inevitable and hence, it is meaningless to distinguish between the two for any strategic evaluation. We henceforth refer to this converged industry as the telecommunications service industry.
6.2.5 An overarching phenomenon: (Partial) Convergence of Industries and the emergence of the Multimedia Industry

The technological convergence of voice, data, video facilitated by digitization is supporting the consumer demand for products and services that incorporate this convergence of media. In providing these services, firms from different industries are coming together (or converging) and contributing their respective expertise and resources. Specifically, firms from the following broad but distinct industries are involved in this convergence:

- Telecommunications Industry (encompassing telephony, cable, broadcast, wireless)
- Information Technology
- Media (Information/Content)

The Convergence: A view of the future

Source: OECD
The new industry formed by this convergence of the three industries is called the Multimedia industry. This industry convergence is depicted in figure. It must be noted that the convergence is only partial. Forecasts of industry convergences are often premature. A recent example of this was the AT&T and NCR breakup, considered a natural confluence not too long ago. There has been lot of attention to this multimedia convergence in the popular press; while some of it is definitely hype, its emergence is indeed undeniable.

Since the beginning of 1995 (when the Telecom Act was considered a reality), there have been spectacular mergers and acquisitions in cinema, TV, newspaper, and other media businesses and various experiments and service trial conducted by the telecommunications operators. This trend has caused a quick shift of the main means of using communications from voice conversation to fax and then to data communications, such as those on the Internet. Disney purchased ABC thus obtaining CATV, interactive media, and other advantages. Time took over TBS. By incorporating TBS, Time-Warner has come to own worldwide networks in all media. The company has also gained international prestige in publishing, cinema, and music. MCI, which wishes to operate in new markets for long-distance operations with an advantage over AT&T, and Microsoft, which looked like a late-comer in network-related industries, entered into a mutual marketing agreement centering on online services and Internet-related services in January, 1996. This event attracted the undivided attention of online services. AT&T, on the other hand, announced its plan at the beginning of March, 1996 to begin providing "WorldNet", an Internet service for AT&T users. This decision has had great impact on the Internet service community. Another trend that cannot be overlooked is the trend in Internet phone. Although newly-born in terms of technology, Internet phone is being put to practical use, because commercial software packages are released in succession these days.

That is, subsets of each of the three industries are converging.
6.2.3 The Telecom industry in the context of the Multimedia Industry:

The emergence of this new multimedia industry has been studied by Bradley et al [Bradley, 1997]. The structure of the industry is shown in figure 6.2.3. As is evident, the industry structure is essentially is formed from structures of three different industries. The vertical silos representing voice (telecommunications/telephony), cable and TV (video), and data (PC) are transformed into a set of horizontally integrated functions: Content, Packaging, Manipulation, Transmission, Storage and Terminals. Transmission is considered both local and long distance - i.e. the telecommunications industry.

In the Multimedia industry value chain, the value of the telecommunication entities - at least in their traditional role, is essentially relegated to providing
transmission. While transmission, especially reliable broadband access is critical to providing multimedia services, the excess capacity in networks and severe (forthcoming) competition will make it less profitable to provide transmission services [Bradley, 97].

6.3 The Emerging Telecommunications Industry: Opportunities & Threats

We now identify the opportunities and threats in the telecommunication industry of the future from the perspective of incumbents in the IXC industry. For most part, this follows from the discussion thus far. We will therefore just note it without the otherwise repetitive explanation except when warranted.

6.3.1 Opportunities:

As with changing industries, there are several opportunities in the telecom industry as well:

- The expanded market size
  
The market size has suddenly increased from $75 Billion to $175 Billion (size of the local and long distance markets) immediately.

- A time advantage
  
  IXCs will have a time advantage over the LECs since the latter will have to comply with the 14 preconditions before offering intra-LATA long distance services. Thus far the LECs have been struggling to prove that they are meeting these conditions and their entry in the IXC market is delayed. The IXCs have no such barriers and are entering the local markets quite aggressively.

- Product /Service Integration
  
The emerging structure provides opportunities for offering complementary products and services as integrated packages as desired by customers.
• Marketing Strengths
In comparison with the new entrants - LECs and Cable companies with their considerable resources, the incumbent IXCs have significantly better marketing competencies than the hitherto local monopolies. Marketing skills will be crucial as they pursue the new (i.e. each other’s) markets.

• Customer Base
The incumbents such as AT&T have about 80 Million customers and that will be a significant advantage to the LECs who will start in the long distance business with a major handicap. Furthermore, the IXC brandnames are nationally recognized and despite the diminishing power of brandnames (in the IXC portion of the market), they may still be an advantage vis-à-vis LEC brandnames which are relatively unknown outside their home boundaries.

• Opportunities in the Multimedia Value Chain
The larger convergence between the telecommunications and other industries present even larger markets in the multimedia value chain.

• Diminishing Supplier Power
The continued intense rivalry in the suppliers’ (equipment providers and software developers) industries could be leveraged in several ways. Apart from better payment terms and discounts, their expertise in high technology could be sought to develop the sophisticated services that could become necessary to differentiate.

6.3.2 Threats:

• Broadband Access
Although the regulatory changes ensure that local access (to the residential/office location) could be leased from the local LEC incumbent, this arrangement will invariably pose some problems. The LEC itself and several other carriers will be in direct competition with the IXC for this critical piece of access, and since the wired access is the only access
available to most residences in the US and most of the businesses, the LEC could wield a significant power despite the FCC and PUC monitoring. Moreover, the existing access is limited to about 64kb for the most part and this insufficient to provide the multimedia services that the consumer requires. The IXCs therefore will have to find innovative ways to reach the customer without having to endure the cost of laying optic fiber to each home estimated to be $1500 per house, and would take a decade to complete. There is no business case for such a plan, the explosion of opportunities notwithstanding [Business Week, May ’96].

