A COMPETITIVE ANALYSIS OF THE
ONLINE INFORMATION SERVICES INDUSTRY

by

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Bachelor of Arts
University of Pennsylvania
(1984)

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

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ABSTRACT

The online information industry is currently undergoing vast changes. The boundaries between various elements of the industry and how each element influences the future of competition are especially important in analyzing these changes. This thesis uses a traditional analytical framework to examine these elements and the competitive environment created by the various participants in the industry. The following specific constituents are addressed: Intra-industry competitors, suppliers, buyers, new entrants and substitute service providers.

Thesis Supervisor: Jerry A. Hausman
Title: John and Jennie S. MacDonald Professor of Economics
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I. INTRODUCTION

Call it the fruitcake test. One of the hottest holiday season sellers in CompuServe's Electronic Mall was a Christmas classic - a fruitcake baked by Father Theodore and some fellow Trappist monks in Missouri. That proves it. On-line services have come a long way from the days of discount diskdrives and discussions about SCSI chains. They're no longer a techno-cult. They've become a new mass media.¹

Despite tomorrow's promise, there's a problem today: Profits are scarce .... services are struggling to find a formula that will deliver compelling content at a price the masses are willing to pay .... In the end, nobody really knows what will work. Raymond Boggs, an analyst, ... says it's so uncertain that most on-line service providers must feel as though they're "building a business on quicksand in an earthquake zone."²

The views depicted above describe the manic mood that the online information service industry is in. While few would doubt that the dollar value in the "information economy" is growing at a fast rate³, the boundaries of the online electronic information services industry are currently in flux. Industry participants are seemingly being attacked from all sides by competitors new and old. This blurring of boundaries is a natural result of the growth stage at which the industry is in. Analysts see the industry moving from $500 million today to over $3 billion in five years.⁴

The clouding of borders tends to make the task of competitive analysis more difficult and at the same time make it more important.

²ibid.
⁴Hamm, "Holy on-line."
The purpose of this thesis is to use a traditional analysis framework and apply it to the online information services industry. Although I would grant that boundary definitions used here may soon become obsolete, the value of such an analysis lies in understanding the various components of the industry as it exists today and what forces are likely to effect large scale change in the near future.

Figure 1 on the following page depicts the layout of the industry as it will be discussed. The major sections of this thesis correspond to the five major areas on Figure 1. They are: intra-industry competitors, suppliers, buyers, new entrants and substitute service providers. In addition, I have included a brief section on the external environment although the issues raised there are beyond the scope of this work.

---

Figure 1

External Environment

New Entrants
- Content Suppliers
- Computer Cos.
- Telecomm. Cos.

Suppliers
- Information Supply
- Telecomm. Supply

Intra-Industry Competition
- Players
- Strategies

Buyers
- Buyer Power
- Segmentation

Substitutes
- The Internet
- Cable TV
- CD-ROM
II. INTRA-INDUSTRY COMPETITION

THE PLAYERS

What follows is a brief description of the major online information industry participants. I have included several of the most important characteristics of the competitors and their history. Many share similar features. The basic service features fall into two distinct areas:

*Communications* including e-mail, discussion groups/bulletin boards, chat capability (immediate interactive discussion), Internet access.

*Information* including full text of newspapers, periodicals, financial data, historical and archival information, reference services.

All the services have information content to a greater or lesser degree. The communication capability is more erratic as some of the business oriented services like NEXIS and Dialog do not have these capabilities while Dow Jones recently added a connection to a third party e-mail service company so users would have access to electronic communication. The other more consumer oriented services have focussed on the communications features although some have been more advanced than others. Prodigy, for example has yet to enable the chat feature which is so popular on America Online.

AMERICA ONLINE

The rise of America Online in the eyes of investors captures well the speed at which the industry is moving.
The company went public at $11.50 per share in March, 1992. By the end of 1993, the share price had risen steadily to the $50's and in March, 1994, amid takeover rumors, traded as high as $91. An analyst’s report which speculated that the company eventually would be purchased by a cable or telephone company, went on to estimate that if it were acquired, it would sell "for as much as $200 a share."

Long before the stock price run up, the Wall Street Journal had the following evaluation of the company: "In a frothy industry filled with red ink and far-fetched fantasies, [America Online] has a real product, rising earnings and a surging base of customers."

Clearly, the stock market has a belief that the company and its charismatic, former Proctor & Gamble and Pepsi marketing executive turned CEO Steve Case, are doing something right. This view is not universal. Some critics claim America Online is not moving fast enough to take advantage of opportunities. One such critic is reclusive billionaire Paul Allen, co-founder of Microsoft, who has chosen to distribute his new sports service on a rival network.

The Virginia-based America Online has, however, done a number of things right:

Content and communication features - America Online has its aim squarely on the consumer segment, favoring more general information content and communications (i.e Chat feature) over the technical or business focus of other competitors. The company has combined access to popular sources such as full text of the Chicago Tribune and Time Magazine with the most popular communications capabilities of an online service.

---


Interface - America Online features the kind of graphical user interface that made the Apple Macintosh and Microsoft Windows popular. This area has been the stumbling block for other services hoping for mass appeal.

The key to America Online's success has been simplicity. Prodigy and CompuServe might have a richer store of information, but even America Online's critics concede that it is the most user-friendly of the major on-line services.⁸

[America Online] is the sophisticated wave of the future among services ...overlapping windows that can be freely manipulated, menus of plain English commands ... and colorful icons you can click to quickly reach a wide variety of rich information databases.⁹

Partnerships and strategic alliances - America Online is typical of an emerging model of business success - a complex and large mesh of strategic relationships which lever various partners' most sought after attributes. America Online's web of relationships includes: partner distribution agreements with major computer, modem and software manufacturers; a 1993 agreement which granted Apple computer a non-exclusive license to use the America Online service platform to develop and provide Apple branded online services; 10% equity investment by Tribune Company, the publisher of the Chicago Tribune and owner of numerous other media properties; a recent equity investment by Sprint which gives America Online more flexible telecommunications pricing.

Independence - While the above strategic web is clearly important to America Online's success, the company's independence from traditional powers in the technology industry has given it the perspective to try new things as well as the market discipline to listen to its customers. Without the deep pockets of a rich parent,

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America Online has been forced to grow quicker and smarter than well heeled Prodigy or NEXIS. "Independence has distinct advantages, such as allowing America Online to enter partnerships with large technology and information companies without running into potential conflicts."\textsuperscript{10}

America Online has used these advantages to grow at an astounding rate as described by the results in Table 1 below.

<table>
<thead>
<tr>
<th>Date</th>
<th>Users</th>
<th>Fiscal Year</th>
<th>Revenues $ mil.</th>
<th>Net Income $ mil.</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 1991</td>
<td>130,000</td>
<td>1990</td>
<td>17.3</td>
<td>0.2</td>
</tr>
<tr>
<td>Dec. 1992</td>
<td>219,000</td>
<td>1991</td>
<td>19.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Dec. 1993</td>
<td>530,000</td>
<td>1992</td>
<td>26.2</td>
<td>3.5</td>
</tr>
<tr>
<td>Apr. 1994</td>
<td>700,000</td>
<td>1993</td>
<td>40.0</td>
<td>4.2</td>
</tr>
</tbody>
</table>

**PRODIGY**

Prodigy is flailing away like some beached whale .... Get a shovel ready; the body is getting cold.\textsuperscript{11}

In 1988, Prodigy Information Services came into being at a time when the high hopes for personal computers in every home was just starting to be realized. The idea was that the world's leading computer manufacturer and the U.S.'s largest retailer could

\textsuperscript{10}Jack Davies, America Online Senior Vice President quoted by Reuters Financial Report, March 22, 1994.

