

The  
**eCommerce:**  
**B2B Report™**

July 2001



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## Welcome to eMarketer

Dear Reader:

eMarketer's *eCommerce: B2B Report™* is the fifth installment of our semiannual review of e-business and B2B e-commerce around the world. With 245 charts and numerous case studies of industry leaders, the report looks at emerging trends and offers penetrating insights and comparative data on:

- Global B2B e-commerce revenues
- Business connectivity
- eBusiness strategies and IT budgeting
- Online procurement and supply chain management
- B2B websites and emerging sell-side exchanges
- Technology strategies and alliances among leading solutions providers
- Partnerships and transaction activity among leading exchanges

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**Methodology: The eMarketer Difference**

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## Methodology: The eMarketer Difference

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eMarketer research is founded on a simple philosophy of aggregation:

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**The key to approaching quantitative truth – particularly when examining the internet marketplace – is to consider data from as many reputable sources as possible. No one has all the answers. But taken together, multiple sources, coupled with healthy doses of common sense and business intelligence, create a reasonably accurate picture.**

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eMarketer has no testing technique to protect, no research bias and no clients to please. The eMarketer research team begins each report by examining research studies, surveys and reports from hundreds of published, publicly available sources; we then filter, organize and synthesize the information into tables and graphs. Finally, we present the comparative source data along with our own analysis, estimates and projections. As a result, each set of findings reflects the collected wisdom of numerous research firms and industry analysts. The benefits to our readers are threefold:

- Information is more objective and comprehensive than that provided by any other single research source
- Information is available in one place – easy to find, evaluate and compare
- Information can be quickly accessed to make intelligent, well-informed business decisions



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Since eMarketer's last *B2B Report* was published in February of 2001, business-to-business e-commerce has gone through a tumultuous time. In a short 6 months, several business-to-business exchanges have closed, e-business technology spending has slowed, and at least one major internet research firm has scaled back its original estimates for the growth of B2B e-commerce. Add to that the significant decline in influence among former leading B2B software vendors such as Ariba, Commerce One and FreeMarkets, and it's no wonder, perhaps, that some observers have knelled the death bells for B2B e-commerce.

But although the "B2B" moniker may be falling out of favor – now often replaced by the term "supply" or "value chain management" – it is fair to say that business-to-business e-commerce is stronger than it was before. With the continuing shakeout of weak B2B exchanges and the consolidation activity among e-business software vendors, we are now able to examine the B2B story with much greater clarity.

For example, in the enterprise applications space there are now a handful of emerging leaders that are extending the internal, automated systems of large companies by connecting them to those of their trading partners. These trusted names include Oracle, SAP and IBM, as well as PeopleSoft, Manugistics, i2 Technologies and Microsoft.

There is also a better understanding of which business-to-business exchange models have the best chance of succeeding over the long term. Commodity-based exchanges and select consortia-led marketplaces are beginning to demonstrate those transaction or service models that offer sustainable revenues for their owners and a clear return on investment for potential users. Industry leaders such as Altra Market Place, CheMatch and Transora are now focusing on building on their early successes.

And finally, e-business adoption is now gaining momentum thanks to the leadership of large brick-and-mortar companies. For many global companies, internet initiatives have become part of core business strategies, moving out of the domain of single business units and placed under the guidance of top-level executives. The early adopters among large businesses – companies such as IBM, GE and Boeing – are now moving beyond their early e-commerce initiatives to expand the use of the internet enterprise-wide and across their trading networks. This in turn is driving the adoption of business-to-business e-commerce technology throughout the world.

So, in spite of the difficult times faced by many of the startup B2B exchanges, software vendors, and some of the early adopters of new technologies, this shakeout has been a healthy exercise. Although it is by no means over – it will likely continue through to the end of this year – there is a much clearer picture of the long-term future, which is helping companies make better decisions for their long-term e-business strategies.

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## A. Global B2B eCommerce Estimates

eMarketer’s forecast for worldwide B2B e-commerce has remained unaltered during the first half of 2001, as we continue to monitor the changing economic conditions in the US and global economies. While there has been a marked slowdown in technology purchases during the first two quarters of this year – especially in the US - there remains a great deal of uncertainty as to whether spending will pick up during the last half of 2001 or into 2002.

Despite these delays in technology spending, eMarketer continues to project that business-to-business e-commerce activity will steadily increase over the next several years, as companies continue to take a long-term perspective with their e-business strategies. Although the economic slowdown may have an effect on near-term forecast numbers, eMarketer is confident that the long-term prospects for the growth of business-to-business e-commerce will remain intact.

### B2B eCommerce by Region, 2000–2004 (in billions)

	2000	2001	2002	2003	2004	As a % of Worldwide B2B eCommerce 2004
North America	\$159.2	\$316.8	\$563.9	\$964.3	\$1,600.8	57.7%
Asia/Pacific Rim	\$36.2	\$68.6	\$121.2	\$199.3	\$300.6	10.8%
Europe	\$26.2	\$52.4	\$132.7	\$334.1	\$797.3	28.7%
Latin America	\$2.9	\$7.9	\$17.4	\$33.6	\$58.4	2.1%
Africa/Middle East	\$1.7	\$3.2	\$5.9	\$10.6	\$17.7	0.6%
<b>Total</b>	<b>\$226.2</b>	<b>\$448.9</b>	<b>\$841.1</b>	<b>\$1,541.9</b>	<b>\$2,774.8</b>	<b>100.0%</b>

Source: eMarketer, 2001

Of the eight global B2B e-commerce forecasts that eMarketer tracks, only one was changed during the first half of 2001 as a result of the slowdown in the US economy. The Gartner Group issued a revision to its worldwide estimates for B2B e-commerce in March, lowering its 2004 forecast from \$7.29 trillion to \$5.95 trillion, and extending its model out to the year 2005. In May of 2001, International Data Corp. (IDC) extended its global B2B e-commerce forecast out to the year 2005, estimating that internet trade would reach \$5.3 trillion by then.

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**Comparative Estimates: B2B eCommerce Worldwide, 2000-2005 (in billions)**

	2000	2001	2002	2003	2004	2005
<b>eMarketer</b>	<b>\$226</b>	<b>\$449</b>	<b>\$841</b>	<b>\$1,542</b>	<b>\$2,775</b>	–
AMR Research	–	–	–	–	\$5,700	–
Computer Economics	\$3,068	\$5,232	\$6,815	\$9,907	–	–
Forrester Research	\$604	\$1,138	\$2,061	\$3,694	\$6,335	–
International Data Corp. (IDC)	\$213	–	–	–	\$2,233	\$5,300
Gartner Group	\$403	\$953	\$2,180	\$3,950	\$5,950	\$8,530
Morgan Stanley Dean Witter	\$200	\$721	\$1,378	–	–	–
Goldman Sachs & Co.	\$357	\$740	\$1,304	\$2,088	\$3,201	–
Ovum	\$218	\$345	\$543	\$858	\$1,400	–

Source: eMarketer, 2001; various, as noted, 2000

While it was anticipated that some research firms would find it necessary to adjust their e-commerce models as a result of the economic slowdown in the US, most internet analysts have indicated that they will wait until they had a clearer picture of economic conditions in the latter half of 2001 before making any changes. This is also the approach of eMarketer, which will be reevaluating its e-commerce forecasts during the second half of 2001.

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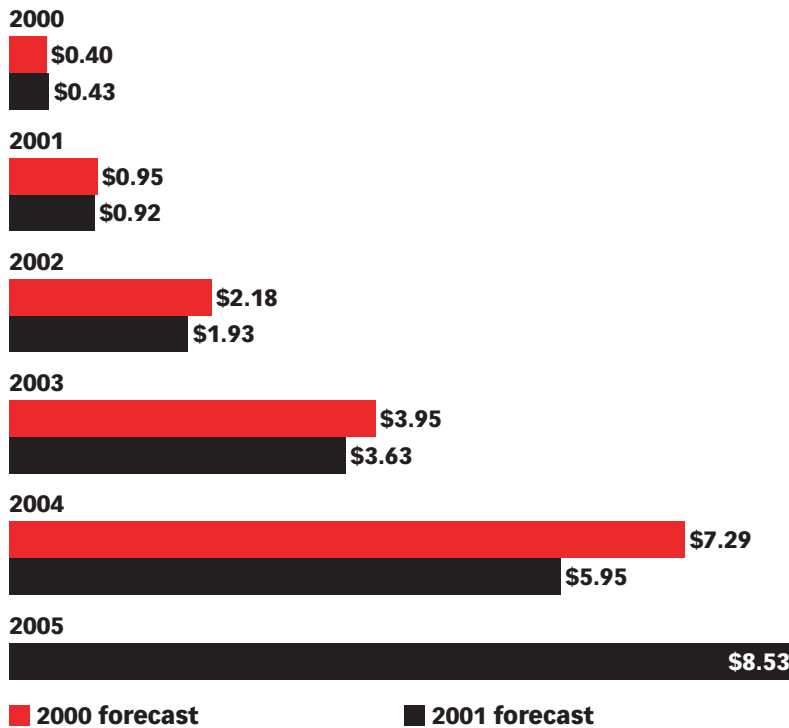
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**Revised Worldwide B2B eCommerce Forecast, 2000–2005 (in billions)**



Source: Gartner Group, 2001

Another significant trend that eMarketer is watching is the regional differences in technology adoption rates throughout the world. As recently as 2 years ago, most survey data indicated that in general, there was an 18-month to 2-year lag in business technology adoption rates between the US and the rest of the world. In past reports, eMarketer has noted that other regions of the world were rapidly catching up to the US in terms of e-commerce trade, and there is now growing evidence that these regional differences are shrinking.

While IDC estimates that the US share of global B2B e-commerce will decline from 47% in 2000 to 38% in 2004, the Gartner Group estimates that the US portion of internet trade will drop to 42% by 2005. Most significantly, the Gartner Group notes a drastic decline in the Americans' lead in business-to-business e-commerce activity from 2000 to 2001, as their share has fallen from 59% of global activity to 52%.

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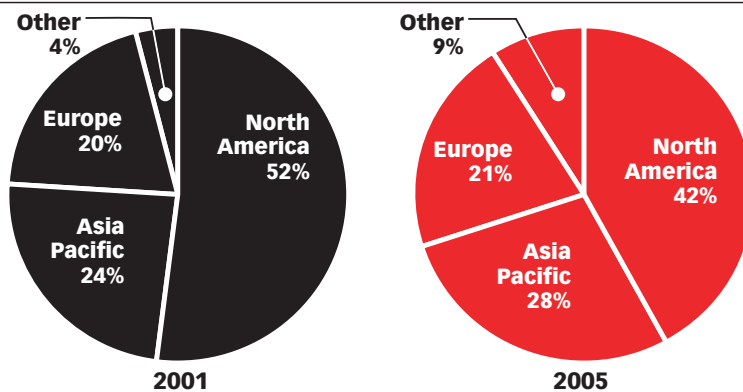
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**B2B eCommerce Forecast by Region, 2000 & 2004 (in billions)**

	2000	As a % of World Total	2004	As a % of World Total
US	\$100.8	47%	\$837.4	38%
Western Europe	\$61.4	29%	\$784.6	35%
Asia/Pacific Rim	\$5.4	3%	\$104.9	5%
Japan	\$27.5	13%	\$361.8	16%
Rest of World	\$17.7	8%	\$144.4	6%
<b>Worldwide Total</b>	<b>\$212.8</b>	<b>-</b>	<b>\$2,233.1</b>	<b>-</b>

Source: International Data Corp. (IDC), 2000

**Regional Share of Worldwide B2B eCommerce, 2001 & 2005**



Source: Gartner Group, 2001

In addition to these forecast numbers, several surveys have shown that companies in Western Europe, Asia and even Latin America are not far behind their American counterparts when it comes to evaluating and adopting specific e-business technologies. These include enterprise applications such as customer relationship management (CRM) solutions or supply chain management (SCM) systems. International participation in business-to-business exchanges is also growing quickly, in both commodity-based marketplaces and some consortia-led exchanges such as Covisint.

One further driver of regional parity when it comes to e-business technology adoption has come as a direct result of globalization. Multinational firms such as Ford, GE or Xerox have rolled out e-business plans for their entire enterprises, which include operations in all areas of the globe. Not only are these large companies enabling their own businesses for e-commerce, they are simultaneously requiring their suppliers and other trading partners to become web enabled as well.

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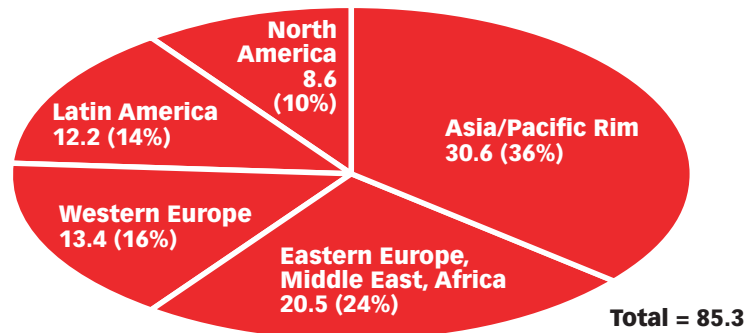
As evidence of this trend, the Aberdeen Group estimates that 80% of multinational companies have plans to globalize their websites by 2004. While the Aberdeen Group finds that companies with a presence in Europe are typically the first to internationalize their websites, many businesses are expanding their capability to do business in the home language and currency of trading partners wherever they are in the world.

## B. Number of Businesses Worldwide

Counting the number of businesses worldwide is a challenging task. With reliable data available only from leading industrial economies, most analysts have to rely on estimates to devise broad regional figures. Probably the most widely known is Dun and Bradstreet's, which places the number of businesses worldwide at 53 million.

More recent research from AMI-Partners places the estimate at 85.2 million small and medium-sized businesses worldwide, with the Asia-Pacific region owning the greatest share.

### Small/Medium-Sized Businesses, by Region, 2000 (in millions)



Source: AMI-Partners, 2000

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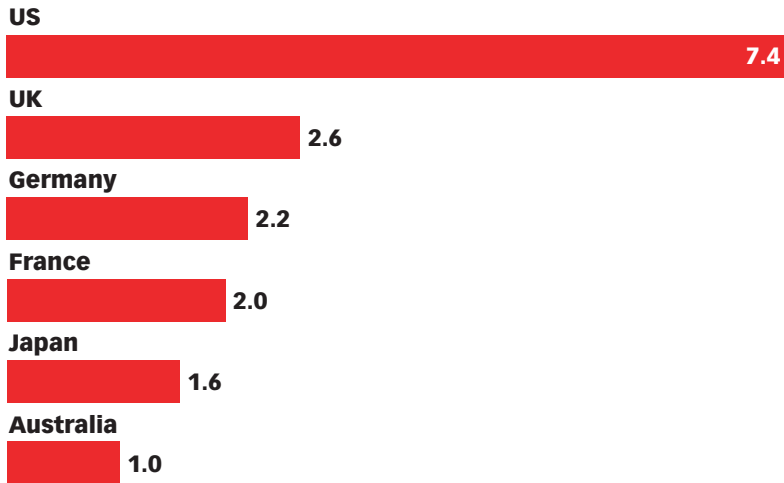
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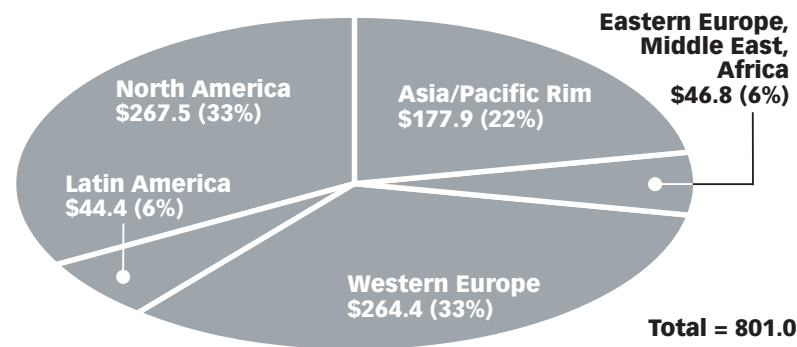
**Small/Medium-Sized Businesses, by Country, 2000 (in millions)**



Source: AMI-Partners, 2000

Gauging technology spending by small and medium-sized businesses, AMI-Partners surveyed businesses in the leading national economies of each global region. Building its worldwide forecast from these numbers, AMI-Partners estimates that small and medium-sized businesses spent \$801 billion on IT- and internet-related technologies in 1999. This spending was expected to grow to \$877.3 billion in 2000 and \$962 billion in 2001.

**Small/Medium-Sized Business Spending on Information Technology, Internet, and Telecommunications, by Region, 1999 (in billions)**



Source: AMI-Partners, 2000



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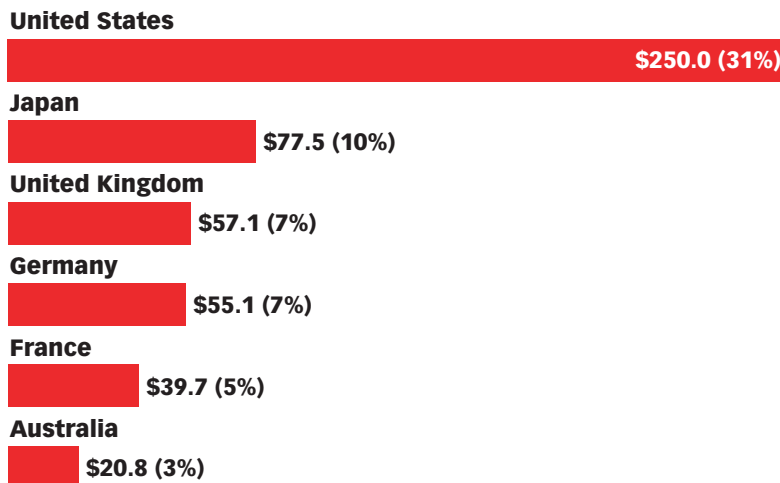
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### Small/Medium-Sized Business Spending on Information Technology, Internet, and Telecommunications, by Country 1999 (in billions)

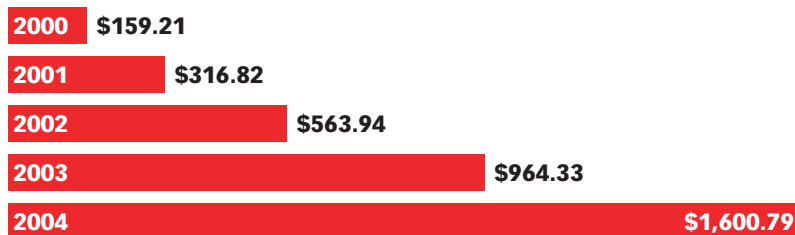


Source: AMI-Partners, 2000

### C. North America

eMarketer’s forecast for the growth of North American e-commerce remains constant as of the first half of 2001. Without question, the economic slowdown has delayed the purchase of e-business technology among American and Canadian companies, but this has not stopped several firms from increasing their levels of online trade.

### B2B eCommerce Revenues in North America, 2000–2004 (in billions)



Source: eMarketer, 2001

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The continued growth of business-to-business e-commerce is due in part to the fact that many North American companies have already invested in procurement applications and are ramping up the use of their installed internet purchasing software. Sales of supply chain management applications have also remained steady through the first quarter of 2001, confirming that businesses are continuing to invest in those e-business technologies that permit them to generate efficiencies through internet-based trade.

Furthermore, as noted in Chapter VI, several commodity-based trading exchanges have seen quarterly growth rates in excess of 90% since the end of 2000, as successful B2B exchanges are beginning to gain traction among their users. This has been especially true in the energy and utilities industries in the US.

And finally, several small and mid-sized businesses are being connected to the electronic data interchange (EDI) networks of their larger trading partners, moving former phone- and fax-based transactions onto the internet. At a basic cost of about \$35 to \$50 per month, and requiring nothing more than an internet connection and a web browser, small and medium-sized business adoption of web-enabled EDI should not be affected by a slowdown in the economy.

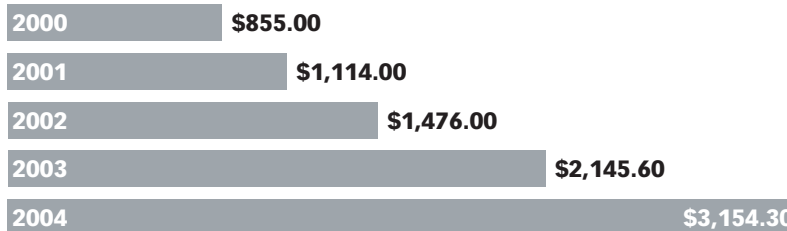
With the exception of the Gartner Group's revised forecast, all estimates for the size of business-to-business e-commerce activity in North America have remained constant as well.

**North American B2B eCommerce Revenues, 2000, 2001 & 2005 (in billions)**



Source: Gartner Group, 2001

**B2B eCommerce Revenues in North America, 2000-2004 (in billions)**



Source: Datamonitor, 2001

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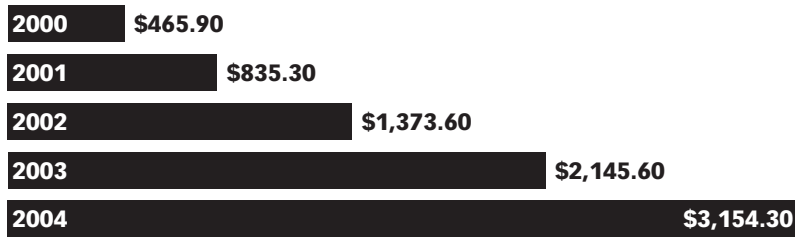
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**B2B eCommerce Revenues in North America, 2000–2004 (in billions)**



Source: Forrester Research, 2001

**United States**

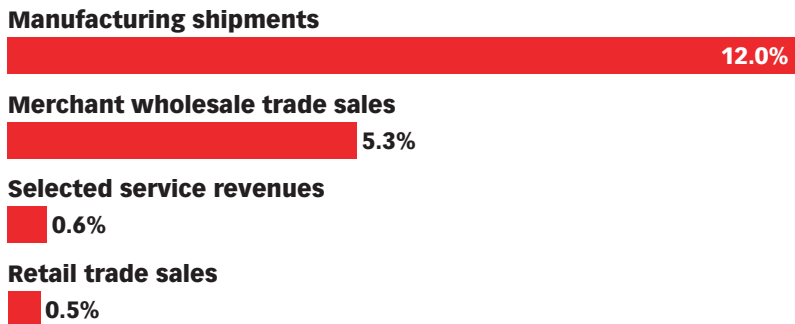
**Census Bureau Study**

In March of 2001, the first measurement of US electronic commerce activity by the US Census Bureau was finally published. In four separate surveys of the manufacturing, wholesale, services and retail sectors of the US economy, the Census Bureau has obtained the most comprehensive picture of American electronic business-to-business trade to date.

Although the results of the four studies cannot be combined because they were completed separately, they do provide a useful first-glance at electronic commerce in the US economy. Excluded from the surveys were firms in the agriculture, mining and utilities industries, along with non-merchant wholesalers.

The US Census Bureau defines electronic commerce as both EDI and internet-based trade. eCommerce accounted for 12.0% of all business-to-business trade in the manufacturing sector and 5.3% of trade in the wholesale sector during 1999. Approximately 50,000 US manufacturing plants were surveyed, while 6,900 merchant wholesalers were included in the wholesale study.

**US eCommerce Trade as a % of the Total Value or Trade, by Economic Sector, 1999**



Source: US Census Bureau, 2001

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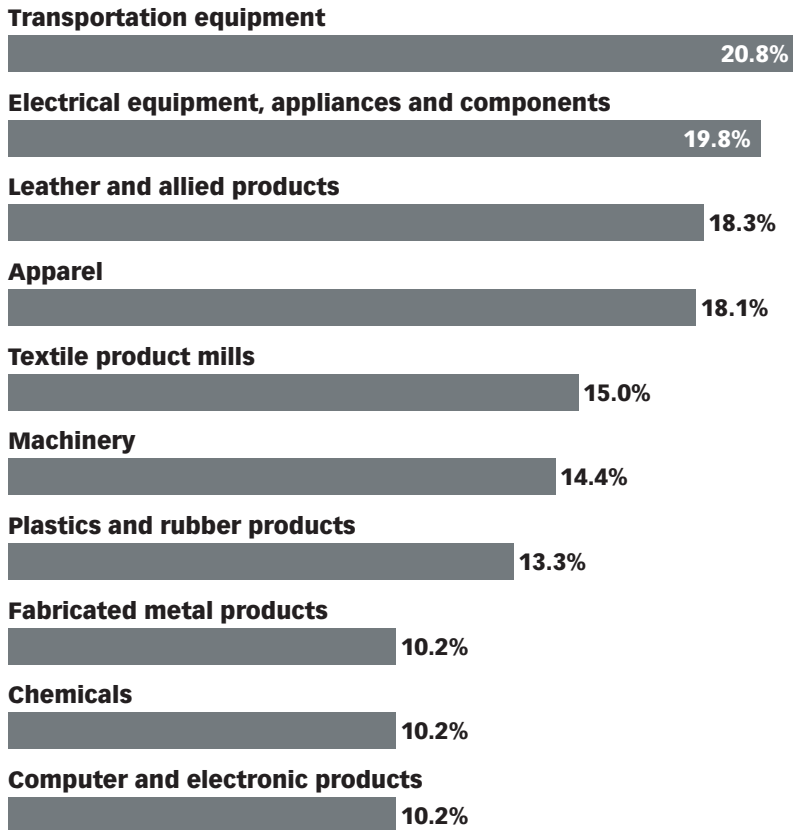
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Of note is the clear gap in electronic commerce activity between business-to-business and consumer-facing sectors of the US economy. Electronic sales in the services and retail sectors accounted for less than 1% of total sales in 1999. This is explained by the fact that while legacy EDI networks have been in place between businesses for several years, the consumer-facing electronic network is entirely internet-based, and is therefore still in an early stage of its development.

Looking at the business-to-business sectors of the US economy, the Census Bureau found that 52% of e-commerce-ready manufacturers took new orders over the internet most often, while 36% relied most heavily on their EDI systems. However, in terms of the dollar value of electronic transactions that businesses processed, most companies indicated that internet orders accounted for no more than 5% of the dollar value of all of their shipments, while EDI orders accounted for an average 59% of total shipments.

**Top 10 US Manufacturing Industry Groups Conducting eCommerce, 1999 (as a % of all industry group shipments)**



Source: US Census Bureau, 2001

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Transportation equipment led electronic orders among manufacturers, followed by electrical equipment and components. As for the wholesale sector, drugs and druggist sundries was the most networked of any industry within the economy, transacting almost one-third of its goods electronically in 1999.

### Top Five US Merchant Wholesale Trade Industry Groups Conducting eCommerce, 1999 (as a % of all industry group shipments)

#### Drugs and druggists' sundries

32.3%

#### Motor vehicles, parts and supplies

16.8%

#### Computer, peripheral equipment and software

9.6%

#### Professional and commercial equipment supplies

8.1%

#### Hardware, plumbing and heating equipment and supplies

7.6%

Source: US Census Bureau, 2001

The total value of US manufacturing electronic commerce was \$485 billion in 1999, compared with \$134 billion in the merchant wholesale sector. It is important to underscore the fact that these two surveys cannot be added together, as they were conducted separately and do not indicate an aggregate figure for the US economy.

### US Electronic Commerce (EDI and Internet Transactions) in the Manufacturing and Merchant Wholesale Sectors, 1999 (in billions)

Manufacturing sector

\$485.28

Merchant wholesale trade \$134.43

Source: US Census Bureau, 2001

#### Comparative Estimates

Turning to the forward-looking projections for internet-based US B2B e-commerce, there have been no changes to the comparative estimates that eMarketer has been following. However, as a result of the slowing economy, both The Yankee Group and Jupiter Media Metrix have indicated that they will be reviewing their forecasts later in the year, as will eMarketer.

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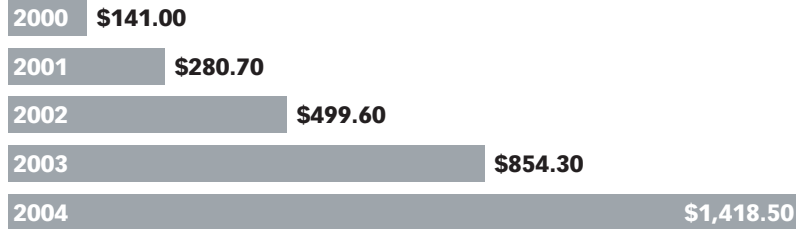
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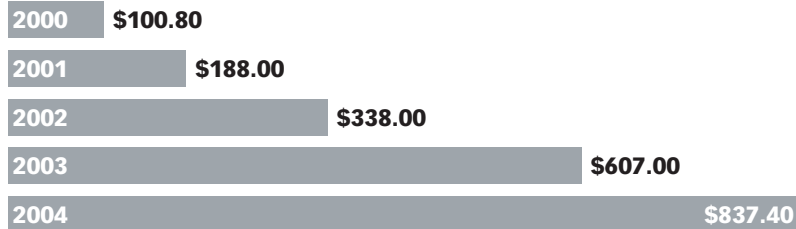
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**US B2B eCommerce, 2000–2004 (in billions)**



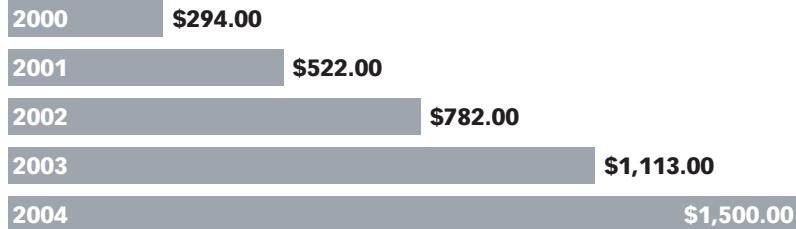
Source: eMarketer, 2001

**US B2B eCommerce, 2000–2004 (in billions)**



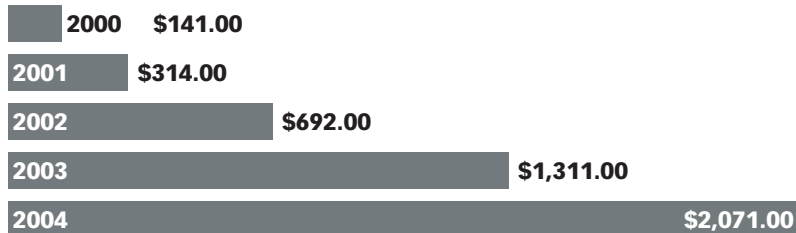
Source: International Data Corp. (IDC), 2001

**US B2B eCommerce, 2000–2004 (in billions)**



Source: Goldman Sachs, 2000

**US B2B eCommerce, 2000–2004 (in billions)**



Source: Keenan Vision, 2000

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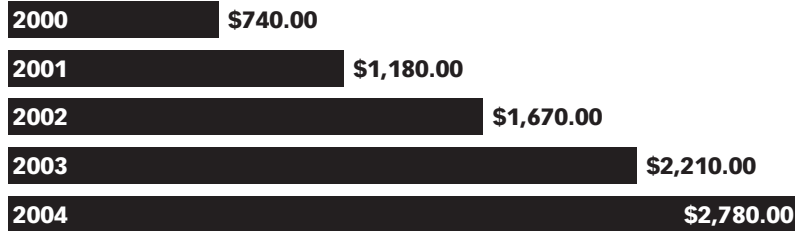
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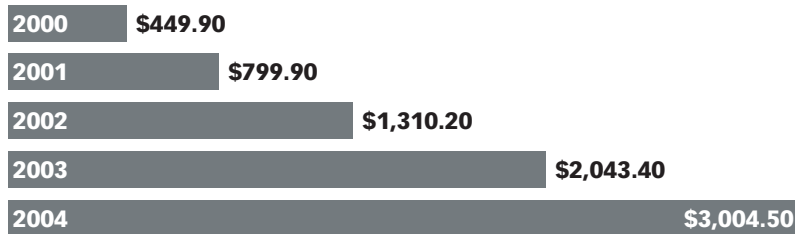
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**US B2B eCommerce, 2000–2004 (in billions)**



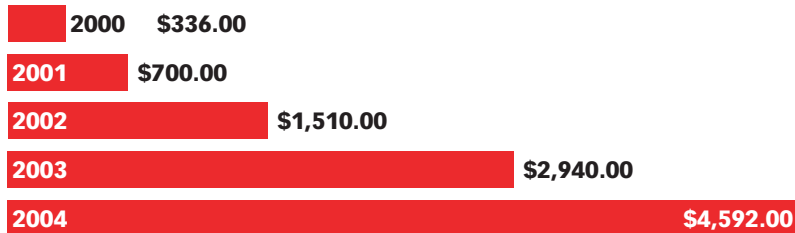
Source: Yankee Group, 2000

**US B2B eCommerce, 2000–2004 (in billions)**



Source: Forrester Research, 2000

**US B2B eCommerce, 2000–2004 (in billions)**



Source: Jupiter Research, 2001

As with eMarketer’s global e-commerce forecasts, there are no changes to the estimates for the penetration and growth of internet use by US businesses. There have been few new surveys published since the beginning of this year, and those that have have been in line with eMarketer’s original projections.

Small businesses are defined by eMarketer as companies with fewer than 100 employees, but with active payrolls, and able to support a significant e-commerce initiative. Small offices/home offices (SOHO) are excluded from this definition.

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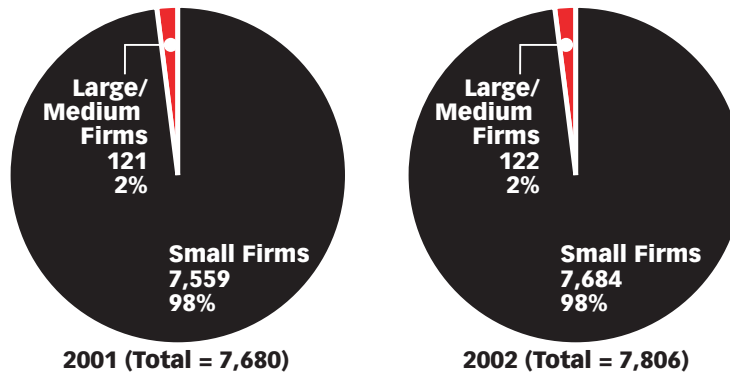
**Defining the Number of US Businesses, 2001**

Estimate	Description and Primary Source
5.4 – 6.1 million	Represents those with “active payrolls” according to US government records (e.g. “Employer Firms”)
10 – 11 million	Includes above, plus additional firms that don't have active payrolls but do have “active” businesses, as calculated by Dun & Bradstreet (e.g. “SOHOs,” “one-person shops, etc.”)
16 million	All firms with phone service listings in the Yellow Pages
23 million	All self-employed persons reporting themselves as a “business” to the Internal Revenue Service
7.7 million	eMarketer’s estimate for the number of “active” businesses with the potential to engage in some form of e-commerce over the next few years

Source: eMarketer, 2001; US Census Bureau; SBA; Dun & Bradstreet; IRS; Commerce Inc.

Of the 7.7 million US businesses that are capable of e-commerce in the United States, eMarketer counts 121,000 medium and large companies. Medium-sized firms are defined as firms with 100 to 500 employees, while large businesses have more than 500 employees. Small businesses make up 98% of all US companies.

**US Businesses, by Size, 2001 & 2002 (in thousands)**



Source: eMarketer, 2001

**Number of US Businesses Connected to the Internet**

eMarketer considers a business to be connected to the internet if a significant portion of senior level employees are actively using the internet on a regular basis to conduct research, gauge competitive activity, gather customer acquisition data or for other business purposes.



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In 2001, the expected number of US businesses connected to the internet is projected to reach more than 6.0 million, or 78.3% of all US businesses.

**Number of US Medium/Large-Sized Businesses Connected to the Internet, 2000–2003 (as a % of total medium/large-sized firms)**

2000	109,000 (91%)
2001	115,000 (95%)
2002	120,000 (98%)
2003	122,000 (99%)

Source: eMarketer, 2001

**Number of US Small Businesses Connected to the Internet, 2000–2003 (in thousands and as a % of total small businesses)**

2000	4,462 (60%)
2001	5,896 (78%)
2002	6,301 (82%)
2003	6,639 (85%)

Source: eMarketer, 2001

Comparative estimates show that as of 2000, well over 90% of medium and large businesses were connected to the internet in the United States. The range of small firms that are connected to the internet as of 2000 is between 60% and 65% of companies.

**Comparative Estimates: US Medium/Large Firms Connected to the Internet, 2000 (as a % of all firms)**

eMarketer	91%
PricewaterhouseCoopers	94%
Meta Group	95%
Strategis Group	97%

Sources: eMarketer, 2000; various, as noted

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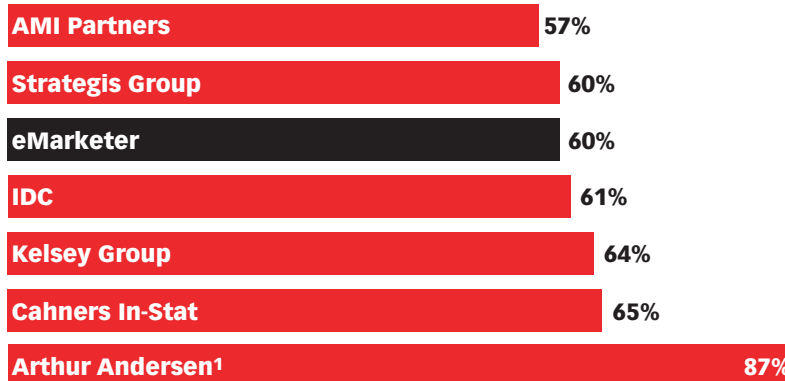
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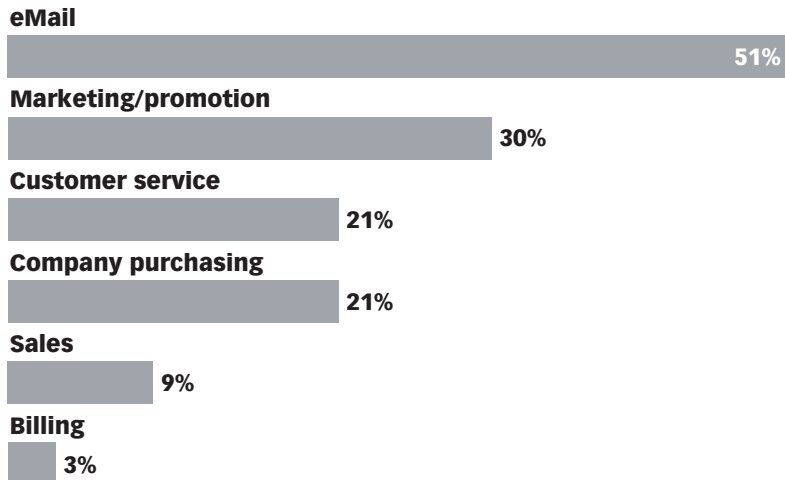
**Comparative Estimates: Small Firms Connected to the Internet, 2000**



Note: <sup>1</sup>Includes both small- and medium-sized companies  
Sources: eMarketer, 2000; various, as noted

The vast majority of small businesses use the internet for e-mail and promotional activities. As their internet presence evolves over time, many establish websites and then move on to some kind of e-commerce activity.