- Strength of substitutes
  Substitutes like Internet Telephony can pose a threat, especially if the LECs and other carriers use it to enter the IXC part of the market.

- New entrants and Severe Competition
  Equally resourceful competition is already beginning to actively compete. Further, with the low capital constraints to enter the IXC market as well as the excess capacity, these new entrants would invest significantly in providing value-add services, and thereby attack that part of the market with the highest margins.

- Low customer loyalty in LEC markets
  With the proper incentives the IXC consumers could easily switch to the LEC that has been operating in the area for a long time.

- Outstanding Regulatory Issues
  There are several regulatory issues that are outstanding including critical ones pertaining to access, universal service and so on. Some of these issues will be challenged and settled in courts; thus, there is a great deal of uncertainty about the marketplace and this would make it difficult to pursue opportunities aggressively (and usually entailing significant cost).

- Low value proposition in multimedia industry
  For most part, the IXC’s range of services could be described as transmission plus value add. In the interactive multimedia value chain,
the IXC role is relegated to providing a commodity, transmission. Given that the multimedia industry is likely to encompass the whole of the telecom industry, the IXC's value could seriously be undermined.
PART III: Strategy
Overview of Part III:

In this final part we explore the viability of the One-Stop Shop Strategy. We present an understanding and motivation for the One Stop Shopping concept, and then assess its sustainability proposition. We conclude summarizing the thesis effort.
CHAPTER 7: A strategy in the new marketplace [One-Stop Shopping]

7.1 Introduction

* Chapter Objective:

In this chapter, we will attempt to understand the strategic initiatives undertaken in the context of the market structure presented in the last chapter; we will specifically focus on the strategy\(^53\) that appears to be in vogue: that of One-Stop Shopping [Communications Week, Feb '97], and examine its viability, both internally to the firm and externally in terms of its potential success in the marketplace.

* The Approach:

The specific reason(s) for a firm to employ a strategy is usually reflective of that firm's current position, its future intent and the competitive landscape; rather than focus on any one firm and its unique circumstances, we attempt instead to adopt a more general and hopefully a more useful approach. We begin by defining the notion of One-Stop Shopping; then using i) the actions\(^54\) being taken by firms in the emerging industry and ii) the emerging industry structure and the identified opportunities and threats as the basis, we will attempt to identify a comprehensive list of the underlying reasons (positions) for undertaking this strategy. These reasons - the basis for positioning favorably, for differentiation, or undertaking defensive measures, should essentially provide a reasonable insight into the motivations for using a One-Stop strategy. We subsequently discuss the viability of these reasons. In

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\(^{53}\) We employ the definition of strategy to mean a pattern here (and elsewhere, unless otherwise noted). There have also been explicit announcements by the entities in this market about their strategic intentions.

\(^{54}\) We are assuming these actions credibly indicate the positions that the firms are attempting to take.
so doing we assess the sustainability of the One-Stop strategy itself; the ability or inability to sustain a underlying position will reflect in the sustainability of a strategic position.

We rely on the frameworks developed by Hax, Ghemawat and the work of Porter in our analysis of the sustainability. Wherever possible, we will also draw upon historical precedents, lessons from other industries and our personal experience to evaluate the One-Stop Shop strategy.

7.2 What is a One-Stop Shop?

A One-Stop Shop is a marketing concept wherein the products and services required to meet a domain of user needs (a segment) are offered and subsequently supported through a single user interface, usually under a single brand name.

The One-Stop Shop has fundamentally been based on the premise that consumers value the single point of contact to order, purchase, and seek assistance with a set of products and/or services. One-Stop Shopping has long been commonplace in several businesses. An example of a One-Stop Shop for travel would likely offer all travel related services - transportation, boarding and lodging, entertainment (at travel destination) and so on. Basically, it attempts to meet all the travel related needs of a segment of travelers through a single interface (store location, toll-free number, WWW site or some other convenient mechanism). A consumer requiring Airline tickets and hotel reservations can accomplish both tasks through a single point of contact rather than expend the additional economic cost required if they were to be accomplished through two separate agents. Similar One-Stop Shops have long been prevalent in businesses ranging from financial services to

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55 The time and money involved to contact, purchase, synchronize and so on.
automobile parts. In telecommunication services, specifically in local and long distance, the latitude for offering one-stop shopping has typically been restrictive due to regulatory constraints.

**Some points to note about One-Stop Shopping:**

- One-Stop Shopping is essentially a marketing concept that is primarily oriented to providing consumer convenience.
- It offers more than one 'discrete' service or product - and often these are related to a domain of consumer needs. These may entail providing services and/or products that are not necessarily related technologically but usually related functionally (i.e. complements). These services or products usually tend to integrate vertically in the consumer’s value chain.
- The One-Stop shop may also offer services in an unbundled form but bundling is usually a key reason for a One-Stop Shop.
- The most critical issue about offering One-Stop Shopping is the domain (or segment) that it addresses; the combination of the bundle(s) offered is directed to the appeal of a specific segment and attempts to leverage this market niche. The domain usually is dependent on several diverse environmental factors such as culture, the availability of substitutes and so on.
- The One-Stop Shop may be offered under a single (and usually better known) brand name.

7.3 **The One-Stop Shopping paradigm in the (emerging) telecom industry**

At the outset, we note that several firms in the emerging industry are pursuing a One-Stop Shopping strategy. All the major players - the incumbents like AT&T, Sprint and MCI as well as new entrants such as the
LECs and even Cable companies are offering the convenience of One-Stop Shopping. For example, MCI announced a one-stop shop for Internet services and has extended this concept to providing all data and voice services through its MCI-One package. AT&T recently stated that it will provide a full-line of data communications including Internet access through its WorldNet package [Info World, Aug. 1996]. Bell-Atlantic Corp. has developed All@once which concentrates on providing a one-stop package for telecommuters [Communications Week, Issue 611; pp. 10]. Sprint's Global One venture is offering multi-national firms the advantage of one-stop shopping for their global voice and data networks; it also offers similar services for the hotel segment in the United States.