\textsuperscript{11}Todd Copilevitz, "Fading Prodigy: Network Didn't Keep Up With the Times." The Dallas Morning News, November 14, 1993.
use big corporate America's know-how, and marketing muscle to make a success out of the consumer electronic information service concept. However, six years, nearly $1 billion invested and zero profits later, industry observers wonder about the resolve of the ownership. In January, 1994, the company announced layoffs of 250 employees, almost 22% of the total workforce. Advertising revenues which were supposed to carry the service to profitability account for less than 30 percent of revenues.

The problems with the service stem from lack of a focus on changing customer and competitor landscape. "Prodigy will fade from view because it is no longer indispensable. We live in an era of speedy, more powerful PC's .... and easy-to-use interfaces at every turn - except on Prodigy." Prodigy's user interface - laced with lots of graphics and advertising scrolling across the bottom of the screen - has turned into a handicap as the graphics must be sent over the phone line and are maddeningly slow when used with anything slower than a 9600-bps modem. In addition, it is not as user friendly as the familiar Mac and Windows environments. Prodigy also made the mistake of scanning all public bulletin board messages for obscenity and posting them 24 hours later, essentially defeating one of the key features of an electronic information service. Reportedly, this scanning time will be reduced to less than one hour in early 1994.

Prodigy's mass market advertising strategy has also come under fire. "They'll spend $30 million on ads and get only $6 million or $7 million worth of performance," says Joshua Harris, President of Jupiter Communications. In addition, Prodigy has inadvertently helped its competitors by educating the public about online services in

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13Copilevitz, "Fading Prodigy."
general. "Until recently, Prodigy even allowed competitors like America Online to advertise on Prodigy - and avail themselves of a target market for online services."\(^{16}\)

Prodigy has made somewhat of a comeback in 1994, bringing out a Windows version of its interface and promising a Mac version by the middle of the year. The service is also planning a live chat feature.\(^{17}\) Despite these improvements and the service's current level of 2 million users, valuable time has been lost in this rapidly changing environment.

**COMPUSERVE**

In 1993, H&R Block, the consumer tax accounting giant, chose to hold its annual meeting, not in headquarters Kansas City, but in Columbus, Ohio. It was a move that *Forbes* described as "loaded with symbolism."\(^{18}\) Columbus is the headquarters of CompuServe, Inc. Block's online information service subsidiary. Founded in 1979 as a mainframe time sharing company and purchased by H&R Block in 1980, CompuServe has grown into the industry's most profitable and respected player, with $315 million of revenues (22% of H&R Block total), $74 million in pretax income (25% of H&R Block total) and 1.7 million users in fiscal 1993.\(^{19}\) In addition, CompuServe is the only player in Europe.

Maurice Cox, President of CompuServe, proclaims that the service aims to support the global information and communications needs and interests of both consumers and businesses.\(^{20}\)

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\(^{16}\)ibid.

\(^{17}\)Copilevitz, "Prodigy's Windows of Opportunity."


\(^{19}\)ibid.

\(^{20}\)ibid.
CompuServe has been especially successful at becoming the preeminent electronic distributor of technical support for computer hardware and software vendors. Over 400 vendors actively participate in discussion forums concerning their products. CompuServe also carries full text of over 60 newspapers and 200 magazines.

**DOW JONES NEWS/RETRIEVAL**

If business is your business, Dow Jones News/Retrieval ... will give you everything you ever wanted.21

With direct access to all of parent company, Dow Jones & Co. proprietary business and financial data (including *The Wall Street Journal* and Dow Jones News Wire), Dow Jones News/Retrieval (DJN/R) is a premier information service. It includes searchable text for over 1200 non-Dow Jones publications including most major U.S. newspapers and magazines. The rich nature of the financial news and data available make the service a natural choice for certain professions. The service was started in 1974 using dedicated phone lines and was expanded to allow for access via personal computers over the public phone network in 1979.22 DJN/R has made a large impact in making online services a credible source of general business information for professionals outside of specific disciplines like law.23

In 1992, the electronic information business segment of Dow Jones & Co. reported revenues of $809 million (44% of the corporate total) and net income of $151 million (54% of the corporate total). These figures include the Telerate dedicated terminal, security pricing service, which accounts for the bulk of revenues and income.24

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23Ibid, p. 71.

The wealth of information available on DJN/R is not without an appropriate price to end users. Until very recently, DJN/R price was $75 per month for an account. Beyond that, the cost was $78/hour for most accesses and an additional $0.76 for each 1,000 characters retrieved. A recent change in DJN/R pricing is discussed below in the section on pricing. In 1993, DJN/R inaugurated a new service aimed at personal investors priced at $25/month for unlimited access time in the evenings to a collection of limited information sources.

**DIALOG**

Dialog Information Services, Inc. inaugurated the first public, commercial online search service in 1972. Dialog began its existence as Lockheed Retrieval System and was used to catalog much of the information necessary for the large defense contractor. Dialog was purchased by Knight-Ridder in 1988.

Dialog played an important role in creating the basic connect time pricing system that is in effect to a large degree today. Previously, time-sharing firms measured machine performance and demands to determine pricing. The "ticking meter," connect time method had the "merits of simplicity and predictability."²⁵

Dialog provides access to over 600 databases ranging from Dun’s Market Identifiers, which contains financial information on over 7.3 million U.S. businesses, to the Philosopher’s Index. The service has essentially followed a blanket coverage approach to become the service from which many professional searchers would begin a project.

As a practical matter, the inclusion of certain of the smaller databases has undoubtedly meant that some were subsidized by Dialog. It was an enlightened strategy, for the sweeping diversity of Dialog’s database catalog is an essential source of the system’s marketing strength.

Indeed, [Dialog's] drive to constantly feed the computer with more files constituted a most rational and powerful marketing strategy in and of itself, given the need to achieve a critical mass of information as the greatest motivation to sign up for a password. This supermarket approach, coupled with a constant stream of retrieval system enhancements, enabled Dialog to become the learning environment for the preponderant number of online searchers. And the first system learned tends to be the system of choice throughout a searcher's career.26

In general, Dialog has focussed on specialized business information and directories and scientific bibliographies and abstracts. This data is more likely to be searched by a corporate or professional librarian for further distribution to one or more other employees.27 Dialog's parent company, the newspaper giant Knight-Ridder, is slowly attempting to change the make-up of Dialog's content by bringing more full-text, general interest databases onto the service.

In April of 1994, in an attempt to address legal issues surrounding copyright protection, Dialog announced new extra fees for users, primarily corporate librarians, who distribute search results to others.28

MEAD DATA CENTRAL

Mead Data Central, based in Dayton, Ohio, is a subsidiary of the $4.8 billion Mead Corporation, a paper and forest product company. Mead entered the electronic information business unintentionally. In 1968, the corporation purchased a small printing technology company that was experimenting with a computer-based research


28Ibid.
system for lawyers. Five years later, Mead introduced its LEXIS service. The service contained state and federal case law, opinions and statutes. LEXIS was among the first electronic information services to target a specific set of end users. The LEXIS service proved profitable for Mead.

In 1979, Mead launched its much larger and more general NEXIS service. However, as Business Week noted in 1986,

Bigger wasn’t better. NEXIS has thousands of subscribers, and its revenues have grown by more than 25% a year .... But it is only marginally profitable. That’s partly because of high costs: It takes enormous amounts of expensive computing power to absorb the 110,000 new documents that NEXIS adds weekly .... The other problem is that customers don’t use the system enough -- evidently because its information often isn’t vital and search fees are high.

Mead has continued to increase the coverage of NEXIS, but has also attempted to pierce a new niche market, medical information, with its MEDIS service.

Mead’s current offerings include the full text of newspapers, newsletters, public records and legal documents. This information is likely to be retrieved by individual users conducting their own searches.