**Small Business Use of the Internet in the US, 2000**



Source: PSI Global, 2000

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### Number of US Businesses with Active, Purposeful Websites

For many firms, an “active, purposeful” website may be all that they require for their web presence. Such websites go beyond so-called “brochureware” or the provision of basic company information to provide at least one of the following:

- Interactive customer service or support
- A meaningful display of the firm’s products or services
- Regularly updated information

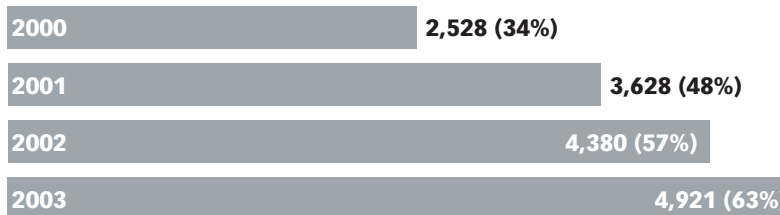
With the cost of website software applications coming down, increased numbers of small businesses are able to afford their own websites via hosted solutions. eMarketer has continued to observe significant growth in the number of firms with increasingly sophisticated websites. For many companies, a web presence will complement offline advertising as clients and other contacts are directed to a website via simple promotional means such as business cards, company letterhead or packaging.

### Medium/Large-Sized Businesses with Active, Purposeful Websites in the US, 2000–2003 (as a % of total medium/large-sized firms)



Source: eMarketer, 2001

### Small Businesses with Active, Purposeful Websites in the US, 2000–2003 (in thousands and as a % of total small firms)



Source: eMarketer, 2001

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The range of estimates for the percent of firms with websites varies, as do the definitions of what constitutes an active, purposeful website. While eMarketer's more conservative definition places the percent of medium and large firms as 57% in 2000, The Yankee Group estimated that 62% of medium and large companies had a website in 1999. Deloitte and Touche put this number at 44%.

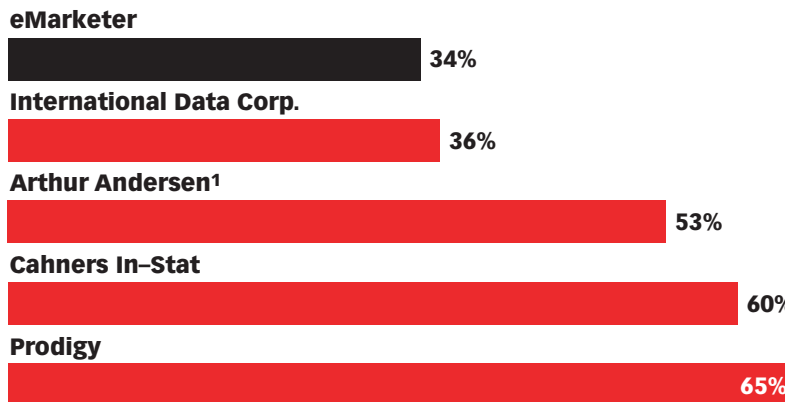
**Comparative Estimates: US Medium/Large-Sized Firms with a Website, 2000**



Source: eMarketer, 2001; various, as noted

When most research firms survey the number of small companies with websites, it is typically defined as any kind of web presence, regardless of whether it is actively updated or not. In 1999, Prodigy estimated that 37% of small companies operated a website, compared to PSI Global's estimate of 32%.

**Comparative Estimates: US Small Firms with a Website, 2000**



<sup>1</sup> Includes both small- and medium-sized firms  
Source: eMarketer, 2001; various, as noted

**Number of US Businesses Engaged in eCommerce**

A company is defined as conducting e-commerce if it is doing some kind of buying or selling via the internet. Sales may be conducted on a firm's website, through an online network such as an extranet, or with an online exchange. Similarly, purchasing must be conducted over the internet. In both cases, the final agreement, purchase order or contract must be established online, according to eMarketer's definition.

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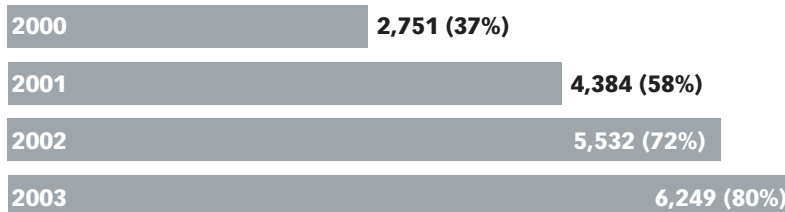
The number of American firms purchasing online will rise significantly between the years 2000 and 2001, as companies begin to implement the e-commerce strategies that they started to plan in 2000. By 2003, 6.3 million US businesses will be engaged in e-commerce of some kind.

### US Medium/Large-Sized Businesses Engaged in eCommerce, 2000–2003 (as a % of total medium/large-sized firms)



Source: eMarketer, 2001

### US Small Businesses Engaged in eCommerce, 2000–2003 (In thousands and as a % of total small firms)



Source: eMarketer, 2001

Comparative estimates show that roughly 40% to 60% of medium and large businesses are conducting e-commerce.

### Comparative Estimates: US Medium/Large-Sized Firms Conducting eCommerce, 2000



Source: eMarketer, 2001; various, as noted

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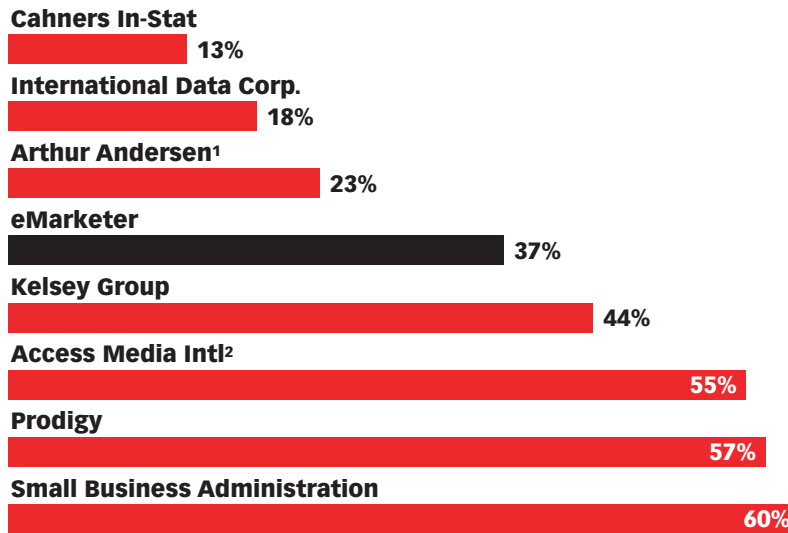
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Comparing the estimates between small businesses is much more difficult due to the diverse range of definitions of what constitutes an e-commerce transaction and the regularity of e-commerce activity. Data from 1999 is robust; however, estimates of online activity in 2000 are more difficult to find. Updating their research from 1999, ActivMedia estimates that 67% of small companies were purchasing online in 2000 while Arthur Andersen finds that 46% of small and medium-sized firms were conducting e-commerce in 2000.

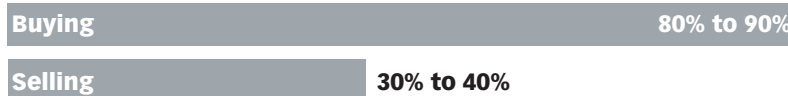
**Comparative Estimates: US Small Firms Conducting eCommerce, 2000**



<sup>1</sup> Small- and medium-sized firms <sup>2</sup> Small Firms Purchasing Online  
 Source: eMarketer, 2001; various, as noted

In most of these estimates, the number of firms engaged in e-commerce is biased toward firms that are purchasing online. eMarketer finds that within the next 3 years, 80% to 90% of US businesses will be buying online, while 30% to 40% of US companies will be selling via the internet.

**US Firms Buying vs. Selling Online, 2003**



Source: eMarketer, 2001

Non-strategic purchasing, or indirect procurement, is currently the primary driver behind e-commerce activity. While not all businesses have products or services that they can sell via the internet, many companies will find it convenient to purchase basic items such as office supplies or computer equipment online.

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Direct procurement will be a driver of online sales, as purchasers demand that their trading partners offer products for sale via the internet. These more complex transactions will often be negotiated offline, but fulfilled or replenished online.

Of the 7.2 million US small businesses counted by the Giga Information Group, 20% are projected to be selling via the internet in 2001 with 40% expected to be selling online by the end of 2004.

**Percent of US Businesses Selling via the Internet, 2000**



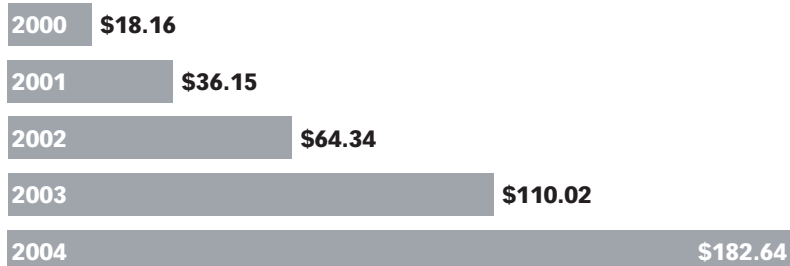
Source: Giga Information Group, 2001

**Canada**

**Comparative Estimates**

Extending its forecast out to 2005, Forrester Research estimates that Canadian business-to-business e-commerce will grow to \$272 billion (US), up from \$149 billion in 2004. By comparison, eMarketer estimates that Canadian B2B e-commerce will reach \$182 billion by 2004, noting that during the first half of 2001, e-commerce adoption in Canada remains slow compared with its US trading partner.

**B2B eCommerce Revenues in Canada, 2000–2004 (in billions USD)**



Source: eMarketer, 2001

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**Comparative Estimates: B2B eCommerce in Canada, 2000–2004 (in billions)**

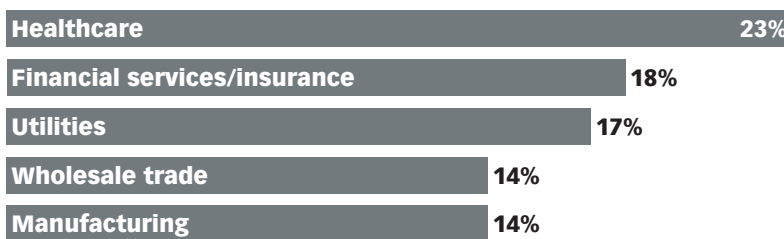
	2000	2001	2002	2003	2004
<b>eMarketer</b>	<b>\$18.16</b>	<b>\$36.15</b>	<b>\$64.34</b>	<b>\$110.02</b>	<b>\$182.64</b>
Forrester Research	\$16.00	\$35.40	\$63.40	\$102.20	\$149.80

Source: Forrester Research, eMarketer, 2000

Forrester goes on to predict that by 2005 as much as 71% of Canadian business-to-business e-commerce activity will take place in the provinces of Quebec and Ontario, with Alberta and British Columbia accounting for an additional 11% of online transaction activity. The strength of central-Canadian e-commerce as a proportion of total online business-to-business trade in Canada is a result of the heavy concentration of manufacturing in that region.

New figures from Statistics Canada find that 10% of Canadian companies used proprietary EDI networks to transact goods in 2000, compared with 18.2% of Canadian businesses that buy or sell goods via the internet. EDI use was highest among the healthcare and financial industries.

**Percent of Canadian Companies Using Proprietary EDI Networks, 2000**



Source: Statistics Canada, 2001

For many Canadian companies, there is no compelling reason to buy or sell online, largely because they believe that their goods are not readily sold via the internet. There is also a high level of resistance to change, as more than one-third of businesses said that they preferred to maintain their traditional way of doing business.



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## Reasons Why Canadian Companies Do Not Buy or Sell Online, 2000 (as a % of respondents)

### Goods do not lend themselves to internet transactions

56.4%

### Prefer to maintain current business model

35.6%

### Security concerns

13.9%

### Cost of development and maintenance is too high

11.8%

### Lack of skilled employees

10.3%

### Uncertain about benefits

9.9%

### Customers not ready

9.6%

### Concern about competitors analyzing company information

5.7%

### Suppliers not ready

5.6%

### Internet available to us is too slow

3.6%

Source: Statistics Canada, 2001

But despite this apparent reluctance to transact online, a full 63% of Canadian businesses state that they used the internet in some capacity as a means of conducting business. Larger companies are the most likely to conduct business online, with 43% of firms with more than 500 employees saying that they participate in e-commerce compared with 31% of medium-sized companies with 100 to 500 employees.

As for B2B exchange activity in Canada, few public exchanges have been established. The most ambitious public exchange in Canada, Procuron, was only opened in April of 2001 and is focused on the procurement of indirect business products such as office supplies and equipment. Backed by three of Canada's leading banks – including CIBC, ScotiaBank and le Mouvement des caisses Desjardins – Procuron runs on the technology of BCE Emergis and Ariba. The banks have pledged to drive the majority of their own procurement activity through Procuron. Bell Canada, Canada's largest corporation, has also agreed to channel its indirect purchases through Procuron, which should help the exchange meet its goal of \$1 billion CDN in transactions during its first year of operations.

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Other indirect procurement exchanges are crowding the Canadian market, however, with TD Marketsite already providing indirect procurement services to its small and mid-size business customers, while Microsoft's bCentral Canada is expected to open during the second half of 2001.

Because a significant portion of Canadian trade flows north-south across the US border rather than interprovincially within Canada, many Canadian firms will likely wind up participating in US-based public exchanges within their vertical industries. For example, Canadian natural gas companies are already trading their products on commodity-based energy exchanges such as Altra Market Place, while Canadian auto parts manufacturers will likely wind up participating in Covisint.

Privately run trading networks are already being developed at the largest Canadian businesses as well. Following the pattern of e-commerce leadership that is common in most countries outside of the US, Canada's leading domestic companies are driving the adoption of e-commerce within their own country.

## D. Europe

The development of B2B e-commerce has progressed more slowly in Europe than in the United States. In the wake of the recent market correction, however, that may be a blessing rather than a curse. Like the proverbial tortoise, Europe may ultimately win the B2B race through the development of more robust, time-tested business models with fewer disruptive failures of hastily hatched businesses.

In Europe, e-commerce is on the management agenda of large companies – a precursor to its adoption by businesses. According to Accenture, more than 80% of top-level managers in Europe are expecting to use e-commerce intensively by 2004, not only for marketing and sales but also for purchasing and procurement. Nearly two-thirds of top managers now see e-commerce as a key to gaining competitive advantage.

However, European businesses still lag behind US businesses in their application of e-commerce. In eMarketer's last *eGlobal Report*, we reported that executives in Europe were less enthusiastic about the internet and e-commerce than their counterparts in the US. While this difference is diminishing, according to recent survey research, a noticeable divide persists. In Europe, 68% of companies have someone at the board level responsible for e-business, compared with 91% of US firms.

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**Companies with Representative at Board Level Responsible for eBusiness, 2000**



Source: Financial Times, 2000

Small companies in Europe – especially those with fewer than 10 employees – are much more hesitant about e-commerce adoption than larger firms. They are especially concerned about the costs of implementing e-commerce solutions and less aware of the benefits of e-business.

In theory, Europe’s B2B sector could actually thrive if the US recession dampens economic growth in the region, to the extent that e-business solutions are sought after to cut procurement costs. Unlike the many consumer internet companies like Boo.com that spent venture capital on advertising and brand development, B2B firms have quietly invested in more mundane activities like developing electronic procurement systems that could save on daily expenses like spare parts, PCs and pencils. These tangible benefits are likely to be well-received in a recession.

Unfortunately, business executives have not been doing a good job measuring the cost savings resulting from e-business strategies. According to survey data from UK polling firm e-Mori, approximately two-thirds of business leaders in the UK (63%) and Germany (68%) believe that it is difficult to show the impact of e-business spending on their bottom line. The main benefit of B2B e-commerce perceived by German and UK business leaders is the development of a progressive image for their organizations. Not surprisingly, therefore, only half of those companies surveyed developed a business plan before launching e-business projects. Over the next couple of years, it will be increasingly important for executives to understand and track these gains.

**Perceived Benefits of eBusiness by UK and German Business Leaders, 2001**

	UK	Germany
eBusiness investments give company a more progressive image	71%	65%
eBusiness led to a measurable improvement in customer relations	59%	59%
eBusiness projects create a measurable reduction in overhead	30%	39%
Difficult to show the impact of e-business spending on bottom line	63%	68%

Source: e-Mori, 2001

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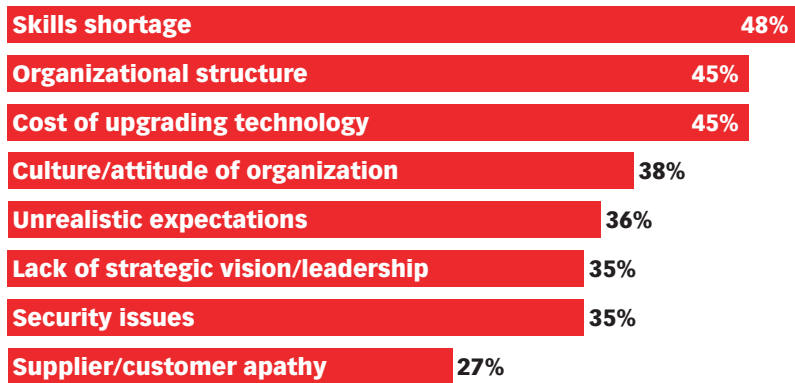
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Relatively few businesses report that they have achieved reductions in overhead or other significant cost decreases due to e-business solutions, yet softer, less tangible benefits appear to be central to their e-business goals, according to those surveyed by e-Mori. When asked to define the central goal of their company's e-business strategy, 66% of those interviewed in the UK and Germany reported strengthening customer relations, 33% in both countries reported improving integration of their business, and only 26% mentioned increasing revenues via online sales, while 20% mentioned reducing overhead costs.

**Perceived Barriers to the Successful Use of eBusiness by UK and German Business Leaders, 2001**

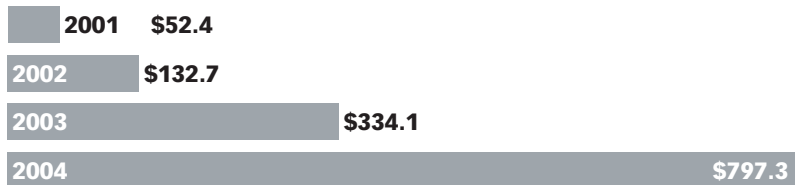


Source: e-Mori, 2001

**Comparative Estimates**

We project that the value of B2B transactions in Europe will grow exponentially over the next 4 years, reaching an estimated \$797 billion in 2004. If, however, the economy continues to slow, investment in e-business solutions will slow and this expected growth may be stymied.

**European B2B eCommerce Revenues, 2001-2004 (in billions)**



Source: eMarketer, 2001

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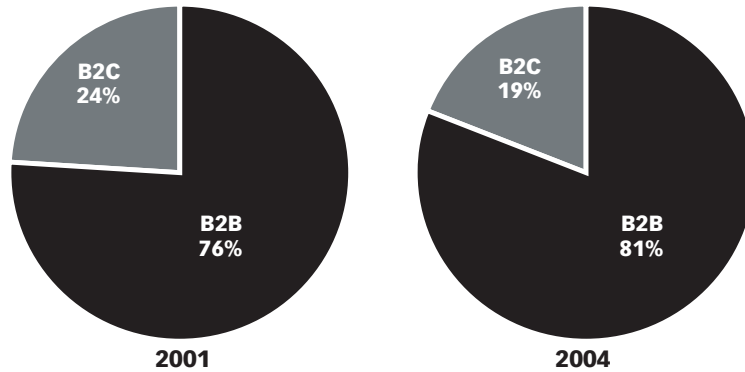
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By 2004, B2B will represent 81% of all e-commerce revenue in Europe. The B2B sector represents a far greater value proposition than online retailing, and while Nordic countries have embraced B2C shopping, their retail economies are relatively small compared with the entire region.

**European B2B and B2C eCommerce, 2001 & 2004**



Source: eMarketer, 2001

Other market research firms are significantly more sanguine about European e-business than eMarketer. International Data Corp. (IDC), for example, predicts that European B2B revenues will skyrocket from \$57.3 billion in 2000 to over \$1.4 trillion in 2005. Durlacher estimates the size of the B2B e-commerce market among the Euro-15 group of countries will grow from \$159 billion in 2001 to \$1.27 trillion in 2004. Similar figures are offered by Gartner, with European B2B e-commerce expected to reach \$1.64 trillion by 2005. A report released in May 2001 by Forrester rather optimistically predicts that online B2B trade in Europe will amount to 33% of total business-to-business sales.

**European B2B eCommerce Revenues, 2000 & 2005 (in billions)**



Source: International Data Corp. (IDC), 2001

**Euro-15 B2B eCommerce Revenues, 2001 & 2004 (in billions)**



Source: Durlacher, 2000

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## European B2B Internet Commerce Forecast Estimates, 2001 & 2005 (in billions)

<b>2001</b>	<b>\$177</b>
<b>2005</b>	<b>\$1,641</b>

Source: Gartner Inc., 2001

One result of the expansion of B2B e-commerce in Europe is that over the next several years, the United States will represent a rapidly dwindling share of worldwide e-commerce revenue. According to IDC's Internet Commerce Market Model, v. 7, by 2004, the United States will account for only 38% of worldwide e-commerce revenue, down from nearly half (47%) in 2000. While IDC expects the United States to represent the largest single market in 2004, Western Europe is closing in fast, with a projected 35% market share.

Despite Europe's growing share of online B2B e-commerce, US companies remain surprisingly provincial. According to an IDC survey of some 360 US companies, relatively few are taking advantage of European business opportunities. More than half (55%) reported having done nothing to court foreign business, and only 20% said they have websites in more than one language.

### Marketplaces and Exchanges

Internet exchanges (or "e-marketplaces") are one of the most important features of B2B e-business in Europe. According to IDC, most of the growth in B2B revenues will come from transaction fees, membership fees and fees for additional services, such as e-business consulting, driven by the development of e-marketplaces.

These exchanges have received unwarranted hype over the past couple of years. According to A.T. Kearney, most analyst forecasts for exchange volume in 2000 were revised downward 20% to 40% from previous estimates. However, approximately 200 internet marketplaces operate in Europe, according to Jupiter MMXI. And according to Gartner, only 5% of Europe's e-marketplaces in existence in 2001 – primarily the very large ones and some niche players – will survive by 2003.

To succeed, online marketplaces must achieve a high volume of transactions, the backing of industry leaders, and the integration of online offerings with offline services, such as local customer support. According to Jupiter, among the examples of e-marketplaces that are expected to last are a Belgian fish marketplace, a Swedish construction industry portal, an internet bandwidth supplier, and suppliers to the small-office sector. The European B2B playing field is likely to be dominated by a relatively few large marketplaces, undoubtedly drawing the attention of institutions (the European Commission, for example) that are concerned about maintaining competition in e-business.

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## Jupiter MMXI Top 10 European B2B Marketplaces, 2001

	Country/industry
Acequote	UK: supplies for small/medium enterprises
Band-X	UK: internet and telecoms bandwidth capacity
BuildOnline	UK: construction
eumediX	Netherlands: medical supplies
eu-supply.com	Sweden: construction
Goodex	Germany: industrial equipment and supplies
IngredientsNet.com	Ireland: food ingredients
Mondus	UK: supplies for small/medium enterprises
PEFA.com	Belgium: fish
Phonetrade	Sweden: mobile phones

Source: Jupiter MMXI, 2001

Even e-marketplaces will face obstacles in the next few years. Generally, much of the investment available just a year ago has dried up. And as the closure of Work24, a small-business portal set up by ScottishPower and Royal Bank of Scotland demonstrated, B2B models can be quite fragile. Despite spending some £30 million over 8 months, the firm attracted only 10,000 registrations, far below the projected 150,000, with few registrants actually conducting business on the site.

Moreover, European companies, not unlike businesses in other parts of the world, have been cautious to venture into these internet marketplaces because of concerns about entering into business arrangements with unknown or unfamiliar trading partners who may be less reliable about delivery, service, or payments than firms established through traditional business contacts. This can be a particularly nettlesome problem for pan-European marketplaces with members from smaller economies that may be less familiar to larger firms. Some exchanges are implementing credit checks, binding contracts, and delivery-tracking services to overcome such fears, but even the most watertight contracts may not substitute for trust between businesses built over a long period.

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## Business Internet Connectivity

For many years, European firms lagged behind the US in their adoption of basic internet technology. However, an increasing number of European businesses are connected to the internet. According to Durlacher, 28% of all European companies have some internet connection, with more than two-thirds of large corporations (with more than 500 employees) connected to the internet.

Still, for the most part, the internet is used primarily as an information-gathering tool, and e-commerce activities are directed mainly at public relations for the sales and marketing departments, as the following figures from Andersen Consulting's survey indicate. Fewer companies use e-commerce for purchasing, where it can help them procure more efficiently, or in logistics, where enormous efficiencies can be gained.

### Business Divisions Using eCommerce in Selected European Countries and the US, 2000

	Sales and marketing	Purchasing	Logistics	mCommerce
Finland	83%	47%	33%	13%
France	70%	47%	23%	37%
Germany	75%	50%	38%	19%
Italy	65%	26%	35%	3%
Netherlands	93%	33%	30%	3%
Norway	59%	53%	31%	19%
Poland	84%	28%	28%	6%
Spain	57%	33%	27%	3%
Sweden	77%	57%	23%	13%
UK	74%	61%	45%	13%
US	80%	52%	34%	6%

Source: Andersen Consulting, 2000



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**Business Use of the Internet in Selected European Countries and the US, 2000**

Category	Germany	Spain	France	Italy	Nether-lands	Sweden	UK
Advertising	53%	38%	47%	50%	46%	51%	63%
Selling directly to other companies	28%	25%	31%	20%	23%	23%	36%
Selling directly to consumers	37%	18%	18%	18%	12%	26%	32%
Distant collaboration	45%	32%	47%	42%	36%	41%	53%
Providing after-sales service	39%	23%	20%	35%	26%	41%	38%
Managing orders and invoicing	16%	32%	20%	25%	20%	31%	26%
Answering public calls	8%	12%	7%	8%	6%	22%	29%
Communications/administration	22%	38%	20%	31%	18%	40%	31%
Managing financial accounts	32%	45%	18%	25%	18%	43%	15%
Recruiting	28%	8%	11%	12%	20%	20%	26%
Allowing telecommuting	24%	16%	26%	14%	22%	20%	26%
Researching market information	87%	76%	71%	85%	79%	77%	75%

Source: European Commission, Flash Eurobarometer, 2000

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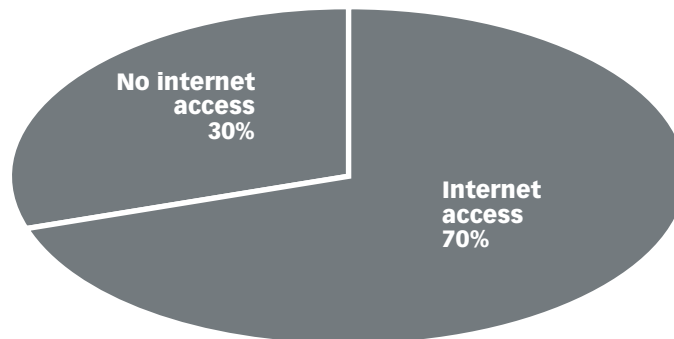
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Europe’s more than 19 million small and medium-size enterprises (SMEs) – companies with less than 250 employees – comprise roughly 99% of the total number of businesses in Europe, according to a recently released European Commission report. In the aggregate, these smaller ventures generate a substantial share of Europe’s GDP, jobs and business innovations. However, only 70% of these companies have any internet access, and an even smaller percentage actively use the internet as a business tool.

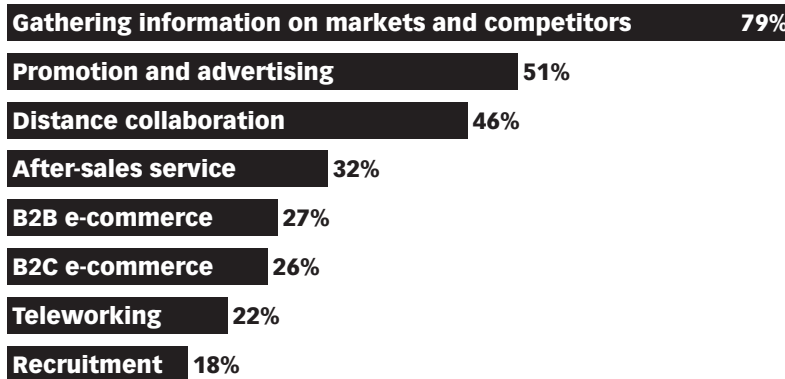
**Internet Access by European Small/Medium Businesses, 2000**



Source: Flash Eurobarometer 78, 2000

According to survey data from Gallup Europe for the European Union, fewer than one third of SMEs engage in either B2C or B2B e-commerce. They primarily use the web for research, such as gathering market data, or for simple e-mail.

**Uses of Internet by European Small/Medium Businesses, 2001**



Source: Flash Eurobarometer 78, 2000

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One effort to help SMEs grow through the use of information technologies and e-commerce was launched by the European Commission at the beginning of April. The project, dubbed “GoDigital,” will promote the use of e-commerce among small businesses through exchange programs, forums and other activities. However, even with the best-executed promotional effort, encouraging small-business owners to invest in new technologies will be a challenge, given the fall in dot-com stock prices and the prospect of slower economic growth in Europe.

## eBusiness Automation

According to a survey commissioned by Izodia, manufacturers appear to have adopted B2B e-commerce at a higher rate than any other economic sector. The Izodia survey found that 66% of all manufacturing companies had implemented or were in the process of deploying B2B initiatives, putting manufacturing ahead of the finance and retail sectors. The survey also found that while manufacturing companies were quickest to adopt B2B e-commerce, they require much faster timetables for obtaining a return on their initial investments. Of those surveyed, nearly half (47%) of manufacturers expected a return on investment within a year. Overall, 83% of respondents across all sectors expected a return on investment within 2 years of deploying an e-commerce initiative.

Not only does the manufacturing sector appear to be ahead in terms of its adoption of e-commerce, but the firms surveyed by Izodia appear to understand how collaboration across the entire supply chain and more efficient internet-enabled production techniques can help to drive down costs and increase operational and financial efficiencies.

Research from Vanson Bourne suggests that manufacturing companies in the United States and Germany lead the pack in terms of B2B adoption, well ahead of the United Kingdom. Although manufacturing companies in the United Kingdom are behind in adopting B2B solutions, the survey suggests that these companies have a greater desire to use e-business technology to automate processes up and down the supply chain than firms in other countries that tend to focus on sales and customer relations. More than 83% of UK manufacturers intend to automate both procurement and supply functions, compared with 61% in the United States and Germany.

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## E. Asia

The internet is changing the way Asian manufacturers trade with the rest of the world. It will shorten supply chains, allow small and mid-sized manufacturers to find new buyers and boost productivity. Perhaps more than in any other region, the internet will threaten the hegemony of conglomerates and open up markets previously closed to most suppliers.

### Comparative Estimates

Given Asia's advanced manufacturing sector, eMarketer expects B2B e-commerce to generate the bulk of the region's online revenues for the foreseeable future. B2B e-commerce will account for 89% of online commerce revenues in Asia by 2001. Its share of the overall e-commerce market will continue to stay about 89% by year-end 2004, as online exchanges mature and more businesses move to online procurement.

### B2B eCommerce Revenues in Asia, 2000–2004 (in billions and as % of worldwide revenues)

2000	\$36.2 (16.0%)
2001	\$68.6 (15.3%)
2002	\$120.3 (14.3%)
2003	\$199.3 (12.9%)
2004	\$300.6 (10.8%)

Source: eMarketer, 2001

Estimates from other leading research firms, meanwhile, put eMarketer's numbers at the lower end of the scale.

International Data Corp. (IDC), for instance, predicts that Asia's B2B sector will grow to more than \$516 billion by 2005. IDC suggests that Asia Pacific should continue to experience massive build-out over the next several years. Asian economies with strong manufacturing and export-oriented mentalities will lead the region's B2B acceleration. Large corporations will lay the groundwork, followed by small and medium-sized businesses. Excluding Japan, IDC cites China and South Korea as attractive B2B marketplaces, surpassing even Australia in terms of scalability.

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**B2B eCommerce Revenues in Asia, 2000,2002 & 2005  
(in billions)**

<b>2000</b>	<b>\$12.8</b>
<b>2002</b>	<b>\$61.0</b>
<b>2005</b>	<b>\$516.0</b>

Source: International Data Corp., (IDC), 2001

Comparative estimates vary widely, but all researchers forecast strong growth for Asia’s B2B segment.

**Comparative Estimates: B2B eCommerce Revenues in Asia, 2000–2004 (in billions), 2000-2004**

	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
<b>eMarketer</b>	<b>\$36.2</b>	<b>\$68.6</b>	<b>\$120.3</b>	<b>\$199.3</b>	<b>\$300.6</b>
Computer Economics	\$758.8	\$1,134.9	\$1,423.6	\$2,095.1	–
Forrester Research	\$49.9	\$108.9	\$266.3	\$672.8	\$1,532.7
Goldman Sachs	\$8.0	\$44.3	\$119.7	\$242.4	\$1,047.2

Source: eMarketer, 2001; various, as noted

**eMarketplaces and Exchanges**

In economies dominated by manufacturing and large conglomerates with thousands of suppliers, online marketplaces and exchanges could produce notable efficiencies. However, progress has been relatively slow in Asia.

Asia’s relatively slow adoption of electronic marketplaces may in fact be directly linked to the power of vast conglomerates such as the keiretsu of Japan or the chaebol of South Korea. In Japan and in Korea, conglomerates have nurtured traditional cozy and opaque business relations that stifle the competition. Open trading communities on the internet have been seen as a partial threat to their continued dominance.

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However, two trends are helping foster a climate that will ease the introduction of online marketplaces in Asia. One is pressure from foreign (typically US) companies such as Wal-Mart, which are insisting that suppliers deal with them over the internet. The other is government initiatives, such as the one spearheaded by the South Korean government. All government procurement in South Korea will be on the internet by 2002. Similar initiatives are underway in Thailand and other countries.

**Business Internet Connectivity**

Although Asian businesses are gradually coming online, few have taken the leap from passive usage to active involvement in e-commerce. According to a report from The Gartner Group, for instance, Australia and New Zealand were the only two countries to have more than 50% of their companies prepared to conduct business transactions online.

**Businesses Prepared to Implement B2B eCommerce System, by Country\* in Asia, by Year-End 2000**

New Zealand	> 50%
Australia	> 50%
Singapore	45%
China	30%
Indonesia	30%
Hong Kong	25%
Korea	< 20%
Thailand	< 20%
India	< 20%
Taiwan	< 20%
Malaysia	< 20%

*Note: \*Japan not included in study.  
Source: Gartner Group, 1999*

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## F. Latin America

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The high level of fragmentation in the supply chain in Latin America means that tremendous opportunities exist in the B2B segment of the e-commerce market. For that reason, eMarketer expects B2B e-commerce revenues to grow rapidly in the next few years, and gain an increasing share of overall e-commerce revenues in the region. Although the process of bringing procurement, operational and transaction activities online will initially be burdensome, particularly for small and medium-sized enterprises (SMEs), the savings from lower purchasing prices, transaction costs and inventory levels and the prospect of using the internet to sell to a broader audience could dramatically increase overall operating margins for companies of all sizes.

An additional factor is the vast potential of business-to-government (B2G) e-commerce in the region. The state is a large force in Latin America and, according to the World Bank, government expenditures accounted for a significant percentage of GDP in most countries in 1999, with Brazil leading the way at 16%. By 2004, the Brazilian government expects to bring all of its procurement online, not only to cut costs but also as part of an effort to inject greater transparency in public expenditures. Chile and Mexico have also allocated funds and technology for e-government initiatives, and other countries in the region are sure to follow suit.

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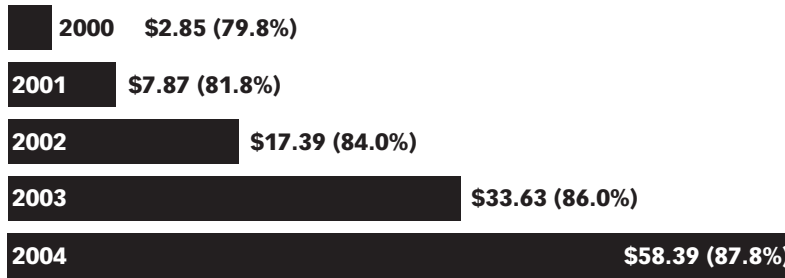
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## Comparative Estimates

B2B e-commerce will account for 82% – the overwhelming majority – of online commerce revenues in Latin America in 2001. Its share will increase to 88% by year-end 2004, as marketplaces and exchanges mature, and as more businesses and governments move to online procurement.

### B2B eCommerce in Latin America, 2000-2004 (in billions and as a % of total Latin American e-commerce)



Source: eMarketer, 2001

With its large and relatively automated manufacturing sector, which has been the object of billions of dollars of foreign direct investment in recent years, Brazil dominates B2B revenues in Latin America, and will continue to do so through the middle of the decade. All countries in the region will show impressive growth in B2B e-commerce transactions, although only Mexico will see a significant gain in its share of the region's overall revenues.

### B2B eCommerce in Latin America, 2000–2004 (in billions)

Country	2000	2001	2002	2003	2004
Argentina	\$0.27	\$0.75	\$1.98	\$3.48	\$5.92
Brazil	\$1.95	\$5.30	\$10.48	\$20.62	\$34.72
Mexico	\$0.44	\$1.26	\$3.52	\$6.47	\$11.84
Rest of Region	\$0.19	\$0.55	\$1.41	\$3.06	\$5.92
<b>Total</b>	<b>\$2.85</b>	<b>\$7.87</b>	<b>\$17.39</b>	<b>\$33.63</b>	<b>\$58.39</b>

Note: Figures may not add up precisely due to rounding

Source: eMarketer, 2001

Forrester Research's projections for B2B e-commerce revenues in Latin America remain the most optimistic. However, the normally conservative Pyramid Research predicts that transactions will be worth more than \$100 billion by 2005. This well exceeds projections by The Yankee Group, which segments B2B transactions into three categories: e-marketplaces, electronic data interchange (EDI) made through private value-added networks, and direct corporate-to-corporate sales.



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The interesting fact about Forrester’s projections is that, by 2002, the firm forecasts higher total B2B e-commerce revenues for Mexico than for all of the rest of Latin America, including Brazil. This prediction runs contrary to nearly all other forecasts, but can perhaps be attributed to Mexico’s proximity to the US and the degree to which its assembly operations are closely linked to global supply chains. In addition, Forrester sees hypergrowth occurring in Mexico in 2003, one year before Brazil, and several years prior to the rest of Latin America.

**Comparative Estimates: B2B eCommerce in Latin America, 2001-2005 (in billions)**

	2001	2002	2003	2004	2005
eMarketer	\$7.87	\$17.39	\$33.63	\$58.39	–
Forrester Research	\$12.40	\$27.50	\$68.77	\$175.43	–
Goldman Sachs	\$3.50	\$14.20	\$31.80	\$61.10	–
Pyramid Research	\$1.12	–	–	–	\$107.32
Yankee Group	\$10.90	\$17.60	\$28.50	\$44.30	\$63.80

*Note: Goldman Sachs figures do not include Mexico  
Source: eMarketer, Pyramid Research, 2001; Forrester Research, Goldman Sachs, 2000*

**Marketplaces and Exchanges**

Unlike in North America, Europe and Asia, internet exchanges (or “e-marketplaces”) have yet to become a staple of B2B e-commerce in Latin America. Although exchanges of all types are in an expansionary phase, Pyramid Research believes that private B2B networks, typically owned and operated by a single large firm and similar in design to Brazilian supermarket chain Pão de Açúcar’s proprietary exchange, Pd@Net, will account for the majority of transactions and revenues in the region.