The table 7.1 briefly outlines the explicitly stated and observed One-Stop Shop strategies of some of the key players in the industry, the respective product portfolios, (stated) target segments, and the actions undertaken by the firms to support the One-Stop Shop strategy. We have attempted to present a reasonably broad sampling of the One-Stop shop strategies that are being employed in the industry to give a sense of the diversity and variance that exists in its adoption. The data with regards to the product portfolios is the latest available; however, it must be noted that these appear to be in a state of flux and firms are introducing, eliminating and modifying their product/services under the One-Stop shop. There is more data for some One-Stop Shops while less for others; thus we have to make do with perhaps an incomplete competitive perspective. As will be evident from table 6.1, the incumbent IXCs are featured prominently compared to other (new) competitors in the telecommunications industry. This is due to the IXCs' more aggressive and visible pursuit of the strategy (rather than us focusing only on the IXCs). This list is by no means exhaustive but should suffice for the purpose of this effort (some of the firms featured in table 7.1 have other One-Stop shops as well but will not be discussed here for reasons of brevity).
<table>
<thead>
<tr>
<th>Firm/Brand</th>
<th>One-Stop Shop portfolio</th>
<th>Target Segment(s)</th>
<th>Underlying Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT&amp;T/ATT.ALL</td>
<td>• Local toll service • Long distance • Calling card • Local Cellular/PCS services • Internet Service (WorldNet) - Browser - Access • Voice messaging • 500 Personal number</td>
<td>• Stated target: (Affluent) residential and small businesses • Toll-free number interface</td>
<td>• Most services provided through existing internal portfolio; leased local lines in all states. • Outsourced billing to Claremont Technology.</td>
</tr>
<tr>
<td>MCI/MCI One</td>
<td>• Long Distance (including inbound 800, card, domestic) • Cellular phone • Pager • Internet Services - PC - Free software including Microsoft's browser and email - Access • Personal One number with intelligent routing • Calling Card • Home Security System • Customized News Clips • International Calling • Single bill</td>
<td>• Stated target: (Affluent) residential and small businesses • Offered in Basic package as well as several permutations of the MCI One offerings (e.g. MCI One Internet Service) • Cellular available only in some markets. • Company states that consumers can save 20 to 70% as opposed to individual purchases • Toll-free interface for end to end support</td>
<td>• Alliances with several companies: Dell Computer for PCs, Westinghouse for alarm system, purchased PCS minutes from NextWave, Paging from Skytel. customized news service through Pointcast etc. • Marketing, engineering and billing done internally by MCI.</td>
</tr>
<tr>
<td>Sprint</td>
<td>• Local service • Long Distance service • Wireless PCS • Internet Access • Paging • Pre-paid calling cards • Residential/PCS phonesets • One bill (except for Internet access)</td>
<td>• Retail consumer market • Distributed through RadioShack electronic stores • Toll-free centralized support interface</td>
<td>• Partnership with Tandy corp. to set up 'store-within-a-store'; partnership with Sony to supply PCS handsets. Outsourcing support functions (such as centralized call center to Clarify) • Internal coordination between its local, long distance and PCS divisions for service;</td>
</tr>
<tr>
<td>Firm/Brand</td>
<td>One-Stop Shop portfolio</td>
<td>Target Segment(s)</td>
<td>Underlying Approach</td>
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<tr>
<td>------------</td>
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<td>---------------------</td>
</tr>
<tr>
<td>Sprint/Global One</td>
<td><strong>Setup a global (or country specific) Virtual Private network</strong>&lt;br&gt; <strong>Manage regulatory and all other country specific issues</strong></td>
<td><strong>Multi-national corporations.</strong>&lt;br&gt; <strong>Usually dedicated account representative undertakes all responsibility except for routine functions.</strong>&lt;br&gt; <strong>Portfolio result of joint venture with France Telecom, Deutsche Telekom</strong>&lt;br&gt; <strong>Use overlay network and pre-existing relationships and expertise of the three players.</strong></td>
<td></td>
</tr>
<tr>
<td>Sprint</td>
<td><strong>Basic Voice and Data services including voice telephony, data connections.</strong>&lt;br&gt; <strong>Single bill</strong></td>
<td><strong>Hospitality segment (hotels, entertainment industry etc.)</strong>&lt;br&gt; <strong>Account representative handling important issues and centralized customer support.</strong>&lt;br&gt; <strong>Using existing internal expertise for the most part.</strong></td>
<td></td>
</tr>
<tr>
<td>MCI Enterprise Management Services</td>
<td><strong>Voice and Data services</strong>&lt;br&gt; <strong>Building and managing home pages</strong>&lt;br&gt; <strong>Total responsibility for developing business software applications and also for the business processes supported by the applications</strong></td>
<td><strong>Small to medium businesses</strong>&lt;br&gt; <strong>Internal expertise to provide voice and data services. Software development and system integration using the expertise of the acquired firm SHL SystemHouse.</strong>&lt;br&gt; <strong>Partnership with British Telecom and Intel Corp. (subsequently BT acquired MCI)</strong>&lt;br&gt; <strong>Telecom services provided using internal expertise.</strong>&lt;br&gt; <strong>Consultancy services offered through Ernst &amp; Young.</strong></td>
<td></td>
</tr>
<tr>
<td>MCI/Internet Service</td>
<td><strong>Internet Service offered internationally (specific countries unknown; presumably not all)</strong></td>
<td><strong>Multi-national Businesses</strong>&lt;br&gt; <strong>Account representative handles initial and any difficult issues. Centralized customer support</strong></td>
<td></td>
</tr>
<tr>
<td>Bell Atlantic All@Once</td>
<td><strong>ISDN and other capacity intensive services.</strong>&lt;br&gt; <strong>Local, Long Distance</strong>&lt;br&gt; <strong>Consultancy in assessing service and growth needs.</strong>&lt;br&gt; <strong>Telecommuters and small businesses</strong>&lt;br&gt; <strong>Long distance is limited areas within the Bell Atlantic LATAs</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The accuracy of the information has been cross-checked with multiple sources but is still not guaranteed\textsuperscript{56}. Any subsequent analysis is based on but not restricted to the information provided in table 7.1. A critical component that is missing from the table is the price(s) for the various bundles offered by the one-stop shop. While prices are unequivocally being used to convey the appeal of one-stop shopping, there are two problems with using them in our analysis: first, there are just so many combinations of services and discounts that it involves a considerable effort to even assess the actual cost savings the various bundles in the portfolio entail. Secondly, the prices are very fluid and are subject to constant change (i.e. prices appear to be highly negotiable, including the discounts implying price discrimination).