Mead recently announced layoffs of 400 mostly headquarters personnel as part of a restructuring meant to make the company more customer focussed.

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30Ibid.
31Riordan, "Business Technology."
GENIE

GEnie is a subsidiary of the General Electric Information Systems. The service, which currently has 400,000 users, is best known as a gateway service to other service providers. For instance, GEnie offers access to Dialog, Dow Jones News/Retrieval and newspaper and magazine databases. GEnie requires only a small monthly investment for a great deal of access, however for the volume user, it is probably more expensive than other alternatives.

STRATEGIES OF KEY PLAYERS

PRICING

Until 1993, pricing was not generally viewed as an area of competition by service providers. Companies whose primary focus was in the professional (finance, law, etc.) sectors assumed that they faced price inelastic demand and set relatively high prices with substantial connect time, per search and downloading fees. Early service pricing schemes were almost all based on connect time. Dialog played a key role in establishing this pricing scheme.

Newer, more hybrid, consumer and professional services understood that bundling a set amount of access with the payment of a monthly fee would entice new customers whose use could not be predicted. This type of scheme would also capture margins from high volume users. Under such a scheme, a user would pay a set subscription fee per month for access with the first few hours of connect time free. After the first set of hours, the user would pay a per hour fee. There would also be premium services which cost extra from the first minute of use. Although connect time is still an important part of pricing schemes, the cost of content rather than the cost of telecommunications services is becoming the primary cost driver.
In the spring of 1993, price became a major marketing weapon especially among the consumer-oriented services. The following chronology describes these developments:

March 1993: CompuServe raises its subscription rate from $7.95/month to $8.95/month, but lowers its hourly rates from $22.80/hour to $16.00/hour (9600-bps connection) and from $12.80/hour to $8.00/hour (2400-bps connection).33

April 1993: Prodigy announces new hourly charges of $4.80/hour beyond the free two-hour allotment which comes with the $14.95/month subscription. The hourly charge will apply to four popular services.34

April 1993: In response to Prodigy’s rate hike, America Online announces price cut. The service will have a new flat rate of $9.95/month for five hours and $3.50 for each hour thereafter. Previously, America Online charged $7.95/month for two hours and $6.00 for each additional hour.35

May 1993: GEnie eliminated its flat rate option, cut hourly charges in half to $12.50 (prime time) and $3.00 (non-prime time) with $6.00/hour surcharge for 9600-bps connections. The subscription fee was raised to $8.95 from $4.95 and includes four hours of non-prime time connect time.36

January 1994: Dow Jones News/Retrieval announced a new pricing policy that does away with connect time charges. Rather, DJN/R will charge users only for the amount of information received. The fee will be $1.50 per 1,000 characters for most, but not all, of the services offerings. Gone is differential pricing for modem speed, time of day, time spent online and other variables.37

January 1994: CompuServe announced a 40% price cut, resulting in an $8.95/monthly charge plus premium services charges of $9.60/hour or

35Ibid.
$4.80/hour depending on modem speed. The prices of its low volume package remained unchanged at $2.50/month plus $22.80 or $12.80.\(^{38}\)

Today the pricing structure has not only become competitive, but its complexity has also come under attack. If the industry is to move toward mass appeal, it is clear that it must continue to head toward more rational, easy to understand - and at the same time profitable - pricing policies.\(^{39}\)

It is safe to say that present [pricing] algorithms, which are confusing and possibly perceived as arbitrary, have dissuaded many from using electronic information services. As information providers revise their pricing ... new users will be attracted to their products and the industry will grow. If the industry is to experience significantly higher growth rates ... prices must become much more realistic and must be within the reach of low-volume end-users.\(^{40}\)

The consistent move toward higher subscription fees would seem contrary to the view expressed above and may not induce extended trial by potential customers.

The competitors in the industry do have a fair amount of pricing flexibility in that the marginal cost of adding another user is very small while the companies remain within the current capacity of the system. This is not true, however, as technical capacity constraints are approached. Just such a situation occurred at America Online. In the spring of 1993, America Online made a substantial change in its prices. After the announcement, the service grew at a pace that was far ahead of predictions and capacity. In the course of eight months, membership doubled and the "smooth running system went haywire."\(^{41}\) Slow response times and delays in signing-on forced CEO


\(^{41}\)Dresser, "Being Aggressive."
Case to publicly apologize for the problems, curtail some marketing programs and promise improvements by May 1, 1994.

**DISTRIBUTION, SALES and PROMOTION**

The distribution and promotion landscape has changed dramatically in the online information service industry. "Distribution" in this section refers to the method in which original service sign-up occurs. Technical distribution, i.e. telecommunication service, is addressed in section III under telecommunications supply.

Traditionally, the services have relied on "word of mouth" advertising, networking effects and exclusivity to gain users. If for instance a group of users found a certain bulletin board service helpful, others would follow creating a critical mass for the service. In the early 1980’s, CompuServe grew through this kind of avalanche effect. Exclusive or first to market advantages also created demand for some hard to imitate services. Mead’s strength in the legal area brought users to it.

America Online began a shift in distribution with its consumer oriented bundling strategies. In 1992, the company began to offer an automatic sign-up with the purchase of several different computers - most notably Apple’s bargain priced Performa line. This has been followed by bundling agreements with major modem and mobile computing device manufacturers. Also, America Online initiated a promotional campaign in major computer trade magazines. The campaign gave away a month of free service to all new users on a trial basis.

All the services have moved toward increased advertising and direct mail. America Online has continued to boost its efforts increasing its advertising and marketing
budget from $5 million to $9 million in 1994. Analysts estimate that marketing efforts cost Prodigy $150 for each new account. This figure might be high for an industry average, but it is clear that such costs are large and growing.

Prodigy aired live television commercials during Monday Night Football in the fall of 1993. Given the relatively small percentage of households that have PC's with modems and the even smaller percentage of those homes that are likely to tune in to Monday Night Football, it would appear that Prodigy was making more of a statement about the future market of electronic information services rather than the present.

PRODUCT INNOVATION

Aside from content which will be discussed in section III, product innovation and differentiation have come in one particular area: Enhanced software interfaces to facilitate ease of use.

The newer services like America Online and Prodigy include software that takes care of many ease of use features such as pull-down menus and help screens.

The older services tend to use more of a command line syntax. CompuServe, which began its existence as a mainframe time share company originally had a traditional command line interface similar to DOS and other large system, character based input interfaces. However, there is now a growing body of information service software that creates front ends for users. There are at least twenty such programs for CompuServe alone. CompuServe's own product, CompuServe Information Manager (CIM) is slower than direct access, but it has won praise for masking the cryptic commands one would need to learn.

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43 Hamm, "Holy On-line!"
Other service providers are following the CompuServe example. In November of 1993, Dow Jones introduced TextSearch Plus, a Windows-based software program that provides easy access to Dow Jones News/Retrieval’s full text library. Like CIM, it will turn obscure commands into buttons and menus making the content of Dow Jones more accessible to the average user.\textsuperscript{44}

Mead Data Central is currently testing session software that allows for enhanced navigation around the company’s complex library system. "This [interface management] is a huge issue, and it is definitely something that we are working on," commented a Dow Jones executive.\textsuperscript{45}

Interface improvements are important in the industry not just because they make a particular service easier to use, but also because corporate customers are pushing for greater interface standardization. For example, one of the reasons (beyond cost) large users like Chase Manhattan Bank place limits on service usage is the time required to train users on different interfaces.\textsuperscript{46} Service providers are quickly realizing this trend. "It does not make sense for engineers and lawyers to spend their time ... trying to remember the different commands," says Paulyn Heinmiller, senior manager of information services at Microsoft Corporation.\textsuperscript{47}

\textsuperscript{44}Dreyfuss. "Dow Jones News/Information."


\textsuperscript{46}ibid.