A Yankee Group study, released in September 2000, listed five factors that are essential for e-marketplaces in Latin American to succeed:

- Local market connections
- Appropriate brick-and-mortar partnerships
- Latin American industry knowledge and expertise
- Revenue generation
- Real transaction capabilities

However, the Yankee Group cautions that the relative lack of intra-regional economic integration (with the exception of the Mercosur common market and, to a lesser extent, the Andean Pact) and the corresponding differences in customs and tariff policies will continue to challenge cross-border business-to-business transactions. *InformationWeek* Research’s Global IT Strategies 2001 study indicates that the Latin American businesses surveyed earn 22% of their revenues from domestic e-business transactions, while only 7% from transactions abroad.

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Among the examples of e-marketplaces that currently fulfill some or all of The Yankee Group criteria and which may survive the startup phase are:

**Latin American eMarketplaces, 2001**

Agronegócios-e	Agribusiness (Brazil)
Latinexus	Indirect goods (regional)
MegaAgro	Agribusiness (Argentina)
Mercado Eletrônico	Electronic marketplace (Brazil)
Mercador.com	Food and beverage (Brazil)
Net 2000 (Volkswagen)	Automotive (Argentina and Brazil)
PetroLatin	Petroleum (Venezuela)
Pd@Net	Retail (Brazil)
Transora	Consumer goods/ food and beverage (regional)

Source: eMarketer, 2001

Ultimately, however, the likelihood is that the Latin American B2B playing field will be dominated by a relatively few large marketplaces that draw the attention and business of the region’s leading firms. As with businesses in other parts of the world, Latin American firms may have legitimate concerns about entering into business arrangements with unknown or unfamiliar trading partners who may be less reliable about delivery, service, or payments than firms established through traditional business contacts, particularly when evaluating whether or not to join pan-Latin American marketplaces.

**eBusiness Automation**

An IDC survey of 161 leading e-businesses in Latin America, with a sample split between dot-com pure plays and brick-and-mortar companies, found that 70% use a web hosting service and 53% outsource website development, particularly design work and the implementation of online transaction capabilities. In terms of website construction, pure plays paid out an average of \$894,448 versus \$481,796. IDC observed that brick-and-mortar firms were able to reduce their outlay by exploiting their existing IT infrastructures, an option most pure plays did not have.

A Yankee Group assessment of 22 Latin American “e-builders,” the consultancies and systems integrators responsible for web development and e-commerce solutions, found that large corporations in the region spend an average of \$1.2 million per project on e-business ventures. According to the study, financial services, telecommunications and manufacturing firms have been turning to e-builders with the greatest frequency, followed by governments and companies in the healthcare and wholesale industries.

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Given the degree to which Latin American governments expect to do their procurement and dispense services over the next few years, The Yankee Group's prediction that online government services will account for approximately 16% of e-builder revenue by 2003 is unsurprising. In terms of demand for solutions and services, requests from Latin American firms and governments have focused on storefronts, purchasing software, hosting services and multilanguage management tools.

IDC expects the application outsourcing market to make significant gains in the next 3 to 4 years, reaching \$418 million in revenues by 2004. Microsoft, for example, has been busy trying to tailor its ".Net" enterprise software to the economic and infrastructure constraints present in Latin America, in particular, the region's relative lack of broadband connections. IDC likewise pointed to bandwidth constraints as the leading impediment to successful, widespread ASP deployment.

Latin American businesses are moving more quickly to implement Customer Relationship Management (CRM) solutions, particularly in Argentina, Brazil and Mexico, the region's three largest markets. According to IDC, 10% of large companies surveyed already have a CRM solution in place and an additional 10% are in the process of implementing such a solution. The survey found that Latin American companies typically approach traditional Enterprise Resource Planning (ERP) software vendors for CRM software, and also use leading system vendors for consulting and implementation services. In 2000, firms dedicated the largest portion of their CRM budgets to software. Overall, IDC expects the CRM services market to grow to \$6.3 billion by 2004.

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Business-to-business e-commerce arrived in 2000 with a great deal of hype and overblown expectations. So when the ambitious promises of dot-coms, consortia-led exchanges and technology vendors didn't materialize as rapidly as initially promised, many observers quickly turned against anything that had been originally tagged with the B2B label.

At the middle of 2001, the pendulum has now swung forward and back, and it appears that although many of the excesses of the early days of e-commerce are continuing to be unwound, the majority of companies are continuing to roll up their sleeves by preparing for the long process of automating the external relationships between businesses.

Bearing this long-term perspective in mind, the US-based economic downturn during the first half of 2001 is only a small bump in a 5- to 10-year road. As much of the survey data from the past 6 months show, most companies are steadily moving forward with their e-business strategies as they continue to plan and implement technology that will increase their productivity while at the same time tying them closer to their trading partners.

## A. Managing eBusiness Strategies

In late 2000, Computer Sciences Corporation (CSC) found in its annual survey of more than 800 IT executives that well over half of the companies it examined had written information systems strategies in place. While it has been common for companies to view IT strategies as a significant part of their overall competitive advantage, a renewed focus on information technology strategy has been brought about by the current interest in e-business.

### Companies with Written Information Systems Strategies, by Region, 2000

North America	59.8%
Australia/New Zealand	56.8%
Europe	53.6%
Asia	51.7%

Source: Computer Sciences Corporation, 2001

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For most companies, business-to-business e-commerce represents the next generation of business automation. Following the enterprise-wide unification of business information systems through the ERP implementations of the 1990s, e-business is the extension of the internally automated enterprise to its trading partners. Much of the early focus of B2B has been on the purchasing side of e-commerce; however, the extended enterprise connects not only to buy-side trading partners, but to its sales-side channel partners, distributors and even customers as well.

Collectively, this extended enterprise system is referred to as the value chain. Facilitated by the internet, real-time business information will eventually be able to flow from the front lines of customer service, through to the enterprise, and then on up the supply chain. This entire set of technologies, from private extranets and public exchanges, along with supply chain management (SCM) and customer relationship management (CRM) systems, falls under the umbrella of e-business.

By the end of 2000, CSC found that more than two-thirds of European companies, and almost 60% of their counterparts in the United States had developed some kind of e-business strategy.

### Companies with eBusiness Systems Strategies, by Region, 2000

Europe	67.1%
North America	59.9%
Asia	45.8%

Source: Computer Sciences Corporation, 2001

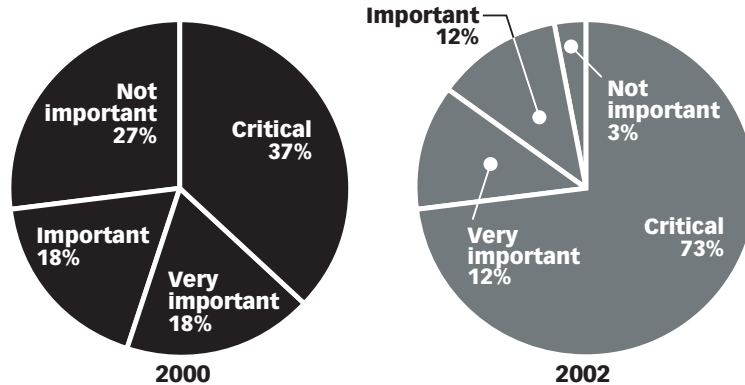
Underscoring the perceived importance of e-business strategies, Forrester Research found in an April 2001 survey of senior American executives that 85% of respondents said that working with their firms' business partners was a top priority of their internet efforts. A further 38% said that such efforts would make or break their business over the long term.

Among the executives surveyed, 59% said that they were either maintaining or raising their internet efforts in 2001.

*Full findings from the CSC study are available in the eMarketer eStat Database*

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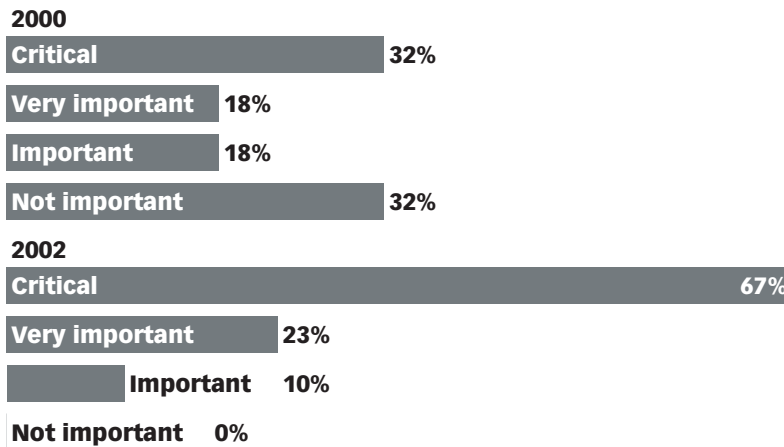
### Degree of Importance Attributed to B2B eCommerce among US Buyers, 2000 & 2002



Source: Forrester Research, 2000

While slightly more buyers than sellers attributed a high degree of importance to business-to-business e-commerce in 2000, 90% of suppliers said that it would become very important to their company by 2002.

### Degree of Importance Attributed to B2B eCommerce among US Sellers, 2000 & 2002



Source: Forrester Research, 2000

In tracing their short history, many corporate e-business units have roots in customer-facing departments within their companies. *Interactive Week* magazine found that in early 2001, more than two-thirds of survey respondents who headed up e-business units were from non-IT backgrounds. The magazine also found that 40% of these e-business managers were primarily responsible for running a company's customer-facing website, thereby explaining the significant portion of marketing and sales leadership within e-business units.



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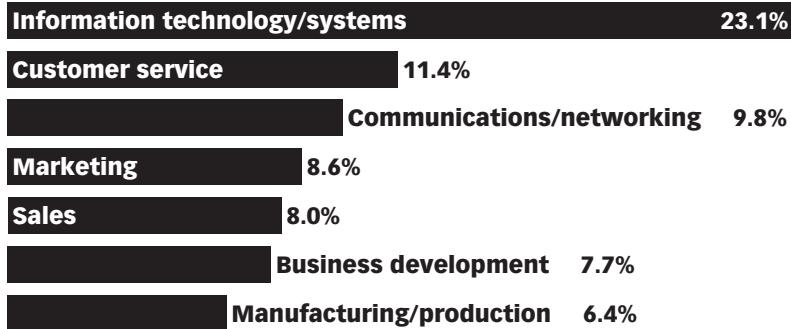
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**Background of eBusiness Managers, 2001**



Source: *Interactive Week, 2001*

However, because of the growing importance assigned to many companies' e-business strategies, *Interactive Week* found that in the first half of 2001, several e-business initiatives were being placed under the control of either a CIO or CTO. Developing an enterprise-wide vision for most companies' e-business strategies has become crucial, as businesses expect to be able to have an integrated view of all of their e-commerce activities in the future.

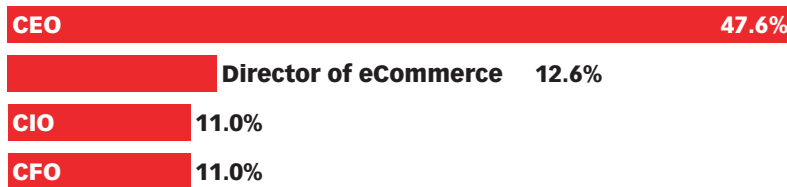
Despite the pursuit of an integrated technology strategy, many companies have maintained separate e-business units that remain outside of their IT departments. The two groups are naturally required to work together, with e-business managers expected to demonstrate ROI plans for any of their e-business investments, just as any other department would be.

Almost 60% of e-business managers from the *Interactive Week* survey were over the age of 40, indicating that the need for experienced individuals with significant hands-on business experience is a critical qualification for leaders of most companies' e-business initiatives. eBusiness leaders clearly need to have a strong grasp of their companies' fundamental business, along with an understanding of the technologies that will help them to accomplish their goals.

According to a late-2000 survey by *IndustryWeek*, 43.7% of US manufacturers had a formal e-business strategy in place, with 11% saying that their strategies had so far been highly effective. A further 77.6% of respondents said that their e-business strategies were somewhat effective. As is the case within several industries, e-business leadership has been trending toward the executive level of most organizations with nearly half of manufacturing firms placing responsibility for the overall e-business strategy with the CEO.

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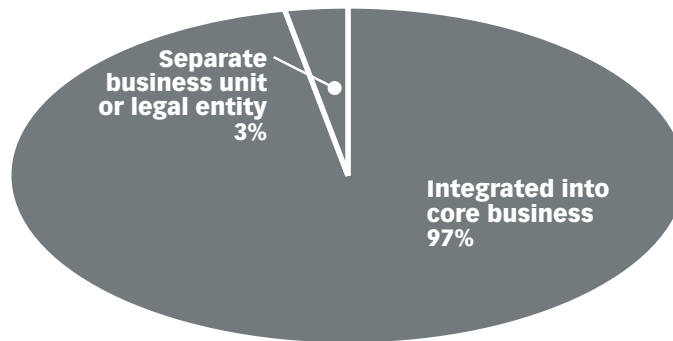
### eBusiness Strategy Leaders within US Manufacturing Companies, 2000



Source: Industry Week, 2001

The majority of manufacturers have decided to keep their e-business initiatives close within their core business structure as well, with only 3% forming separate e-commerce business units, according to a survey by the National Association of Manufacturers and Ernst & Young.

### US Manufacturers' Organizational Structure of eCommerce Initiatives, 2000



Source: National Association of Manufacturers, Ernst & Young, 2001

Almost all manufacturers financed e-business initiatives out of operating cash flow, which is consistent with the decision to tie them closely to most firms' core business operations.

### Sources of Funding for US Manufacturers' eCommerce Initiatives, 2000

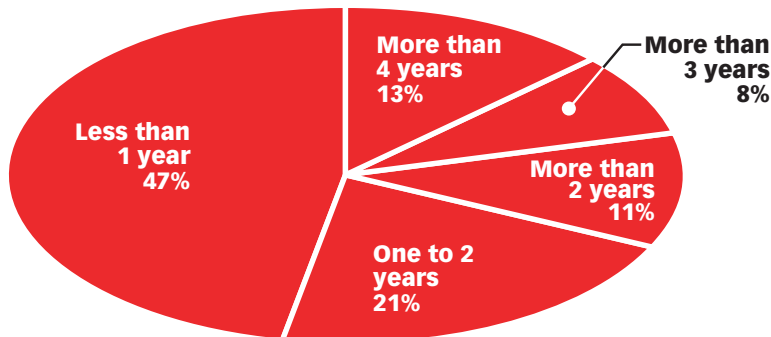


Note: Multiple responses accepted  
 Source: National Association of Manufacturers, Ernst & Young, 2001

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In an October 2000 survey of 107 companies that were in the process of implementing business-to-business solutions, CommunityB2B.com found that the greatest portion of respondents had been participating in online e-commerce for less than one year, with 68% of respondents trading online for less than 2 years. The data confirm that there is a move out of the early-adoption phase of e-commerce, as a majority of businesses have now begun to engage in some kind of internet trade by the end of 2000.

### Number of Years Companies Have Been Conducting B2B eCommerce, 2000



Source: CommunityB2B.com, 2001

As for the priorities that businesses are setting for their e-commerce strategies, improved customer service and communications are listed as top goals in many e-business plans. While back-end issues such as supply chain management and cost savings were also leading considerations for firms in this survey, a clear majority of companies placed improved customer service as the most crucial part of their e-business strategies.

### Primary Goal for Implementing a B2B Solution, 2000



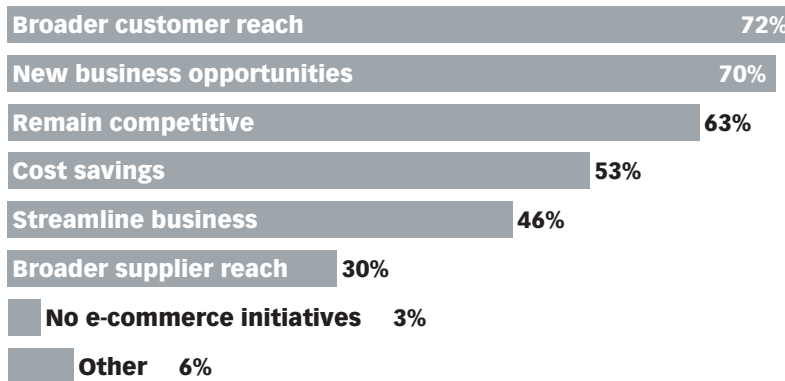
Source: CommunityB2B.com, 2001

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A driving factor behind the focus on customer service is the fact that companies can earn more profits by up-selling and growing their relationships with established clients rather than through the pursuit and acquisition of new customers. Online customer service has also become a key element within e-business strategies because it offers a way to forge closer ties with important customers, while at the same time permitting businesses to differentiate themselves as they resist the commoditization that they fear will be brought about by online trade.

Manufacturers are no different than other companies in their prioritization of customer-facing issues within their e-business strategies. However, the National Association of Manufacturers and Ernst & Young found that metals and automotive manufacturers were most interested in finding new business partners, while technology industry respondents were focusing on expanding their relationships with established customers.

### US Manufacturers' Objectives for Their eCommerce Initiatives, 2000

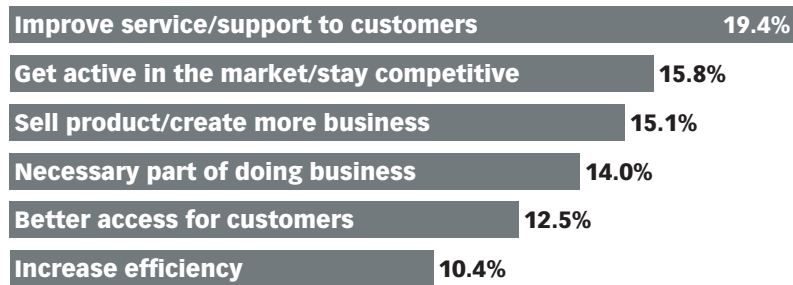


Source: National Association of Manufacturers, Ernst & Young, 2001

VARBusiness conducted a survey of information systems and networking managers in early 2001 to determine the current status of e-business strategies. Of the 400 professionals surveyed, 85.5% said that their company had an e-business strategy in place, with the remainder of respondents planning to implement one within the year. As with other e-business surveys, customer service was again the top priority for most companies.

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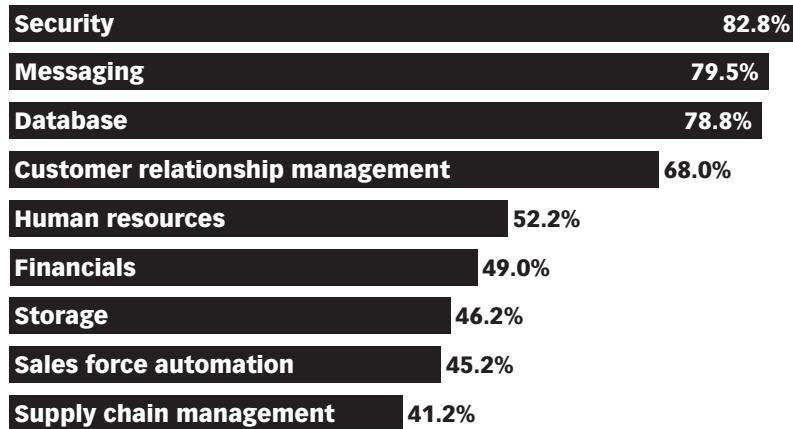
### Top eBusiness Priorities among US Information Systems and Networking Managers, 2001



Source: VARBusiness, 2001

When the time comes to implement e-business technology, security is also a priority for most companies. Several surveys have found that security issues are not only one of the leading concerns for businesses that want to bring their commercial activity onto the web, but security technology is typically the first to be implemented before business go forward with any extensive online commercial activity. Other e-business priorities for companies in 2001 include messaging and database implementations.

### Top eBusiness Solutions Implemented or Scheduled for Implementation among US Businesses, 2001



Source: VARBusiness, 2001

In a separate survey, Benchmark Research also found that the number one concern among manufacturers when it comes to implementing an e-business strategy is security. While 46% of respondents to the Benchmark study said that security was their first concern, 42% cited a lack of internal resources as a major impediment to proceeding with their implementations.

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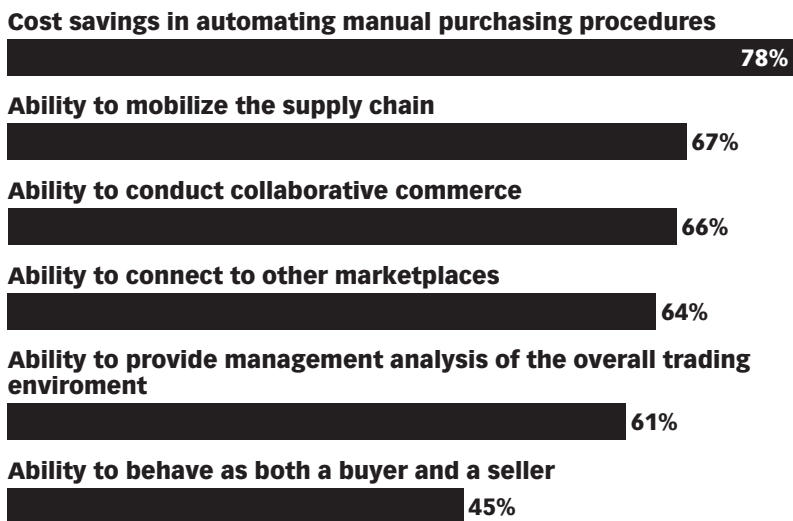
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At the beginning of 2001, Izodia conducted an international study that measured the current state of B2B e-commerce implementations around the world. Businesses in the US, UK, Germany, Italy, Sweden, Holland and South Africa were surveyed in January and February of 2001, and it was found that cost savings through automation was the primary driver for companies that were adopting B2B solutions. Organization of the supply chain and collaborative commerce were also leading B2B solutions that were being adopted. It should be noted that this survey primarily focused on supply-side e-commerce issues, with minimal coverage of customer-facing technologies.

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### Main Interests of Businesses in Adopting B2B eCommerce Solutions, February 2001

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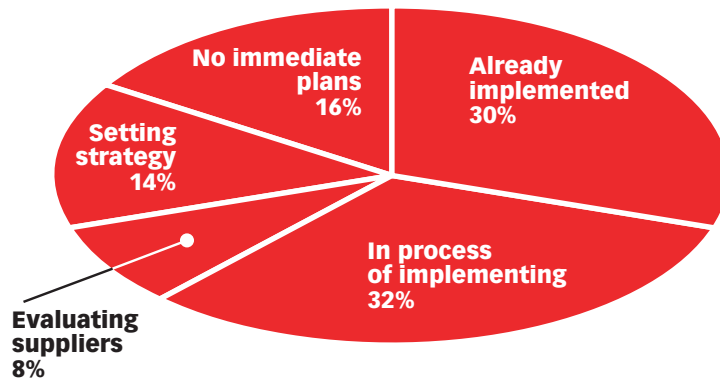
Source: Izodia, 2001

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Almost one-third of the respondents to the Izodia study said that they had already implemented some kind of business-to-business e-commerce solution, with a further one-third stating that they were in the process of an implementation. Once again, results from this survey confirm that e-commerce adoption is making significant headway throughout the wider business community, and that internet commerce in 2001 is no longer confined to the early adopters.

### Stage of Adoption of B2B eCommerce Solutions, February 2001



Source: Izodia, 2001

But as more companies move forward with e-commerce programs, several are also running into major difficulties. For many businesses that are implementing e-commerce technologies, back-end integration issues appear to be the largest hurdle. The CommunityB2B.com survey found that this was especially true for those companies that must integrate their external e-commerce systems with proprietary back-ends, which accounted for 27% of respondents.

On the external side of the integration issue, companies must also plan and agree on standards for exchanging data with their trading partners. In most cases this must be worked out on a relationship-by-relationship basis. At the same time, many companies are also participating in the development of industry standards. However, industry-wide standardization is often a much slower-moving process.

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## Top Challenges for Implementers of B2B Technology, 2000

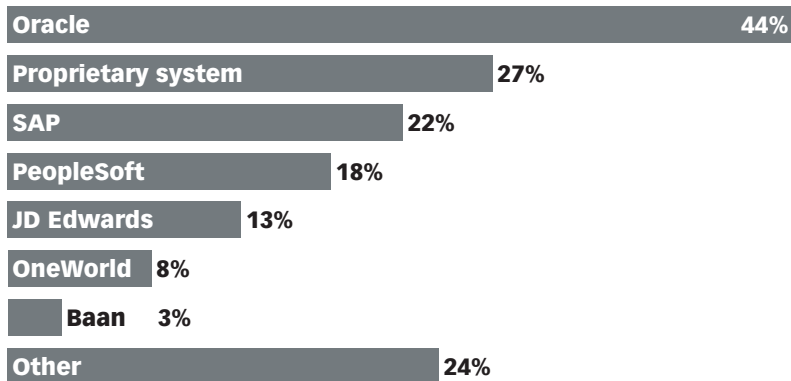


Source: *CommunityB2B.com, 2001*



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### Primary Back-End Systems That Companies Plan to Integrate with Their B2B Solutions, 2000

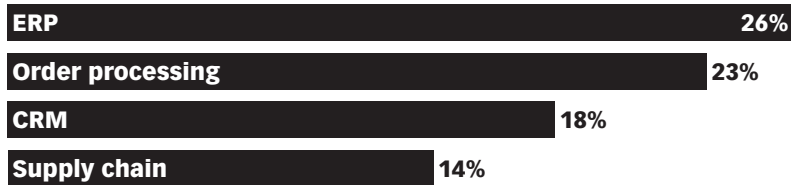


Source: CommunityB2B.com, 2001

In a separate survey of manufacturers, 28.6% cited integration between e-business systems and their manufacturing operations as their largest e-commerce headache, followed by integration concerns with other back-office systems. At the center of this problem is the real-time information flows from internet-based transactions that manufacturers need to link to the slower, batch-processed legacy systems that they continue to use internally.

Among the wider business population in the United States, IDC found that there is still a great deal of integration work ahead for the majority of companies. Just 26% of businesses had integrated their websites with their ERP systems, while there was also a substantial need for CRM and SCM integration work as well. Forrester Research estimates that medium to large firms have an average of seven legacy back-end applications that must be integrated to participate in business-to-business e-commerce.

### US Companies with Websites Fully Integrated with Enterprise Applications, 2001



Source: International Data Corp. (IDC), 2001

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Despite some of the concerns and complications associated with implementing e-business solutions, those technology leaders that have implemented collaborative systems are finding them to be successful. Not only are they achieving cost savings, e-business leaders are also increasing customer revenue through the sharing of information with their trading partners. Although security and trust issues continue to hold many companies back, those that are willing to take some risks through online collaboration are finding that their efforts are making a significant contribution to the improvement of their bottom line.

### US Companies Claiming Success via Online Collaboration, 2001



Source: InformationWeek, 2001

## B. IT and eBusiness Budgeting

Ever since the US economy began to show signs of weakness in the fourth quarter of 2000, business leaders and investors alike have been closely monitoring IT spending during the first half of 2001. Initial concern over slowing growth rates for IT budgets quickly turned into worry over IT budget cuts. For many technology vendors, there was a great deal of uncertainty about customer demand during the first quarter of 2001, but once final sales numbers came in, it became clear that corporate executives had tapped the brakes on technology spending.

As the second quarter progressed, IT spending remained depressed in the US, with most observers wondering how long the slowdown would last. Consensus appears to be growing around a recovery during the first half of 2002, with some holding out hope for an increase in spending during the second half of 2001.

Although the economy has taken much of the blame for this rapid slowdown in technology spending, eMarketer believes that there are a number of other contributing factors that have also caused businesses to temporarily cut back on their IT spending.

For one, the shift in e-business leadership to the executive level has caused several companies to pause in their technology spending. Following a year of sometimes-frantic technology buying, many businesses are now looking to move forward with an integrated e-business strategy that is better thought out. Executives are bringing themselves up to speed on e-business technology issues, as they want to avoid some of the errors in judgment made by many brick-and-mortar companies during the dot-com run-up.

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There has also been a perceptible collective pause among the wider business community, which has reduced some of the competitive urgency that was driving decision making during the last half of 2000. eBusiness spending in particular has been reigned in, with department heads expected to demonstrate a clear return on investment before being given a green light on further implementations. Businesses are also aware that the slowdown in technology spending, coupled with growing competitive pressure among technology vendors, has caused many software companies to heavily discount their products.

And finally, specific to the business-to-business e-commerce space, there is still a degree of uncertainty over the alternatives that companies are faced with when it comes to choosing which kind of online trading networks they should build. While private exchanges appear to be emerging as the preferred means of internet commerce, they only began to be widely considered during the closing months of 2000. Meanwhile, several of the largest multinational companies remain fully committed to building industry-led consortia exchanges, whose technology offerings are only now beginning to be rolled out for potential users' evaluation.

To the extent that these factors have played a greater role than economic considerations alone in technology-spending decisions, eMarketer believes that although IT spending will not return to the exuberant rates of growth from last year (businesses are taking an incremental approach to their e-business implementations) it is still quite possible that the fourth quarter of 2001 will see a recovery.

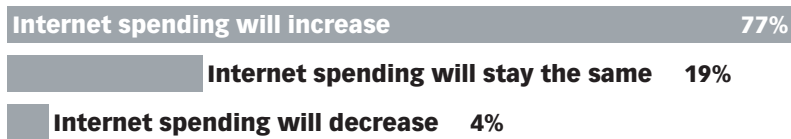
Tracing the sentiment behind IT spending, the Meta Group was one of the first research firms to announce that IT spending would be slowing in 2001. Following its late-2000 survey of 800 US businesses, the Meta Group predicted that IT budgets would grow by only 10% in 2001, compared with a 20% rate of growth in the prior year. This compares to a forecast of 5% growth by AMR Research, which found that IT budgets grew an average 15% in 1999 and 2000.

Contributing to the belief among technology vendors that they would not see a reduction in first-quarter sales, several surveys that came out during the first two months of 2001 were still indicating that most businesses expected their IT spending would continue to rise throughout the year, despite signs of an economic slowdown.

Among the 250 IT and e-business executives interviewed by *InternetWeek* at the beginning of this year, 77% said that they intended to increase their internet spending in 2001, with the average increase expected to be as high as 40%. During the previous year, only 1% of respondents said that they planned to decrease their internet spending, while 80% of respondents to the January 2001 survey said that signs of a slowing economy were not causing their companies to scale back on internet budgets at that time.

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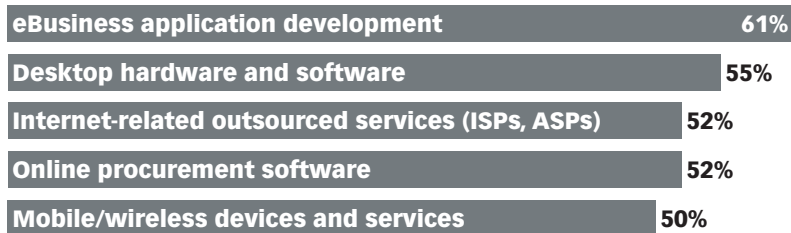
## eBusiness Executives' Planned Internet Spending for the Coming Year, January 2001



Source: *InternetWeek, 2001*

When asked which product or technology would most likely be cut in the event of an economic slowdown, a majority of executives included e-business applications development, desktop hardware and software, and outsourced internet services among their priorities.

## IT Budget Areas Most Likely to Be Cut by eBusiness Executives, January 2001



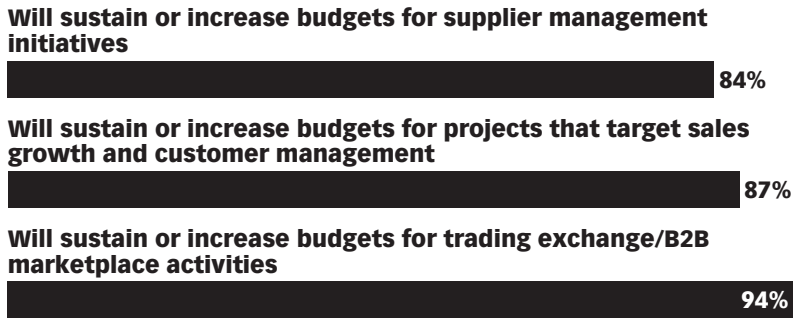
Source: *InternetWeek, 2001*

AMR Research found that the majority of the executives it surveyed planned to either maintain or increase spending for those technology projects that would help their companies' bottom line – either through better supply chain efficiencies or through increased sales thanks to improved customer service. Just 14% of survey respondents said that they had plans to cut e-business initiatives, while 23% said that they would actually increase spending on SCM and CRM initiatives during an economic downturn.

AMR Research did find, however, that 29% of respondents planned to cut technology spending on projects that did not have a direct impact on their businesses' bottom line. An example would be spending on personal computers.

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## eBusiness Executives' IT Spending Intentions, January 2001

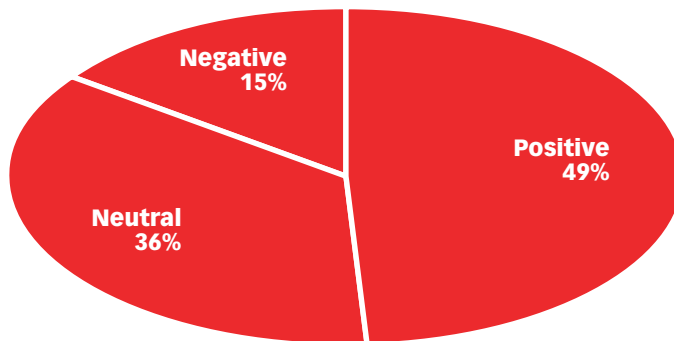


Source: AMR Research, 2001

AMR's results were echoed by the National Association of Manufacturers, which found that while 75% of manufacturers planned to increase their IT budgets by less than 5% in 2001, 72% planned to invest in supply chain solutions as a means of reducing costs. Another January survey by Deutsche Bank found that among the 45 American, European and Asian companies it surveyed, IT spending was expected to increase between 5% and 10% in 2001.

As economic sentiment soured in the United States, a quarterly study on technology spending priorities by *InformationWeek* found that by February 2001, just 49% of companies had a positive outlook for their IT spending in 2001, compared with 72% of companies with a positive outlook 3 months before. However, just 15% of the survey's 300 respondents stated that they had already cut their IT budgets in February. According to the study, average IT spending as a percentage of revenue had fallen to 7.7% from the 8.0% average for respondents during the previous quarter.

## US Companies' IT Spending Outlook, February 2001



Source: InformationWeek, 2001

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By the month of March, Merrill Lynch found in its survey of 70 American and European CIOs that early interest rate cuts were not spurring IT spending. Instead of the 9% growth in IT spending that it had originally forecast, Merrill Lynch revised its estimates downward, predicting a lower growth rate of only 5% to 6% for 2001. This reduction in IT spending was similar to a spring survey by Adams, Harkness & Hill, which found that IT budgets would grow at an average rate of only 7% in 2001, compared with an 11% growth rate during 2000.

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### Growth Rates for IT Budgets, 2000 & 2001

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Source: Adams, Harkness & Hill, 2001

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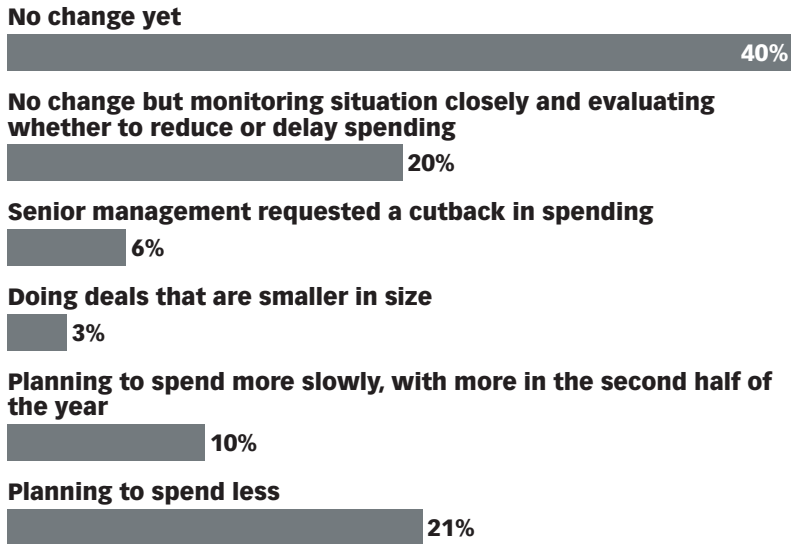
Another study by *InformationWeek* that was released in April of 2001 found that 61% of the 300 global companies that it surveyed said that their IT budgets for 2001 would be higher than their budgets in 2000. Among IT spending priorities, 52% of respondents said that customer service and support was their top concern, compared with just 36% of respondents who said that B2B exchanges were a priority.

Compared with the February *InformationWeek* study, the April survey was with a different sample group. The April survey was also conducted globally. By comparison, the 300 American companies from the February survey were less positive about their e-business outlook, while their counterparts in the April survey had a much more positive view.

Morgan Stanley's monthly survey of 250 CIOs found that since the beginning of the year, a growing number of companies were becoming increasingly concerned about the downturn in the US economy. Although 21% of respondents said that they were already planning to spend less on IT investments as a result of the slowdown, the majority of survey respondents indicated that they were only holding back on spending or had made no changes at all. These results indicate that there may be some pent-up demand within technology budgets from the first half of 2001 that could possibly be spent during the second half of this year.

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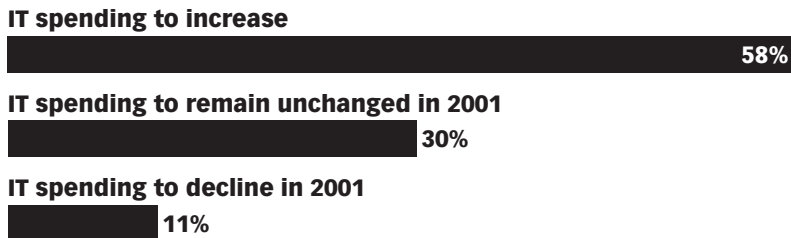
## Changes to CIO Budgeting Plans as a Result of the Slowing Economy, April 2001



Source: Morgan Stanley, 2001

This perception of a continued interest in spending on IT initiatives was supported by a separate survey of 98 CFOs, conducted by CFO.com. Once again, a strong majority of companies appear to be maintaining or increasing their budgets this year, despite the fact that most companies believe IT spending within the wider economy will not pick up until 2002.

## Technology Spending Plans for 2001-2002, April 2001



Source: CFO.com, 2001

## Expected Timing of Pickup in IT Spending, April 2001



Source: CFO.com, 2001

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As of May 2001, the US Commerce Department announced that during the first quarter, IT spending fell at an annualized rate of 6.6%. Shortly after this announcement, AMR Research predicted that considering historical trends in software markets, spending in this segment of the IT industry won't pick up again for another 12 to 18 months. The research firm expects that businesses will concentrate most of their efforts for the next several months on deploying and putting to use the software that they have already purchased, with vendors of easy-to-implement applications seeing the most sales until the market recovers.

And finally, in a survey of 257 American CEOs that was conducted by the Business Council in early May – perhaps the darkest days in terms of economic outlook – more than one-third of respondents said that they had reduced IT budgets as a result of the economic slowdown. Interestingly, more than 10% of respondents replied that they had actually increased their IT budgets.