Some observations:
From (primarily) examining the various one-stop shopping strategies listed in table 7.1, we note the following:

Segmentation:
1. The One-Stop shops have usually been confined to addressing the needs of narrow segments such as telecommuters (Bell Atlantic), multi-national corporations (Global One) and so on but they are, in some instances, also addressing relatively broader segments such as residential and businesses (MCI One).
2. Companies are positioning as one-stop shops in multiple segments. (e.g. Sprint is offering one-stop shopping for the hospitality segment as well as muti-national corporations).
3. Sometimes the multiple segments addressed by the corresponding one-stop shops are not mutually exclusive intentionally (e.g. MCI One to residential and small business consumers, while offering Enterprise

\textsuperscript{56} Since we received inconsistent information from the firms themselves. Anyways, we restricted to those facts that were not disputed.
Management Services to small to medium businesses). In other instances, the one-stop shop segments overlap as in the case of Sprint’s hospitality and multi-national segments (e.g. multi-national hotel chains).

4. The segments are not restricted to purchasing the bundled offering only; they can still purchase unbundled services (true of all one-stop shops in the telecom industry) from individual suppliers (e.g. home alarm system, or customized news service is still available from Westinghouse and Point Cast respectively).

5. The segments, for the most part, are reasonably sophisticated and affluent (e.g. MCI One is targeted to upscale residential consumers).

**Portfolios:**

1. The One-Stop shops are offering several bundles - each a combination of the services and products from a portfolio (e.g. MCI One Internet, Business MCI One offered from the MCI One portfolio). In cases such as MCI One, in fact one observes a hierarchical offering of bundles.

2. The portfolios under the One-Stop shops typically represent a small subset of the total portfolio of products and services offered by the company.

3. The One-Stop shop portfolios comprise of existing services as well as new services, sometimes radically departing (in functionality at least) from their previous portfolios (e.g. MCI One offering security alarm service, Bell-Atlantic’s @Once offering consulting services).

4. The bundles are not the sole choice; consumers in a segment can also purchase unbundled services (albeit, usually at higher cost) from the respective companies.

5. The diversity of the service portfolios range from horizontal integration to vertical integration in various value chains. Consider MCI’s Enterprise Management Services; it involves (among other things) to quite an extent the creation and maintenance of the client’s webpages. It can safely be said that this is outside of the traditional voice and data domains of telephony services and can more appropriately be classified in the domain of the
multimedia industry. In the multimedia domain, the role of the telecom companies has been that of providing transmission. However, it appears that with the One-Stop shopping strategies and bundling, their participation in the multimedia value chain is extending vertically from transmission to include packaging as well (see chapter 5.3). Thus, there appears to be some clear signals to move into this value chain or rather to be more precise the value chain of industries that are going to be enveloped by the multimedia convergence. All@Once, the Bell Atlantic One Stop Shop for telecommuters could be considered another such example. The needs of the telecommuter segment (i.e. working from home) would typically entail a multimedia assortment comprising a voice connection, high speed data access, video conferencing, voice, fax, and e-mail, Internet/WWW/On-line services etc. While some of the components of such an offering (such as voice and data connection i.e. transmission) are part of the standard telecom portfolio, the integrating and packaging with other services such as video conferencing and Internet would afford the telecom company to extend its role in the telecommuter’s multimedia value chain. Recent comments by MCI’s Chief Executive Officer Bert Roberts only confirm this trend to move into the multimedia domain. In fact, he indicated that MCI intends to compete in all fronts (with the eventual goal of competing effectively in the converged marketplace) and in fact, aims to get 50% of its revenues in the year 2000 from services and products not offered today.

Approach:
1. The One-stop shop is being offered through alliances with other firms (e.g. Sprint’s alliance with cable companies TCI, Comcast and Cox) and mergers or acquisitions (e.g. SHL Systemhouse by MCI).
2. In some cases, the companies are advertising heavily to convey the image of a one-stop shop for all the telecommunication needs (e.g. Sprint, MCI). They downplay (small print) the fact that some of their present offerings
are not ubiquitously offered (e.g. cellular offered in some markets in the case of MCI), or completely bundled (e.g. Internet services are not part of the ‘single’ bill from Sprint despite its claim to have a single bill).

**Branding:**
1. In most cases, one-stop shopping is being offered under its own brand name (e.g. All@Once etc.).
2. It appears that the One-Stop shop branding is invariably tied to the company brandname e.g. MCI One, ATT.ALL.

We will now look at the plausible motivations for undertaking a One-Stop shop strategy and subsequently, examine the potential challenges and opportunities that it presents.

**7.4 The strategic motivation for a One-Stop Shop Strategy in the emerging telecommunications industry**

What is the motivation for a One-Stop Shop Strategy? We now attempt to outline the different underlying reasons for firms to employ a one-stop shop strategy. Recognizing that all these reasons may not be applicable to every firm competing in the industry, we note that it may however lend a framework to assess the motivation of an individual firm in the industry.