\textsuperscript{47}ibid.
III. SUPPLIERS

INFORMATION SUPPLY LEVEL

The original sources of the information which is disseminated online are not often thought of as explicit "suppliers" in the same sense as in a manufacturing environment. They are often referred to as "information" or "content providers." It is wrong to ignore the crucial role suppliers play in the online information industry.

The lack of clear focus on information supply has come about for several reasons. In many cases the supplier and the distributor are the same company as is the case with Dow Jones News/Retrieval. It is also the case that the distribution mechanism may be so unobtrusive to the user that there appears to be a direct link to the supplier.

The distinction between supplier and distributor is, however, quite important. "Most industries cannot survive without an ample supply of raw materials, and the electronic information industry is no different."48 Although unlikely, the dual threat of monopolistic practices by information suppliers and a stagnation in the production of new raw materials still exists. "If the supply of information in electronic form were to dry up, the effect on all players would be immediate and far-reaching."49

The current state of supply is, however, quite promising. The Gale Directory of Databases, a chronicler of the electronic information industry, counts the number of information suppliers in several ways. Table 2 on the following page summarizes data gathered in the Directory and shows the rapid growth in the number of databases published electronically and database producers from 1975 to 1993. The compound

49Ibid.
annual growth rate for databases for the period is 22.6%. Database is defined as "a collection of data or a body of information that is organized for rapid retrieval via a computer and is available online directly from the producer or through a third-party online service." In addition to the increased amount of content, Table 3 on the following page documents the change in percentage source of the data since 1977 and shows a clear trend toward more commercial production.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Databases</th>
<th>Number of Producers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1979</td>
<td>300</td>
<td>221</td>
</tr>
<tr>
<td>1980</td>
<td>411</td>
<td>269</td>
</tr>
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<td>1981</td>
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51*Gale Directory*, v. 1., p. x.
Table 3
Percentage of Databases by Producer Status\textsuperscript{52}

<table>
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<tr>
<th>Year</th>
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**DEVELOPMENT OF ELECTRONIC INFORMATION SUPPLY**

Historically, much of the information which became available electronically was merely the same raw material that came to market as print product. This was especially true for two particular types of content: serials, newspapers and journals including abstracts thereof; and directories. Extension of the print product line was a natural outgrowth for these segments of the publishing industry.

Three trends have impacted the growth of electronic content and the relationship between services and suppliers.

First, content providers sought to create augmented products by taking them to the electronic distribution channel. Directories were ideal for this purpose since the actual content would not change. By adding electronic searching capability, however, publishers could create an ideal differentiated product to sell.\textsuperscript{53}


Second, news gathering companies traditionally used an editing process to winnow out what was perceived as useful information and package it in a readable size and format in newspapers. Electronic distribution changed this as newspapers can now electronically publish nearly all the news that they gather instead of just the small amount which makes it to the daily edition. "We can print only about 10 percent of the information available on an average day," said Dennis Berry, publisher of the Atlanta Journal-Constitution. "Computer storage is relatively inexpensive and will enable us to greatly expand the information we can provide online."54

Third, a number of technology improvements have influenced content suppliers to use electronic distribution methods. The advent and institutionalization of electronic typesetting in publishing has made electronic distribution available at little or no incremental cost. Also, scanning and optical character recognition technology have become available at reasonable prices. As this trend continues, it will become less expensive and easier to convert information to electronic formats.55

**CHANGING RELATIONSHIPS FOR INFORMATION SUPPLIERS**

In economic terms, printed information supply can be considered a high fixed cost, low marginal cost industry. Fixed costs include not only modern technology for typesetting and printing operations but also a distribution network of vehicles and salary and expenses for information gathering personnel. This encourages the supplier to produce and sell more units of product - either print or electronic - to absorb the high fixed costs. Electronic distribution has the added benefit of reducing some of the fixed costs of distribution.


To see the underlying economic logic of electronic delivery, one need only look at a modern newspaper printing plant, such as The [Los Angeles] Times' new facility. The $230-million Olympic Boulevard press building, which covers nearly 1 million square feet, turns 430 tons of newsprint and 700 gallons of ink into 600,000 newspapers every day -- newspapers that are then delivered across the Southland by hundreds of trucks.56

While there are clearly economic benefits for content suppliers to seek electronic distribution channels for their products, the actual operations of such services may not be within the area of competence for most content suppliers.

David Easterly, President of Cox Newspapers, whose company recently decided to distribute some of its newspapers electronically through the Prodigy service said,

Clearly, it's time for us and the rest of the newspaper industry to join the Information Superhighway. There are so many benefits for our readers. But we don't have to invent the technology to participate, and we don't have to spend years trying to reach technical standards with other publishers to become a player in this exciting new business.57

Similarly, in February of 1994, The New York Times announced that it would electronically distribute the same day edition of the paper via Dow Jones News/Retrieval (rights to electronic distribution of past New York Times are exclusive to Mead Data Central). The paper also announced a special edition of the paper to be distributed electronically via America Online.58

It may be true that the marginal cost to the publisher of distributing electronically remains very small. But this holds only if the fixed costs of the electronic distribution


network are paid by outside parties. This would argue for content suppliers to seek
electronic distribution partners and generally stay away from entering the distribution
area. In section V, I discuss why several suppliers are now entering the market with
their own services.

The nature of the relationship between information providers and distributors has
changed over time. In 1989, an industry observer commented on the power
relationships between the groups, noting that their affiliation was similar to "the farmer
and the wheat wholesaler. The farmer has a difficult time figuring out how his $1.25
per bushel of wheat becomes a $1.50 loaf of bread."59 Distributors do provide at
least three things for the content provider: the software for retrieval and
communication, the critical mass of customers for a particular piece of content and the
online environment that collects a group of content providers and creates an
"information magnetism."60

However, the same observer went on to note that, based upon their perceived role as
critical to electronic information industry, distributors act as if they own the affiliation
of individual users, have the right to set retail prices and control information exchange.

The consequence of this mindset is that the individual database producer
plays an ever-decreasing role in differentiating, marketing, and
supporting his database. The reduction of the information providers' influence in the last five years has been one of the most significant, yet
least visible changes in the online industry.61

Flash forward to 1994, and consider that nearly every service on the market is
proclaiming content is critical and will be the driving force in the success of the
industry. Brand name companies like the Chicago Tribune and Encyclopedia

60ibid.
61ibid.
Britannica are entering the market quickly and powerfully, sometimes directly with their own services (see section V). It may turn out that the services themselves - rather than the content - will be reduced to commodity status.

**TELECOMMUNICATIONS SUPPLY**

Another area of supply which is crucial to the online service industry is telecommunications services. Value added networks (VAN’s) such as BT Tymnet and Sprintnet provide this service as they connect host computers systems often over long physical distances. Ample supply of low cost telecommunications services has been a major factor in the rise of the industry.

One of the stimuli for the early growth of online information services in the 1970’s was the widespread availability of low-cost publicly available packet-switching networks [VAN’s], which brought telecommunications costs for online searching well below the cost of a long-distance call.\(^62\)

The cost beyond a local call is usually born by the service provider as part of the service’s final price although price calculations inevitably include telecommunications costs. The connect time pricing scheme which has been prevalent keeps revenues growing at least as fast as the telecommunications costs.

Within the VAN industry, there has been a trend toward the consolidation of service providers.\(^63\) Companies like America Online have made alliances with some of the largest VAN providers in an attempt to gain more favorable pricing.

\(^62\)Hawkins, "Growth Trends."

As VAN based telecommunication charges have continued to be competitive, the pricing of online information services will depend less on these costs. The more recent trend away from connect time pricing also shows that the telecommunication costs are becoming less important when compared to other costs.
IV. BUYERS

BUYER POWER

As the number of services grows (see section V) and the number of suppliers of proprietary content increases (see section III), so too will competition. This will have the effect of increasing the power of the buyers in the market.