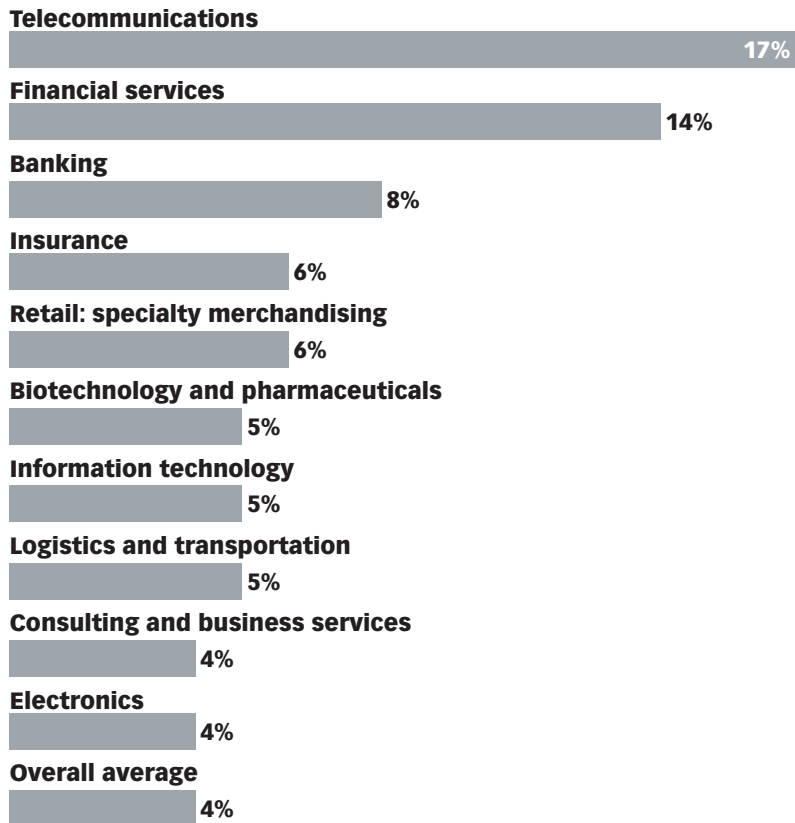
Turning to studies that consider how companies are managing their IT budgets, *InformationWeek* found in its annual survey of 500 technology leaders that, on average, these businesses spend about 4% of their gross revenues on IT.

As might be expected, the most information-intensive industries, such as telecommunications and financial services, allocate the largest portion of their gross revenues toward IT. Falling outside of the top 10, several industries spend just 2% of their budgets on IT, including automotive, chemicals, consumer goods manufacturers, and metals and natural resources.



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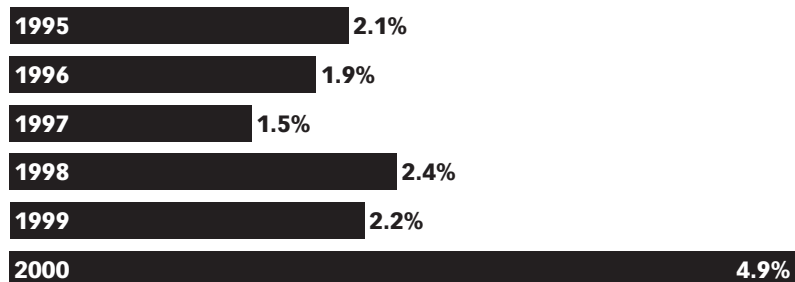
### IT Budget As a % of Projected Revenue, by Industry, 2000



Source: *InformationWeek*, 2000

By comparison, in an annual survey of more than 800 businesses from around the world, Computer Sciences Corporation finds that for the past 6 years, IT budgets have averaged around 2% of gross revenues, with the year 2000 standing out as an exception because of Y2K-bug preparations. Of the two surveys, the CSC study represents a more accurate picture of the general business population, on account of *InformationWeek's* focus on technology leaders.

### Information Systems Budgets, as a % of Company Revenue, 1995-2000



Source: *Computer Sciences Corporation*, 2001

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When it comes to gauging how much companies spend on internet initiatives as a percentage of their IT budgets, comparative estimates show e-business typically accounted for less than 10% of total IT spending in the year 2000. However, this proportion is projected to climb as sales of business-to-business solutions from procurement applications to SCM systems and private exchange platforms are widely expected to increase over the next several years.

**eBusiness Spending as a Portion of Total IT Spending, 2000 & 2001**



Source: Gartner Group, 2001

At the beginning of 2001 the Gartner Group was projecting that e-business spending would grow to 15.5% of total IT budgets this year, compared to 12.7% in 2000. By comparison, as a portion of its estimate for the entire worldwide market of \$1 trillion in IT spending, AMR Research believes that e-business spending accounts for no more than 10% of that total.

By 2005, Gartner projects that e-business will account for as much as 30% to 50% of total IT budgets. Comparative estimates by Cahners In-Stat project that internet-specific spending will grow from 15% of corporate IT budgets in 2000 to 26% in 2004. Meanwhile, IDC finds in a survey of global businesses that spending on web initiatives as a portion of IT budgets is expected to climb to 20% in 2001, up from 16% in 2000. In a separate study, IDC also points out that up to 80% of internet budgets are dedicated to business-to-business e-commerce initiatives.

**IT Budgets Estimated to Be Spent on Web Initiatives, 2000 & 2001**

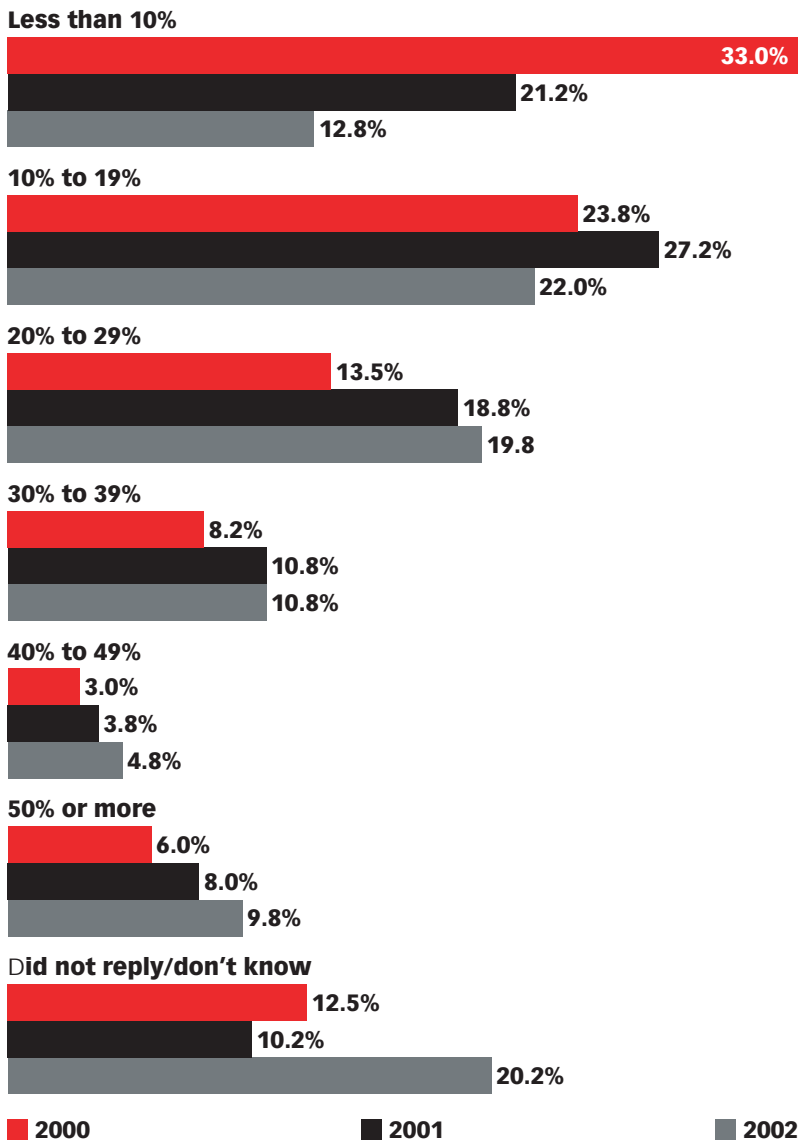


Source: International Data Corp. (IDC), 2001

A survey of 400 information systems and networking managers conducted by VARBusiness conducted in late 2000 found that one-third of companies had e-business budgets that were less than 10% of their total IT budgets last year. However, by 2002 most companies had plans to increase e-business spending to more than 10% of their IT budgets. A full 25% of respondents expected to be spending more than 30% of their IT budgets on e-business initiatives by 2003.

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## US Companies' IT Budgets Allocated toward eBusiness, 2000-2002



Source: VARBusiness, 2001

By contrast, a *Network World* survey of IT professionals at large enterprises found that respondents expected that their e-business budgets would decline in 2001, following a strong year in 2000. Average e-business spending is expected to drop from \$58 million in 2000 to just under \$53 million this year, but then is expected to experience a significant rebound in 2002 jumping to more than \$68 million per company.

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**Average eBusiness Spending per US Company, 2000-2002 (in millions)**

<b>2000</b>	<b>\$58.0</b>
<b>2001</b>	<b>\$52.9</b>
<b>2002</b>	<b>\$68.4</b>

Source: Network World, 2001

When it comes to watching how companies spend their e-business budgets, *InformationWeek* finds in a special survey of 150 IT managers that almost one-third (29%) of e-business spending went toward third party consultants in 2000. This finding is consistent with other studies, which have found that e-business projects typically cost 2 to 5 times the initial purchase price of the underlying technology once consulting work and ongoing maintenance are considered.

Spending on consulting, however, also happens to be the first area that is most likely to be cut in the event of an economic slowdown, according to Morgan Stanley. Not surprisingly, purchases of new personal computers and Windows 2000 upgrades for the desktop were also high on the list.

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## Budget Areas Most Likely to Be Cut by US CIOs, April 2001



Source: Morgan Stanley, 2001

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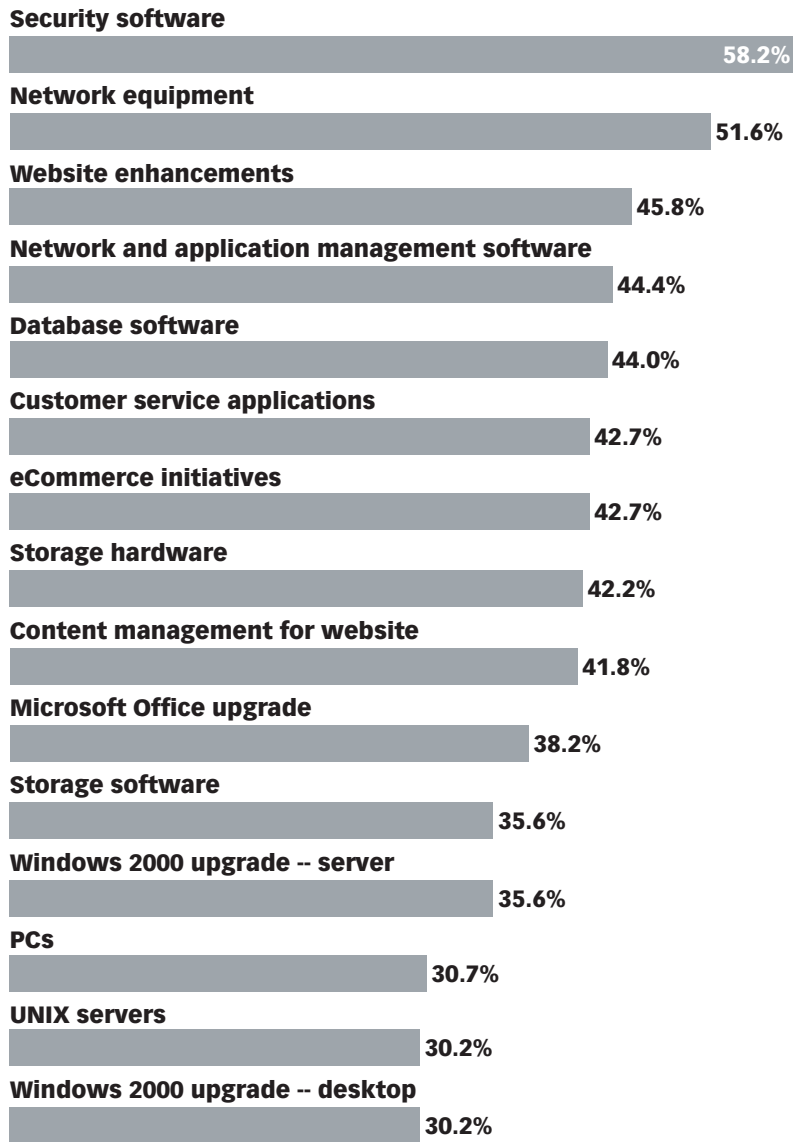
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What was surprising, however, was that procurement applications shot up the list of spending areas that were likely to be cut. This may have partly been a result of the negative press surrounding Ariba, whose troubled efforts to move away from its focus on procurement software and into the supply chain management space had possibly cast a negative view on procurement applications in general. Growing questions about the ability of procurement vendors to remain independent over the long term may have also led some companies to delay purchases, as they take time to evaluate the fuller offerings of SCM and ERP vendors.

Much of the data from the Morgan Stanley study confirms what other surveys have also found: supply chain management and customer relationship management projects are among the least likely to be cut, while those technology investments that do not contribute directly to a company's bottom line are expected to be pushed back until later. Security software and network equipment spending have remained strong throughout Morgan Stanley's monthly survey series, while customer-facing projects such as website development and CRM projects have also been at the top of most companies' list of spending priorities.

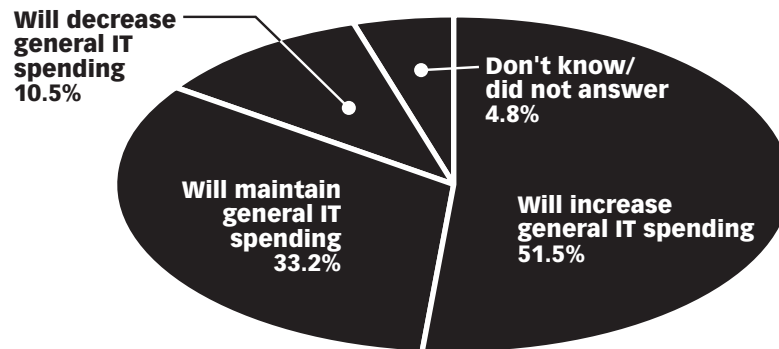
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## Budget Areas Least Likely to Be Cut by US CIOs, April 2001



Source: Morgan Stanley, 2001

As for companies' perceptions of what their competitors are doing, the majority of businesses surveyed by VARBusiness believe that they are either maintaining or increasing IT spending over the course of 2001. Clearly, companies are still feeling competitive pressure to stay on top of their own e-business initiatives as a means of keeping pace with other firms in their industry. Should business sentiment suddenly shift and lead businesses to believe that their competitors are once again investing heavily in technology, there could be strong momentum behind renewed technology buying.

[Methodology](#)[Global Overview](#)**eBusiness Trends and Budgeting**[Online Procurement and Supply Chain Management](#)[Business-to-Business Selling Online](#)[EDI Networks and Private Exchanges](#)[Public B2B Exchanges](#)[Index of Charts](#)**Expectations of US Businesses of Competitors' IT Spending for the Next 12 Months, 2001***Source: VARBusiness, 2001*

But gone are the days of panicked buying, with companies throwing money at software vendors and consultants to quickly establish their e-business operations for fear that dot-coms would steal their business by getting online first. In an April 2001 study conducted by CFO.com, 40% of the 98 CFOs that were surveyed said that their companies had made unrealistic expectations for their online profits over the past year, with 34% of respondents saying that they had overestimated the potential of the internet.

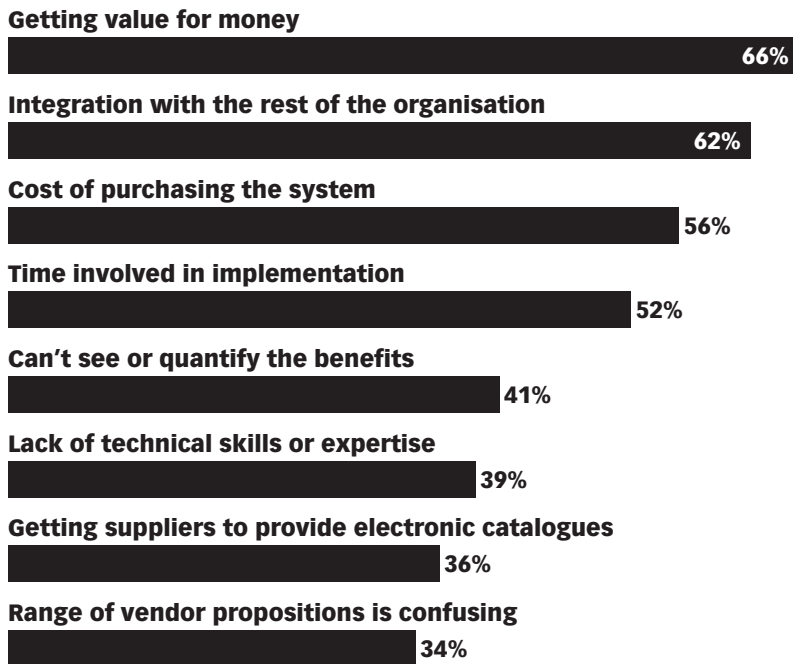
There is now a much more levelheaded approach to most e-business projects. Businesses are planning for the long term, and to the extent that complex projects may be broken down and implemented on a modular basis, companies prefer to do e-business right rather than fast.

Evidence of this is apparent from several surveys, in which return on investment (ROI) has become a clear e-business priority in early 2001. Companies want to receive good value for their web-based technology investments, with non-essential projects coming under increased scrutiny. But while it is important to underscore the renewed ROI focus by most businesses, they are also concerned about integration issues as well as the length of time that it is taking to implement e-business solutions. Although companies are no longer rushing to become e-business ready, competitive pressure still remains.



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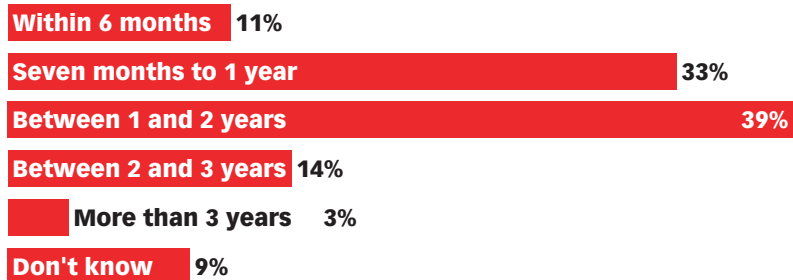
## Respondents Rating Specified Barriers as "of Concern" or "of Great Concern" to adoption of B2B eCommerce, 2001



Source: Izodia, 2001

Many participants in the Izodia survey – which focused on procurement and supply chain management software purchases – said that they did not expect to see a return on investment from their e-commerce projects for at least 1 to 2 years, while the greater portion, at 44%, expected to see an ROI within 1 year. More American firms had a longer-term perspective, with 47% of US-based respondents expecting an ROI in 1 to 2 years. In Europe, 56% of respondents in both Sweden and Italy expected a faster payoff within 7 months to 1 year.

## Company ROI Expectations for B2B eCommerce Implementations, February 2001



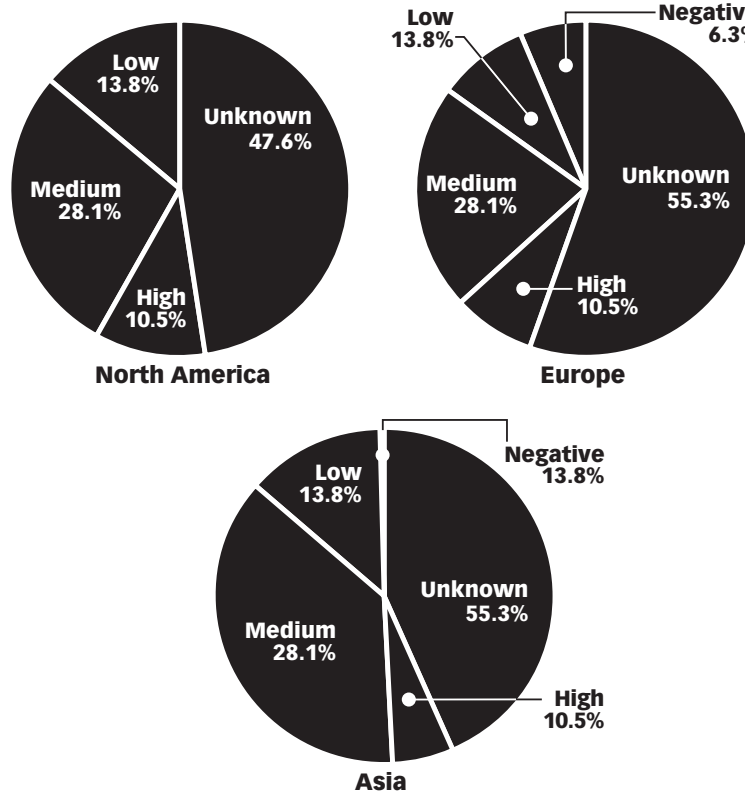
Source: Izodia, 2001

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When it comes to tracking technology implementation in general, many businesses appear to have no idea of the return on investment that they are getting, regardless of where in the world they operate. But among those businesses that do track ROI, most expect to get a 10% to 15% return.

A full breakdown of Izodia's survey data by country is available in the eMarketer eStat Database.

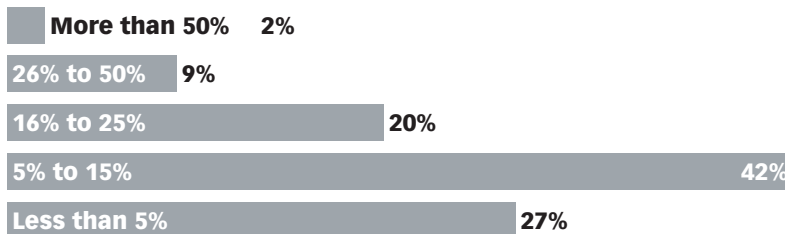
**Companies' Expected IT ROI, by Region, 2000**



Source: Computer Sciences Corporation, 2001

By comparison, in a separate study of US manufacturers, the majority expected to see at least a 5% to 15% return on their e-commerce technology investments.

**US Companies' Expected Rate of Return on eCommerce Initiatives, 2000**

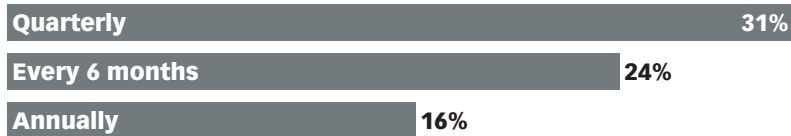


Source: National Association of Manufacturers, Ernst & Young, 2001

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When it comes to tracking the success or failure of their technology investments, 48% of respondents to a CFO.com survey said that their ROI expectations had not been met by early 2001, while a similar portion, 49%, said that their ROI expectations had been met. Only 2% of respondents said that their expectations had been exceeded.

### Frequency of ROI Evaluations for Technology Investments, 2001



Source: CFO.com, 2001

As for the frequency of IT ROI studies, the majority of CFOs carried out quarterly ROI evaluations, with 16% doing evaluations on an annual basis. Only 11% of CFOs said that they had not established a method to calculate the ROI on their technology spending, while 48% replied that they used a variety of metrics to calculate ROI. Technology’s impact on productivity was the most important criteria for CFOs, with financial payback being the lowest.

### Criteria Used by CFOs to Evaluate Technology Investments, 2001

- Impact on productivity
- Impact on customer strategy
- Impact on customer relationships
- Financial payback

Source: CFO.com, 2001

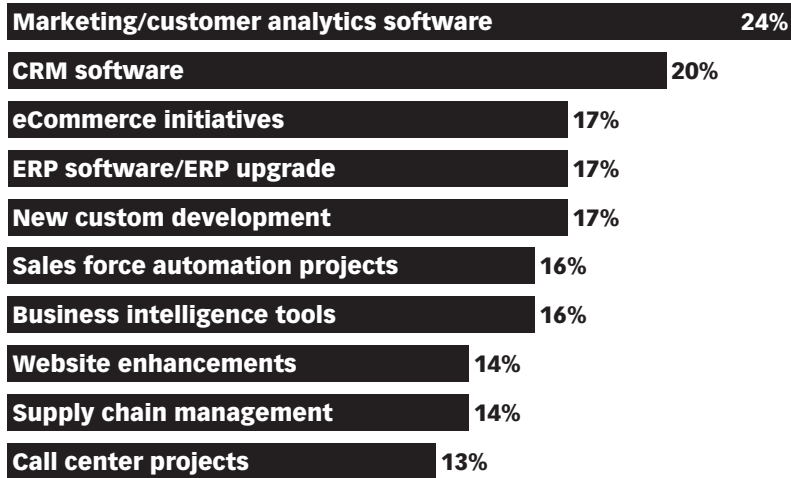
By contrast, a separate study by Forrester Research found that for 90% of e-business executives, the number one criteria for making e-business funding decisions is based on the financial impact of projects on their company. These findings are consistent with those of CFO.com, as financial impact may be considered to be a broader term than financial payback that includes considerations such as productivity or customer profitability.

In early 2001, pressure grew on e-business departments to demonstrate projected ROI before obtaining funding for specific technology initiatives, and this has likely impacted the speed with which e-business departments have been able to roll out new projects. For many e-business units that are responsible for both sell-side and buy-side technology implementations, the need to evaluate multiple solutions and vendors has been enormous.

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Among those software projects that most CIOs believe will bring them the highest ROI, marketing and customer analytics software tops the list, followed by CRM applications. Without question, CIOs have followed through on their assessment, as CRM vendors such as Siebel Systems saw strong sales during the first quarter of 2001.

### US CIOs' Ranking of Software Projects with Highest ROI, February 2001



Source: Morgan Stanley, 2001

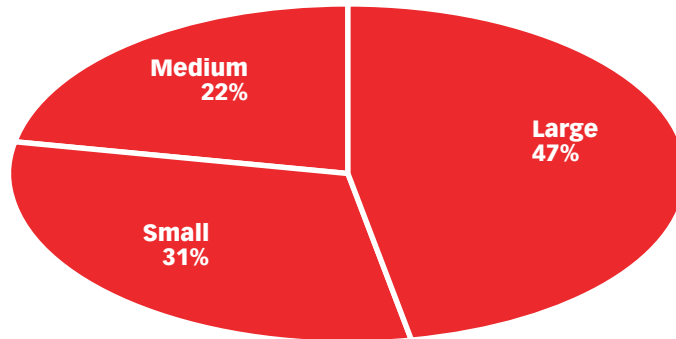
### C. eBusiness for Small and Medium-Size Businesses

Small and medium-size businesses represent one of the largest market opportunities for e-business technology and services vendors. Not only are these companies typically behind their enterprise counterparts when it comes to technology adoption, but they often require more assistance with implementation and maintenance, as they do not have the same level of internal IT support as large companies. Further, there are literally millions of potential small business customers, with more than 7 million in the United States alone.

IDC breaks down the small, medium and large business share of IT spending on web-based initiatives, with small and medium businesses accounting for just over one half of total spending.

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### Share of Worldwide eBusiness Spending by Small, Medium and Large Businesses, 2001



Source: International Data Corp. (IDC), 2001

The Aberdeen Group estimates that mid-size firms will spend as much as \$5.5 billion on business-to-business e-commerce technology by 2003, while Cahners In-Stat predicts that medium and large businesses in the United States will increase their spending on the wider internet technology market to reach \$200 billion by 2005, growing at a CAGR of 25%.

### Estimated Revenues from B2B Technology Sales to Mid-Sized Firms, 2001 & 2003 (in billions)

2001	\$1.10
2003	\$5.50

Source: Aberdeen Group, 2001

### US Medium and Large Business Spending on eBusiness, 2000 & 2004 (in billions)

2000	\$49
2004	\$200

Source: Cahners In-Stat, 2001

When it comes to forecasting the market for small business and small office/home office (SOHO) spending on internet-based technologies, Cahners In-Stat estimates that the group will account for 43.5% of the total US e-business technology market by 2004. Cahners predicts that small businesses will soon begin to outsource their technology needs, as offerings become increasingly complex but more cost-effectively delivered via third parties such as application service providers (ASPs).

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## US Small and SOHO Business Spending on eBusiness, 2000 & 2004 (in billions)

<b>2000</b>	<b>\$31</b>
<b>2004</b>	<b>\$87</b>

Source: Cahners In-Stat, 2001

So far, however, ASPs have had a difficult time stirring up business, as many companies are not yet comfortable with having their business software run and managed by an outside party. A *Network World* survey of networking professionals found that there is still a strong preference by larger companies to retain applications in-house, with 72% doing so in 2001 and 73% planning to continue doing so in 2002. Concerns over security, reliability and cost savings were the main reasons why networking professionals preferred to keep applications behind their own firewalls.

But although there has been some interest in hosted application solutions, they have not been widely adopted. A lack of trust may lie at the root of the problem. The Yankee Group finds that, although 79% of small and medium businesses with over 50 employees are aware of hosted solutions, only 6% actually outsource their applications, while just 16% described themselves as being very interested in outsourcing.

Security and reliability remain the largest concerns. As many as 70% of medium-sized businesses said security was a concern, while 69% said that they would require a service level agreement prior to outsourcing. As for small businesses, 64% were concerned about security while another 64% said they would address this through a service-level agreement.

For some companies, outsourcing software applications is a cost-cutting alternative that they are only now beginning to consider. Despite the rough start for many application service providers, most leading software vendors – including Oracle and SAP – have been offering hosted application solutions for about 2 years now. These offerings are generally targeted at medium-sized businesses, but they are being successfully sold to larger companies in the Global 2000 as well.

However, it is fair to say that the big push for hosted e-business solutions is only now about to begin. Microsoft is currently in the process of unveiling its end-to-end e-business solution, on which it has staked a significant part of its future. Although it was caught napping at the beginning of the B2B boom, since then, Microsoft has been quietly building out its .Net strategy through both acquisitions and partnerships.

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Microsoft plans to capture not only the small and medium-sized business market for enterprise applications, but it is also hoping to make some headway into larger enterprise systems as well. Building on its installed base of Windows NT servers, Microsoft's BizTalk server is designed to integrate web-based data with offline systems, while at the same time facilitating online business between companies.

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### Microsoft's .Net Strategy Partners, 2001

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Partner	Contribution
Great Plains (acquired)	ERP vendor with base in financials and accounting
Commerce One	Exchange integration to Commerce One network, indirect procurement
VerticalNet	Supplier enabling software, installed base of more than 23,000 online store fronts
Manugistics & KPMG	SCM, implementation services
Usinternetworking	Web and application hosting services
Safeguard Scientifics	Consulting and infrastructure services

*Source: eMarketer, 2001*

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Reliance on hosted solutions is a significant part of the .Net strategy as well. Microsoft's bCentral portal is helping the company pursue the small business market, in which it already offers hosted website solutions. Its recent unveiling of its software as a service strategy should go a long way to promoting the use of hosted business applications, as potential users will likely be more comfortable outsourcing to an established brand with which they are familiar.

Finally, the concept of software as a service will get a further boost by consortia-led business-to-business exchanges. Most of these marketplaces are packaging their technology solutions as hosted, subscription-based services, which exchange users will be able to pay for over a fixed time period. To the extent that these consortia-led exchanges successfully catch on, entire industries are about to become accustomed to the use of outsourced solutions over the next few years.

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Without question, the buy-side of business-to-business e-commerce has a head start on the sales-side when it comes to most companies' understanding of the benefits of B2B e-commerce. Indirect procurement applications vendors Ariba and Commerce One, along with online auction site FreeMarkets, became the early bellwethers of B2B e-commerce, and because these companies were able to communicate the cost savings that could be achieved through the use of their solutions, implementations of these and other supply chain management (SCM) technologies have typically marked most businesses' first efforts at online trade.

The year 2000 saw buy-side e-commerce solutions move out of the early-adopter phase and into mainstream use. At the end of 2000, Merrill Lynch estimated that 8% to 10% of the world's largest 5000 companies had implemented procurement software, while a comparative estimate from Credit Suisse First Boston said that the procurement software market had penetrated 30% to 40% of the Fortune 2000 companies by the first quarter of 2001.

But despite the growing momentum behind internet-based purchasing solutions, most companies' online purchasing as a percentage of their total buying typically remains at less than 10%. Although much of the blame has been pointed at the suppliers, who are often described as reluctant participants in B2B e-commerce, it is also fair to say that users of buy-side applications are only gradually migrating their purchasing over to online channels, and that this shift is not about to occur overnight.

In the early part of 2001, businesses were still implementing and piloting their new technology investments, while at the same time encouraging their closest trading partners to participate in some form of online e-commerce. Full, real-time collaboration is still 2 to 3 years off for many companies, as this element of business-to-business e-commerce still rests in the domain of early adopters. But the foundation has now been laid for the first stage of online buying, and as we move into the second half of this year, there will be a substantial increase in the volume of business transactions made via the internet.

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## A. Online Sourcing

Well before the days of business-to-business e-commerce, many companies were already using the internet as a tool for finding new suppliers and products. As the number of online storefronts and B2B exchanges has steadily grown during the past 2 years, the value of the internet as a sourcing tool has expanded even further. In the first half of 2001, IDC estimates that 90% of large companies and 60% of small businesses in the United States had a website.

Survey data from *Purchasing Magazine* find that 87% of purchasing professionals use the internet in some way for their jobs, while Forrester Research and the National Association of Purchasing Management found that almost 80% of manufacturers use the internet to identify new suppliers.

### US Purchasers' Use of Online Channels for Supplier Relationships, Q1 2001

	Manufacturers	Non-manufacturers
Identify new suppliers	78.9%	82.9%
Collaborate with suppliers	39.7%	46.5%

Source: National Assoc. of Purchasing Management (NAPM), Forrester Research, 2001

Among the alternatives that businesses have for channeling their online purchases, the majority of buyers in the NAPM study have indicated a preference for online request for proposals (RFPs). While online marketplaces are still in an early stage of their development, most purchasers have already been able to make an easy transition from former telephone and fax-based RFP procedures to internet-based RFP processes. Although online auctions have also been a very effective means of reducing costs through internet-based buying, this technology is not appropriate for all kinds of purchasing.

### US Purchasers' Use of Online Channels Used for Internet Buying, Q1 2001

	Manufacturers	Non-manufacturers
Online auction	20.9%	7.5%
Online marketplace	21.5%	24.1%
Online RFP process	48.5%	49.1%

Source: National Assoc. of Purchasing Management (NAPM), Forrester Research, 2001

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*Purchasing Magazine* also found that most professional buyers were very open to internet-based alternatives. Almost three-quarters of purchasing managers already used supplier databases and directories, while online RFI/RFQ features were expected to be used by just as many purchasers.

### How US Purchasing Professionals Use Online Sourcing Channels, 2000

	Already use	Will use	Will not use	No opinion / undecided
Supplier databases and directories	73%	16%	5%	6%
Commerce-enabled extranets with suppliers	25%	40%	20%	15%
Online RFI	36%	40%	12%	12%
Online RFQ	30%	44%	14%	12%
Online negotiation, web enabled but not automated	5%	27%	51%	17%
Online negotiation, web enabled and automated	4%	24%	53%	19%
Online collaboration with suppliers (design, planning)	10%	36%	37%	17%
Automated decision support	7%	24%	47%	22%
EDI	32%	23%	30%	15%

Source: *Purchasing Magazine, 2001*

Related to the topic of online sourcing, there is now an emerging discussion that goes well beyond the use of the internet as a basic tool for price discovery or the identification of new suppliers. According to investment bank Stephens Inc., strategic sourcing applications are a set of purchasing solutions that help companies to choose suppliers, allocate purchasing volumes among suppliers, manage supply risk and optimize supplier performance.

Used as decision-support technology for the purchase of direct materials, strategic sourcing applications employ analytical tools to simultaneously consider multiple variables that may impact a buying decision. These include everything from the cost and availability of multiple supplier products, to shipping costs, delivery times, and even the past quality performance of individual suppliers. Stephens Inc. finds that companies previously relied on spreadsheet solutions or third-party consultants for assistance with these decisions.

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The Aberdeen Group estimates that the e-sourcing market will reach \$3.3 billion in revenues by 2004. According to the Aberdeen Group's definition, e-sourcing includes web-based technologies that support the identification, evaluation, negotiation and configuration of products, suppliers and services within a supply chain network. Web-based sourcing is estimated by the Aberdeen Group to save as much as 20% off of prices, while at the same time reducing the length of sourcing cycles by as much as 30%.

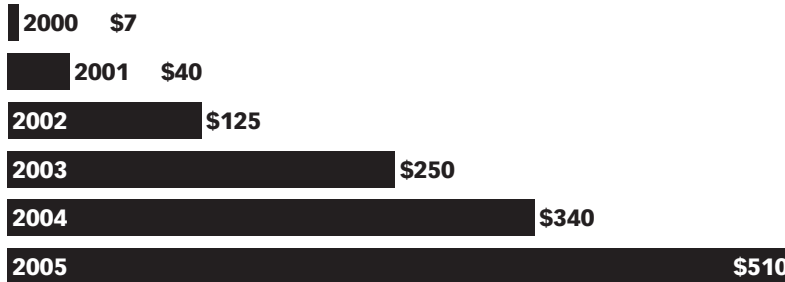
### Estimated Savings through the Use of eSourcing Technologies, 2001

Reduce sourcing cycle time	25% to 30%
Reduce time-to-market	10% to 15%
Reduce unit prices	5% to 20%

Source: Aberdeen Group, 2001

In building its market forecast for strategic sourcing applications, investment bank Stephens Inc. estimates that the average license fee for strategic sourcing software was \$350,000 in 2000. This is projected to grow to \$500,000 per package through 2003 as the discounting that is often used to lure early-adopters is expected to decline. Eventually, prices for sourcing suites are expected to settle at \$400,000 over time, as more competition comes to market.

### Worldwide Market Opportunity for Strategic Sourcing Applications, 2000-2005 (in millions)



Source: Stephens Inc., 2001

Deployment activity for sourcing applications is projected by Stephens Inc. to grow to more than 125 suites by the end of 2001. Substantial growth will occur over the next 4 years, as 3,000 such systems are projected to be in use by 2005. In terms of assessing the long-term prospects for online sourcing, AMR Research sees e-sourcing applications getting stronger over the long term, with adoption occurring at a higher rate within the next 2 years once businesses' supply chain management systems go online.

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### Estimated Number of Strategic Sourcing Applications Installations, 2000-2005

		Total installations
2000	25	25
2001	100	125
2002	250	375
2003	500	875
2004	850	1,725
2005	1,275	3,000

Source: *Stephens Inc., 2001*

Stephens Inc. identifies more than 15 software companies that are participating in the e-sourcing space, although there are few vendors that offer a full solution for sourcing analysis. Some of the vendors that Stephens Inc. has examined include eBreviate, SAS and Rapt, each of which is strong in spending analysis.

### Examples of eSourcing Technology Vendors, 2001

eBreviate

Emptoris

i2 Technologies

Rapt

SAS

Zeborg

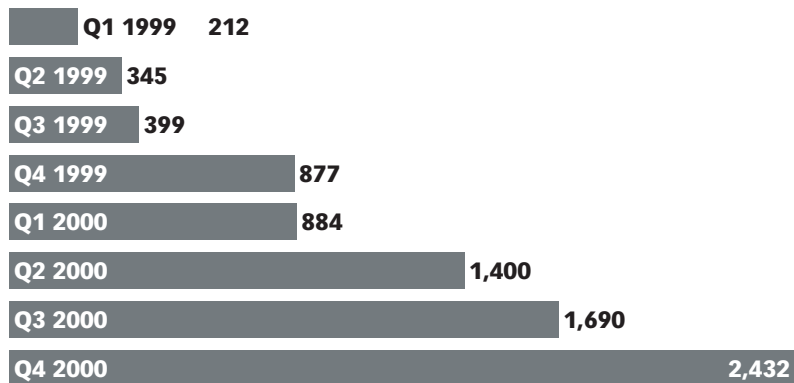
Source: *Stephens Inc., 2001*

Although classified as a supply chain planning solutions provider by Stephens Inc., FreeMarkets is most often described as a provider of e-sourcing services. Indeed, much of FreeMarkets' offline work in preparation for online auctions requires the standardization of product specifications and offer terms, which is similar to the sourcing services provided by consulting firms.