**7.4.1 The Reasons:**

- **Convenience**
  
  As noted earlier, a primary reason for One-Stop Shopping has always been to increase the convenience factor. The One-Stop Shopping strategies in the telecom industry also attempt to increase the convenience by offering a bundled set of services that appeal to the segments they are serving. A survey by IDC/Link showed that about 37.4% of consumers were very interested in buying multiple telecommunication services from a single
provider [IDC/Link, 1996]. With the MCI One offering, for example, consumers requiring local and long-distance telephone service, Internet Access, security alarm system, paging, cellular service etc. can purchase and subsequently be supported by a single point of contact, and receive a single bill for all the services rather than dealing through multiple interfaces. The MCI One package can be ordered simply by dialing a toll-free number and MCI will be responsible for setting up all the constituent services including installing the hardware and software for the Internet Access and the Security system.

- **Simplicity**

  Although a variety of sophisticated products and telecommunication services are being offered with the objective of making it convenient for consumers, they could also pose a formidable barrier to the average consumer. Unless it is simplistic to order (or acquire), use, and maintain it may not be very valuable to the target consumers. A compelling example that was discussed in Chapter 4 was the World Wide Web and the browser software; basically, the WWW and browsers such as Netscape transformed the Internet from a relatively obscure service used mainly in the academic world, to a mainstream necessity. Underlying this remarkable transformation has been the simplified interface that allows even the average person to navigate the Internet.

  One-Stop Shopping attempts to make a consumer’s life easier by offering a simplistic interface to order a range of services (as a bundle or in an unbundled form). All the One-Stop Shop strategies in the telecom industry invariably have a simple interface (such as a toll-free number) to support the service offerings.

- **First mover Advantage:**

  Companies are positioning to be the first to offer a ever widening array of services and products through a single interface. In so doing, it is assumed that the elusive consumer can be ‘captured’ first. In the context of the
complexity and difficulty that accompany subscription of the new telecommunication services, consumers are expected to be reluctant to change once they have been tied down to a carrier. Everyone is essentially attempting to be that first carrier which captures the consumer base. This has been demonstrated by the eagerness in the industry to enter the various (sub)markets as soon as possible. Although, MCI began the bundling mania first, it was almost immediately followed by AT&T and then the others.

- **Offering complementary products to undermine the effect of substitutes:**
  The growing power of substitutes such as Internet Telephony is posing a real threat to the incumbents (especially the IXCs). By offering a range of complementary products such as local, long-distance, cable, email and so on in an attractive bundle (with all its attendant benefits), the threat of substitutes could essentially be countered.

- **Growth (multimedia) markets**
  As noted earlier, the emerging industry structure will invariably affect (negatively) the value add of transmission and packaging of telephony and data services - the traditional domain of operation of the industry players. This is due to the increased competition and commoditization of some key services such as transmission. In response, it appears that some of the players are attempting to move vertically in the multimedia value chain and offering a bundle that, in addition to including transmission, is also beginning to contain multimedia software and packaging. The spending of some of the key firms in the recent years (table 6.2) reveals their serious intent in pursuing multimedia opportunities.

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*table 7.2 Investments in multimedia capabilities (1993-95)*

15.THG
Each of these initiatives presumably are more valuable than the existing status quo; for example, the Internet offering like that offered by MCI One in addition to the ‘usual’ offerings like long distance service is expected to be more valuable. Further, the expected growth in the emerging multi-media industry is unprecedented and is based on the convergence of three different industries. It has been estimated that the total output of these three industries will reach around $1 Trillion by 2000; this convergence will facilitate the transformation and growth of several diverse industries such as Publishing, Retailing, software distribution and so on. In the growth phase of an industry, there is an opportunity for all the players in the industry to benefit. So, it simply makes economic sense to participate in a growth industry. Moreover, a One-Stop Shopping strategy bundling several services and products seizes the growth opportunity in multiple products and services. This despite the lack of specific information as to which of the products and services are most in demand.

- **Leveraging brand name to bundle less-known services:**
The bundling that is invariably present in the One-Stop telecom shop usually comprises discrete products and services that are (were) likely provided individually under different brand names. Consider the MCI One example again; it combines products like home security alarm system - not its regular offering, with other products and offers it under the MCI brandname. A well known brand name like MCI has an economic value associated with it since it conveys reliability, performance and so on. By combining a product or service of a lesser known brand in a bundle, that product acquires the reliability and other attributes associated with the brand (in the mind of the target segment).

- **Economics:**
In offering a bundle of services through a One-Stop Shop, several potential economic benefits can be realized:

  - **Lowered Transaction Cost**
Since several products and services are offered in a bundle and through a single interface, economies of scope could result due to the shared cost of marketing. The total cost of gathering information about buyers (market research), distribution through a single interface, advertising (communication), and customer support for a bundled offering is lesser than the total corresponding costs of supporting an unbundled offering.

For example, in the case of MCI One, the cost of installing the hardware, software, the security system etc. can potentially be reduced by accomplishing it in one visit by a single technician. It also simplifies other transaction costs, including paperwork and so on.

- **Low (marginal) cost of entering adjacent businesses**

The low cost of entering adjacent markets, product lines etc. seeks to leverage the expertise in the base market, or product line respectively. This is especially true in the case of information goods being bundled together. Bakos and Brynjolfson conclude that ‘a strategy of selling a bundle of many distinct information goods for a single price often yields higher profits and greater efficiency than selling the same goods separately’. The bundling strategy takes advantage of the law of large numbers to “average out” unusually high and low values for goods. As a result profits can be increased even as inefficiency is reduced. [Bakos, 1996]. For example, the costs of augmenting Internet access by providing browser software may not be that significant (in relative terms).