Increased buyer power will also be related to the decline in exclusive distribution for popular online information products. Even the New York Times which previously had an exclusive agreement with Mead Data Central has found ways to get around its agreement and find new electronic outlets of distribution. As valuable, brand name content providers continue to see the value in electronic distribution, they will continue to seek wider distribution of their product. In doing so, customers can obtain nearly anything from many different outlets. This fuels increased buyer power.

It is instructive to look at what is considered an extreme case of buyer power - the Internet. The Internet will also be discussed in section VI. Here, however, the worldwide network of computers can be viewed as the archetypical "buyer" controlled service. Although Internet users are not buyers in the purchase sense, they proxy buyers of online services well.

Since, there is no cost to distribute via the Internet - that is, load something onto the network - many organizations and individuals choose to do this. While content providers can require payment for their content via security arrangements within the network architecture, the buyers essentially vote with their electronic feet by choosing what’s valuable and what’s not. Although locating specific areas of interest can be difficult on the Internet, the buyers/users have a great deal of power since they have a great deal of choice.
A less extreme example of the trend toward buyer power can be seen in the growth of electronic micro-markets and non-electronic customized information sources. Print products actually began this trend by creating special regional or neighborhood editions of newspapers. In an attempt to capture audiences by aiming products at smaller, better defined markets, there has been a proliferation of specialized print products. In the electronic distribution area, buyers' special interests can control the market to an even greater degree as witnessed by the proliferation of niche oriented electronic services.

SEGMENTATION

The earliest large scale users of online information services were professional searchers - corporate librarians and others whose primary function was information gathering. One level removed from these professional searchers were end users in certain specific industries like law, finance and accounting. End users in these specific industries had particular use for the core benefits of electronic information storage and retrieval, such as searching capabilities. It was natural therefore that 1) narrow, specialty services and databases were the first to appear, and 2) little or no effort was made to make searching easier as poorly designed front-end software remained prevalent until recently.

These facts have continued to obscure some important changes in the customer marketplace. Even today, little work has been done to segment buyers of electronic information services. The power of various buyer segments to shape the future of the industry has now become a pronounced reality. The industry has shifted from a technology-driven and supply-driven market to a more mature and balanced customer-
driven market. A thoughtful segmentation process will provide a clearer analysis of
the industry as a whole. 64

What follows is a possible segmentation of customers in the online information
services market.

SEGMENT 1: PROFESSIONAL SEARCHERS

This segment includes librarians or others within an organization whose principal
function is to find information for end users. This group remains a very important
customer segment as they are often lead users within an organization. However, given
their relatively stable numbers (a shrinking percentage of all customers as other
segments grow) and high level of system expertise (they already know the ins and outs
of most services) this group will tend to have less and less influence as the market
continues to evolve.

Recently, an industry expert made a roomful of searchers distinctly uncomfortable as
she told them to begin job hunting, since their jobs as intermediary searchers would be
nonexistent in ten years. 65

SEGMENT 2: END USERS IN SPECIFIC FUNCTIONAL AREAS

Professionals in areas like marketing, law and finance often directly make use of
online information services. This group would have in the past used an intermediary
such as a librarian to find what they’re looking for and provide the results. For this
growing segment which has specific content needs, ease of use and depth of coverage

64 Thomas G. DiRenzo, Developing New Markets for Information Products, (National Federation of
Abstracting and Information Services, Philadelphia, PA, 1993) p. 16.

65 Quote from Barbara Quint as reported by Nancy Garman, "The New Online; Traveling the New
Electronic Highway." Online, September, 1993

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are the key factors driving use and selection. "Now more than ever, information equals power. Department managers who deny access to the growing number of online services could be blunting their employees' competitive edge."66

The situation at New York's Chase Manhattan Bank may be typical. About 70 users have direct access to online databases, mainly in the corporate finance area. However, four specialist librarians in the bank's information resource center still provide information services to the 34,000 other employees.

SEGMENT 3: COMPUTER LITERATE EXECUTIVES

The focus of this segment is not in replacing information retrieval that used to be done manually or electronically by librarians or assistants. Rather the aim is to use electronic services to do new tasks or automate transactions such as financial services and travel reservations. New tasks also would include the kind of ad hoc, online research that can now be done easily via electronic services, but would probably not be done at all if information was difficult to find. An example would be a simple background report on participants in a future business meeting.

This segment is also using electronic information services to clip relevant news articles on a regular basis (rather than on an occasional basis for a particular project) to stay informed on topics vital to the user's line of business. This segment may also use electronic information services to supplement their regular intake of general information with little or no preconceived notion as to what they're seeking.

66Crowley, "Who's Accessing."
SEGMENT 4: MOBILE USERS

As a distinct customer segment, mobile computer users represent a new and largely untapped group of customers. The portability and communications capability of new computing devices including PDA's provides customers with greatly increased access to electronic services. Service providers have not ignored this trend. Dow Jones' declared strategy is to provide access to its information "however, wherever, whenever customers want it." In addition, this segment will have a large demand for the types of e-mail and communication features which electronic services provide.

America Online recently announced that it will pre-load a special edition of its service on the Motorola Envoy Personal Wireless Communicator. A Motorola executive described the importance of the relationship:

America Online's strength in interactivity and communications for the mass market makes the Company an excellent partner to provide services for the Motorola Envoy product. The Motorola Envoy device, combined with ... the power of America Online's service is expected to be attractive to a wide range of business professionals and consumers."

SEGMENT 5: PERSONAL INVESTORS

Electronic information services are particularly attractive to consumers of financial information. The increasingly independent nature of investors and the trend toward wider ownership of non-bank investments (mutual funds, etc.) has created an information hungry class of individuals. One useful proxy for this segment is the set of U.S. households who have an account at a major brokerage firm. This group

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68Pat Richardson, Vice President and General Manager, Subscriber Products Division, Motorola, quoted in PR Newswire, March 7, 1994.
numbers 18 million. The minimum investment in most of these accounts is $10,000. The members of this group are serious enough about investing to pay $75 to $100 per year and/or additional trading commissions.

Another way of looking at this group is to consider "high income households" (HIH). The number of households with annual incomes of $75,000 or more is estimated to be 9.3 million. The demographics of HIH's is favorable to electronic online services as 78% are college graduates.

The challenge in serving this segment is their diversity of information needs and the competition from traditional sources in providing the information and transaction services. Investors' have a wide variety of needs ranging from stock price data that can be downloaded to political news and personal finance instruction.

SEGMENT 6: CONSUMERS/HOME USERS

Still awaiting the "killer application," home users are the wildcard that every online service company is attempting to capitalize upon. There are just over 100 million households in the United States. Estimates of home computer penetration range from 25% to 33%, while only 10%-15% of those have modems and subscriptions to online services. It does appear that modem purchasers are highly likely to subscribe to an online service. Rick Martin, an analyst with Chicago Corp. predicts that the number of households which have a service will grow rapidly from today's 4-4.5 million to 35 million by the end of the decade. There is also a trend toward greater computer penetration (36%) in homes with children.

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70 Dresser, "Being Aggressive."

71 Brandon, "Oh Holy Byte."
SEGMENT 7: EDUCATION USERS

As a research tool, online information services have the potential to revolutionize the academic and secondary education market. There are several subsegments which are worth noting. College and graduate level students and faculty have a large need for archival information and search tools. Mead Data Central with its wealth of academic and archival information appears to be a step ahead in this segment with specialized marketing programs and pricing.