FreeMarkets has continued to see strong growth in its online business. During the fourth quarter of 2000, transaction volume grew by 18%, to reach 2,432 auctions over its multiple marketplaces. The number of FreeMarkets customers has grown to reach 111 as of May 2001, following the announcement of Texas Instruments' high-profile contract at the beginning of that month.

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### Number of Auctions Hosted by FreeMarkets, Q1 1999-Q4 2000



Source: FreeMarkets Inc., 2001

With average purchasing savings that run as high as 20% for large supply contracts, it is no surprise that many big manufacturers have been quick to warm up to the easy gains of online reverse auctions. Not only have they been able to significantly reduce contract prices through the competitive bidding process, many of these companies have also said that the reduction in time spent sourcing is one of the most important benefits of online auction events.

As an example of buyers' satisfaction with online auctions, HJ Heinz has agreed to extend its use of FreeMarkets' services through the end of 2002, pledging to send more than \$500 million of its global sourcing needs through FreeMarkets' services by then. And according to IDC, General Motors has realized cost savings of between 3% and 30% on the 64 reverse auctions that the company conducted in 2000.

On the other hand, while GE has already enjoyed the benefits of conducting reverse auctions for its own purchasing needs, CEO Jack Welch has said that GE would want to do everything it could to avoid being a bidder on the selling side. One other interesting note: a veteran of the reverse auction process, United Technologies, finds that although the company has benefited for more than 2 years thanks its use of FreeMarkets' services, its executives also understand that at one point their company will reach a limit as to the price reductions that it will be able to obtain from its suppliers.

Looking beyond this day, United Technologies is already searching for ways to help its own second and third tier suppliers become more efficient themselves. The company plans to accomplish this through aggregate buying on behalf of its suppliers, which will eventually come through internet-based supply chain management.

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## B. Online Procurement

By the beginning of 2001, the majority of companies had either done some online buying, or had a clear intention to use the internet in the near future for a portion of their purchasing. However, even among firms that have started to roll out e-procurement solutions, the majority is in an early phase of their procurement projects. Through the first half of the year, only a small percentage of total purchasing at most companies was being conducted online.

In a December 2000 survey conducted by *IndustryWeek*, the magazine found that 68.3% of manufacturers had done some electronic procurement in 2000, with an additional 79.4% expecting to do electronic purchasing in 2001. For this survey, electronic procurement was defined as both EDI and internet-based purchasing, with manufacturers conducting just under 2% of their purchasing electronically in 2000.

### Internet-Based and EDI Procurement, by US Industry, 2000 & 2001 (as a % of total spending)

	2000	2001
Pharmaceuticals, biotech, medical devices	5.0%	15.0%
Aerospace	2.0%	10.0%
Automotive	2.0%	10.0%
Consumer packaged goods	3.0%	10.0%
High technology	5.0%	10.0%
Industrial equipment and machinery	3.0%	7.0%
Chemicals	5.0%	6.5%
Consumer product durables	2.0%	5.0%
Other	2.0%	5.0%
Printing and publishing	2.0%	5.0%
All	2.0%	8.0%

Source: *IndustryWeek*, 2001

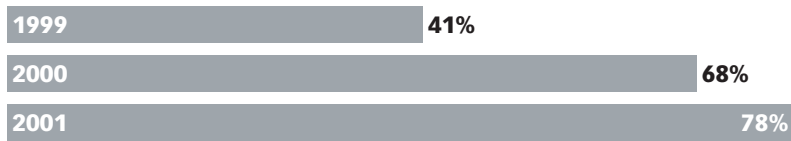
Compared to its survey from the year before, *IndustryWeek* found that manufacturers were taking a much more favorable approach to e-commerce. This was due in part to positive returns from their online sales-side efforts, which for 47.7% of respondents had resulted in some new business.

In its annual year-end survey of purchasing professionals' e-business strategies, *Purchasing Magazine* found that online procurement is on the rise, with 68% of respondents saying that they had done some buying via the internet during the year 2000. Among those purchasers who were not buying online last year, a further 45% planned to be using the internet by the end of 2001.



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## Purchasers in the US That Have Purchased Online, 1999-2001



Source: *Purchasing Magazine*, 2001

According to the survey, more than 50% of purchasing managers planned to adopt e-procurement solutions by the end of 2000, up from just over 20% in 1999. However, among users who had already implemented their procurement systems, very few had seen efficiency gains during the early going, although many expected to become more efficient over the longer term.

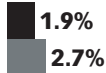
In the National Association of Purchasing Management/Forrester Research study conducted after the first quarter of 2001, non-manufacturers were found to be ahead of manufacturers in terms of their progress with the deployment of their online buying programs. In part, the lag may be due to the greater complexity of the integration work between manufacturers' back end systems and their web-based buying solutions.

The study also found that smaller organizations are slightly behind their larger counterparts, as 55.5% of companies that buy less than \$100 million per year said that they were less than 5% of the way along on their e-procurement initiatives, compared with 43.2% of organizations that purchase more than \$100 million per year. These results are not surprising either, as smaller companies typically lag larger firms in the adoption of enterprise technologies, in part because of their own lack of IT resources for implementing new systems.

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## US Purchasers' Degree of Readiness for Online Buying, Q1 2001

### Don't plan to use the internet



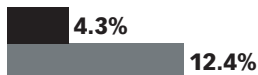
### Less than 5%



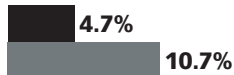
### Between 5% and 20%



### Between 21% and 40%



### More than 40%

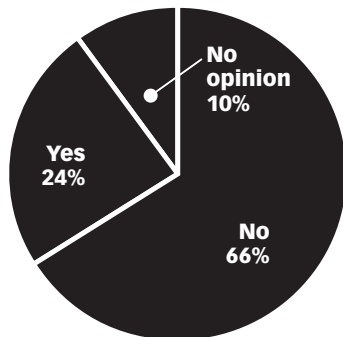


■ **Manufacturers**                      ■ **Non-manufacturers**

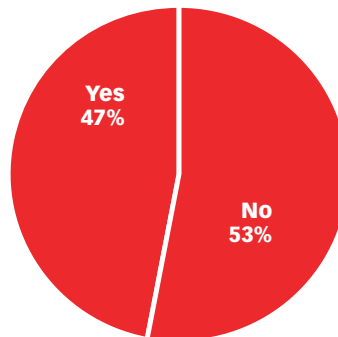
Source: National Assoc. of Purchasing Management (NAPM), Forrester Research, 2001

Just 26.1% of companies replying to the NAPM/Forrester survey said that they had achieved cost savings from their internet purchasing activities in early 2001, with 35.1% of large companies reporting savings compared with 20.4% of their smaller counterparts. Most interestingly, very few companies reported significant changes to their internal procurement procedures, with 93.7% of all respondents saying that they made only minor changes, or none at all.

## How US Purchasers Rate the Effectiveness of eProcurement Solutions, 2000



**Internet tools have already succeeded in shifting work emphasis away from transactions**



**Internet tools will shift work emphasis away from transactions**

Source: Purchasing Magazine, 2001

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Survey data from Accenture support other findings that online purchasing is still very much in its early phase, showing that 45% of the companies that were buying online during the early months of 2001 were conducting less than 5% of their total purchasing via the internet. The vast majority of companies that were buying online, at 69% of respondents, had been purchasing via the internet for less than 2 years.

Comparative results from the Forrester/NAPM study show that while 69.4% of manufacturers and 72.8% of non-manufacturers had bought some indirect materials online during the first quarter of 2001, the average amount of indirect materials that were bought via the internet was a substantial 9.3%.

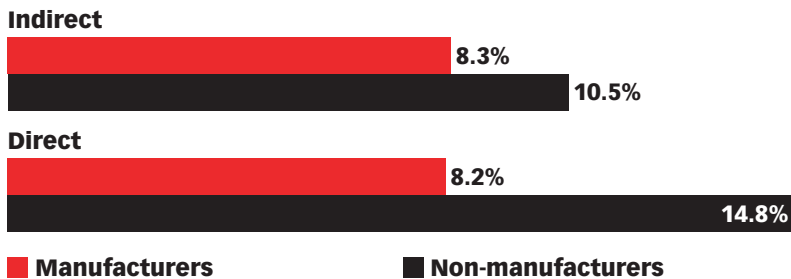
### Companies in the US Buying Indirect and Direct Procurement Materials Online, Q1 2001



Source: National Association of Purchasing Management/Forrester Research, 2001

Manufacturers that had purchased direct materials online accounted for 36.3% of respondents, somewhat lower than the overall average of 45.7% of participants in the study. By comparison, 58.8% of non-manufacturing respondents said that they had purchased direct materials online. The average amount of direct materials purchased via the internet was 8.2% for manufacturers and 14.8% for non-manufacturers.

### Average Amount of Indirect and Direct Materials Purchased by US Companies, Q1 2001

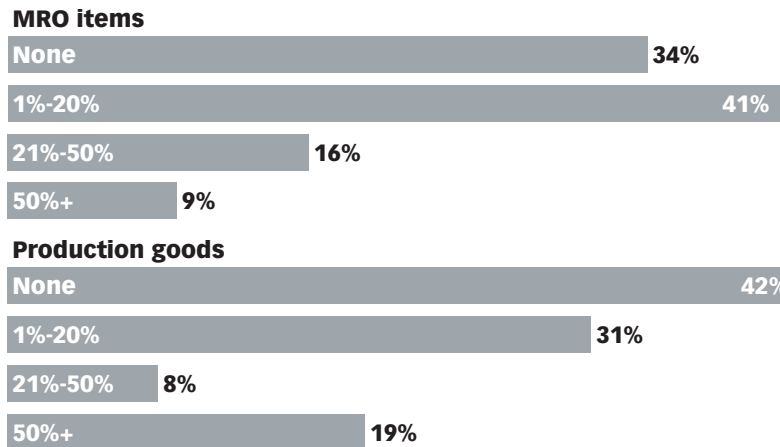


Source: National Assoc. of Purchasing Management (NAPM), Forrester Research, 2001

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In another survey of 1,200 US companies conducted by the Center for Electronic Commerce Research at the University of Texas, several businesses were found to be conducting between 1% and 20% of their total purchasing online. More than 40% of respondents said that they were purchasing up to 20% of their MRO goods online, while 31% of respondents said that they were buying production goods via the internet. But the study also found that several companies remain on the sidelines, choosing not to do any internet purchasing at all.

### US Companies Conducting Direct and Indirect Online Procurement, 2001



Source: CREC, University of Texas at Austin, 2001

Among the reasons that businesses give for not buying online, technology integration issues and concerns about supplier readiness are commonly at the top of the list. In a survey of procurement managers, Jupiter Media Metrix finds that 45% avoided buying online due to concerns over a lack of trust toward new business partners. Despite these misgivings, for many businesses indirect procurement continues to be an easy first step into the online buying game, since it takes nothing more than a web browser and a credit card to begin.

A significant reason for large companies' prioritization of indirect procurement software implementations is the fact that for many businesses, indirect procurement has been the least-automated segment of their purchasing operations. In the past, companies have invested heavily in the automation of their direct purchasing operations, largely because of the strategic importance of these operations. By contrast, indirect purchasing activity has been highly unorganized within most companies, and was therefore ripe for automation by the time procurement software vendors arrived in the late 1990s.

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For purchasing professionals, this means that internet-based procurement systems are less likely to generate substantial returns for their direct procurement systems immediately, although they will add significant value over time. On the other hand, indirect procurement systems will typically bring a faster ROI thanks to their assistance in bringing automation to previously unwieldy internal administrative processes.

In its coverage of Global 2000 businesses that have implemented e-procurement systems, the Meta Group finds that users were able to quickly see cost savings and other benefits thanks to their web-based purchasing systems. Improvements in the accuracy and control of purchasing activities was one of the top benefits cited by 72% of survey respondents, with 73% of companies finding that they had also improved their working capital situation by reducing inventories. Aggregation of buying – another common benefit of automated procurement solutions – has also contributed to reductions in corporate purchasing costs.

### Lead Benefits of eProcurement Systems, 2000

<b>Reduction of excess inventory</b>	<b>73%</b>
<b>Improved order accuracy</b>	<b>72%</b>
<b>Reduction in purchasing costs</b>	<b>58%</b>

Source: Meta Group, 2000

The ARC Advisory Group projects that the worldwide e-procurement software market will grow at a CAGR of 55% between 1999 and 2004, to reach \$2 billion within the next 3 years. Although it defines e-procurement as both indirect purchasing applications as well as online exchange platforms, the ARC Advisory Group’s estimates are considerably lower than those of other research firms, which place the e-procurement market at over \$2 billion in 2001.

### Estimated Worldwide eProcurement Software Revenues, 2000-2004 (in billions)

<b>2000</b>	<b>\$0.35</b>
<b>2001</b>	<b>\$0.55</b>
<b>2002</b>	<b>\$0.87</b>
<b>2003</b>	<b>\$1.35</b>
<b>2004</b>	<b>\$2.08</b>

Source: ARC Advisory Group, 2001

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By contrast, IDC estimates that the market for procurement applications will grow to \$9.7 billion by 2004, versus its forecast \$2.1 billion in sales expected for 2001. IDC's definition includes revenues from the sale of sourcing software as well as some supplier relationship management applications. A third comparative estimate from the Aberdeen Group forecasts that the procurement software market will reach \$9 billion by 2003.

**Worldwide Market for eProcurement Applications, 1999 & 2001 (in billions)**



Source: International Data Corp. (IDC), 2001

In its breakdown of indirect versus direct procurement applications, Salomon Smith Barney estimates that by 2004, indirect procurement applications will reach \$2.7 billion in sales, compared to \$2.0 billion for direct procurement software spending. The greater part of direct procurement spending, according to Salomon Smith Barney, has in the past been attributable to EDI.

**eProcurement Software Revenues, 1999 & 2004 (in billions)**



Source: Salomon Smith Barney, 2000

IDC estimates that there are as many as 200 vendors selling online procurement software. In a recently released report, the Gartner Group projects that by 2004 there will be no stand-alone e-procurement vendors remaining.

**Leading eProcurement Applications Vendors, by Revenues, 2000 (in millions)**

	License revenue	Market share	Number of customers
Ariba	\$276.3	35.5%	550
Commerce One	\$123.0	15.8%	504
Oracle	\$100.0	12.8%	782

Source: International Data Corp. (IDC), 2001

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With e-procurement applications sales growing at a rate of 150% in 2000, AMR Research projects that growth for this sector will slow to a more-than respectable rate of 47% in 2001. While vendors such as Ariba and Commerce One have enjoyed spectacular increases in revenues in 2000, AMR has warned that ERP vendors that have developed their own procurement solutions, such as Oracle and JD Edwards, will be tougher competition going forward.

**Growth Rates of eProcurement Applications Sales by Ariba and Commerce One, 2000**

<b>Ariba</b>	<b>215%</b>
<b>Commerce One</b>	<b>499%</b>

Source: AMR Research, 2001

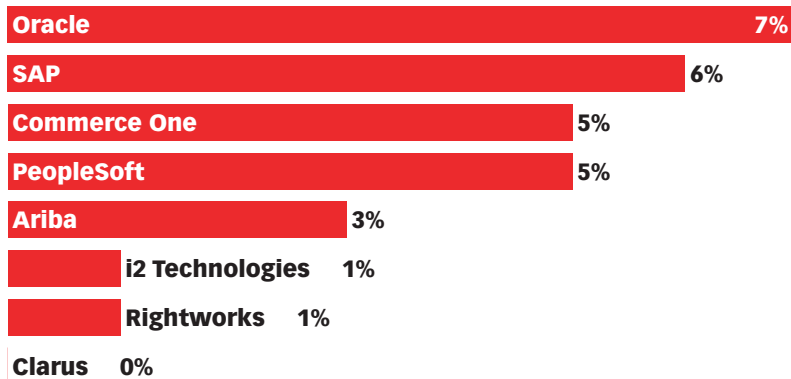
In early 2001, Investment bank Stephens, Inc. estimated that e-procurement solutions range in price between \$500,000 and \$2 million. The Aberdeen Group posts similar results, finding in a survey that companies were spending an average \$1.26 million to buy and install procurement software. For companies that used hosted e-procurement applications, the average total cost was \$840,000.

According to the Gartner Group, the average selling price for packaged Ariba procurement solutions was \$1.8 million during the first quarter of 2001. By comparison, Gartner estimates that similar e-procurement applications by Oracle and SAP were selling at between \$300,000 and \$500,000 as part of their aggressive campaigns to retain their enterprise customers in the extended-enterprise applications market.

In Morgan Stanley's March survey of 250 CIOs, the investment bank found that 28% of respondents had already deployed an e-procurement solution, with a broad mix of vendors' applications in use. Of the five leading solution providers, three were ERP vendors. A further 6% of respondents said that they had purchased an Oracle e-procurement solution, while Ariba, Commerce One, and SAP each had 1% of respondents saying that they had purchased but not yet deployed their software.

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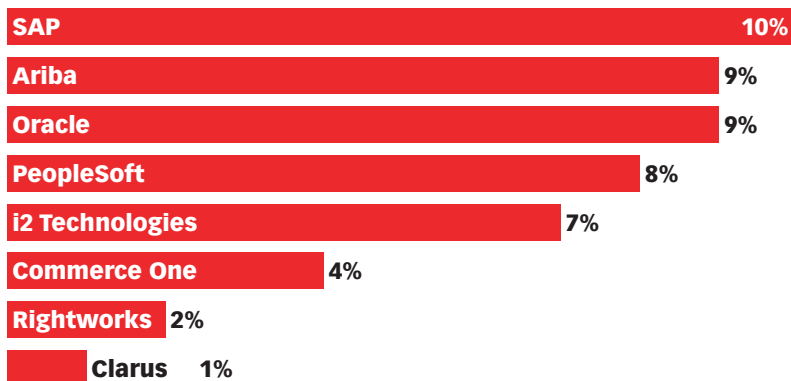
### eProcurement Software Solutions Deployed by US CIOs, March 2001



Source: Morgan Stanley, 2001

As an indication of future purchases, once again Oracle, SAP and PeopleSoft were among the top five choices for solutions under evaluation, with Ariba, known as a best of breed provider, being considered as well.

### eProcurement Software Vendors Being Evaluated by US CIOs, March 2001



Note: Multiple responses allowed  
Source: Morgan Stanley, 2001

Without question, buyers of e-procurement software have found themselves in a favorable position during the first half of 2001, with intense price competition heating up between ERP and procurement vendors. Although it is not clear whether buyers are choosing ERP vendors' solutions because of the deep discounts they are offering, or whether businesses are choosing those procurement solutions that more easily integrate with their back-end systems, clearly a battle is being fought over the much broader future of e-business solutions.



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In addition to the strategic posturing of ERP and procurement vendors, there has also been significant competitive maneuvering on the part of Ariba. The company has seen its relationship with supply chain management vendor i2 Technologies come undone, while at the same time run into trouble with its efforts to build out its own SCM offering.

After a difficult first half of 2001, Ariba's strength remains in indirect procurement software applications, where it is known as a best of breed provider. Ariba has also built out its trading exchange platform through acquisitions, but sales of this solution have dropped off considerably as the market for exchange platforms has run into trouble in 2001. Ariba has also made a foray into supply chain management through its purchase of collaborative design and sourcing provider SupplierMarket, which preceded its attempted purchase of product lifecycle management vendor Agile Software.

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### **Ariba Acquisitions, 2000 & 2001**

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<b>Acquisition</b>	<b>Contribution</b>
TradingDynamics	Internet trading applications
Tradex	Internet marketplace and exchange solutions
SupplierMarket	Online collaborative sourcing solutions
Agile Software (acquisition cancelled)	Product lifecycle management

*Source: eMarketer, 2001*

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The primary driver behind Ariba's move into the supply chain management space has been the need to deepen its technology offering. In late 2000, it became apparent that indirect procurement applications represented only the tip of the B2B iceberg, as supply chain management was seen as the foundation of buy-side e-commerce. Vendors Ariba and Commerce One were quickly cast from the limelight as i2 Technologies and Manugistics simultaneously rose in stature.

Commerce One quickly cemented its relationship with ERP vendor SAP, but in the process of trying to strengthen its own position, Ariba succeeded in alienating its partner, i2 Technologies. Ariba's attempted purchase of Agile was followed by i2's successful purchase of procurement vendor Rightworks, and by the spring of 2001, the relationship between Ariba and i2 was effectively over.

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Nonetheless, Ariba remains a strong player in the B2B space, in part due to its solid indirect procurement product as well as its installed base of customers. Ariba has also unveiled its value chain management (VCM) strategy, with which it hopes to build on its strength as a provider of inter-enterprise e-business solutions. Indeed, it is this inter-enterprise functionality that Ariba and its VCM partners are relying on as an advantage, as they try to cast ERP and SCM systems as enterprise-centric technologies that will remain on the sidelines of true business-to-business e-commerce.

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### Key Partners in Ariba's Value Chain Management Strategy, 2001

Ariba	Indirect procurement, exchange platform
Agile Software	Product lifecycle management
Syncra Systems	Collaborative planning, forecasting and replenishment
Zeborg	Supply chain analytics
SeeCommerce	Supply chain performance management

*Source: eMarketer, 2001*

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Despite the failed acquisition, Ariba has retained its relationship with Agile Software under its VCM strategy, while at the same time establishing partnerships with content management and personalization software vendor Vignette, along with supply chain management vendor Manugistics. And finally, Ariba has also maintained its relationship with IBM.

Following its dismal first quarter and subsequent layoff of 700 employees, Ariba has narrowed its focus by targeting five specific industries into which it will sell its value chain solutions. But despite these moves, many industry observers believe that Ariba faces a considerable uphill battle, and that it has wound up becoming a likely takeover target.

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### Five Core Industries Targeted by Ariba, 2001

Automotive
Consumer packaged goods
Financial services
High technology
Pharmaceuticals

*Source: eMarketer, 2001*

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Meanwhile, Ariba’s competitor Commerce One continues to move forward with its own partnership strategies. At the center of its relationship with SAP, the two companies have jointly developed MarketSet, an exchange platform that tightly integrates the e-commerce software of Commerce One with the supply chain management applications of SAP. Both companies sell the platform under the SAP subsidiary SAPMarkets, targeting both public and private exchange-builders. US Bancorp Piper Jaffray estimates that more than 30% of Commerce One’s revenue in the fourth quarter of 2000 came from its relationship with SAP.

While SAP independently sells its own suite of e-business products under the mySAP.com brand, Commerce One has joined up with Microsoft to offer its marketplace platform and exchange integration services as part of the .Net enterprise software strategy. Commerce One also provides its portal solution as part of PeopleSoft’s own marketplace offering.

**Key Strategic Partnerships for Commerce One, 2001**

Partner	Contribution
SAP	SCM applications, installed base of ERP customers (especially in Europe)
Compaq Computer	Offers hosted Commerce One solutions as a platform provider
Microsoft	Part of Windows 2000 and .Net strategy targeting mid-size firms
PeopleSoft	MarketSite portal linked to PeopleSoft's Marketplace offering

*Source: Salomon Smith Barney, 2000; eMarketer, 2001*

In its interesting analysis of the procurement applications market, the Meta Group has examined the strengths and weaknesses of Ariba along with other e-business applications vendors, as a means of gauging the prospects for these leading firms.

Among its findings, the Meta Group notes that services firms are more likely to purchase indirect procurement applications while manufacturers are more likely to build private marketplaces that will serve as a portal for their trading relationships with supply chain partners.

As a result, Ariba’s solutions are expected to sell best to government agencies and to firms in the services sector. Because of the high proportion of indirect expenditures among services firms, the company’s inter-company relationships are more readily met by a procurement solution rather than a full marketplace platform.

However, businesses that rely more heavily on the direct procurement that is endemic to supply chains will require the deeper integration that comes from supply chain management and ERP systems. The Meta Group therefore expects companies that require SCM systems will build private exchanges as a means of better-integrating with their supply chain partners. Vendors such as Oracle, SAP, and i2 Technologies have a greater advantage in those industries with deeper supply chain management needs.

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## C. Supply Chain Management

In the past, supply chain management systems have been focused on serving the needs of a single enterprise. Their primary purpose is to reduce inventories by helping companies to better plan and coordinate their internal logistics and production processes. Prior to the arrival of business-to-business e-commerce, many companies that had implemented supply chain management solutions were typically viewed as industry leaders that were leveraging technology to build out their competitive advantage.

But the internet has changed the SCM landscape, making it a necessary part of most companies' e-business strategies, be they large or small. And no longer are supply chain management technologies confined to the enterprise – the focus of web-enabled SCM systems is to open up access to information that had previously been confined to an internal supply chain, and share it with a company's trading partners. Because business-to-business e-commerce at its core is about real-time, internet-based collaboration between trading partners, the underlying technology that facilitates this will be supply chain management systems.

According to AMR Research, the increased deployment of SCM applications has the potential to drive improved operating margins and create between \$215 billion and \$465 billion in savings per year worldwide. Included in the long list of productivity gains that businesses can achieve through SCM implementations, delivery performance, improved forecasting and reduced inventory costs are among those areas that will be facilitated the most through internet-based collaboration.

### Quantified Benefits from SCM Software Solutions, 2001

	Improvement
Forecast accuracy	25% to 80%
Inventory reduction	25% to 60%
Fulfillment cycle time	30% to 50%
Lower supply chain costs	25% to 50%
Fill rates	20% to 30%
Delivery performance	16% to 28%
Improved capacity utilization	10% to 20%
Overall productivity	10% to 16%

Source: Supply Chain Council, 2001

But despite this promise, the full adoption of supply chain management solutions may take as long as 10 years according to AMR Research, as their deployment throughout trading networks can only be accomplished on a gradual basis.

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The Meta Group found that in March of 2000, not more than one-third of the business population had invested in SCM technology of any kind. Most deployments had focused on logistics-based areas of the supply chain, with collaborative applications accounting for just 28% of implementations.

### Business Investment in SCM Solutions, 2000



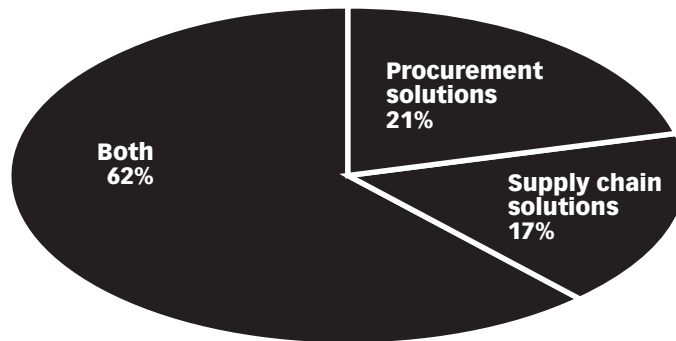
Source: Meta Group, 2000

But by May of 2001, the American Arbitration Association found that among the 100 Fortune 1000 executives that it surveyed, more than 70% said that they had already moved some part of their company’s supply chain online, with just under 70% saying that they expected to complete their online SCM efforts within the next 2 years.

As other surveys by AMR Research and Izodia have shown, supply chain management implementations have remained a priority for companies in 2001, despite signs of an economic slowdown. Indeed, spending on applications that reduce costs and increase efficiencies is continuing to go forward according to most CIOs.

When it comes to examining how businesses go about their e-commerce implementations, research by Izodia finds that most companies’ e-commerce projects do not focus on procurement applications alone. Not surprisingly, the majority of businesses are implementing both supply chain management and procurement solutions at the same time.

### Priorities for Businesses' Implementation of B2B eCommerce Solutions, February 2001



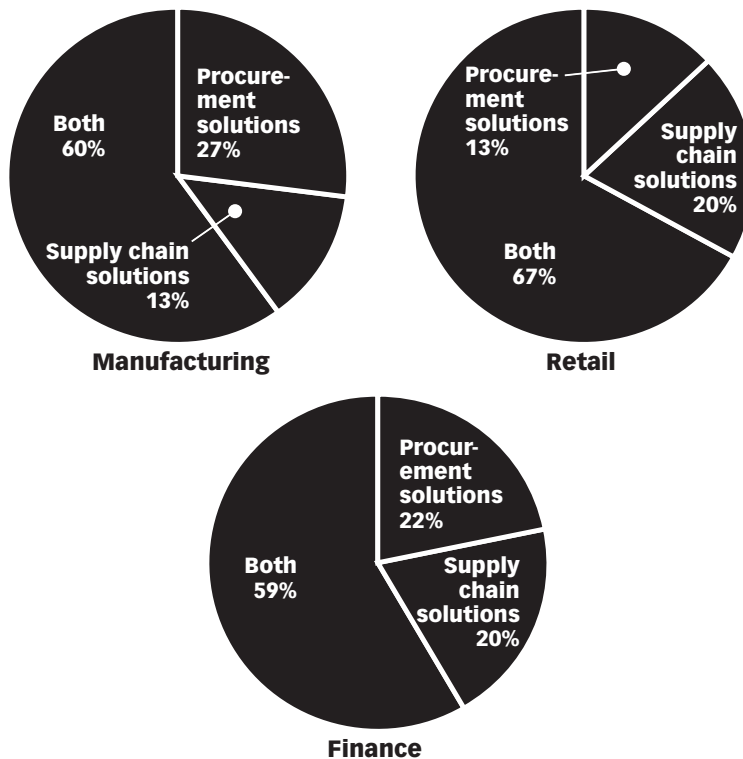
Source: Izodia, 2001

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This is not to say, however, that the majority of companies are trying to build out their supply chains all in one shot – thus repeating the same mistake that many firms made during their ERP implementations in the 1990s. Instead, supply chain management vendors sell entire solutions that are broken down into separate modules, which permit companies to assemble their systems on an incremental basis. Because of the necessary ties between procurement and supply chain management applications, most companies are implementing them as part of an integrated e-business strategy with priorities for the timing of each components’ deployment being determined as appropriate.

Breaking down Izodia’s survey results by business sector, more manufacturing companies are implementing procurement solutions ahead of supply chain solutions, compared to their counterparts in the retail and financial sectors. This is not surprising however, due to the strategic nature of direct materials purchasing in the manufacturing industry.

**Priorities for Businesses' Implementation of B2B eCommerce Solutions, by Industry, February 2001**

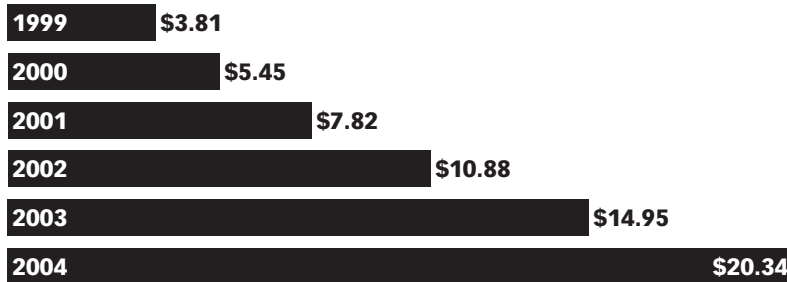


Note: Base: 302 companies with plans or already implementing  
 Source: Izodia, 2001

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In its revised projections for the size of the supply chain management software market, AMR Research has made some changes to its forecast from 1999. SCM software sales are projected to grow to \$7.8 billion in 2001, up from \$5.4 billion in 2000. The previous forecast had projected SCM software sales would be \$5.8 billion in 2000 and \$8.8 billion in 2001. As a comparative estimate, IDC has projected that SCM software spending will grow at a compound annual growth rate of 46% between now and 2003, to reach \$20 billion.

**Estimated Worldwide Supply Chain Management Software Revenues, 1999-2004 (in billions)**



Source: AMR Research, 2000

**Worldwide SCM Software Market Revenues, 1999 & 2004 (in billions)**



Source: International Data Corp. (IDC), 2000

Probably the most interesting forecast for the SCM market is the comparison between projected SCM software sales, versus projected revenues for the related consulting, integration and maintenance services. IDC predicts that this latter market will be worth more than \$140 billion by 2004, while software sales will earn just over \$20 billion that year.

**Revenue Comparison: Estimated Worldwide SCM Software vs. SCM Services Revenues, 2004 (in billions)**



Source: (1) International Data Corp. (IDC), 2000; (2) AMR Research, 2001

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In pursuit of the services opportunity, most of the leading business and technology-consulting firms, along with literally hundreds of niche players, are converging on the supply chain management space. IDC lists Accenture, Cap Gemini, Computer Sciences Corporation, Deloitte Consulting, EDS and IBM Global Services among the largest players that are already serving this market.

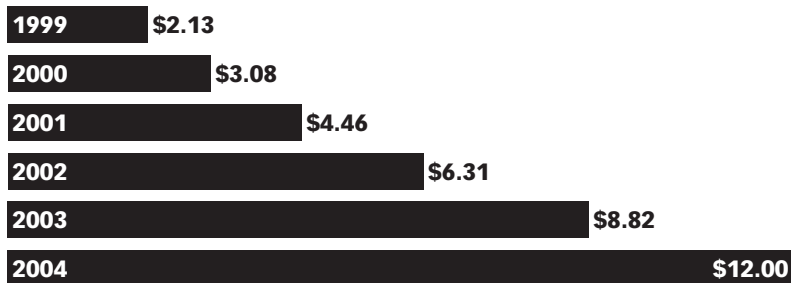
Following the lead of AMR Research, most analysts have begun to break down the supply chain management space into three separate categories: supply chain planning, supply chain execution and product lifecycle management.

Supply chain planning (SCP) software is the most complex of the SCM solutions, because of its ability to process the vast amount of data that is generated throughout a company's supply chain operations. This information is gathered and then used to forecast a businesses' demand and supply needs, which in turn is used to optimize production schedules and inventory levels. Although they sell robust solutions that go well beyond their SCP offerings, i2 Technologies and Manugistics are recognized as the number one and two leaders in the SCP space, which AMR Research predicts will grow at a CAGR of 41% to reach \$12 billion by 2004.

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### Estimated Worldwide Supply Chain Planning Software Revenues, 1999-2004 (in billions)

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Source: AMR Research, 2000

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Software companies such as Manhattan Associates, EXE and Industri-Matematik International are vendors of supply chain execution (SCE) systems. Enterprise resource planning vendors Oracle, SAP, and JD Edwards have also been developing SCE solutions over the past several years as an extension of their enterprise systems. Supply chain execution applications include warehouse management systems (WMS) and logistics applications, and they are often responsible for tracking inventory or coordinating product assembly and delivery operations.



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**Breakdown of Supply Chain Execution Software Revenues, 2001 (in billions)**

Transportation management	\$0.55
Warehouse management	\$1.41
Other	\$1.41
<b>Total</b>	<b>\$3.36</b>

Source: AMR Research, 2000

Supply chain execution systems are expected by AMR Research to grow at a rate of 45% from 2000 to 2001, which is the same as the rate that AMR has forecast for supply chain planning solutions this year.

**Breakdown of Supply Chain Execution Software Revenues, 2004 (in billions)**

Transportation management	\$1.42
Warehouse management	\$3.86
Other	\$3.05
<b>Total</b>	<b>\$8.34</b>

Source: AMR Research, 2000

Product lifecycle management is a relatively new category within the supply chain management family of software solutions. These applications focus on the coordination of the entire end-to-end process of product concept, design, production and sales, and their link to supply chain management systems lies in their facilitation of collaborative manufacturing. AMR Research has identified Agile software as the leader in this space, while noting that Oracle, SAP and i2 Technologies are all investing heavily in the development of similar products.

As for the leading vendors of SCM software by total sales, i2 Technologies was estimated to have an 18% market share in 1999, with \$571 million in sales, followed next by International Business Systems, which had a 7% market share. Third among vendors focused on SCM sales alone, Manugistics was estimated to hold about 5% of the SCM market.

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## Top 15 Supply Chain Software Vendors by Revenues, 1999 (in millions)

### i2 Technologies

\$571

### International Business Systems

\$272

### SAP

\$201

### Manugistics

\$148

### EXE

\$97

### Industri-Matematik International

\$91

### Manhattan Associates

\$81

### JD Edwards

\$69

### McHugh

\$67

### ILOG

\$64

### Baan

\$59

### NxTrend

\$55

### PeopleSoft

\$55

### HK Systems

\$51

### SCT

\$49

### Total

1,930

Source: AMR Research, 2000

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AMR Research goes on to conclude that 54% of the supply chain management software market was held by companies outside of the leading 10 pure-play SCM vendors in 1999. In part, this was due to the large number of smaller SCM vendors that offer various point solutions. But there is also a significant portion of SCM sales that are made by ERP vendors. The following chart is based on AMR's older forecast numbers heading into the year 2000, however it does provide a rough indication of the ERP presence within supply chain management.

**Estimated ERP-Vendor SCM Sales, 1998-2000 (in billions and as a % of total SCM sales)**

	SCM sales	% of total SCM sales
1998	\$0.41	13.6%
1999	\$0.52	14.2%
2000	\$0.93	17.2%

Source: AMR Research, 2000

At the end of 2000, i2 had posted \$1.13 billion in revenues, with software licenses accounting for \$709 million. Net income for the year rose 252%, to reach \$180 million up from \$30.8 million in 1999. While software licenses accounted for 63% of total revenue in 2000, services made up 24% of i2's revenues and maintenance revenues accounted for the remaining 13%.

**i2 Technologies: Fiscal Year 2000 Revenues, by Segment (in millions and as a % of total revenues)**

	Revenues	% of total revenues
Software licenses	\$709	63%
Services	\$270	24%
Maintenance	\$146	13%
<b>Total</b>	<b>\$1126</b>	<b>100%</b>

Source: i2 Technologies, 2001

The average sale for i2 Technologies was \$1.8 million per customer in 2000, with users spending an estimated \$2 million to \$3 million more on implementation and integration services. i2 has a strong client base in both the high technology industry and among manufacturers. Salomon Smith Barney estimates that in the second quarter of 2000, 32% of i2 Technologies' revenues came from high tech industry clients, a considerable improvement over the prior year when that industry accounted for 57% of company revenues.

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## i2 Technologies: Number of Software License Transactions, 1998-2000

	Total transactions	Transactions exceeding \$1 million
1998	216	55
1999	252	66
2000	392	150

Source: i2 Technologies, 2001

Not unlike its former partner Ariba, i2 Technologies has been doing a great deal of maneuvering in the enterprise applications space as well. However, i2's major motivation has come from its need to compete with ERP vendors such as SAP and Oracle by rounding out its e-business offerings.

Through its purchase of Aspect Development's strategic sourcing and product design technologies, i2 has significantly added to its core SCP offering. It has also targeted content as the heart of its supply chain strategy, by building out a database of 100,000 suppliers and over 17 million product components through its acquisitions of SupplyBase and TradeService. And finally, as the nail in the coffin for its relationship with Ariba, i2 Technologies purchased indirect procurement software vendor RightWorks.

## Key Acquisitions by i2 Technologies, 2000 & 2001

Partner	Contribution
Aspect Development	Strategic sourcing, product lifecycle management
SupplyBase	High-tech industry custom parts catalog content
TradeService	MRO goods catalog content provider
RightWorks	Indirect procurement

Source: eMarketer, 2001

As of early 2001, i2 Technologies has been trying to reposition itself as an extended-enterprise, e-business technology provider by centering its SCM, CRM and supplier relationship management (SRM) offerings around its core content and TradeMatrix e-commerce platform. In the month of May, i2 Technologies officially announced its revised business-to-business strategy, as it has also moved away from its prior role as a technology provider to public exchanges and instead become a builder of what are essentially private exchanges.

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i2's Dynamic Value Chain strategy, as its extended-enterprise effort is called, brings together its own technology along with solutions from other key strategic partners, in the aim of helping enterprises obtain a view of their entire value chain, from customer relationships all the way back to supplier relationships. Key partners include IBM, Sun Microsystems and webMethods.