- **Hedging**

In the absence of the certainties in the emerging marketplace except for only general trends, and no apparent killer applications in the horizon, it is very difficult to focus and pursue specific opportunities. The number of variables involved, as should be evident, and the costs of a big scale undertaking are forcing firms to enter in the various (all related) markets with some presence so as to be able move rapidly should they discover any
opportunities. However, they are not investing significantly in case no opportunities arise.

7.5 Assessing the viability of a One-Stop shop strategy

Based on our analysis thus far, we now attempt to assess the viability of the One-Stop Shop strategy. We approach the question of viability by examining whether the underlying positions are sustainable in the emerging industry structure. We assess this question across several dimensions:

- Meeting the market need:

  The primary attraction of the One-stop shop in telecommunications to consumers is the convenience and simplicity it offers. Surveys have consistently indicated that consumers prefer their telecom needs offered in a bundled form through a single interface. In fact, a recent survey revealed that nearly 80% of US households would like to receive it from a one provider. Thus, the market opportunity for a One-Stop shop to exist is clearly apparent. With regulatory barriers vanishing, firms are rushing into capitalize on this very lucrative opportunity - just the combined market for local and long distance is about $175 Billion, and become that one provider for all the telecom needs of the market. The One-Stop shop strategy therefore appears to be a direct response to a market need.

  The emerging telecommunications market structure indicates an increasing dependence on the customer and in fact, is being shaped to support the customer needs. In such an environment, responding to the consumer demand becomes a prerequisite to compete; this is clearly evident by the number of firms offering the One-Stop shop strategy in the telecom marketplace (note: that the leveling of the playing field in this market will invariably ensure that this will be the case in all segments of the marketplace). This precludes the possibility of the One-Stop Shop in
itself becoming a unique competitive advantage. The firms offering a One-Stop shop to provide straightforward bundles (e.g. local, long distance) will not be in a unique position, simply because this is offered by virtually every player or put another way, the One-Stop shop strategy will just raise the standard to compete for everyone. The only opportunity that a firm has here could be a short-term advantage that can result from Operational Effectiveness - i.e. a firm is operating efficiently (or moving towards the Production Possibilities Frontier (PPF)). As Porter asserts, such a strategy is not sustainable. For completeness, we must note that a One-Stop shop strategy in the context of the emerging market may not be vulnerable to a focused competitor offering unbundled services, because although there may be some advantages offered by such competitors (such as cost, quality of service), the customer trends suggest an overwhelming preference for a simple, convenient and integrated package.

Conclusion: The (generic) One-Stop Shop is not a sustainable proposition.

**Segmentation in the One-Stop shop strategy:**

Several of the firms in the industry, clearly recognizing this, have adopted the following two-step approach to differentiating their One-Stop shopping strategies:

1. Focus on providing One-Stop Shopping for specific segment(s) (e.g. telecommuters by Bell Atlantic, hospitality businesses by Sprint)
2. Bundle 'value-add' services (e.g. MCI-One includes customized newsclips etc.)

These steps pre-suppose the accuracy of a critical (and perhaps the most challenging) factor responsible for the success of a strategy in the marketplace - **Segmentation**. In fact, the One-Stop shop cannot practically exist without segmentation (i.e. assuming that no one firm can possibly offer everything to appeal to every segment). In the One-Stop Shop strategies, the segmentation is either quite narrow such as telecommuters to rather broad - residential segment (MCI One). The dilemma whether to
pursue smaller or larger segments is of course obvious - low risk, low
(potential for) revenues versus high revenues with higher risk. Primary to
both endeavors is defining the segment itself and this is where one of the
biggest challenges to One-Stop Shop strategy is exemplified. Classifying
segments as overtly broad or too narrow will invariably jeopardize the
strategic position of a firm. The segmentation evident in the one-stop
shopping for the most part betrays the lack of creativity and is confined to
the clearly inadequate classifications such as business, residential or
government. Some players are, however, beginning to focus on user
segmentation based on functionality (such as multi-national firms).
Segmentation should be based on consumer value-chains since the one-
stop shop implicitly aims at adding value based on these value chains.
Broader the segmentation the more difficult it is to address the consumer
value chains present in the segment, and hence less effective the strategy.
Let us examine how bundling of services and products is accomplished in
the context of the One-Stop shops, since this is a primary manifestation of
the segmentation.

Bundling:

Most of the firms are offering bundles but one could purchase individual
services (i.e. unbundled) as well as smaller bundles (e.g. you can purchase
a MCI One bundle or just long-distance service only, or MCI One Internet).
The incentive to purchase the bundle is usually in its price - MCI One
claims a 20 to 70% discount is possible over an unbundled offering. While
this could be a powerful incentive, it may not be all that appealing for the
segment who is uninterested in the bundle and the cost of the bundle is
significantly greater than the cost of the individual service (or smaller
bundle) that they desire; if the cost of a bundle for local, long-distance and
cellular is say $100 a month (for some fixed usage), and the local and long-
distance bundle costs $75 and unbundled the costs are $25, $60 and $30,
then a user who really desires local and long-distance may not be willing
to spend the additional $25 (i.e. additional 33% spending) for the cellular service. What this implies is that while bundling has a powerful economic incentive for a specific segment (in the example above, the incentive for the segment who desires the combination of all three services), it may not be necessarily appealing to those segments who require a subset of the services and are price sensitive. Hence, **bundling may not be very successful in attracting customers to new services unless the additional cost is low.**

Further more, if the bundle is suboptimal, then this strategy could be vulnerable to a focused competitor who tailors exactly to the needs of the segment. Branding is another approach to entice consumers to new services; again, it is unlikely to succeed unless the price is low enough- as the trend in the new market structure suggests (much to the dismay of brands such as AT&T).