K-12 students represent a potential growth area with their education/entertainment needs and their existing familiarity with computers.
V. NEW ENTRANTS

In the last year, there have been a host of announcements for new entrants in the online information services industry as well as a great deal of speculation about which company would next announce a new service or deal. I have separated the new entrants into three categories:

Content Suppliers

Computer Companies

Telecommunications Companies

CONTENT SUPPLIERS

Content suppliers have been active participants in the online information service market for a long time. Dow Jones & Co. is a premier example. However, there has been a recent spate of activity among content providers.

Ziff-Davis is one of the most aggressive and interesting cases. The company is the publisher of such computer industry print stalwarts as PC Magazine and MacUser. It has long published electronically and widely distributed its products online.

Later in 1994, however, the company will introduce Ziff-Davis Interchange (ZDI). It is clear that ZDI isn’t "holding anything back for fear of cannibalizing parent company Ziff-Davis Publishing Co.'s paper-and-ink business."\(^7\)

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ZDI will reportedly bring a new level of ease and sophistication to the online industry. "The service imparts the look of a glossy magazine, with all the attendant color graphics and typography tricks, carefully married to Windows' icons and buttons."\(^7\)

In addition, ZDI offers several technical features not found in other services. Taking advantage of client/server computing, ZDI allows users to do more storage and computing at the desktop level than any other service. In addition, by implementing what ZDI calls "universal linking" and "ubiquitous indexing," the service lets customers more easily browse the enormous amount of information available no matter what part of the service it is located in. ZDI will focus initially on providing parent company Ziff-Davis's content, but is actively recruiting other content.\(^7\)

One successful recruit is Microsoft co-founder Paul Allen. It has been reported that Allen's Starwave Corporation has chosen to put its new sports information service on ZDI rather than America Online because America Online isn't moving fast enough to "make its service adaptable to new multimedia technologies."\(^7\) Starwave is also an example of the benefits of electronic distribution versus print in niche markets. The print publishing industry's recent attempt at a daily sports newspaper - The National - collapsed under the weight of excessive distribution costs.\(^7\)

The Los Angeles Times and New York Newsday are also launching their own online service. Although affiliated with Prodigy, the newspaper companies will retain complete control. "Rather than being one option among many on an online service, the Times and Newsday services will be completely separate. Each will use the Prodigy network, but customers will buy the service independently and dial up on a

\(^7\)ibid.


\(^7\)Hamm, "Holy on-line!"
different phone line. Rupert Murdoch’s News Corporation recently entered the industry with its 1993 purchase of Delphi Services. Delphi is a smaller online service that has revitalized itself in the past year by aggressively pursuing people interested in the Internet.

The explanation for these activities may be that they are, at least in part, a reaction to what the New York Times did twelve years ago. In 1982, the New York Times signed a path breaking agreement with Mead Data Central. The agreement called for Mead’s NEXIS service to be the exclusive electronic distributor of the newspaper one day after the publication date. The agreement gave these rights to NEXIS "in perpetuity" in exchange for royalties. The royalties may have looked like pure profit at the time, but the electronic information industry has changed. The agreement left the door open for the Times to distribute same day electronic versions as was discussed in section III, but some have said that the newspaper gave away too much in a rapidly changing environment. Even Gordon Medenica, Vice President for Operations and Planning at the Times Company, concedes that "he would feel better if the contract had an expiration date."  

Certainly another part of the reason for new entry by content providers is the pure attractiveness of the industry as witnessed by the growth and profitability of such players as America Online.

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77 Weber, "Stop the Presses."
80 Elizabeth Lesly, "Is the Times falling behind the Times?" Business Week, December 6, 1993.
81 Quoted in Weber, "Stop the Presses."
Savvy content providers understand that the opening of the online market makes middlemen less and less important and see the opportunity to collect the full value of their product.

However, the conservatism of the publishing industry, especially evident in the newspaper business, have held these players back. The organizational memory of the newspaper industry’s last large scale move into electronic distribution remains strong. In 1983 Times-Mirror and Knight-Ridder inaugurated Viewtron - a dedicated terminal information service. After losses of nearly $50 million, the service was discontinued in 1986. According to James Batten, CEO of Knight-Ridder, even in 1994, the bad memory of the "V-word" - what insiders called Viewtron - lingers. Batten says the company still has "a healthy skepticism about the amount of money people are willing to pay for news and information."82

**COMPUTER HARDWARE AND SOFTWARE COMPANIES**

The reasons that companies like Apple and Microsoft wish to enter the market are slightly different from the telecommunications companies and the content providers. Both companies have a history of introducing innovative, high margin products like the Apple Macintosh and PowerBook and Microsoft Windows. However, the market for personal computers and software has become much more competitive over the last five years with shrinking profit margins. As a diversification measure, movement into new businesses segments like online information services makes sense.

In addition, the complementary nature of information services with existing product lines is also a draw. John Sculley, former Apple CEO, hailed the advent of Personal Digital Assistant (PDA) devices by saying that the new market was not about

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"spreadsheets and word processors .... It’s more about content and services, so we are building relationships with service and content companies."\textsuperscript{83}

Apple has done more than just build relationships. It is now firmly in the business with the introduction of its new e•World service. e•World is aimed squarely at the consumer market. It was announced early in 1994 and is currently in the testing stage.

The e•World interface features a "geographic" community to represent the options available to the user. Each icon is a building representing a specific area of the service: a library, a newsstand, a business and professional plaza, an arts and leisure pavilion, a computer center, a marketplace, a post office. Apple’s role has been characterized as being both that of a provider and a facilitator. The company "provides the neighborhood in which data publishers build. Each publisher will provide information, following Apple’s zoning regulations." The price of e•World will be $8.95/month including two free hours of non-prime time connect time and $4.95/hour (off-peak) or $7.90 (peak) thereafter.\textsuperscript{84}

Apple is hoping that companies will eventually use e•World to sell their products. While there is no plan to add a surcharge for these purchases, users may eventually pay for access to certain selling company’s areas. Apple is also predicting that the e•World environment will win over developers of new service offerings much like the Macintosh environment did for software product development.\textsuperscript{85}

Microsoft is reportedly on the verge of jumping into the ring as well. CEO Bill Gates recently gave a brief glimpse of the company’s intentions. The new service, expected

\textsuperscript{83}Steven Burke, "Apple Eyes Information Services for PDA’s," \textit{PC Week}, December 14, 1992.

\textsuperscript{84}Ayre, "The Next Generation."

to debut late in 1994, will include traditional services like news and e-mail, but will also include a vast array of support for Microsoft products.\textsuperscript{86}

A major question for these new entrants to the industry is whether they can and will take advantage of the existing market knowledge or try a wholly different approach. One industry observer commented,

\begin{quote}
We’ve been here before. Now that Microsoft and Apple and Time Warner and TCI are redrawing the highway system, do you think they will reinvent the automobile, too, or take some lessons from the traditional online industry? Somehow I doubt that Microsoft has raided the Dialog or Mead Data Central research and development teams.\textsuperscript{87}
\end{quote}

**TELECOMMUNICATIONS COMPANIES**

The issue of Regional Bell Operating Company (RBOC) entry has in the past been tied to regulation in the telecommunications industry. The Modified Final Judgement (MFJ) expressly forbid the RBOC’s from entering the electronic information services market. Later modifications to the MFJ allowed some entry into the market for gateway service. Nynex’s gateway service, InfoLook, the largest attempt, never gained critical mass and was discontinued in 1990.\textsuperscript{88}

In October, 1991, the information services restriction was fully removed.\textsuperscript{89} Since 1991, the RBOC’s have concentrated their efforts on voice messaging systems, niche oriented services (e.g. vehicle location services, fax service and remote monitoring) and transactional services.\textsuperscript{90} More recently, Nynex has announced that it will team

\textsuperscript{86}Ayre, "The Next Generation."


\textsuperscript{88}Huber et al., p. 93.

\textsuperscript{89}Huber et al., p. 93.