**Key Partners in i2 Technologies' Dynamic Value Chain Strategy, 2001**

Partners	Contribution
i2 Technologies	SCM, SRM, CRM, Content, TradeMatrix Platform
Sun Microsystems/iPLANET	Application server/online payments (with i2 CRM)
webMethods	Preferred integration software provider to TradeMatrix
IBM	Preferred infrastructure, consulting and hosting provider

Source: eMarketer, 2001

Known for its ability to articulate a strategic vision for its users, i2 Technologies must now deliver on many of its offerings, some of which are currently under development and scheduled for release during the last half of 2001.

In contrast with i2's roots in the high-tech industry, competitor Manugistics is known for its strength in the consumer packaged goods industry. In February of 2001, the company announced that it had passed the 1,100 client mark after recognizing revenue from 36 new deals in its latest quarter. The average deal size during Manugistics' fourth quarter ended March 2001 was \$1.3 million, with the company taking in \$89.3 million in revenues, up 105% from the year-ago quarter. Of the 36 deals in the quarter, 14 were in excess of \$1 million, with 6 of those 14 in excess of \$2.5 million.

**Manugistics' Customer Base, February 2001**

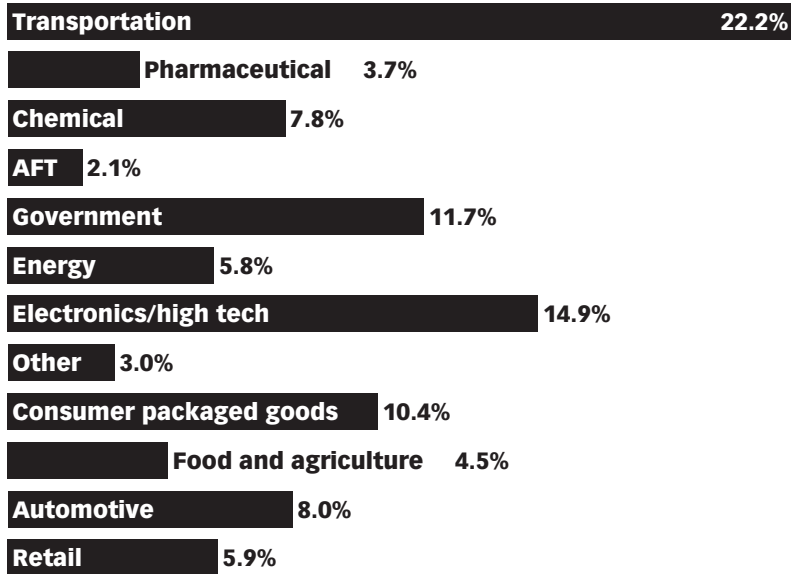
11 of the top 15 high-tech companies
4 of the top 5 chemical companies
6 of the top 10 motor vehicles and parts companies
7 of the top 10 pharmaceutical companies
9 of the top 10 consumer packaged goods companies
7 of the top 10 retailers
6 of the top 10 transportation companies

Source: Manugistics, Inc., 2001

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Broken down by industry, Manugistics has a very diverse portfolio, with established expertise and customer bases in more than 10 industries. While the greatest portion of its revenues comes from both the transportation and electronics/high technology industries, Manugistics is expected to see greater revenues from the hospitality industry, thanks to its acquisition of Talus Solutions at the end of 2000.

### Manugistics' Revenues, by Industry, Fiscal Year 2001



Source: Manugistics, Inc., 2001

As part of its broad Enterprise Profit Optimization solutions strategy, Manugistics has begun to gather several key partners under the umbrella of its Commerce Management solution strategy. Although it has had to break off its relationship with RightWorks following the i2 Technologies acquisition, Manugistics continues to partner with Agile Software and NetVendor as preferred software vendors within its e-marketplace platform offering.

### Key Partners in Manugistics' Commerce Management Strategy, 2001

	Contribution
Agile Software	Product lifecycle management (collaborative manufacturing)
NetVendor	Sell-side channel management solution
webMethods	Preferred integration software provider

Source: eMarketer, 20001

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In a separate initiative, Manugistics has also partnered with supply chain execution vendor Manhattan Associates, which offers its comprehensive warehouse management system along with its extensive experience in the retail, consumer goods manufacturing and automotive industries. And as a means of accessing the small and mid-size business market, Manugistics has partnered with KPMG to offer its SCM product as part of Microsoft's .Net enterprise technology strategy.

Two emerging niche categories within the supply chain management space include supply chain event management (SCEM) and collaborative planning, forecasting and replenishment (CPFR) applications. These two market segments have begun to receive an increasing amount of attention because these solutions fit quite squarely within the collaborative vision of business-to-business e-commerce. Furthermore, both technologies are just now beginning to show positive results, after having been deployed by early-adopters for not more than 1 to 2 years.

Supply chain event management software is projected by AMR Research to grow from a \$185 million market in 2001 to \$1.1 billion by 2004. Solutions vendors such as SeeCommerce give users the ability to use web-based browsers to pull up data that is buried within the SCM solutions of vendors like Manugistics or i2 Technologies, or the ERP systems of Oracle and SAP. These event management solutions provide an accurate, real-time look at supply chain activity and can alert users to inventory-based exceptions that may disrupt the normal flow of goods.

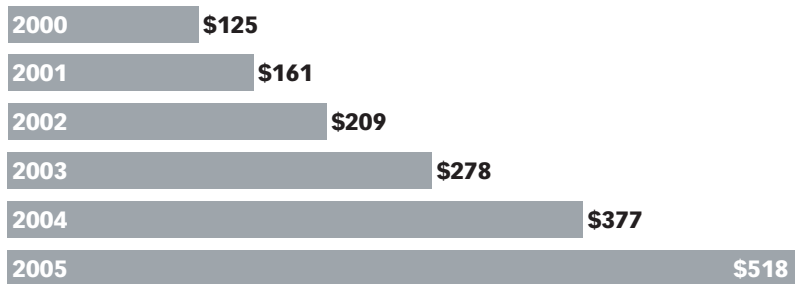
**Projected Worldwide Supply Chain Event Management (SCEM) Software Revenues, 2001 & 2004 (in billions)**



Source: AMR Research, 2001

As a comparative estimate, the ARC Advisory Group projects that what it calls the supply chain process management (SCPM) market will grow to \$377 million in 2004.

**Projected Worldwide Supply Chain Process Management (SCPM) Software Revenues, 2000-2005 (in millions)**



Source: ARC Advisory Group, 2001

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According to the ARC Advisory Group, SCPM/SCEM applications are at present a very immature market with a few early deployments that are only beginning to show results. As an example of an emerging leader in this space, SeeCommerce is estimated to have more than 30 customers in early 2001.

By the ARC Advisory Group's estimates, this market is projected to grow at a CAGR of 33% over the next 4 years, although the consulting firm believes that this rate could potentially be as high as 40% if ROI stories emerge showing that firms are achieving a rapid return on investment. The ARC Advisory Group has also suggested that the SCPM/SCEM market could see higher growth rates once ERP and SCM vendors add this functionality to their basic offerings. And as mentioned above, i2 Technologies is planning to roll out its first supply chain visibility product in the second half of 2001.

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### **Leading Supply Chain Event Management (SCEM) Software Vendors, 2001**

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Viewlocity

Vigilance

SeeCommerce

Industri-Matematik International

Manhattan Associates

JD Edwards

SAP

SupplyWorks

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*Source: Computerworld, 2001*

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As for collaborative planning, forecasting and replenishment (CPFR) solutions, this market is still in a nascent state as well. CPFR software permits the real-time exchange of information between trading partners via the internet, and it is primarily applicable to retailers and manufacturers.

The software works by requiring any two trading partners to communicate their inventory and production needs in advance, with past sales and upcoming marketing promotions being taken into consideration. Once the forecasts are complete and regular replenishment transactions are underway, the CPFR software monitors the transaction activity for exceptions, and then alerts the relevant parties so they may adjust their activities accordingly.

By monitoring transaction activity in real time, CPFR software permits much tighter control of inventory and production levels, and ultimately helps trading partners reduce stock-outs or the costs associated with keeping excess inventory.



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But despite the promise of CPFR solutions, they are still very much in the early-adoption phase. For example, while 22% of the 528 respondents to a National Association of Manufacturers survey said that they were purchasing via the internet, only 1% said that they had deployed sophisticated collaborative applications such as CPFR or logistics by early 2001.

AMR Research estimates that widespread adoption of CPFR technologies will not occur for another 2 years. By 2004, AMR Research predicts the CPFR market for software sales will reach \$540 million.

As per AMR's survey data, 44% of respondents said that they expected CPFR to be extremely important within 2 years, while a significant 80% of retailers and suppliers said that it was not important to their present e-business strategies.

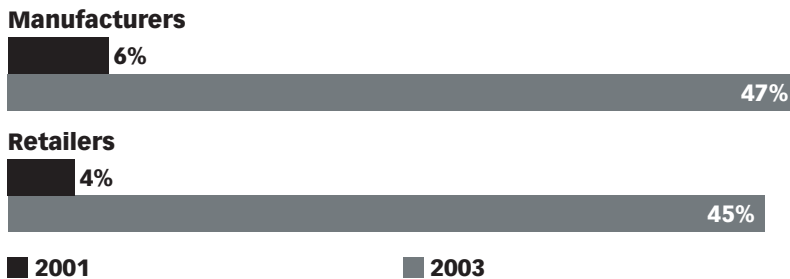
### Retailers and Manufacturers That Use Paper, Phone and Fax for Collaboration, 2001



Source: AMR Research, 2001

AMR Research finds that just 6% of US manufacturers are CPFR capable in 2001, but that 47% plan to have this capability within the next 2 years. A separate survey conducted by NAM and Ernst & Young in late 2000 posted similar results, showing that just 5% of American manufacturers could claim visibility into their suppliers' inventory levels. However, for those manufacturers that did have this capability, their inventory turn rates were 44% higher than for counterparts that had no supply chain visibility.

### Retailers and Manufacturers That Are CPFR Capable, 2001 & 2003

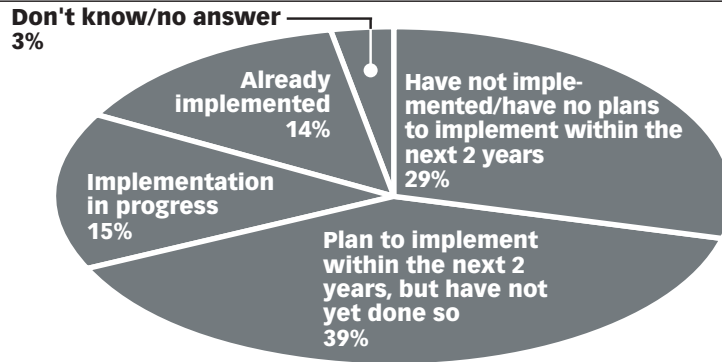


Source: AMR Research, 2001

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Survey data from *RetailTech* magazine agree with this picture from the retailers' point of view, finding that awareness of CPFR had increased in 2000, and that several companies had plans to begin implementing the technology within the next 2 years.

**Status of North American Retailers CPFR Initiatives, 2000**



Source: Retail Tech, PricewaterhouseCoopers, 2000

To accomplish this level of real-time collaboration, a high degree of trust is required. For many retailers, a big step will be beginning to share point-of-sale data with trading partners. There are also complications associated with data compatibility, as different companies use different standards to classify information. For example, a retailer may organize sales data for a specific product item on a weekly basis and by store, while its trading partner may describe product information using weekly data and on a regional basis.

While getting two different back-end systems to communicate with one another is not something that CPFR software can do on its own, industry bodies such as the VICS association are working on standards. Furthermore, consortia-led exchanges are also eager to help facilitate the establishment of industry-wide agreements on the technology side.

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Many businesses may wind up getting their first taste of CPFR technology through their use of consortia-led exchanges. Because most of the leading retail and consumer packaged goods exchanges are aiming to provide CPFR software on a hosted basis, these exchanges have removed some of the risk and headaches associated with the installation of new software for potential users. As consortia-led exchanges move beyond their work with early adopters, they will be able to build on their experience and speed CPFR adoption among the wider business population.

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### **CPFR Software Vendors to Leading Exchanges, 2001**

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Transora	Syncra Systems
GlobalNetXchange	Manugistics
Worldwide Retail Exchange	i2 Technologies
Wal-Mart's RetailLink	Atlas Commerce

*Source: eMarketer, 2001*

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Lost in the discussion of buy-side exchanges and e-business solutions has been the sales-side of business-to-business e-commerce. While most B2B observers are by now familiar with names like Covisint, Exostar and Elemica, so far relatively little is known about sell-side efforts such as FordDirect, MyBoeingFleet or BPDirect.com.

**Brick-and-Mortars' Buy- and Sell-Side Efforts, 2001**

	<b>Buy-side exchange</b>	<b>Sell-side website</b>
Ford Motor Company	Covisint	FordDirect.com
Boeing Company	Exostar	MyBoeingFleet.com
Eastman Chemical	ChemConnect	www.eastman.com
BP Amoco	Elemica	BPDirect.com
Dow Chemical	Elemica	MyAccount@Dow

Source: eMarketer, 2001

However, sell-side efforts are emerging from obscurity with a noticeable push by solutions vendors and extranet builders to bring more suppliers online.

One prominent example is Boeing's sell-side website, MyBoeingFleet.com, which has been in operation since May of 2000. On its 1 year anniversary, the website claimed as many as 15,000 registered accounts, with almost 1,500 daily logins. In addition to providing its customers and trading partners with extensive information about Boeing's products, the website offers a separate PARTS page, through which it sells replacement parts to customers and maintenance workers throughout the world.

**Boeing's Online Sales: MyBoeingFleet.com, May 2001**

<b>Date started</b>	<b>May 2000</b>
Number of individual accounts	15,000 with 1,450 daily logins
PART Page accounts	13,000
Number of daily transactions	20,000

Source: eMarketer, 2001

Although most large and mid-size businesses have set up websites that offer basic company information, product catalogs, and even limited interaction capabilities, most surveys show that fewer than 20% of companies are actively selling their products online. But among the early adopters who have successfully been using the internet to sell directly to their clients, several are already moving into next-generation implementations. These include customer self-service features, ranging from the ability to check an order's shipping status to online order configuration.

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But instead of focusing on direct sales through a corporate website, many businesses have also begun to build out much more complex private networks that focus on strengthening ties with sell-side channel partners. Morgan Stanley has noted that as much as 65% of manufactured goods are sold through such indirect channels, with the majority of brokers, distributors and resellers still relying on traditional phone-fax networks and catalogs for communication.

It is this emerging category of private sell-side exchanges that has begun to gain a great deal of attention, as software vendors, consulting firms and other technology providers are looking to capitalize on the opportunity to build out these networks. Lying at the crossroads of business-to-business e-commerce and customer relationship management, channel management solutions are estimated to become a \$12 billion opportunity within the next 4 years.

## A. Online Direct Sales: Building a Company Website

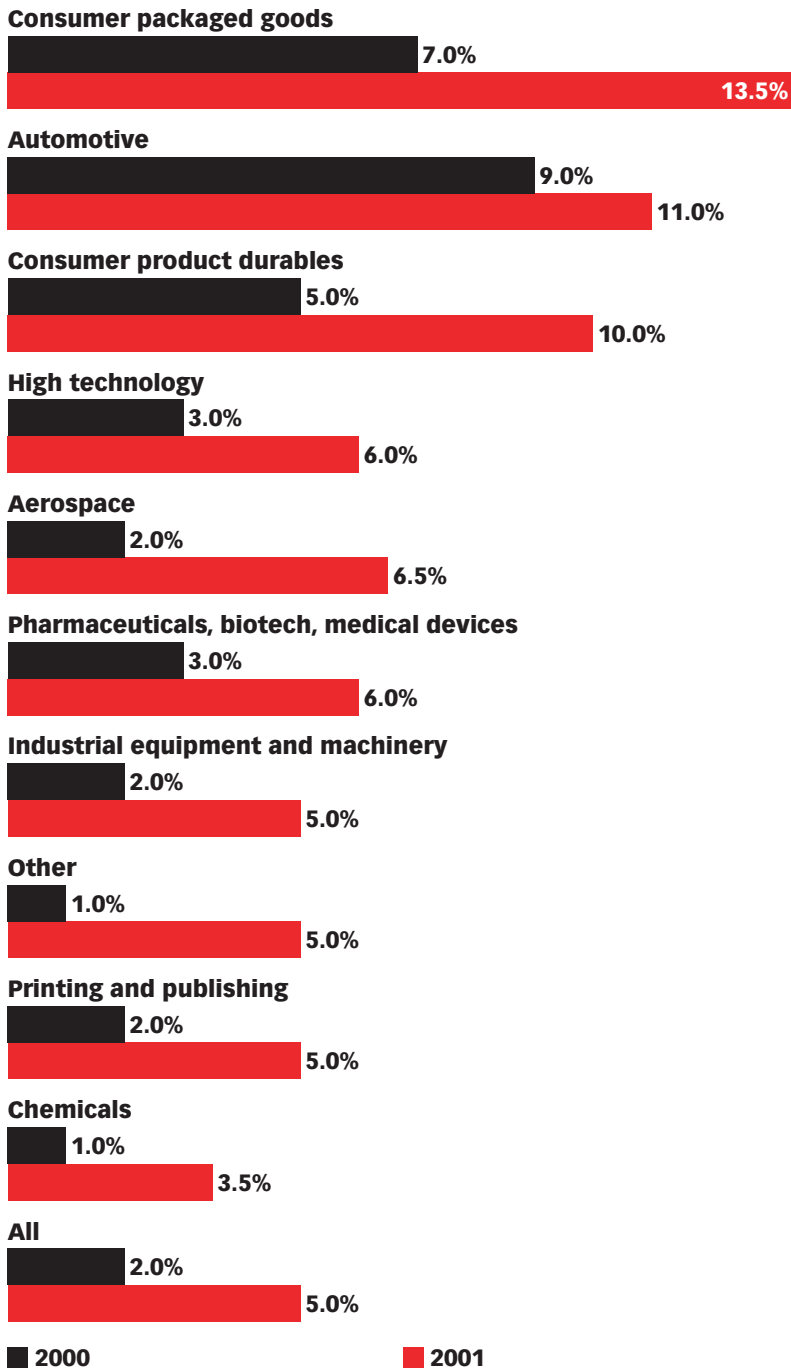
Despite most businesses' efforts to put up websites that provide information about their company, the majority of suppliers have not progressed very far beyond brochureware and basic customer-services features as part of their first efforts at business-to-business e-commerce. And although some businesses have even established limited transaction capabilities, these are most often not integrated with back-end systems.

*IndustryWeek's* annual survey of manufacturers found that at the end of 2000, 48.8% of respondents said that they had plans to conduct more than 5% of their sales electronically in 2001, up from 31.3% during the previous year. The magazine went on to find that 21% of manufacturers offered web-based customer service, versus 25% that sold products through their established EDI connections to their customers.

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Without question, EDI networks accounted for the greater portion of electronic sales in this survey, with the automotive and consumer packaged goods industries leading electronic sales in 2000. Most companies expected to see a substantial increase in 2001, with the high-tech, aerospace and pharmaceuticals industries planning to see their electronic sales double.

### Electronic Sales by US Manufacturing Companies, 2000 & 2001 (as a % of total sales)



Source: IndustryWeek, 2001



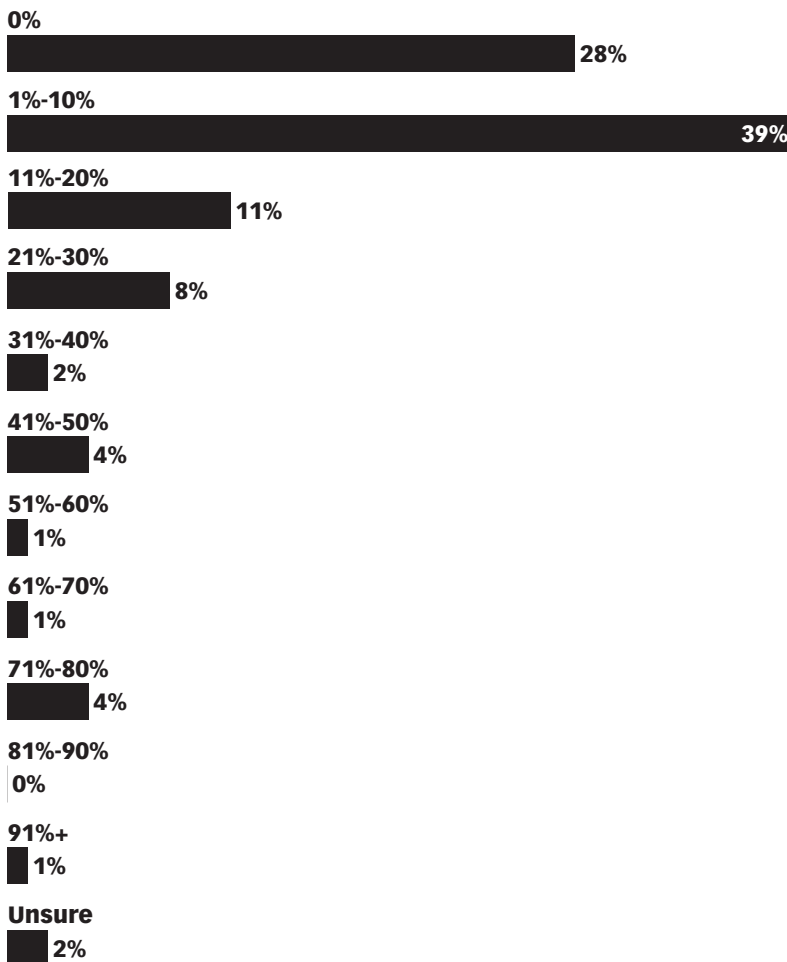
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Most interestingly, 21.2% of manufacturers said that they were using the internet to sell directly to their customers, while 18.3% said that they were selling products via B2B marketplaces.

By comparison, the Hurwitz Group estimates that in early 2001, less than 20% of US suppliers were able to sell via the internet. And in the first quarter of 2001, a survey by Forrester Research and the National Association of Purchasing Management found that only 53.3% of manufacturers and 58.6% of non-manufacturers rated their suppliers' readiness for e-commerce as good, while 43.7% of manufacturers said that their suppliers' readiness was either very bad or poor.

Morgan Stanley's April survey of 250 CIOs found that 28% of respondents said that their companies had no online interaction with their suppliers, while an additional 50% of businesses said they interacted with less than 20% of their suppliers via the internet.

### Suppliers of US Companies Interacting Online for Order Management, Planning, Scheduling, etc., April 2001



Source: Morgan Stanley, 2001

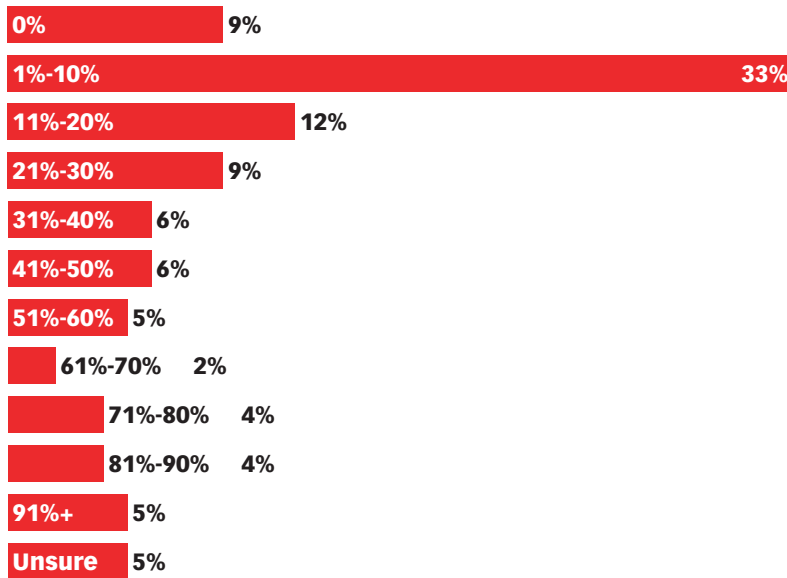
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However, in answer to complaints that suppliers have been slow to come online, manufacturers argue that they simply do not have the resources to open up a new online sales channel. Although setting up a basic e-commerce website may be done relatively easily with a hosted solution, the back-end integration that is necessary for any real volume of online sales is a much more ambitious project. Of the 11,000 members of the National Association of Manufacturers with less than 500 employees, as many as half do not even have a full-time IT staff.

Many suppliers have also found it prudent to wait on the sidelines while ambiguity remains about the future of online business-to-business channels. So far, these companies have watched as startup B2B exchanges were displaced by consortia-led exchanges, which have in turn been displaced by talk of private exchanges. Until an apparent consensus emerges within a supplier's industry or among its own trading partners, most have been wise to hold off on investing in what might be a costly wrong turn for their e-business strategies.

Finally, suppliers have also noted that there is still not yet substantial demand from their customers for online transaction capabilities. The majority of respondents to Morgan Stanley's CIO survey indicated that less than 30% of their customers interact with them online.

### Customers of US Companies Interacting Online for Procurement, Service, etc., April 2001



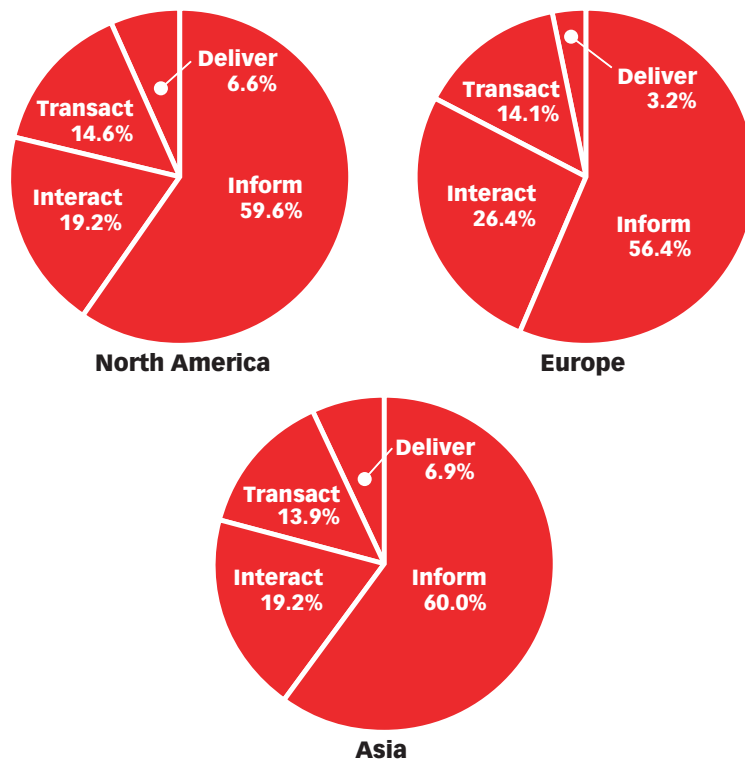
Source: Morgan Stanley, 2001

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Change is underway in 2001, however, as online buyers and sellers have increased in number during the first half of the year. Building on their earlier e-commerce efforts, companies now have some internet experience that will help them decide where they should commit future resources.

As part of this early e-commerce foundation, Computer Sciences Corporation has discovered that more than half of the 800 businesses that it surveyed in North America, Europe and Asia have basic information features on their websites. But no more than 15% of businesses had the ability to transact online, with even fewer companies offering order tracking or other delivery capabilities through their internet channels.

**Company Website-Operating Capabilities, by Region, 2000**



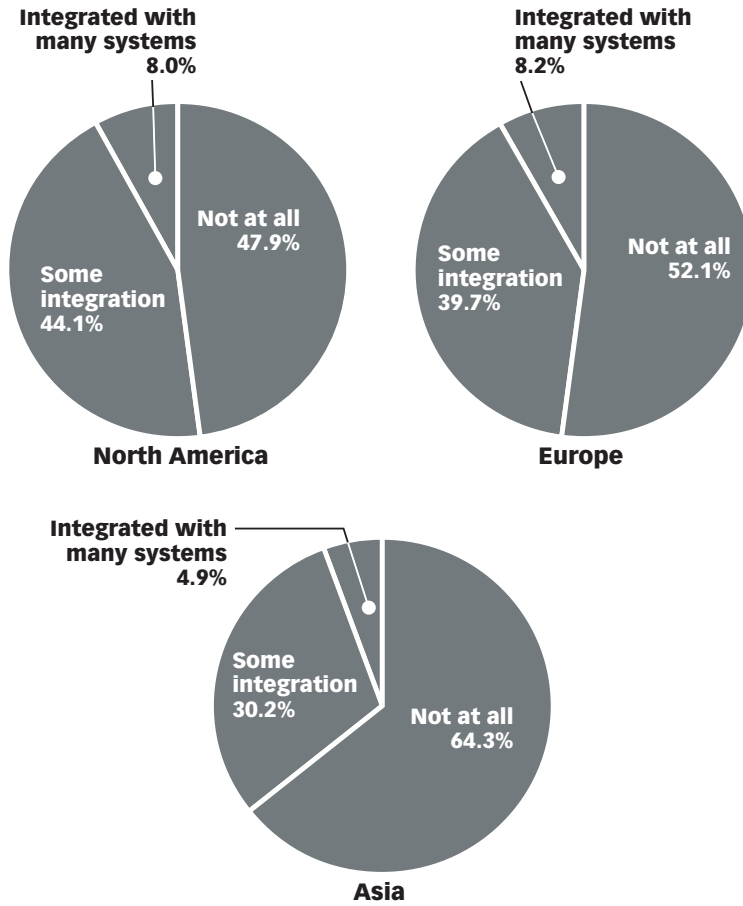
Source: Computer Sciences Corporation, 2001

As for integration between web-based channels and the back-end and front-end systems of online sellers, no more than 10% of businesses said that they had achieved complete integration. Almost half of companies had achieved some level of integration in late 2000, with this work likely to continue as a significant demand on e-commerce resources through 2001.

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On the back-end side of integration, most of the work is focused on establishing links to ERP and SCM systems, as companies will need to provide product availability information to customers on their websites, while at the same time be able to communicate online sales activity to their back-end systems.

**Companies with Websites Integrated to Back-Office Systems, 2000**



Source: Computer Sciences Corporation, 2001

As for front-end integration needs, because the majority of businesses have typically developed their e-commerce websites as a separate project from other sales channels, most companies are now working to integrate their online operations with other sales channels. In the pursuit of a full view of customer interactions across multiple contact points with the enterprise, this integration is often being done as part of an entire customer relationship management system.

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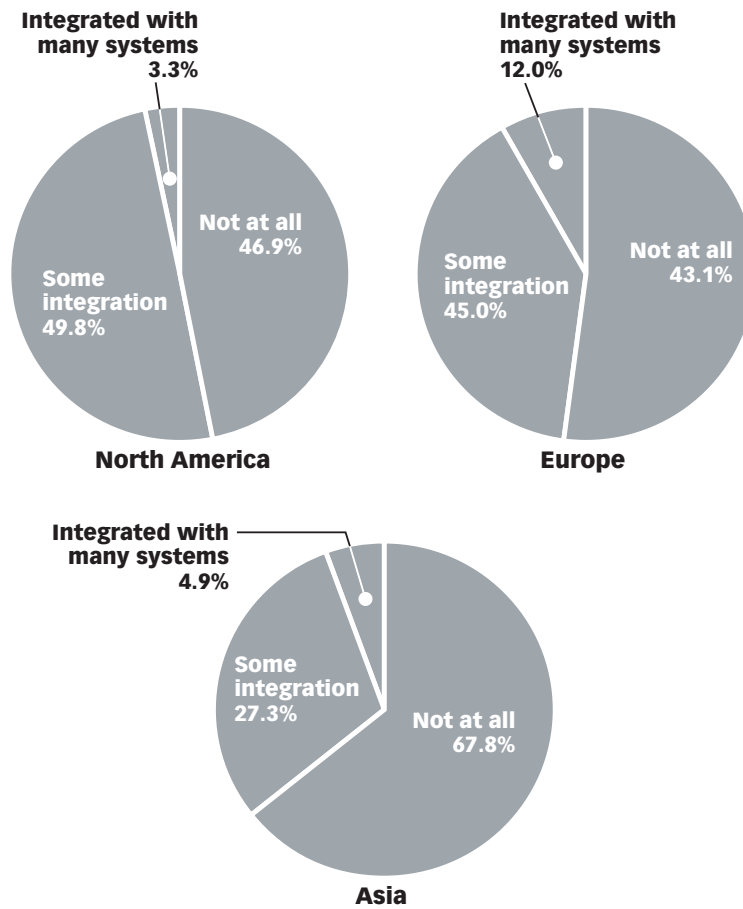
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## Companies with Websites Integrated to Front-Office Systems, 2000



Source: Computer Sciences Corporation, 2001

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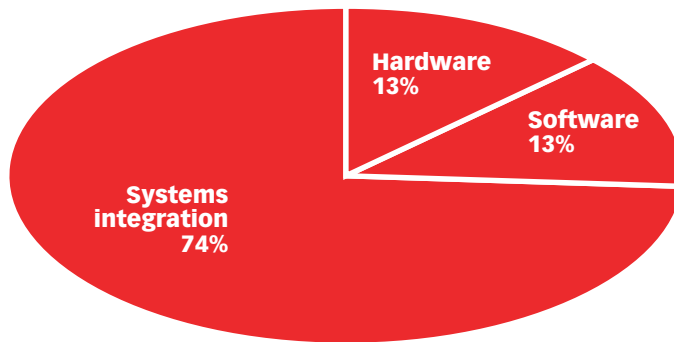
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Indeed, integration costs are by far the largest component of the total cost of deploying a website. According to Jupiter Media Metrix, systems integration accounts for 74% of the total cost, although this may vary significantly depending on the complexity of the website and the features that it offers.

### Internet Business Website Deployment Costs, 2000



Source: Jupiter Media Metrix, 2000

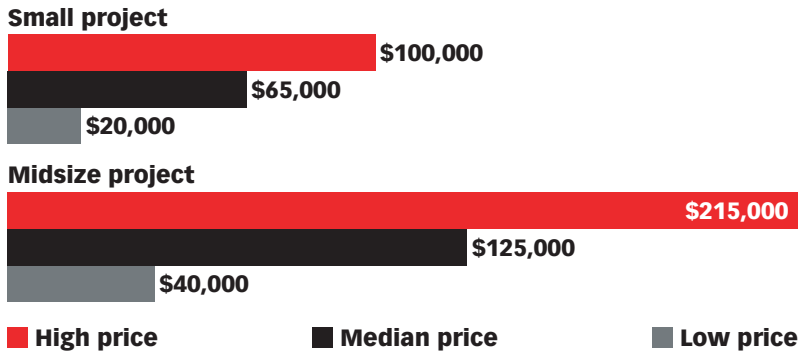
In its annual look at the cost to build and design commercial websites, *BtoB Magazine* finds that the price-tag can range from a low of \$20,000 for a small project to as much as \$675,000 for a large project. As part of its study, twenty different developers were asked to bid on three separate projects that varied in size and complexity. Integration work was not included in these estimates.

The small project was for a hypothetical law firm that required basic design work for a hosted website that would primarily serve as brochureware. The mid-size project required a website to be designed for a fictitious software developer that needed an e-commerce engine, secure hosting services, bulletin board and user registration system. The site was also required to provide customer access to a database for user support.

Bids for the small project topped off at \$100,000, while the high price for the mid-size project was \$215,000. Median prices for the small and mid-sized projects were \$65,000 and \$125,000 respectively.

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## Website Development Costs for a Small and Midsize Project, 2001



Source: *BtoB Magazine, 2001*

The large project was for a hypothetical portal used in the restaurant industry, described as already having 25,000 registered users. This mid-size portal was said to be planning to move into a second-generation phase that would offer vendors the ability to manage and update their online catalogs. The portal also wanted to permit buyers to securely register and manage their own accounts, and store purchase information. An online industry-news service, content personalization, along with an e-mail list management and delivery system were also to be added features for this new website. The high price for this large project came in at \$675,000, while the lowest bid was \$86,000.

## Website Development Costs for a Large Project, 2001

High price	\$675,000
Median price	\$250,000
Low price	\$86,000

Source: *BtoB Magazine, 2001*

Compared to previous years, *BtoB Magazine* found that median prices for website design stayed constant or declined, even though more complex features were added to the survey in 2001. Large projects actually dropped significantly, from a median price of \$608,000 in 2000 to just \$250,000 in 2001. By comparison, midsize projects went up in price, from \$119,500 in 2000 to \$125,500 in 2001.

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As an explanation for these changes, *BtoB Magazine* notes that there was a spike in website development costs in 2000 when web developers turned away dot-coms and brick-and-mortar companies alike due to excessive demand. This situation has changed drastically since May of 2000.

**Comparison of Median Prices for Website Development Projects, 1999-2001**

	September 1999	May 2000	May 2001
Large project	\$405,000	\$608,000	\$250,000
Midsized project	\$170,000	\$119,500	\$125,500
Small project	\$77,500	\$113,500	\$65,000

*Source: BtoB Magazine, 2001*

*BtoB Magazine* also found that as companies moved into next-generation websites, the cost to expand them was significantly lower than their initial development cost. For example, although the mid-size project added significantly more complex technology in the 2001 study, it resulted in only a very slight rise in price. Overall, demand for website development work was found to have substantially declined since May of 2000, while developers' growing expertise contributed to their ability to implement web design projects at a faster speed, thus reducing labor costs.

For many companies that are moving into next-generation business-to-business websites, customer service functionality has become a key focus. Businesses have largely bought-in to the idea that they should become customer-centric organizations, and their e-commerce initiatives are expected to provide them with an effective way of better serving their customers.

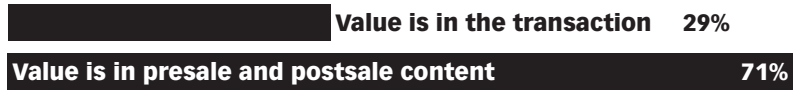
Many companies are also beginning to discover that by offering better online customer service, they are able to distinguish themselves from their competitors and thereby reduce the threat of commoditization that the internet is perceived to cause. As confirmation of this, an Accenture study of 1,000 corporate buyers found that 80% of respondents agreed that a strong brand and reliable customer service are key differentiators over price when it comes to making buying decisions.

Another study by consulting firm McKinsey & Co. found that the majority of business-to-business buyers said the value of online purchasing comes from the pre- and post-sales content that surrounds internet-based transactions. By anticipating customers' questions and providing easy-to-use services that help users serve themselves, online sellers are not only offering better customer service, they are also reducing their own offline sales and customer support costs.



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### User Assessment of B2B Interactions, 2001



Source: McKinsey & Co., 2001

One example of an early adopter that has already taken steps to improve online customer service is W.W. Grainger. The MRO-goods supplier estimates that sales via its core website, Grainger.com, were approximately \$400 million in 2000, accounting for about 6% of the company's total sales.

### Exchange Profile: Grainger.com Revenues, 1999 & 2000



Source: eMarketer, 2001

One of the improvements that Grainger made to its second generation website was to reduce the number of clicks required to conclude an internet transaction. Through the use of personalization tools that bring up customized content for an individual user, the number of customer clicks was reduced from 13 to 2.

As for the wider population of business-to-business websites, Jupiter Media Metrix found that among the 51 web storefronts that it surveyed in February of 2001, 65% offered some form of online customer self-service. However, Jupiter went on to discover that 98% of the surveyed websites merely offered a static frequently-asked-questions (FAQ) page and nothing more. Other self-service features such as order configuration and order tracking were not available.

Almost all business-to-business websites did offer some form of customer service though, with 96% permitting users to contact customer support via e-mail. Not surprisingly, just 4% of websites offered live online chat.