Firms like MCI are offering virtually every bundled combination of its portfolio. In so doing, MCI One obviously hopes to capture virtually all the sub-segments within the major segment (i.e. residential consumers but again this may not necessarily entice new consumers as discussed above). This is essentially a mass customization strategy and should theoretically address the major problem of inaccurate segmentation. However, this approach could also lead to creating unconscious bundling [Porter, 1986]. Such bundles will needlessly entail overhead, and also risk in confusing the customers. If one notes the approach by MCI, one cannot but help note its many permutations and combinations - bundles, some of whose target segments are hard to identify.

**Differentiation:**

In addition to price, an approach to differentiate bundles is to add new value added services. However, this new services in the bundles should be really value add. For example, MCI One consumers can get customized newsclips from major news sources; if this is unappealing to the target
segment, it really is useless, and would undermine the value of the bundle it is being offered in. Thus, differentiation by merely adding new services is actually detrimental. On the other hand, adding services such as consultancy to small businesses as is the case with MCI’s Enterprise Management Services and Bell Atlantic’s All@once, may be very appealing to the segments who could ill afford the high priced consultancy services from a professional firm.

Thus, differentiation is extremely useful if well thought out in the context of the segment’s value chain; however this usually entails engaging in new businesses requiring new competencies that are not available to the firm. In most cases in the industry, one observes that alliances (e.g. Bell Atlantic with Ernst & Young for consultancy services) and acquisitions (MCI acquiring SHL Systemhouse for client-server development) are the approach undertaken to provide this differentiation. The lack of any exclusivity (i.e. other competitors can also seek consultancy services from Ernst and Young) or uniqueness (i.e. several firms in the industry offer similar consulting services) does not lend any uniqueness to such differentiation and can be replicated by the equally strong competitors.

(Speed) First-mover Advantage:

While it is true that there is a stated consumer demand and satisfying that demand first is a reasonable objective, it must be noted that in most telecommunication services, the switching costs are low (this is usually not the case with large business customers whose telecom services are typically customized), and with proper incentives, the consumers will definitely switch not withstanding the integrated service offering. There is an attempt to create higher switching costs using incentives such as discounts etc. (for example, Sprint residential customers can avail of a 10% cash back provided they contractually agree to stay with the carrier until a specific period of time). Another approach is customization; consider MCI Enterprise Management System - it is so specific to a specific business
customer's needs that it is unlikely for the customer to easily switch to another carrier. Thus, first mover advantage may only be viable with the business segment or individual customers who're being offered a highly customized bundle.

Hedging:

Hedging or stalling to undertake a definitive action reflects the difficulty in navigating through the Uncertainty that exists in the industry. Hedging, of course, is a short-term investment until such point that the structure stabilizes and the direction of the industry a little clearer. The idea is to refrain from investing heavily initially. From a One-Stop Shop strategy perspective, such a position is untenable and detrimental to the strategic position of the firm. Hedging implies a lack of commitment on the part of the firm and will be reflective in the quality of its service. When the opportunities arise the firm may have a difficult time in seizing them simply because it may have acquired an undesirable image.

The Multimedia Growth Market:

The multimedia market - based on the convergence of three traditional industries, is literally affecting every industry from publishing to banking in a profound manner. Despite the default assumptions about the excess availability of transmission, it is critical to understand that while this true in the long distance market, it is quite the opposite on the access side; and to support multimedia services would require broadband access. Thus, the role of access transmission provider could be a significant value add.

In undertaking opportunities beyond the role of being a transmission provider, will invariably require new competencies, except perhaps in the case of packaging. Packaging is an area that telecom service providers can reasonably position in given their expertise in packaging transmission in value added packages (such as toll-free services etc.). Furthermore, most of the players already provide Internet services (in addition to access) such as on-line access, setting up webpages, maintaining it etc.; and these forays in
to the world of multimedia have already been enormously successful; AT&T's recently started WorldNet (Internet) service has already surpassed a million users.

However, vertical integration in the multimedia value chain beyond transmission and packaging, while potentially strengthening the position in the multimedia chain could be difficult to sustain without alliances with players from other parts of the multi-media value chain. This will be a considerable undertaking; for example an alliance between MCI and a content provider like Disney, presents problems of scale. The size of these companies is so huge, their cultures so vastly different and each holding equally valuable competencies required in the multimedia value chain that it is simply difficult for them to coexist on anything but small focused projects. The coordination issues with companies of this size, the improvements in computing notwithstanding, are significant in magnitude and complexity.

**Economics:**

The lack of actual concrete figures compel us to forego any detailed numerical analysis on the economic viability of the One-Stop shop strategy. However, we can still discuss the plausible expectations of low transaction cost resulting from the bundling and offering through a simple interface. While this is true of simplistic bundles comprised of products and services that could be offered from within the firm itself, it could hardly be the case when, as in the case of One-Stop shopping in the telecom industry, the bundle requires alliances and mergers between the firms. The latter scenario entails significant coordination costs internally and that is likely to offset any potential gain from the marketing synergies of bundling. Consider the example of Sprint and its One-Stop retail shop at Radio Shack; while the distribution of local, long distance, pager etc. through one interface does reduce overhead like storage, personnel and so on due to efficiencies of scope, there are likely significant costs incurred to
coordinate between Sprint and Tandy (owner of Radio Shack), i.e. there are several more internal transactions (e.g. inventory management, billing settlements etc.). As time goes by and operational efficiencies increase, then the cost may be lowered.