\textsuperscript{90}Huber et al., p. 96-98.
with Prodigy to develop what has been called the "first advertising supported online interactive Yellow Pages system."\(^9\) This kind of development, while important, speaks more to the RBOC’s capabilities in the content rather than online service area. Although they have not aggressively sought the same market as the traditional online competitors described in section II, the RBOC’s with their high brand name recognition, deep pockets and technological sophistication remain threats.

AT&T, which has been free from regulatory bans on information services and electronic publishing since 1989\(^2\) is now preparing to enter the consumer segment with its own service - PersonaLink. PersonaLink, due to be released in June, 1994 will be similar to AT&T’s successful EasyLink. EasyLink, AT&T’s e-mail and messaging service, is the largest e-mail service in the U.S. Its focus, however, has been on the commercial segment.

The innovation that AT&T hopes will win customers to PersonaLink is the "personal agent" software embedded in the system which will allow users to write scripts to handle their messages in a predetermined way.\(^3\) The service will also include extensive electronic shopping services, online news service from Mead Data Central, as well as the mail and communications capabilities.\(^4\)

\(^2\)Huber et al., p. 86.
\(^3\)Ayre, "The Next Generation."
VI. SUBSTITUTES

Perhaps the greatest blurring of distinctions in the online information services industry occurs when one considers substitute products and services.

On the one hand, from the point of view of content suppliers, products such as CD-ROM, are merely alternative distribution channels. They may enhance royalty payments and provide greater flexibility to the content creator and the end user. There may also be economic benefits for high volume users.

However, from the point of view of the distributor, in this case the online information service provider, these substitute products are a direct threat to their industry.

Beyond new entrants into the traditional service market (as discussed in section V), other new forms of competition, which I group here as substitutes, are emerging. I have chosen to discuss three specific types of products and services which are not strictly online information services in the sense I have described, but nevertheless threaten to radically change the industry as it exists today. They are:

The Internet

Full Service Cable Television Networks

CD-ROM

THE INTERNET

The Internet is a quasi-public network of computers around the world that has been in existence for over 20 years. It is actually a peer-to-peer network of networks of computers which takes advantage of several unique addressing and protocol features to form a seamless communication link between constituent parts. The Internet grew out of U.S. Department of Defense research which dealt primarily with learning how
networks could withstand partial outages.\textsuperscript{95} The Internet allows users to connect to and communicate with other networks around the U.S. and the world. Access to the Internet, however, has in the past been limited to individuals whose companies connected to the network or who had an affiliation, usually academic, with an institution which had a connection.

Many sources of information exist on the Internet that are the same or similar to those available through commercial online services. There is no formal body that governs what can be loaded onto the network through a connected computer. Theoretically, at least, any content provider could use the Internet as an alternative access provider.

Indeed, the depth of the information available from the Internet (once you learn to get at it) often surprises even the most seasoned professionals. In addition to the full text of some newspapers, magazines, and journals, you can find government data on population, agriculture, and the economy; research and scientific reports; and even more esoteric data, such as Supreme Court decisions and Space Shuttle schedules.\textsuperscript{96}

The Internet received a content boost in February, 1994, when Encyclopedia Britannica decided to enter the market directly with the Internet as distributor. This marks the first time that the 200 year old publishing company has made its content available electronically. It will initially be available to academic users, using information retrieval technologies developed by Internet researchers. Executives of the company admit they decided against aligning with an existing online service. Joseph J. Esposito, President of Encyclopedia Britannica North America bluntly explained,

The main reason we're doing it ourselves is that you just can't make any money licensing your content .... If you do believe that content is


\textsuperscript{96}Andrew Kantor, "Internet; the Undiscovered Country," \textit{PC Magazine}, March 15, 1994.
king, it's rather unfortunate that so many of the content providers have put themselves in a position where they're held hostage to the on-line services.  

Currently, there is not open competition between the Internet and online service providers. Rather, there is an arms length relationship. With all the popular media discussion of the network, it comes as no surprise that traditional online services would scramble to include access to the Internet. Last September, America Online became the first to announce limited access, but did not install the feature fully enabled until March 1994. Delphi has focused nearly all of its attention on being the consumer gateway to the Internet. In March, 1994, CompuServe announced limited Internet access, but a top executive noted that the company has to make sure users know they're "leaving a safe, supported commercial service to wander in open spaces, where no one's responsible and viruses roam free. We don't want to become user support for the Internet." The overall relationship between commercial online services and the Internet could be termed a fragile peace.

Enhanced Internet navigation products, many of them paid for by government sponsored research, have made the Internet a much more easy to use, consumer friendly service. MOSAIC is one such product. Developed by the National Center for Supercomputing Applications, MOSAIC is a graphical user interface available free over the Internet. It allows users to view text and graphics using server-based search tools. In addition, new Mosaic-based development products from private companies will let users create their information servers on the Internet. It is conceivable that the Internet - armed with these new "ease of use" products and reaching millions of households via universal access (as called for by people like Mitch Kapor of the

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97 Markoff, "44 Million Words."

49
Electronic Frontier Foundation\textsuperscript{100}) could make traditional online services look like toll roads in "freeway"-laden California.

The competitors in the online information service industry may not see the Internet as an immediate threat, but they are certainly taking notice of the huge network. In fact, one competitor explicitly expressed his product's superiority in relation to the Internet. "I think we do add a lot of value and most people probably don't appreciate our tagging and organizing of the data .... You can't replicate that zipping around the Internet.\textsuperscript{101} A good argument may soon be made that one could.

Another boost for the Internet may come in the form of increased speed and cheaper access to certain services. In some cases, academic or business users may be able to bypass traditional packet-switching networks like BT Tymnet and their cost to gain access to services like Dialog. Currently a user would either have to access Dialog directly or access through another service like America Online.\textsuperscript{102} The speed of connection could also be an advantage for the Internet as users with fast direct connections to their computer centers could avoid some network slow downs. This would depend on local conditions and the speed supported by the local Internet connection.\textsuperscript{103} While this development is more of a threat to the telecommunications networks, user familiarity with the Internet may lower the resistance to the network in general.


\textsuperscript{101} Rod Everhart, President, Mead Data Central quoted in Marydee Ojala, "Rod Everhart, Change Agent at Mead Data Central," \textit{Online}, September 1993.

\textsuperscript{102} Carol Tenopir, "Predicting the Online Future," \textit{Database Searcher}, January 1993.

\textsuperscript{103} ibid.
FULL SERVICE CABLE TELEVISION NETWORKS

Like the Internet example, arrangements and accommodations have developed between traditional service providers like Prodigy and cable television companies. The Cox cable system has agreed to let Prodigy use its wire into the home (rather the telephone company’s) to reach users.\textsuperscript{104} This type of agreement, however, masks the underlying reality of competition between the computer online service provider and the emerging full service cable television networks.

Prototype systems built by Time-Warner in Orlando, Florida and AT&T/Viacom in Castro Valley, California - while aimed more at the full motion entertainment market - have the capacity to push computer based online services out of parts of the market.

An area of certain conflict is financial services. Time Warner projects nearly 25% of its network revenues to come from fees generated by online investment activities.\textsuperscript{105} Meanwhile, America Online, Prodigy and Dow Jones have all beefed up their personal investor offerings.

CD-ROM

Much of the content available via online information services is also available on CD-ROM. CD-ROM offerings have shown tremendous growth in the past four years. Table 4 on the following page shows the growth in the number of databases available over the period.

The advantages of CD-ROM technology are non-reliance on wireline connection to a service, unlimited use, constant availability and less time pressure during use. The

\textsuperscript{104} "Ink On Paper Won’t Last Forever," \textit{Communications Daily}.

disadvantages include lack of realtime information and the cost of a new hardware
device (CD-ROM reader).