### Online Customer-Service Features Offered by B2B Websites, 2001

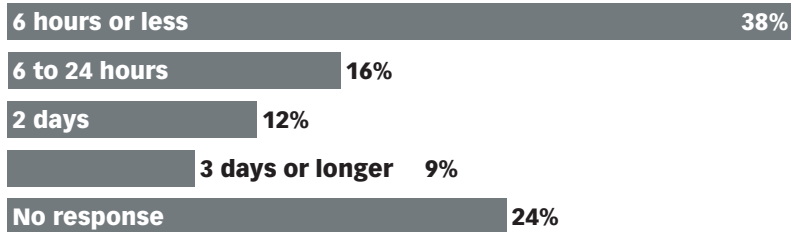


Source: Jupiter Media Metrix, 2001

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Among business-to-business websites that did offer e-mail customer support, 65% were able to respond to basic customer inquiries within 24 hours, with 41% of the companies responding within an impressive 6 hours. However, a high percentage of businesses did not reply to customer inquiries at all.

### eMail Response Times by B2B Websites, 2001

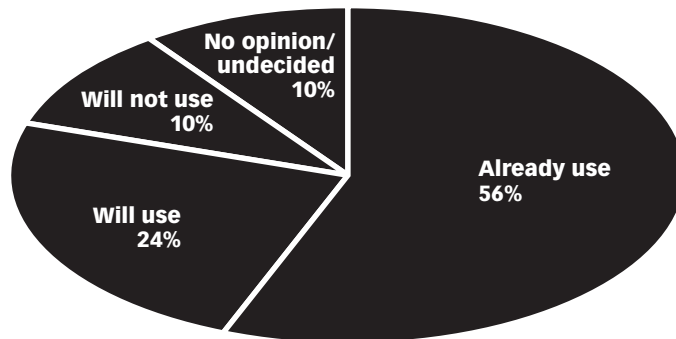


Source: Jupiter Media Metrix, 2001

Turning to the perspective of the buyers, in late 2000 *Purchasing Magazine* found that a majority of purchasing professionals were already users of supplier-hosted websites, with an additional 24% of respondents saying that they intended to use supplier websites for some of their buying.

This data was gathered within the context of a discussion about the use of catalog content, with 67% of respondents saying they would also consider hosting a supplier's catalog information on their own internal network, and 64% saying they would turn to an online exchange for access to supplier content as well.

### US Purchasing Professionals' Use of Supplier-Hosted Websites, 2000

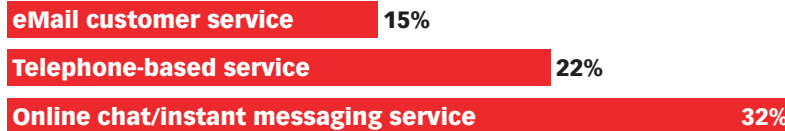


Source: Purchasing Magazine, 2001

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As for the wider population of business buyers' use of their suppliers' e-commerce websites, Critical Research found that 95% of American users had abandoned online transactions due to complications associated with internet-based ordering. When it comes to obtaining service via web-based channels, a surprising 32% of respondents had better experiences with online chat service, as opposed to telephone or e-mail channels.

### US Businesses Rating Online Service Channels As Satisfactory, 2001



Source: Critical Research, 2001

Looking at the overall experiences of business buyers on the internet, Critical Research went on to find that 93% of users regularly had trouble conducting business online, with basic activities such as signing up for online service and conducting product research being listed as their top difficulties.

### Regular Online Trouble Spots for US Business Buyers, 2001



Source: Critical Research, 2001

While the survey was not clear as to whether these problems were a result of users' inexperience with web-based buying, or whether they were caused by poor website functionality, a separate survey by BroadVision indicates that these problems are likely caused by a little bit of both. It should be noted that both surveys were conducted on behalf of companies that have an interest in promoting e-commerce software to website builders.

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### Leading Complaints about B2B Websites, 2000



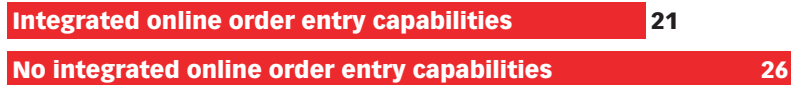
Source: BroadVision, 2000

As mentioned above, web-based customer self-service features not only provide customers with better service, they are also an effective way for online sellers to reduce their own customer support costs. By letting clients check a product’s inventory status prior to ordering, or by permitting customers to follow-up on the delivery status of their orders via the internet, high-volume call center inquiries may be substantially reduced. This in turn permits companies to reallocate customer service representatives to higher-value service areas. Forrester Research estimates that manufacturers can save as much as 32% in support costs through online self-service channels.

For example, prior to deploying online customer self-service solutions, 80% of the orders placed on GE Supply’s SupplyNet required some offline assistance. This was reduced to approximately 10% of orders following the implementation. Furthermore, GE Supply is reported to have seen a 42% increase in the size of its online orders as a result of the improvements it made to the functionality of its website.

For manufacturers that have integrated online order features with their back-end systems, order times have reportedly been reduced by an average of 5 days. Manufacturers with online product configuration technology have reduced their order-to-ship time by a substantial 15 days.

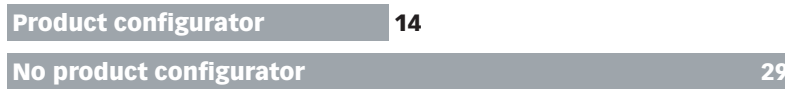
### US Manufacturers' Primary Product Order-to-Shipment Time, 2000 (in days)



Source: National Association of Manufacturers, Ernst & Young, 2001

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## US Manufacturers' Primary Product Order-to-Shipment Time, 2000 (in days)



Source: National Association of Manufacturers, Ernst & Young, 2001

Many companies have also found considerable value in the analytical information provided by the use of web-based customer service applications. For example, by tracking customer behavior online companies have reportedly reduced their custom research budgets.

And finally, among companies that have been selling online – via marketplaces or to their buyers through their e-procurement solutions – consulting firm Andersen finds that 36% of suppliers had already achieved a positive ROI for their e-commerce investments by early 2001. On average, suppliers posted an ROI of 46%, with 42% of companies experiencing an ROI after 1 year of online experience. Among those companies that had been trading online for less than 1 year, just 19% had posted a return on their investments.

By opening themselves up to online procurement applications or through their participation in public exchanges, 62% of suppliers said that they obtained additional income through new customers, while 52% cited incremental revenue growth as part of their return on investment.

## Sources of Additional Income for Suppliers Selling Online, 2001



Source: Andersen, Inc., 2001

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## B. Sell-Side Networks and Channel Management Solutions

General estimates place the portion of products that are sold through indirect channels at somewhere between one-half and two-thirds of all manufactured goods, with most large companies relying on literally hundreds or even thousands of resellers, distributors, brokers or agents to bring their products to end customers. The complexity of these relationships comes not only from the vast number of channel partners that large firms have, but also from the fact that most of these partners are geographically dispersed and of varied capabilities.

Sell-side extranets permit manufacturers that rely on their brand to maintain some degree of control over sales channels. They further permit a better flow of information through the demand chain, from the customers on up through channel partners, all the way back to the manufacturer. This in turn leads to improved communications and better customer service through the integrated value chain. At present, however, this degree of connectivity is for most businesses a vision rather than a reality.

With most companies only beginning to build out this vision, AMR Research estimates that the market for private sell-side exchange solutions will reach \$12 billion by 2005. Businesses are expected to spend a further \$34.5 billion on related e-commerce and CRM systems by then as well.

### Customer Management Systems Sales, 2005 (in billions)

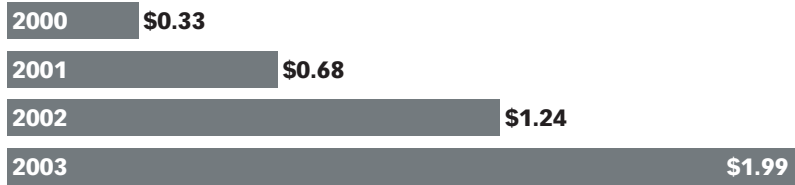
Sell-side private trading exchanges	\$12.00
Sell-side e-commerce systems	\$10.50
Customer relationship management systems	\$24.00
<b>Total</b>	<b>\$46.50</b>

Source: AMR Research, 2001

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By comparison, in an older forecast of what it calls the partner relationship management (PRM) market, IDC estimates that sales of PRM technology and services will reach almost \$2 billion by 2003.

**Estimated PRM Software, Hardware and Services Revenues, 2000-2003 (in billions)**



Source: International Data Corp. (IDC), 1999

While many channel partners initially feared that the internet would displace them, it is now apparent that most large channel managers would prefer to use the internet to improve communications within their selling networks. Rather than move into the business of directly selling their own goods, most large manufacturers instead see the value of leveraging their sales channels through better coordination.

As a first stage in the development of an online sales channel, many large companies have begun with a separate website or portal that they have used to communicate with their partners. Basic information such as an online catalog, marketing materials and technical support are typically made available, along with other information for sales assistance.

But because of the complexities of vendor-distributor relationships, some companies have built their own private extranets to facilitate the communication of more dynamic information. Sales leads, inventory updates, internal invoicing, and warranty registrations are all key components of sales channel communications. While much of this activity has historically been conducted over telephone and fax networks, a growing number of companies are now turning to internet-based solutions.

There are two primary camps of solution vendors that are competing to build out these sales-side networks. Often described as partner relationship management (PRM) technology providers, the first group of companies have been building sell-side extranets for several years now, and have developed extensive software suites that manage the broad range of channel relationships, from real-time inventory status monitoring and automated invoicing, to catalog content management and sales lead management.

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## Leading Channel Management Solutions Vendors, 2001

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Click Commerce

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Haht Commerce

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Ironside Technologies

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Source: eMarketer, 2001

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The average selling price for software solutions by Click Commerce was \$940,000 in 1999, but as buyers have begun to invest in more robust extranet solutions, Click Commerce has seen its average deal size grow to \$1.6 million in 2000. As for the returns that users are finding, Sigma Aldrich, a client of Haht Commerce, estimates that they have saved over \$1.5 million during the past year thanks to their extranet solution.

The other group that is just arriving on the channel management scene is the CRM solutions vendors. These software providers have built out their sales force automation (SFA) capabilities by extending them to sell-side networks. Referred to as “extended-CRM,” these solutions are still for the most part under development by leading CRM firms.

However, CRM vendors’ solutions do have an advantage because of their ability to provide sell-side visibility right through to the end customer, something that PRM vendors often fail to offer because of their technology’s focus on channel relationships. And while CRM companies are presently building out their channel management capabilities, the largest vendors such as Siebel Systems and i2 Technologies have a further advantage thanks to their installed base of customers who may be willing to wait for this functionality.

At present, the channel management solutions market is in an early stage of its growth. Companies that have deployed full PRM systems may be considered early-adopters, with most automated channel management systems having been built as proprietary systems. These proprietary networks are typically found in the IT industry.

A study by Ernst & Young and the National Association of Manufacturers found that in late 2000, very few manufacturers had begun initiatives to connect with their channel partners via the internet. In total, just 4% of the 578 respondents said that they had the capability to transact online with their channel partners.



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### US Manufactureres That Have Not Begun eCommerce Initiatives to Connect with Sell-Side Partners, 2000

<b>Metals</b>	<b>93%</b>
<b>Automotive</b>	<b>88%</b>
<b>Energy, chemicals &amp; natural resources</b>	<b>87%</b>
<b>Technology &amp; electronics</b>	<b>87%</b>
<b>Industrial equipment</b>	<b>87%</b>
<b>Consumer products</b>	<b>80%</b>
<b>All</b>	<b>87%</b>

Source: National Association of Manufacturers/Ernst & Young, 2001

As for the channel management experience of the IT industry, the Technology Channels Group estimates that \$120 billion worth of computer products are sold through partner networks annually, accounting for more than 50% of the total IT market. For IT products valued at less than \$100,000, Dataquest estimates that more than 76% are sold through indirect channels.

The Technology Channels Group found in a 1999 survey that most channel managers included product information along with sales and technical support on their channel partner websites. More sophisticated capabilities such as lead generation, contract exchange, or sales training had not yet been automated by most firms.

### Type of Information Companies Share with Channel Partners via the Internet, 1999

<b>Product information</b>	<b>90%</b>
<b>Sales support</b>	<b>76%</b>
<b>Technical support</b>	<b>76%</b>
<b>Marketing support</b>	<b>68%</b>
<b>Pricing</b>	<b>66%</b>
<b>Leads</b>	<b>52%</b>
<b>Contracts</b>	<b>40%</b>
<b>Sales training</b>	<b>38%</b>
<b>Order processing</b>	<b>37%</b>
<b>Technical training</b>	<b>31%</b>
<b>Soft dollar programs</b>	<b>21%</b>
<b>Business planning</b>	<b>16%</b>
<b>Technical certification</b>	<b>15%</b>

Source: Technology Channels Group, 2000

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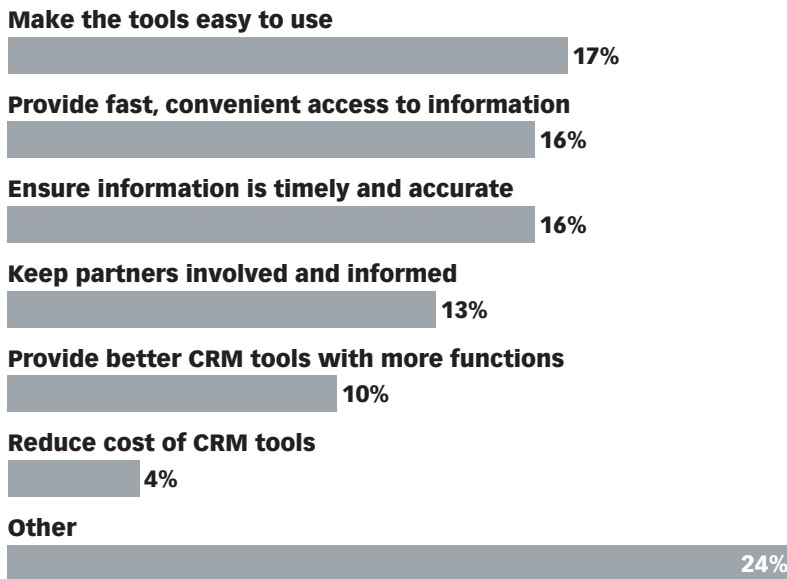
Another survey conducted by Front Line Solutions in late 1999 found that 70% to 80% of channel partners did not give a satisfactory rating to the extranet systems that connected them with larger their trading partners.

The primary complaints focused on ease-of-use issues, with many users saying that they did not get any benefit from participating on the extranet. Instead, several respondents said that the automated channel management system meant extra work for them.

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### Advice of Channel Partners to Extranet Operators, 1999

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Source: Front Line Solutions, 2000

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It should be noted, however that as many as 70% of the extranets that are deployed in the IT industry are custom-built, proprietary solutions. Indeed, it has been the shortcomings of these proprietary solutions – their collaborative capabilities in particular – that have caused many hardware and software vendors to consider implementing packaged PRM solutions.

As for the implementation of channel management solutions, some parallels have been drawn between sales force automation and channel management implementations, with several instances of user resistance in both cases. As with many sales people, channel partners have indicated that they do not feel that they gain much from the new technology, and that it instead adds to their workload.

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In order to get around this user resistance, Front Line Solutions suggests that channel managers roll out their PRM solutions on a gradual basis. Channel managers should first provide their channel partners with information that is valuable to them, so that channel managers will be able to gain channel partners' loyalty and cooperation before they request information in return. The theme of two-way collaboration is crucial to the success of this type of business-to-business integration, where both parties need to share information that ultimately benefits their mutual interests.

An example of a leading channel management solution that is currently being deployed is Toyota's iStarXchange, an internet-based portal that manages Toyota's aftermarket parts sales to dealers and independent repair shops. The website permits more than 150,000 independent repair shops and 1,500 Toyota dealers to check inventories, purchase parts, and arrange for shipping online, while simultaneously communicating information about product demand all the way up back up the supply chain.

**iStarXchange: Connecting Toyota's Aftermarket Parts Operations, 2001**

Technology provider	IBM/i2/Ariba
Value of aftermarket spare parts sales	\$2.5 billion
Number of manufacturers/suppliers	2,000
Number of Toyota dealers	1,500
Number of independent repair shops	150,000

Source: *Business 2.0, 2001*

Another internet-based channel management solution has been developed by Manugistics on behalf of Mitsubishi Motors of America. This extranet helps Mitsubishi track its inventory of unsold cars that sit on dealer's lots. By gaining better visibility into the demand chain, Mitsubishi has reduced inventory by more than 50% and saved an annual \$2 million in inventory upkeep costs.

**Mitsubishi Motors of America: Savings through Better Channel Management, 2001**

Technology provider	Manugistics
Number of dealers connected	526
Reduction in inventory of unsold cars	Down from 85,000 units to 38,000
Reduction in average age of inventory	25%
Estimaed annual savings from reduced inventory upkeep costs	\$2 million

Source: *Deutsche Bank, 2001*

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## A. EDI Networks

The use of automated electronic trading networks to facilitate transactions between businesses has been around for more than 25 years, as anyone familiar with electronic data interchange (EDI) can attest. Large enterprises have invested millions of dollars in building these private connections to their strategic suppliers, and these legacy systems are not about to be suddenly displaced by the arrival of the internet.

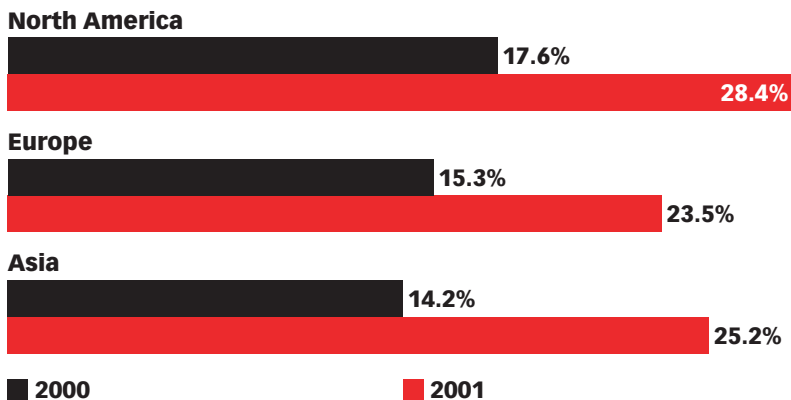
Stepping back from much of the early excitement surrounding the potential for online business-to-business trade, most observers have by now come to understand that the internet is just one of several channels through which commercial transactions may be conducted. Offline person-to-person sales will remain the predominant means through which business is conducted, while telephone/fax, EDI and various forms of internet-based commerce will each hold some share of commercial activity as well.

This is not to say, however, that businesses will not eventually migrate most, if not all, of their EDI transaction activity over to internet-based networks. What remains uncertain is the rate at which this transition will take place, as well as the extent to which business activity from other offline channels will be migrated online as well.

So far, government data about the current use of electronic business networks is still being gathered in most countries. The primary sources of information on EDI and internet penetration rates come from private-sector research firms, or the stated intentions of businesses that forecast their own internet use into the future.

In a survey of more than 800 international companies that was conducted in late 2000, Computer Sciences Corporation found that businesses had estimated that about 15% to 20% of their total transaction activity was conducted electronically. Most survey respondents expected to see this rise substantially in 2001, however, with firms in Asia, Europe and North America all planning on seeing growth of more than 50%.

### Company Transactions That Are Electronic, by Region, 2000 & 2001



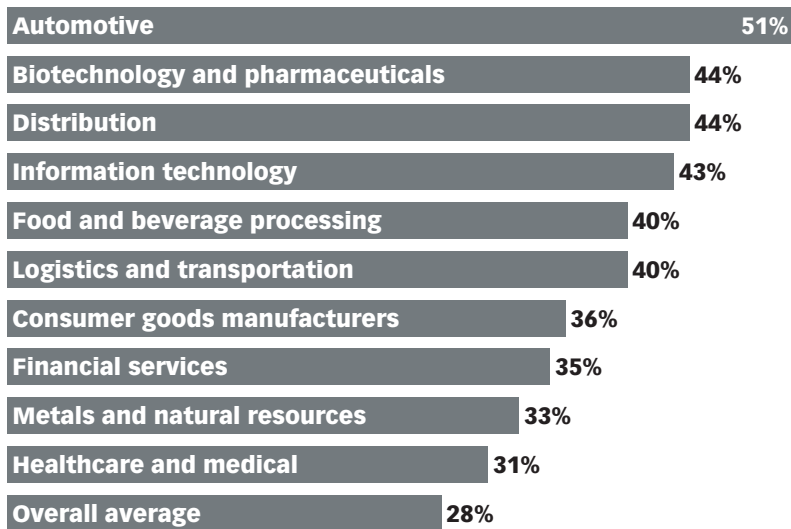
Source: Computer Sciences Corporation, 2001

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Most of the businesses in the *InformationWeek* 500 study were found to have well-developed electronic supply chains, be they EDI- or internet-based. On average, 28% of these technology leaders' suppliers were connected via an electronic supply chain in 2000, up from 25% of suppliers in 1999. Not surprisingly, more than 50% of the automakers' suppliers were participating in an electronic network in 2000, followed closely by the pharmaceuticals industry.

Among the least-networked industries, construction and engineering came in last with just 6% of suppliers linked electronically, with the chemicals industry having only 12% of trading partners connected.

### Percent of Suppliers Included in Electronic Supply Chain, by Industry, 2000



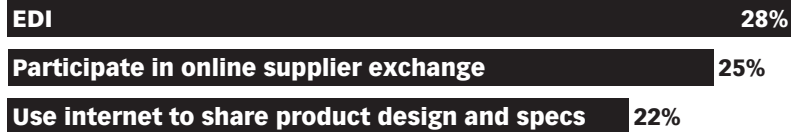
Source: *InformationWeek*, 2000

A separate survey by the National Association of Manufacturers found in late 2000 that more than 28% of its members were using EDI as a means of connecting with their supply chain partners. However, a significant 25% were also participating in some kind of online exchange.

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Penetration rates of electronic connections did not go that deep however, with just 8% of the surveyed manufacturers saying that they connected to more than half of their suppliers electronically, and 92% of respondents stating that they established electronic connections only on a selective basis.

### US Manufacturers' Electronic Connectivity to Suppliers, 2000



Source: National Association of Manufacturers/Ernst & Young, 2001

In its examination of EDI and internet-based trade, the Giga Information Group breaks down the leading business-to-business sales channels as a portion of the entire US economy. Almost 70% of inter-business exchange is estimated to occur through person-to-person or in-store contacts, while a significant 26% of all business-to-business transactions are estimated to flow over EDI-based networks.

The Giga Information Group calculates a total of \$11.4 trillion in business-to-business transactions in 2000, with all electronic commerce activity accounting for about \$3.3 trillion.

### US B2B Sales, by Channel, 2000



Source: Giga Information Group, 2001



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As a portion of all electronic commerce, the Giga Information Group estimates that 70.1% was routed through EDI value added networks (VANs) in 2000, but adds that this share will decline to 27.2% by 2004. In its place, web-based EDI and internet marketplaces are expected to gain a larger portion of electronic commerce activity. The research firm also estimates that by 2004, as much as 44% of offline business transactions will be influenced by internet sales channels.

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## US B2B Sales, by Channel, 2004

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### Salespeople/in-store

62.8%

### EDI with traditional VANs

10.3%

### EDI with internet-based ETNs

9.5%

### Internet e-marketplaces

9.4%

### Internet/extranet

3.6%

### Web EDI

2.6%

### EDI direct over web

2.4%

### Telemarketing/direct mail/newspaper

1.5%

### Catalog sales

0.4%

Source: Giga Information Group, 2001

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Breaking down electronic sales by business size, the Giga Information Group estimates that as many as 16,800 mid-sized businesses in the United States currently sell via EDI, with 45% of these EDI users selling via traditional VANs and 48% selling through web-enabled EDI. By 2004, 55% of mid-sized companies are expected to be selling through web-enabled EDI channels, as those companies that were excluded by the cost and complexity of EDI are now able to easily connect with their customers through web-based channels.

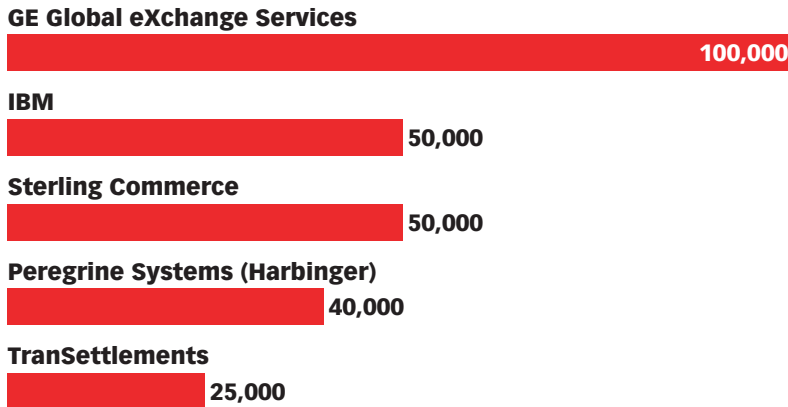
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Indeed, at present most of the leading EDI network operators are working to expand their membership by reaching out to small and medium-size businesses that want to connect to larger trading partners via EDI. For large enterprises, web-EDI further consolidates their supplier base onto an electronic trading network, while at the same time extending the use of their investment in EDI technology.

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### Leading Global EDI Trading Networks, by Number of Participants, 2000

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Source: Giga Information Group, 2000

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Building out web-based connections is also expected to ease the transition from EDI to internet-based networks over time. For example, Cessna Aircraft has found that since it rolled out a web-based data translation service to allow its smaller suppliers to link to its EDI network, 50 out of 70 of its former EDI trading partners decided to switch to the web-based system, saying that the internet-based technology was easier for them to manage.

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By offering web-enabled EDI services to small and mid-size businesses, GE Global eXchange Services is building on its own EDI networks and laying a clear path for companies to migrate existing EDI networks onto internet-based networks over the long term. With low set-up costs and an easy-to-use system, companies are able to sign up and start trading electronically within 15 minutes. Standard and custom EDI forms such as purchase orders, order confirmations and invoices are available through this web format.

**Pricing of GE TradeWeb’s Internet-EDI Services, 2001**

	Fee amount	Services included
<b>Monthly package</b>		
Initiation	\$35 one-time fee	Set-up
Subscription	\$75 per month	Up to 30 outgoing messages/month, plus unlimited incoming messages
Excess usage	\$1.50 per message	Cost per message starting with 31st message/month
eMail notification (optional)	Included with subscription	eMail notification sent for each new document received
<b>Annual package</b>		
Initiation	\$35 one-time fee	Set-up
Subscription	\$750 per year	Up to 30 Outgoing messages/month, plus unlimited incoming messages
Excess usage	\$1.50 per message	Cost per message starting with 31st message/month
eMail notification (optional)	Included with subscription	eMail notification sent for each new document received
<b>Pay per use</b>		
Initiation	\$35 one-time fee	Set-up
Subscription	\$5 per month	Unlimited incoming messages
Message	\$5 per message	Each message sent
eMail notification (optional)	\$5 per month	eMail notification sent for each new document received

Source: GE Global eXchange Services, 2001

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Effectively, third and fourth tier suppliers – companies identified by GE as having less than 100 employees and revenues of \$5 million per year or lower – are thus able to connect to the established networks of large retailers or manufacturers at an inexpensive rate, with an easy-to-use technology. All that is required is an internet connection and a web browser, while back-end integration is not considered to be a significant hurdle because of most of these companies’ modest sales.

However, although the extension of EDI networks is made considerably easier thanks to the internet, it is important to note that EDI technology only facilitates the exchange of documents. As companies have understood the need for online collaboration and the sharing of increasingly granular data on products or customers, collaborative extranets are being developed to facilitate this richer form of electronic communication. The evolution toward internet-based networks or B2B exchanges therefore requires a more robust solution that includes content sharing and real-time collaborative capabilities.

**EDI vs. Extranets**

EDI	Exchange of documents, processed in batches	Data transmitted via VANS, computer to computer
Extranet	Beyond e-commerce, facilitates highly interactive and collaborative business processes in real time	Data transmitted via VANS, VPNs, or the internet, application to application

Source: GE Global eXchange Services, 2000

**Comparison of EDI and Internet-Based Electronic Commerce for the Auto Industry, 2001**

<b>EDI</b>	<b>Internet</b>
No standard interfaces	Standardized interfaces
Highly customized software solutions	Standardized, web-based software solutions
Limited transactions	Covering activities along the whole value chain
Focused on OEM-tier 1 relationships	Relevant for all players along the value chain
\$8 per transaction; low cost efficiency	\$1 per transaction; high cost efficiency

Source: Roland Berger, Deutsche Bank, 2000

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Well aware of the need to provide internet-based services, GE GXS has begun to roll out its e-commerce strategy. Over the long term, GE expects that its customers will continue to use its secure VANs for their web-based extranets. To capitalize on this transition from EDI to extranets, GE is continuing to build out its offering of internet-based trading and collaborative applications.

GE's first step came in October of 2000, when GXS unveiled its procurement solution, Purchasing Expert. The solution is targeted at mid-size and large companies with indirect procurement needs of \$50 million to \$1 billion. In April of 2001 GXS announced the acquisition of TPN Register, an internet-based catalog and content company in which it had previously held part ownership.

Finally, GXS has formed strategic alliances with PricewaterhouseCoopers and Cap Gemini Ernst & Young to develop and implement integration services for companies that plan to link their enterprise networks with those of their trading partners via the internet. By emphasizing its long-term experience at running corporate networks – be they EDI-based or extranets – GE Global eXchange Services has positioned itself to become a technology provider to private exchanges.

At the core of GE's exchange-building initiative is its Express Marketplace solution. Referred to as a "Commerce Services Provider" (CSP) by GXS, the Express Marketplace system brings together hosted sourcing, auction, procurement, transaction settlement and supply chain solutions. This is essentially an exchange platform, as companies will be able to host their own private exchange networks using GE's Express Marketplace technology, or engage in electronic commerce with the entire membership of GE's online community.

Scheduled to roll out in three stages, the platform's first participants will be members of GE's own 7,000-strong supplier network. Next, GE's 100,000 electronic trading partners will be encouraged to migrate their use of EDI systems onto the Express Marketplace system. Third, other companies that have little or no experience with e-commerce will be encouraged to join. Over the long term, GE envisions exchange-to-exchange connections between its own network and other consortia-led exchanges that will likely operate on a similar hosted model.

As for other businesses' intentions for using electronic trading networks, Morgan Stanley found in its April 2001 survey of US CIOs that forming internet-based connections with both suppliers and customers remains a priority for 74% of the companies it surveyed. While 23% of respondents said that this was not a priority, 3% of CIOs said that forming links with customers was a priority but that forming internet-based connections with suppliers was not.

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Most CIOs planned to move commerce online with their customers by the end of 2001, with 10% planning to do so immediately and an additional 32% saying they would do so this year. A further 31% of companies said they would do this within the next 2 years.

In a separate study, Line56 Research surveyed 542 medium and large businesses in early 2001 to learn about their current and intended internet-based purchasing activity. On average, respondents said that roughly 20% of their businesses' transaction activity was already conducted online, with businesses expecting this to double to almost 40% of transaction activity by 2003.

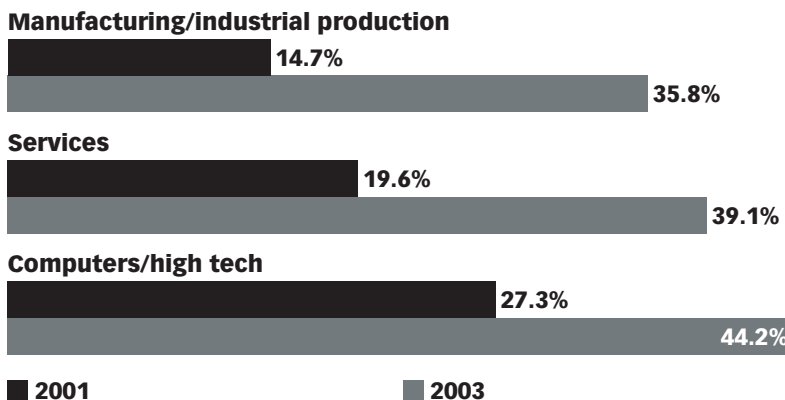
### Percent of B2B Transactions Conducted Online, 2001 & 2003



Source: Line56 Research, 2001

Broken down by industry, computer and high-tech firms planned the highest share of online transactions, with an expected 44.2% of their trade being run over the internet within the next 2 years. The most rapid growth in online trade was expected by manufacturing firms however, at a rate of 144%.

### Percent of B2B Transactions Conducted Online, by Industry, 2001 & 2003



Source: Line56 Research, 2001

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## B. Private Exchanges

As of mid-2001, a great deal of uncertainty remains about the choices that businesses are making about building their online exchange capabilities. On the buy side, most large companies are faced with the option of building out their own private supply chain networks, versus participating in a consortia-led exchange. Although it is likely that hybrid approaches will emerge, questions remain about the proportion of e-commerce activity that will be channeled through the various alternatives.

If the consortium vision prevails, many businesses may choose to build their own private trading networks within an industry exchange, using the hosted technology of the consortium-led service provider. On the other hand, some large companies may choose to independently build their own private trading exchange networks that connect with their most strategic suppliers, while turning to a consortium exchange for trade with a consolidated group of smaller or intermittent suppliers. Another hybrid alternative may see a heavier emphasis on the use of private buy-side exchanges, with large companies turning to either consortia or third party exchanges to do some limited purchasing, such as reverse auctions or commodities transactions.

At present, most companies are watching the progress of consortia-led exchanges as they are simultaneously implementing parts of their own supply chain solutions. As for the industry-backed exchanges themselves, several are still selecting technology providers and implementing their solutions. Only a few have already priced their hosted solutions packages. Once tangible offers by the consortia-led exchanges are on the table, potential users will be able to more clearly evaluate their alternatives.

But for many mid-sized and small businesses there are fewer choices available. The majority will necessarily have to follow the lead of their largest trading partners, which will require them to connect to trading exchange platforms chosen by others. As a result, many of these suppliers are faced with the problem of being required to integrate their systems with multiple online trading platforms.

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Indeed, it was this integration burden for suppliers that spurred the creation of Covisint. In November of 1999, after Ford and GM independently announced that they would build their own private online buying networks, their tier one suppliers asked them to collaborate on exchange technology to help them avoid costly multiple integrations.

One potential scenario that a mid-tier supplier could be faced with is the need to connect to as many as three, five or fifteen different private buying networks should several of its customers develop separate platforms. Another scenario may permit a supplier to connect to most of its trading partners through a consortia-led exchange, but still require it to connect to a handful of private extranets. In fact, this is the alternative faced by suppliers that sell to both Wal-Mart and members of the GlobalNetXchange, or automotive industry manufacturers who sell to Covisint's members, as well as BMW or Toyota.

A third alternative for suppliers would be to build their own website or sell-side network and convince their customers to purchase or link their buy-side networks to their central, sell-side exchange. Most small and mid-size suppliers are unlikely to have either the clout or the resources to go forward with this latter alternative.

However, over time there will certainly be exchange-to-exchange connections that will permit suppliers to link to multiple exchanges. For example, an electronic components manufacturer might participate in a private marketplace set up within the hosted network of Converge, and then punch out to trade with the separate, private network of Cisco.

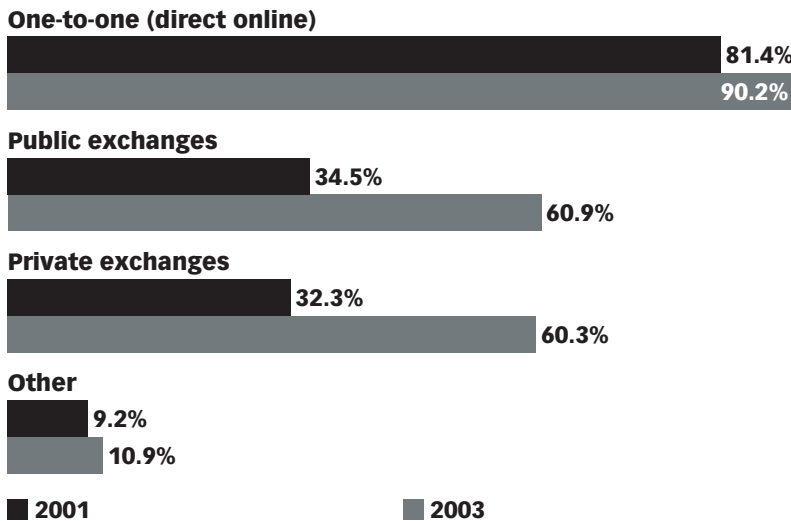
Up to now, uncertainty continues to hang over business-to-business e-commerce. No clear picture has emerged, largely because the consortia-led exchanges are only now beginning to finalize their packaged service offerings. Furthermore, it is difficult to predict trends that are applicable to businesses in general, because many of these decisions will be made on an industry-by-industry and company-by-company basis.



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Line56 Research finds that most companies plan to use multiple channels to interact with their trading partners online, with direct one-to-one channels accounting for the majority of e-commerce transactions. However, although more than 90% of companies expect to continue engaging in direct online purchasing within the next 2 years, the number of firms planning to use public and private exchanges is expected to grow at rates of 76.5% and 86.7%, respectively.

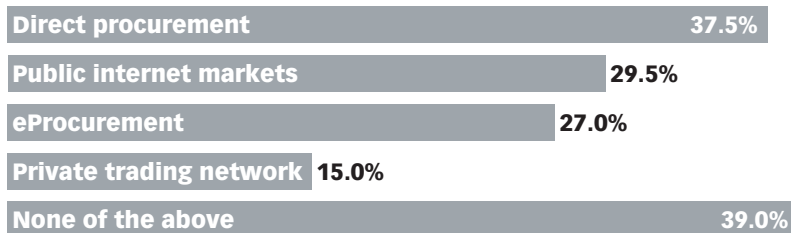
### Percent of Companies Conducting B2B Purchasing, by Channel, 2001 & 2003



Source: Line56 Research, 2001

In a survey conducted with a small sample group, Jupiter Media Metrix posted similar results, finding that large enterprises were less likely to be trading via a private network than they were through a public exchange. At this early stage in online business-to-business trade, the majority of companies were making purchases directly from their trading partners' websites.

### Percent of US Businesses Trading through Different Channels, 2001

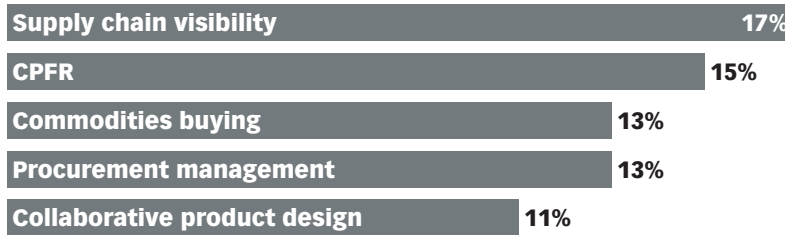


Source: Jupiter Media Metrix, 2001

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A later survey of 400 purchasing managers conducted by Jupiter Media Metrix found that among the majority of companies that had set up their own private B2B exchanges, most placed supply chain visibility and CPFR as the priorities for their online activities. Just 20% of survey respondents said they would use procurement applications as the focus of their private exchanges, compared to 26% that placed a priority on collaborative features.

### Primary Goals of Private Trading Exchange Users, 2001



Source: Jupiter Media Metrix, 2001

However, Jupiter has also found that one of the most significant barriers to private exchange activity is the willingness of companies to share sensitive data with their trading partners. While 36% of respondents to the Jupiter survey cited reluctance to share data as their primary barrier to online trade, 24% cited difficulties associated with the integration of trading platforms to their own enterprise systems.

Note that although many companies have been quick to declare their intention to engage in some form of online collaboration, the step is actually very difficult for most businesses to take. As Jupiter's findings confirm, the issue of trust may often be a greater barrier to online collaboration than technology integration, which in turn has led to a slower pace of true business-to-business e-commerce adoption.