7.6 Conclusion: Tying it all together

The One-Stop Shop is primarily in response to the consumer demands for an integrated offering of (complementary) telecommunication services. Underlying this demand is a need for simplification of an increasingly sophisticated set of services available from different sources. However, a One-stop shop strategy to merely integrate some of the existing services (a combination of local and long distance, for example) is simply not a sustainable position because it lacks uniqueness and can be fairly easily duplicated by the resourceful competitors in the industry. A first-mover advantage may also offer only a short-term advantage given the low switching costs that are expected to prevail in the industry due to the lack of unique value-added differentiation. Differentiation is being introduced by bundling various permutations and combinations; there are indications of this extending to mindless bundling as well and this could be detrimental to strategic positioning. Differentiated bundling also appears to be heading towards a mass customization approach although it appears to stem from a desire to 'capture' the customer at any cost rather than a deliberate decision. A underlying problem that is widely pervasive in the industry appears to be that of segmentation. Unless segmentation is accomplished in a meaningful manner a firm would likely pursue differentiation strategies that could actually be detrimental to its future.

The One-Stop shop requires competencies that usually do not exist within the organization. Acquiring these competencies either through mergers and acquisitions, or alliances indeed appears to be the only short-term option; however, it is not the most efficient option and when alliances are between
equally strong players there will be inherent instability, not conducive to strategic position. Some of the One Stop shops are already extending this differentiation to the multimedia value chain while others are positioning for entry. Entering this rapidly growing value chain through complementary Internet-based services may position advantageously if the offering extends beyond access to other multimedia services. From a standpoint of incumbents in the IXC industry, they would invariably have to address the bandwidth - the last mile problem and multi-media software to augment their presence in the multimedia value chain. Alliances and mergers to form mega-corporations may be the only recourse to support this option. This approach may actually undermine the perceived efficiencies of One-Stop shopping (arising from synergies in marketing, marginal cost of bundling information goods etc.).

The One-Stop shop could be a viable, in fact a powerful proposition if it were directed to the needs of very specific segments; in this context, the firms can move up vertically in the consumer’s value chain and yet remain relatively focused. The opportunities of larger markets are very seducing but are also fraught with the Uncertainty and instability. Rather than attempting to be in every potential market, firms will have to learn to make tradeoffs, and instead commit to certain segments. Such an approach is likely to yield better strategic positioning opportunities. Pursuing operational effectiveness subsequently would strengthen this competitively advantageous position.

Borrowing from the positioning-sustainability-valuation-flexibility framework, developed by Ghemawat [Ghemawat, 91] we can assess the merits of the One-Stop shop strategy:

Positioning:
The One-Stop shop strategy in telecommunications is not expected to provide any unique advantage unless the firms employ a very focused and highly segmented approach.
Sustainability:
Although some firms have invested a significant amount of resources, the One-stop shop is also largely being used as a hedging mechanism; this lack of commitment can undermine any strategic gains. The issue of complements also poses a significant challenge in this industry.

Flexibility:
The One-Stop shop is essentially a response to the recognition of the uncertainty in the emerging telecommunications industry. It implicitly is prepared for different outcomes; however, the mere flexibility to address the changing demand may not suffice. In addition, operational effectiveness may be required.
CHAPTER 8: Conclusion

Assessing the viability of a strategy is in itself a challenging endeavor; it is reasonable to say that the scale and scope of the unprecedented changes underway in the telecommunications industry aggravated this challenge. Moreover, the lack of any scholarly research focusing on the new telecommunications industry compelled us to first understand what forces were (re)shaping the structure of the industry.

We initially examined the telecommunications industry background and took a snapshot of the industry structure at a relatively stable point in time, specifically prior to any significant effect of the regulatory changes (Chapter 2). The main points from this chapter were:

- The IXC industry was an oligopoly and there was strong competition amongst the main players (although the severity of competition was disputed). Several hundred entities operated in the niches of the IXC market. The LEC markets were monopolized.

- IXC service providers offered not only transmission but also value added packaging services.

Subsequently, we studied each of the three drivers - Government policy, Technology and Market demand since these forces have historically shaped the IXC industry and furthermore, due to the significant events/trends that were underway in each of these domains: the Telecom Act of 1996, the Internet and multimedia respectively. We also attempted to understand how each of these forces were changing the industry structure (Chapters 3, 4, and 5). We then examined their collective impact on the structure and defined the emerging industry structure. We also compiled the opportunities and threats in this new industry (Chapter 6). This part of the thesis relied extensively on Porter's framework, and reached the following conclusions:
• Each of the three forces were virtually affecting every aspect of the industry structure. Although, we could identify the larger trends and their impacts, a more detailed examination - potentially multiple thesis efforts, are warranted.

• The emerging IXC industry structure eliminated any barriers to entry to powerful LECs and Cable companies. Conversely, the LEC markets were also opened; There was no longer any distinction between local and long distance markets. The emerging industry structure would have several equally resourceful competitors trying to lock-in the customer.

• The Porter framework did not adequately capture externalities which simply couldn’t be ignored, notably the convergence of local and long distance markets and on a larger scale the convergence of telecom, computing and media industries. In fact, the nature of changes - with industries converging inherently undermine existing frameworks which impose industry boundaries. New approaches are required to deal with such changes.

• The emerging market structure presents great opportunities to IXCs as well as formidable risks. The IXCs have advantages in marketing, and the experience of being in a highly competitive marketplace.

It was in this context that we evaluated the One-Stop Shop strategy (Chapter 7). In assessing this strategy we outlined the plausible reasons for pursuing this strategy using industry examples; we then attempt to assess the sustainability of this strategy. This chapter concluded the following:

• The One-Stop shop strategy is in response to the customer demand for a simplified and integrated offering.

• While the advantages of One-Stop shopping are powerful, it is difficult to ignore the challenges it presents in view of the vast array of services that are expected to be supported. A particularly important flaw in most of the
One-Stop shops appears to be that of poor segmentation. Firms should trade-off newer markets and commit to a more focused, customer-oriented\textsuperscript{57} approach.

In conclusion, this effort required dealing with considerable scale and scope. The challenges of such an endeavor were exaggerated by the lack of any serious analysis into the emerging industry structure.
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