Table 4
Number of Databases published on CD-ROM\textsuperscript{106}

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Databases published on CD-ROM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>409</td>
</tr>
<tr>
<td>1991</td>
<td>737</td>
</tr>
<tr>
<td>1992</td>
<td>934</td>
</tr>
<tr>
<td>1993</td>
<td>1278</td>
</tr>
<tr>
<td>1993-mid year</td>
<td>1433</td>
</tr>
</tbody>
</table>

For non-time sensitive material, some basic calculations involving volume of use
would determine the cost effectiveness of using CD-ROM instead of an electronic
service. Estimates show that breakeven points for many popular content products
which are available both online and on CD-ROM range from less than one minute to
several hours per day of usage.\textsuperscript{107} It is clear that high volume users of archival type
information such as libraries could do well to switch to CD-ROM for certain sources.

For other types of information (realtime stock quotes for instance) and lower volume
users (home users for instance), CD-ROM is not yet a challenge to online information
services for most features. However, as the direct production cost of CD-ROM’s
continues to drop, the pressure from this substitute will increase.

\textsuperscript{106}Gale Directory, v. 2., p. x.

\textsuperscript{107}Huber et al., p. 45.
VII. EXTERNAL ENVIRONMENT

The forces and trends that exist in the external environment are beyond the scope of this thesis. However, it is important to note that they exist. Below is a list of five external environment issues which merit close attention when considering the future of the online services industry:

*Technology penetration* - As the price, size and power of computing and communications devices continues to improve, the industry will clearly be faced with an increasing market for its services.

*Finance* - The capital markets’ views of these emerging technology service companies will affect which competitors have the capital necessary for advancement in the industry.

*Regulation* - Federal and state regulation of information distribution through computer, telephone and other networks has the potential to change the dynamics of the industry.\(^{108}\)

*Legal environment* - Judicial decisions and prevailing legal conventions regarding intellectual property and copyright law will have a large effect especially on content providers and distributors.\(^{109}\)

*Political* - Government involvement in a national information infrastructure will bear largely on what happens in the industry.

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\(^{108}\)For a complete discussion of the regulatory issues surrounding RBOC entry into the information services market, see Tsutomu Okamura, "Issues Concerning Telco’s Entry into Information Services: Experience in the United States, France and Japan," (Program on Information Resources Policy, Harvard University, Cambridge, MA, 1992).

VIII. CONCLUSION: THE FUTURE

There are a number of conclusions which can be drawn from this analysis of the online information services industry.

SHORT TERM COMPETITION

Within the industry, short term winners and losers will be determined by marketing mix decisions rather than technical considerations. The trend toward increased marketing expenditures in the consumer segment will drive the focus away from technology. Although ease of use features are a key dimension of competition, user interface advances will be made more quickly and their competitive advantage will be short-lived. In the very short term, installed base of subscribers will be crucial for both the cash flow needs and content attraction capabilities of those competitors with fewer internal resources.

Given these considerations, America Online is well positioned in the industry. The company has won a number of important battles in the marketing arena. It’s promotion, pricing, distribution and product feature advantages make it a likely candidate for continued success. Beyond the direct competitive success, America Online is also in an advantageous strategic position by virtue of its web of relationships. This business network will become even more important as the competition in content becomes more heated.

Other current competitors are waiting to see how the consumer market develops before attempting any new, large scale efforts. Mead Data Central and Dow Jones & Co. are well positioned to branch out although market conditions may keep them from entering the consumer distribution segment and entice them to remain more rooted in the business/professional distribution and information supply segments.
The pricing puzzle has yet to be solved. While the services have moved to reduce cost to the average user, subscription rates remain high and extra connect charges for premium services are common for most services. This leads to unpredictability of monthly costs to the end user. Like cable television, the industry might be wise to move to a tiered pricing program that does not allow prices to bounce around from month to month. In the consumer market, once trial has been induced, predictability of pricing may be more important than absolute level.

The recent price war which the industry has undergone is generally good for the industry as it has moved price points within the reach of more customers. However, if such price competition were to continue unabated, this development has the potential to cause much harm as resources which are needed to grow would be diverted. Content suppliers may become reluctant to participate if price points for the overall service go too low even if this development does not directly effect content supplier margins. At this point, it is not clear if price is a factor which can induce interest beyond current levels. Other avenues of growth and new dimensions of competition will need to be explored.

It is important to note that vendor reputations have now been established in the online information service industry - both in the professional/business market and in the consumer market. As growth continues, this fact will prove to be an important competitive advantage when services are attempting to lure valuable content suppliers.

As the industry continues to mature, one can expect to see the number and size of bundling agreements increase. This mode of sale has advantages for both the services and the hardware manufacturers. The logical extreme would be inclusion on every computer sold, much as operating systems are currently sold.
The existence of profitable buyer segments will spur the continued growth of niche markets for online information. Mobile users and personal investors are two segments with clear needs and the resources and willingness to pay for premium services.

Overall, continuing price competition, established vendor reputations, increased bundling and the existence of profitable buyer segments will increase interest in the online information services. Intra-industry competition, however, is not a zero sum game. The industry is not yet in a mature state. There is a great deal of market penetration which has yet to occur. Lower prices as well as aggressive and savvy marketing will help increase penetration. From a strategic point of view, the implication is that it is more important to watch your customers than your competitors. There is certainly room in the industry for other competitors who have not yet entered, but the competitors who do well will be the ones that succeed in satisfying customer needs rather than merely beating the competition. However, high fixed costs of processing power and network connections, an increasingly crowded field of competitors and the increasing importance of brand name recognition will make entry more difficult in the more distant future.

VALUE OF INFORMATION SUPPLY

The value to the industry competitors of content is increasing. Content will drive the amount of utility which the online services can provide to customers. Mainstream information providers will need to consider very carefully such factors as cannibalization rates and investment costs in order maximize their return on electronic distribution. No longer is it the case where electronic distribution is just an "add-on product" to a basic print production process. I am, however, wary of content providers stepping too far outside their core competency and venturing into the distribution channel.
What the conditions above suggest is growing competition between supplier and distributor, in this case, online service operator. This competition has already taken the form of content supplier entry into the industry and a severe reduction in exclusivity arrangements. If content is indeed the motivation for use, then the growth of supplier power will continue. On the other hand, as electronic personal communication via online services grows into its own separate profitable business, content will have less importance.

*The implicit competition between print and electronic formats effects all of the competitive forces.* To a large degree, this competition will determine the future of the online information service industry. When, electronic distribution creates an augmented product - as is the case with search or realtime capabilities - there is no doubt that online has a valuable position in the market. However, the competition for general information consumption (be it in the form of newspapers or electronic bulletin boards) does not tilt toward either format. Current technology favors print in several ways such as ease of handling and portability and lack of necessary additional support devices.

Beyond these considerations, however, there is another more deep rooted print advantage. In addition to actual content, brand name products like the *Wall Street Journal* connote an ethos of importance that will be difficult to copy precisely because such products are not customizable. The attraction of electronic formats is the ability to obtain specifically what one is interested in. The attraction of the *Wall Street Journal* is its commonality. There is a "greater" community that is created by such an immutable print product.

**LONG TERM PROSPECTS**

*Substitutes products and services such the Internet, full service cable television networks and CD-ROM are attacking the very need for online information services.*
These entities will profoundly effect the portion of the market which will remain available for the traditional online service providers.

*In the long run, the distribution function of the online information service industry will become less important.* With technology driving seamless connectivity, the value of content increasing and buyers becoming more powerful, intermediaries, like online information services, will become a less influential and less necessary part of the value chain. A virtual information supermarket without the barriers and drawbacks of a retail establishment could arise quite quickly. Unlike a supermarket, however, there will be little power residing in this last, low margin distribution step since it will provide little added value.
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