In its overall examination of the B2B exchange-building opportunity, AMR Research estimates that the size of the market for platform vendors and related services companies will grow at a CAGR of 68% from 2000 to 2005, to reach a total of \$106 billion in combined software and services revenues over those 5 years.

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AMR describes business-to-business trading platforms as the next step in business automation, following the intra-enterprise ERP systems installations of the 1990s. This \$106 billion in total revenues is \$26 billion more than the ERP opportunity, which cost large companies more than \$80 billion between 1995 and 2000.

### B2B Trading Exchange Opportunity, 2000-2005 (in billions)

<b>Software revenues</b>	<b>\$31</b>
<b>Services</b>	<b>\$75</b>

Source: AMR Research, 2001

AMR Research estimates that the exchange platform market will post sales of \$35 billion in the year 2005 alone. The greater portion of these revenues, \$25 billion, will be spent on services, while it is projected that the remaining \$10 billion will be spent on software application licenses.

### B2B Trading Exchange Revenues, 2005 (in billions)

<b>Application license revenues</b>	<b>\$10</b>
<b>Services revenues</b>	<b>\$25</b>

Source: AMR REsearch, 2001

Broken down another way – between sell-side, buy-side and public exchange platform revenues – AMR predicts that the greater portion of software and services revenues will be spent on buy-side exchanges, totaling \$14 billion in 2005. Public exchanges will slightly edge out sell-side exchanges, accounting for \$11 billion and \$10 billion, respectively. Growth among sell-side applications promises to see the most aggressive increase over the next few years, however, at a CAGR of 109%.

### B2B Exchange Platform Revenues, 2005 (in billions and as a CAGR 2000-2005)

Sell-side exchanges	\$10 (109%)
Buy-side exchanges	\$14 (93%)
Consortium/public exchanges	\$11 (42%)
Total	\$35 (68%)

Source: AMR Research, 2001

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AMR Research notes that any enterprise with revenues exceeding \$1 billion should consider building a private exchange platform, with Fortune 500 companies likely needing to spend between \$50 million and \$100 million on their exchange efforts. However, to arrive at the \$35 billion figure for 2005, AMR conservatively assumes that only one-third of \$1 billion-companies will actually build these private trading exchanges. The research firm goes on to predict that the average deal size for exchange platform vendors will increase over the coming years, with several sales coming in at \$20 million to \$50 million, once all modules are implemented.

By comparison, the Meta Group estimates that as many as 65% of Global 2000 companies will operate their own private B2B exchanges by 2005, while a comparative estimate from Upstream Consulting places the market for building B2B exchanges at \$10.5 billion by 2004.

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### Projected Private Exchange Penetration among Global 2000 Companies, 2003 & 2005

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Source: Meta Group, 2001

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A third comparative estimate comes from Jupiter Media Metrix, which reports that spending on the construction of private trading networks will grow at a rate of 300% from 2000 to 2003, compared with a growth rate of 95% for public B2B exchanges. Jupiter attributes the higher spending on private exchanges to the deeper infrastructure costs behind supply chain management and other collaborative applications, which it believes will be built out over private rather than public networks.

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### Estimated Spending on Construction of Private Trading Networks in North America, 2000 & 2005 (in billions)

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Source: Jupiter Media Metrix, 2001

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Among the leading software providers in the exchange-platform market, AMR Research lists Oracle, Commerce One/SAP and i2 Technologies among its top five. To that list may be added other firms that are still aiming for a leadership role, including Ariba, Manugistics, PeopleSoft, and GE Global eXchange Services.

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### Leading B2B Exchange Platform Vendors, 2000

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Oracle

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SAP

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i2 Technologies

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*Source: AMR Research, 2001*

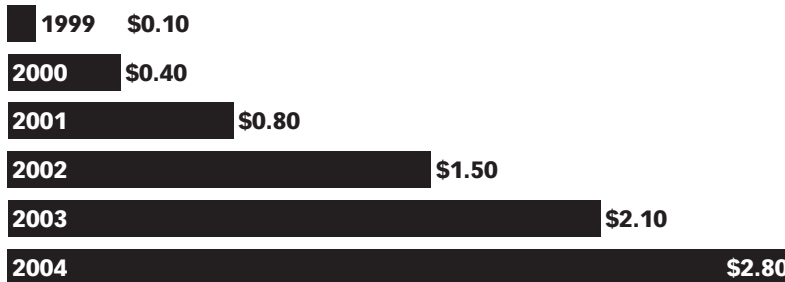
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Based on the research conducted up until September of 2000, Salomon Smith Barney projects that the market for trading exchange platforms, as sold by companies such as Ariba and Commerce One, is set to grow to \$2.8 billion by 2004. As part of its assessment, the investment bank notes that ERP, SCM and CRM vendors are also crowding into this market for internet-based business-to-business trading networks.

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### B2B Trading Exchange Platform Application Revenues, 1999-2004 (in billions)

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*Source: Salomon Smith Barney, 2000*

---

Included in the Salomon Smith Barney estimates are both the cost of licensing exchange software as well as related consulting and maintenance services that are expected to vary depending on the type of exchange platform to be built. For the largest industry B2B exchanges, total revenue for the exchange software alone is estimated to be \$5 million to \$10 million, while smaller, online market-makers (typically dot-coms) or private exchanges are projected to fetch just \$1 million to \$3 million in revenues.

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and Supply Chain  
Management](#)[Business-to-  
Business Selling Online](#)[EDI Networks  
and Private Exchanges](#)[Public B2B Exchanges](#)[Index of Charts](#)**Estimated Average Revenues for Commerce One B2B Exchange Solutions, 2000**

Exchange type	Potential number of clients	Revenues
Mega-Exchange	50	\$5 million to \$10 million
Regional-Exchange	100	\$3 million to \$5 million
Net Market Maker	5,000	\$1 million to \$3 million

Source: Commerce One, Salomon Smith Barney, 2000

The significant market opportunity among the dot-com exchanges has of course evaporated since this forecast was originally made. However, the market for private exchanges has arisen from the ashes of the dot-coms, with some researchers forecasting that the number of private exchanges to be built will reach as high as 3,000.

As an example of one of the many new competitors within the exchange-building space, technology-provider Model N has released a platform that it calls the Private Business Network, which permits companies to trade online with their most strategic trading partners. According to Model N, the company's server and applications facilitate the flow of information via the internet by pulling data from companies' ERP and SCM systems. This permits trading partners to track their transaction activity along with their inventories in real time.

Model N's system costs between \$2 million and \$3 million, with a hosted service offered at \$100,000 per month. Provision X, the poultry and beef industry exchange, is a user of Model N's technology.

Compared to these estimates for the cost of a private exchange solution, The Yankee Group estimates that on average, businesses need to spend \$3.8 million on software and internal development to become capable of conducting internet transactions. A late-2000 survey of 800 companies conducted by Harris Interactive found that 42% of companies with revenues of more than \$100 million planned to invest as much as \$3 million in building online exchanges, with most planning to begin their projects in 2001.

In a more detailed effort to gauge the cost of building individual private extranet connections, *Network World* magazine priced two extranet connections that a single auto parts manufacturer might have to build to two different suppliers. The first extranet uses dedicated leased lines to maintain 99.9% connection reliability with a critical parts supplier. The second extranet solution connects to a less-critical office product supplier, and therefore makes use of a less-expensive, internet-based virtual private network (VPN).

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### Supply Chain Extranet Costs: Auto Parts Extranet Connection, 2001

Component	Initial cost	Ongoing monthly cost
Each T-1 WAN link	\$18,500	\$1,800
Local infrastructure, including servers, operating systems, cabling, switch ports	\$68,000	\$2,500 (2)
Homegrown SNA LU 6.2 software, including IBM SNA library	\$450,000 (1)	\$150,000 (3)
Microsoft messaging tools	\$419,000 (1)	\$135,000 (3)
IBM messaging tools and MQSecure	\$400,000 (1)	\$135,000 (3)
<b>Total</b>	<b>\$1,355,500</b>	<b>\$424,000</b>

*Note: 1) Includes software license fees and salary of in-house programmer; 2) Includes salaries of part-time administrators; 3) Includes salary of maintenance programmer*  
 Source: Network World, 2001

### Supply Chain Extranet Costs: Office Supply Extranet Connection, 2001

Component	Initial cost	Ongoing monthly cost
Each VPN Link (two firewall boxes, frame relay links)	\$8,000	\$1,000
Local infrastructure, including servers, operating systems, cabling, switch ports	\$22,000	\$500
Oracle and BEA WebLogic software	\$90,000 (1)	\$15,000 (2)
<b>Total</b>	<b>\$120,000</b>	<b>\$16,500</b>

*Note: 1) Includes software license fees and salary of in-house programmer; 2) Includes salaries of part-time administrators*  
 Source: Network World, 2001

A virtual private network (VPN) is a secure communications network that exists within a public network. Privacy is obtained by tunneling through the public internet, as IP packets are sent on a secure pathway between so-called tunnel partners. While they can be used for business-to-business networks, they are most often used for internal communications within a company.

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For small and medium-sized businesses, VPNs represent a cost-effective way to maintain secure connections between multiple work sites. However, very few small and medium companies are connecting with trading partners via VPNs at this time, with the majority of these companies using VPNs only for remote-access connections such as home offices or mobile workers. Nonetheless, with 16% of small businesses and 19% of medium-sized companies already using VPNs for these services, there will likely be growth in their use of business-to-business connections, according to The Yankee Group.

### Percent of Small/Medium-Sized US Businesses Using VPN Technology, 2001

Small businesses (20-99 employees)	16%
Medium-sized businesses (100-499 employees)	19%

Source: Yankee Group, 2001

As for examples of early private exchange efforts, Staples has been frequently held up as a successful early adopter. The company has established its own buy-side network for its supply chain partners, while building three separate sell-side networks for its customers, each catering to the needs of specific customer groups.

### Staples' Multiple Buy and Sell Exchanges, 2001

Buy-side	Connects to
StaplesPartners.com	Supply chain partners
Sell-side	
Staples.com	Small businesses (less than 100 employees)
StaplesLink.com	Medium and large businesses
Quill.com	Vertical industries: law, medicine

Source: eMarketer, 2001

In a study released in April 2001, Goldman Sachs finds that companies in the US managed-healthcare industry are the most likely to build private B2B exchanges, with 60% saying that they have plans to do so in 2001. Financial companies are a close second at 55%.



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The auto industry has also seen its fair share of private exchange efforts launched over the past 2 years as well. Dana Corporation, for example, has set a 5-year plan to build out its own private network with its suppliers. By 2005, the auto parts manufacturer expects to have all of its tier one suppliers connected, and almost one third of its second tier suppliers participating in its exchange. As is typical for most private exchange efforts, the project is set to be completed on a modular basis, with new features being added on a gradual basis and new links to trading partners being established incrementally as well.

**Strategic Vision for Dana Corporation’s Private Exchange, 2001**

<b>Completion date</b>	<b>2005</b>
Connectivity with tier one suppliers	100%
Connectivity with tier two suppliers	32%
Connectivity with third tier suppliers	10%

*Source: Purchasing Magazine, 2001*

Another tier one auto parts supplier, Delphi Automotive, has conducted 77 auctions with FreeMarkets between 1998 and 2000, for a total of \$800 million in transactions and an estimated \$114 million in savings. However, since Covisint’s founding much of Delphi’s auction activity has been switched to the industry-sponsored exchange, providing the company with similar results. As the examples of Dana Corporation and Delphi Automotive suggest, even companies within the same industry are taking different approaches to their hybrid exchange strategies.

Another player in the auto industry, BMW, has decided to remain independent of Covisint, choosing SAP’s supply chain management solution for its private exchange. By contrast, Volkswagen has gone with the IBM/i2/Ariba alliance to build its online supply chain network. The company claims that by March of 2001, it had conducted online auctions worth \$930 million via its own private network.

Of course, many of the most advanced private business-to-business exchanges remain the domain of the technology industry. Among the largest, IBM’s Supply Portal connects the company to over 24,000 first and second tier suppliers, using i2 Technologies and Ariba solutions.

IBM estimates that it has saved itself \$375 million by procuring 94% of its goods and services electronically in 2000. In total, IBM bought \$43 billion in goods and services via electronic channels. In a separate exchange on the sales side, IBM sold \$23 billion in products via the internet last year.

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As for General Electric's e-business efforts, the company managed to sell an estimated \$7 billion, or 5% of its products online in 2000 – albeit short of its stated goal of 30% of its total \$130 billion in revenues. According to GE, the shortfall was due to the lack of preparedness on the part of its customers for e-business. In 2001 the company has shifted its strategy by focusing on digitizing many of its internal processes. GE has increased its IT budget by approximately 12% this year, with a plan to spend as much as \$3 billion on e-business initiatives. By the end of this year, GE plans to sell at least \$15 billion in products and services online.

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Business-to-business exchanges run by independent third parties, as well as those run by their consortia-led counterparts, have been subject to their fair share of skepticism through the first half of 2001.

With the ascendancy of the private exchange model, the long-term viability of consortia-led exchanges was brought into question, as many of these exchanges came to be viewed as hastily assembled, preemptive strikes against the startup, independent exchanges. As for third party exchanges, the shakeout of many poorly conceived business models led to an excessive cynicism that brought some observers to dismiss the viability of third party exchanges entirely.

It is important to note, however, that the consolidation and closure of several of these exchanges has been widely expected, and the continued consolidation activity should hardly come as a surprise to anyone. In fact, this consolidation will continue to be a necessary and healthy exercise, bringing a great deal more clarity to the B2B picture through 2001.

For example, we now already have a better understanding of which third party exchange business models are the most successful – those that facilitate the online trade of commodity products. And although their future prospects are less certain, we have also seen how some former independent exchanges have been able to adapt their business models to become solution providers to private exchanges.

Finally, there are now leaders emerging among the consortia-led exchanges that are demonstrating promising business models as hosted solution providers to large and small firms within their vertical industries.

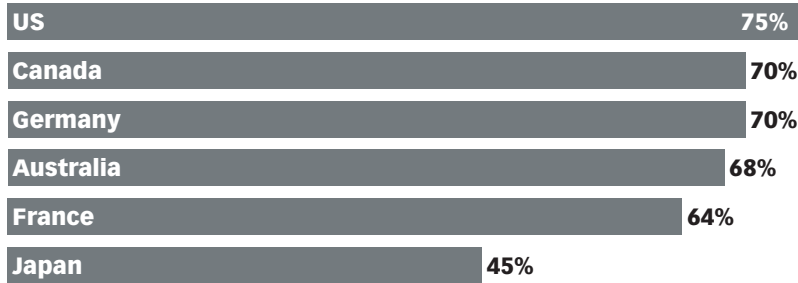
As mentioned in Chapter V, there still remains a great deal of uncertainty about the choices yet to be made by most businesses, especially as to which exchange models they will select. But their alternatives are becoming much clearer, as those public exchanges that will be around for the long term can now be more easily identified.

Without question, several more exchanges will go out of business or be merged or acquired through the second half of this year. But we may also expect to see growing momentum behind those public exchanges that are able to build on their early successes. Look for those businesses that have remained on the sidelines to begin participating in those exchanges.

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As for most companies' awareness of the public exchange alternatives that are before them, IDC found in its global survey of business executives that there remain a significant number of companies that are not familiar with the exchange concept. While three-quarters of executives in the United States were aware of B2B exchanges, just 45% of their counterparts in Japan had knowledge of online marketplaces.

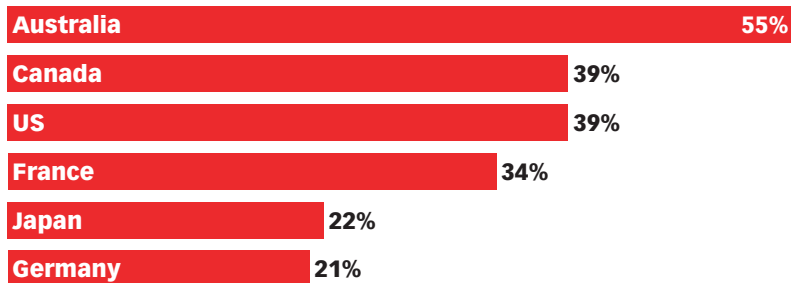
**Percent of Companies with Knowledge of eMarketplaces, by Country, 2001**



Source: International Data Corp. (IDC), 2001

Most interestingly, IDC discovered that Australian businesses had taken a wider lead in the use of B2B exchanges than their North American counterparts. Australia's role as a trailblazer may be explained in part by the early success of commodity-based online trading exchanges, several of which have been deployed in Australia. Australian businesses have also not been shy about joining trading exchanges hosted in the United States or other parts of Asia, as much of their business is conducted abroad.

**Percent of Companies Participating in eMarketplaces, by Country, 2001**

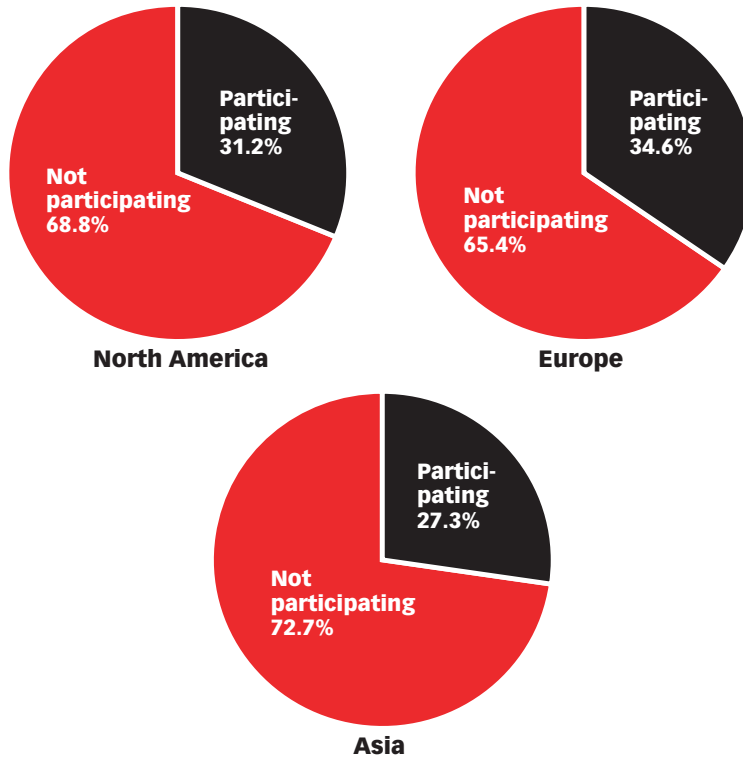


Source: International Data Corp. (IDC), 2001

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The Computer Sciences Corporation finds that about one-third of companies had joined an online exchange by late 2000. Almost two-thirds of businesses that were not participating in an online exchange either had the intention of joining one, or were in the process of investigating their alternatives. The greatest number of skeptics that said they had no intention of joining a public exchange came from the United States.

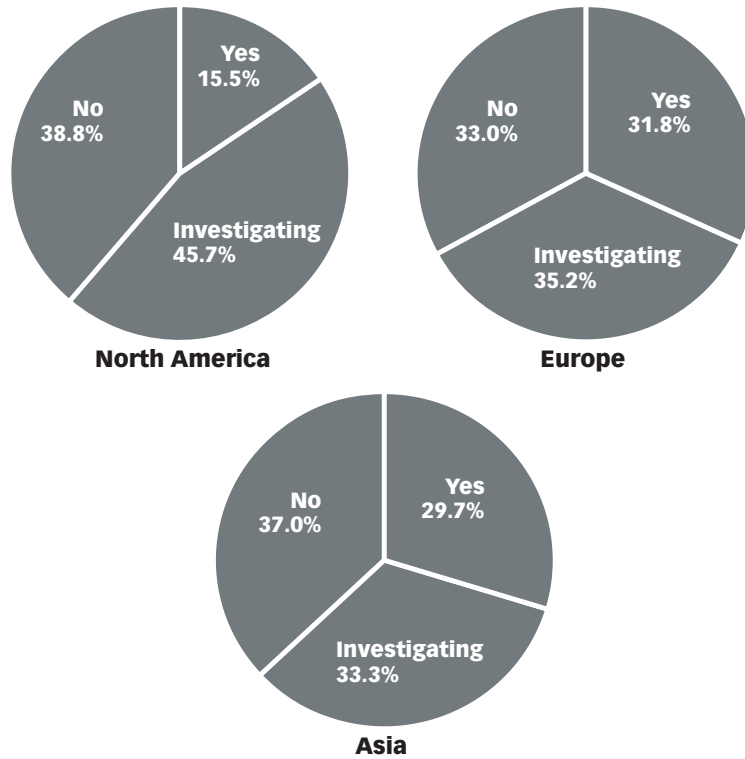
### Percent of Companies Participating in Online Marketplaces, by Region, 2000



Source: Computer Sciences Corporation, 2001

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### Plans to Participate in Online Marketplaces among Current Non-Users, by Region, 2000

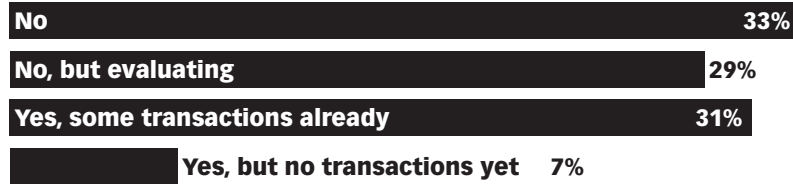


Source: Computer Sciences Corporation, 2001

A separate study conducted by Morgan Stanley in the beginning of 2001 posted similar results, with about one-third of businesses saying that they had joined an online exchange, with another third evaluating their alternatives. These numbers appear to have grown later in the year, however, as a survey of 100 Fortune 1000 executives, released in May by the American Arbitration Association, found that 78% of respondents were familiar with online exchanges. A further 58% said that their companies were currently involved in an online exchange of some kind, with almost half of respondents to the survey saying that they had helped create an online B2B exchange.

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### Percent of US Companies That Have Joined or Plan to Join an Online Exchange to Transact with Customers or Suppliers, January 2001



Source: Morgan Stanley, 2001

In its annual survey of purchasing professionals, *Purchasing Magazine* finds that a significant number of respondents do not have a favorable opinion toward transacting via B2B exchanges of any kind, with real-time auctions receiving the highest skepticism.

However, the percentage of respondents saying they would not use exchange services has decreased over time, as many have had the opportunity to learn about the positive results from early users of B2B marketplaces. This shows that several businesses will need to hear more evidence of the success stories behind B2B exchanges before they jump on the bandwagon.

### Plans of US Purchasing Professionals to Use B2B Exchange Features, 2000

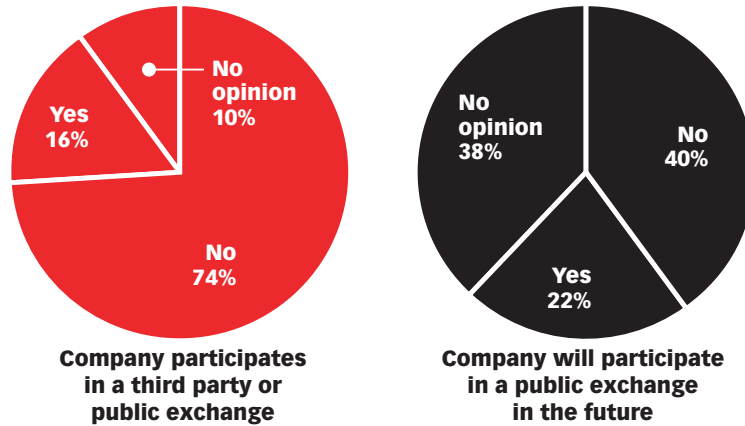
	Already use	Will use	Will not use	No opinion/undecided
Order matching (anonymous deals)	4%	23%	52%	21%
Reverse auctions	12%	26%	52%	10%
Forward auctions	6%	20%	60%	14%
Real-time auctions	9%	18%	61%	12%
Non-real time auctions	4%	21%	61%	14%
Demand aggregation with other companies	6%	25%	50%	19%

Source: *Purchasing Magazine*, 2001



Although very few companies intended to join a public B2B exchange at the end of 2000, 38% of respondents to the *Purchasing* study said that their company still had no opinion on whether or not it would participate in an exchange.

**Participation of US Purchasing Professionals in Public B2B Exchanges, 2000**



Source: *Purchasing Magazine*, 2001

It is important to note, however, that for many purchasing agents, price is not always the most significant consideration in making a buying decision.

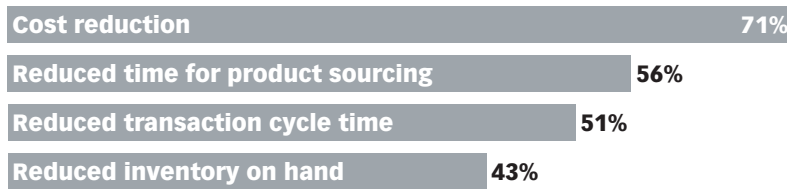
Instead, professional purchasers rely on their long-term, established relationships with trading partners whom they know and trust. Price can often take a back seat to other factors such as a buyer's familiarity with a supplier's product quality or their ability to deliver on time. Long-established business processes and credit terms are also a factor that adds strength to these relationships.

Several of these purchasing professionals may therefore not readily be drawn to online exchanges that focus on sourcing or dynamic trading features. However, as the benefits of technology solutions offered by online trading networks become better understood, some professional buyers may be more inclined to use internet exchanges as a means of bringing greater efficiencies to their established trading relationships. Until then, business-to-business exchanges may only remain as a peripheral sourcing tool for professional buyers.

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At first glance, results from Jupiter’s survey of procurement executives may appear to contradict this analysis, as the research firm found that 71% of respondents said that cost reduction would be their primary reason for participating in an online trading network. However, the survey indicates that the cost reductions are anticipated to come not from price reductions, but through productivity gains. Such improved efficiencies are anticipated to speed transaction cycle times and reduce inventories through improved supply chain visibility as well.

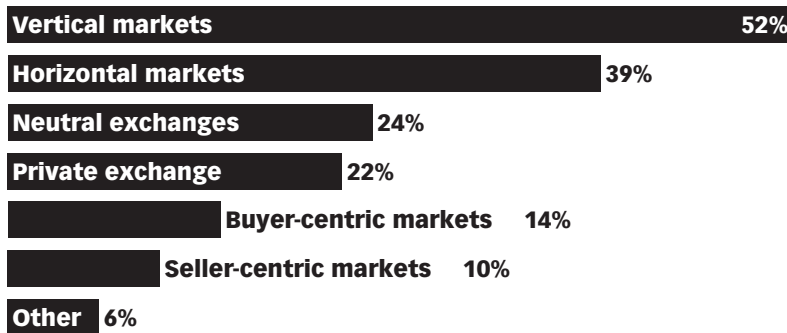
### Procurement Executives’ Reasons for Participating in Online Trading Networks, 2000



Source: Jupiter Media Metrix, 2001

In its survey of 173 companies that were in the process of evaluating different B2B exchanges, CommunityB2B.com finds that most respondents are interested in participating in industry-specific vertical markets. A separate study conducted by Jupiter Media Metrix finds that the food and beverage industry, along with the auto industry, attracted the highest proportion of companies to vertical exchanges.

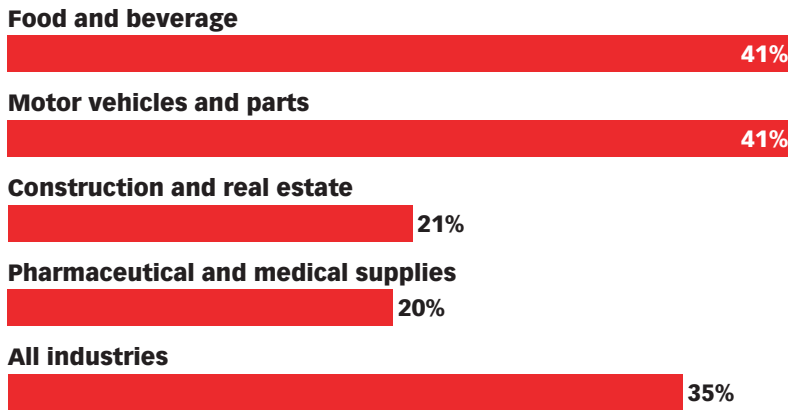
### Primary Exchange Models That Businesses Are Evaluating, 2000



Source: CommunityB2B.com, 2001

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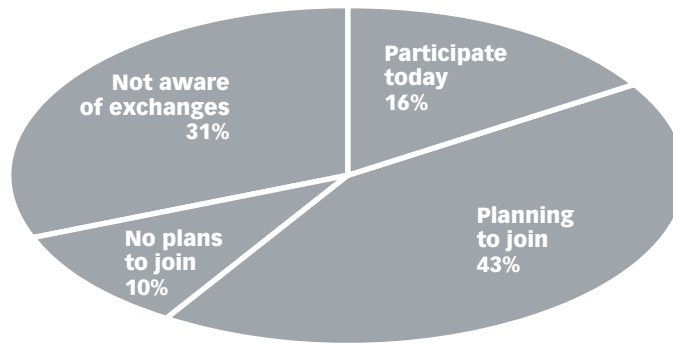
## Percent of US Businesses Using Online Exchanges, by Industry, 2000



Source: Jupiter Media Metrix, 2001

In a survey that asked 247 manufacturers and retailers about their intentions to use an internet-based trading exchange, AMR Research found that a significant 41% of companies have either not heard of the exchange concept or have no plans to join one.

## Businesses' Intentions to Participate in Public B2B Exchanges, 2001

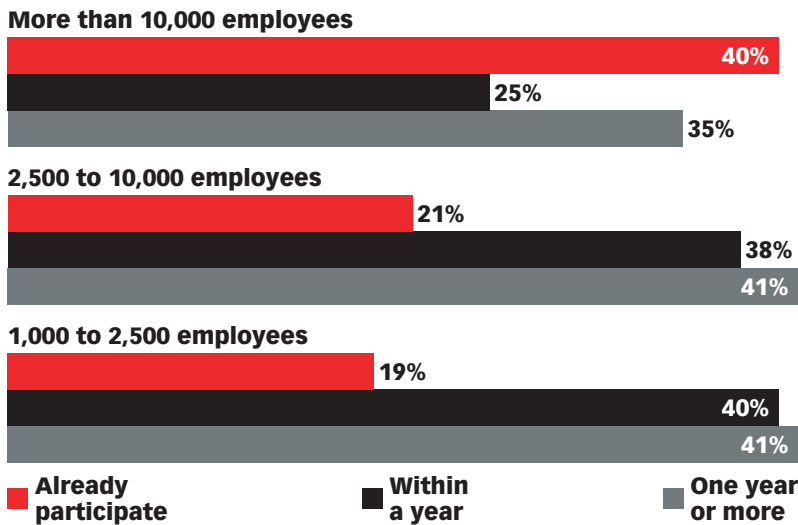


Source: AMR Research, 2001

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AMR finds that the larger the company, the more likely it is to participate in a public exchange, with 40% of enterprises with more than 10,000 employees already participating in one. As might be expected, larger companies are leading the way for their smaller trading partners. Mid-sized and small businesses must necessarily wait for their larger trading partners to establish these online exchanges, before they may evaluate their alternatives and go forward with their own internet trading activity.

### Businesses' Participation in Public B2B Exchanges, by Company Size, 2001



Source: AMR Research, 2001

But while many companies may say that they are members or participants of exchanges, membership does not always translate into regular, active use of online trading networks. Some companies may only be investors, while others may only have limited experience conducting a few pilot transactions but nothing more.

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Although participation levels have improved in 2001, Accenture found in an August 2000 survey of 96 public B2B exchanges a wide disparity between the number of companies that had signed up as participants and the number of actual users of these exchanges. While the median number of registered participants among the 96 exchanges was 1,800, the median number of exchange participants that had conducted more than two trades was 120.

### Median Number of Participants and Users of B2B Markets, August 2000

<b>Registered participants</b>	<b>1,800</b>
<b>Participants trading one or more times</b>	<b>350</b>
<b>Participants trading two or more times</b>	<b>120</b>

Source: Accenture, 2001

Forrester Research finds that most companies view internal resistance, along with technological difficulties, as their primary obstacles. As for the external factors that companies face, the lack of preparedness on the part of B2B exchanges, as well as the readiness of suppliers was also holding up their use of online exchanges.

The results of this survey point to timing issues – rather a lack of interest – as the leading causes slowing the growth of B2B exchange activity in early 2001. This in turn points to the likelihood of growth heading into 2002, once exchanges and suppliers are more capable of transacting online.

### Obstacles to Successfully Using B2B Exchanges, March 2001

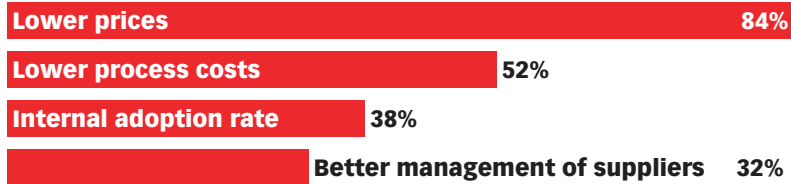
<b>Internal resistance</b>	<b>56%</b>
<b>Technology hurdles</b>	<b>50%</b>
<b>eMarketplace immaturity</b>	<b>32%</b>
<b>Supplier unreadiness</b>	<b>26%</b>
<b>Costs</b>	<b>14%</b>

Source: Forrester Research, 2001

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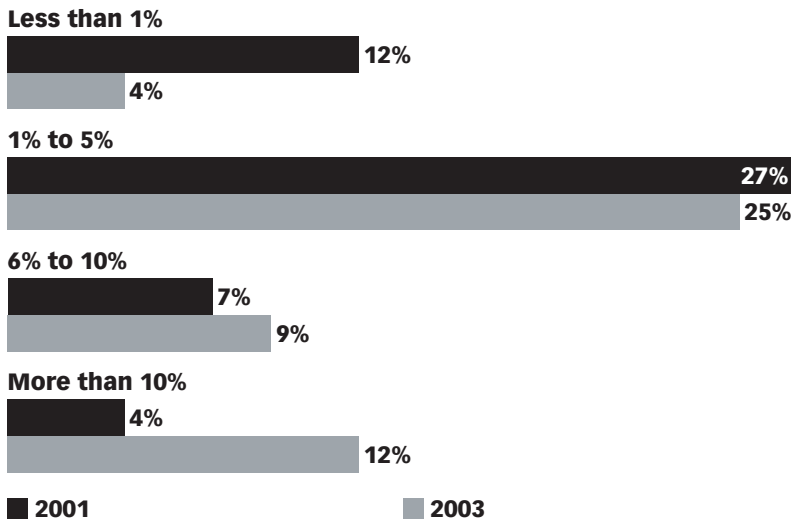
While lower prices are expected as the primary source of cost savings for companies planning on participating in a B2B exchange, reduced process costs through greater efficiencies are anticipated as well. Most companies plan to save between 1% and 5% of their total costs by participating in an exchange, with 12% expecting to see savings of more than 10% of their costs by 2003.

### How Companies Measure the Success of eMarketplace Buying, March 2001



Source: Forrester Research, 2001

### Cost Savings That Businesses Expect from eMarketplaces, 2001 & 2003

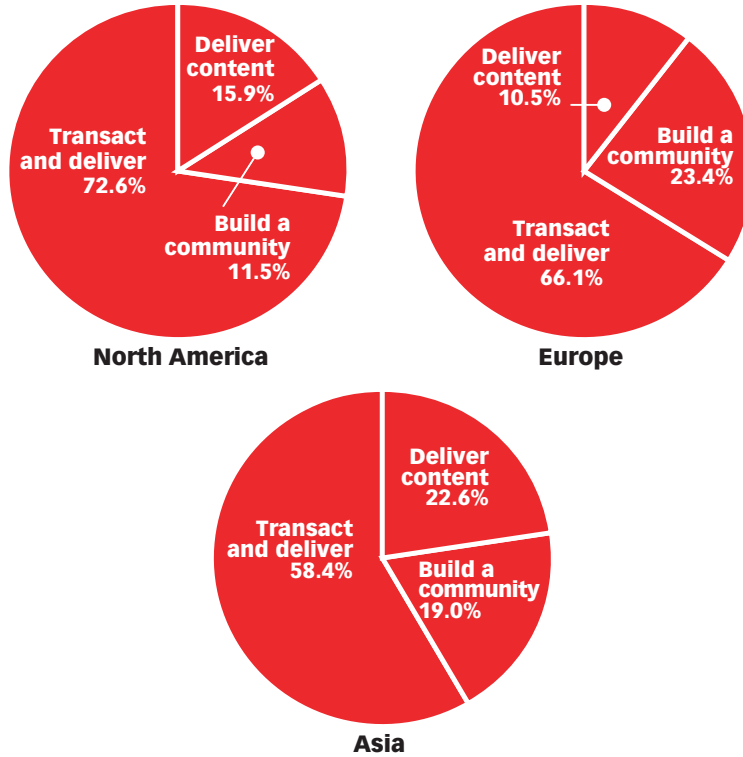


Source: Forrester Research, 2001

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As for companies with plans to use online marketplaces, the majority expects to run their electronic transaction and supply chain management activities through public exchanges. Although content and community features are a focus of some firms, more than two-thirds of businesses in North America and Europe plan to use exchanges to facilitate the exchange and delivery of goods.

**Primary Focus of Companies' Online Marketplace Strategies, by Region, 2000**



Source: Computer Sciences Corporation, 2001

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In its examination of features that enterprises are most interested in using via an online marketplace, AMR Research finds that sourcing and self-service features are most sought after. Rated on a scale of 1 to 10, with 10 being the most important, online auctions, collaborative product design, and industry news or professional information are lowest on the list, with rankings of 5. These results are similar to those of the Computer Sciences Corporation.

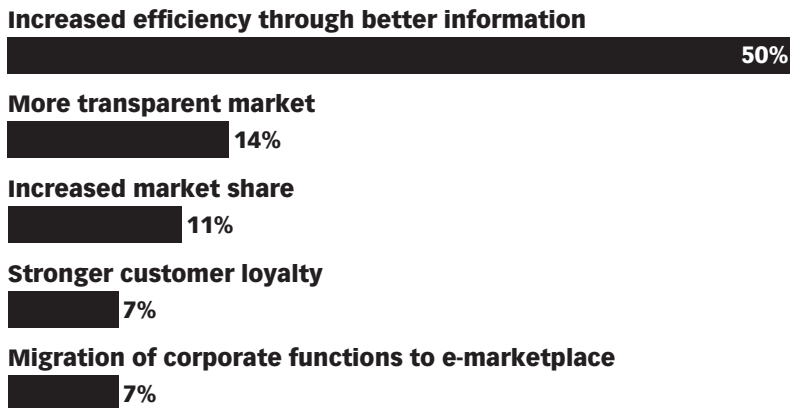
### Importance of Trading Exchange Features to Enterprise Users, 2001 (on a scale of 1-10)

Product search capability	9
Order status and tracking	9
Vendor search capability	8
Product catalog	8
Integration with buyer or supplier back-end systems	8
RFP/RFQ	7
Transportation management	7
Collaborative supply, demand and fulfillment planning	7
Supplier/buyer directory	7
Joint planning and scheduling	6

*Note: Rated on a scale of 1-10, with 10 being the most important  
Source: AMR Research, 2001*

As for companies that are participating in a buy-side B2B exchange to improve their supply chain management capabilities, a wide majority of businesses surveyed by Forrester say they expect to see greater long-term efficiency thanks to the improved flow of information. Rather than industry content or sourcing features, improved information in this survey refers to the supply chain visibility provided through the online collaboration between trading partners. Information about market conditions or increased sales is not expected to have as much of a long-term impact.

### Large-Sized Companies' Expected Long-Term Benefits for SCM Conducted via a B2B Exchange, 2000



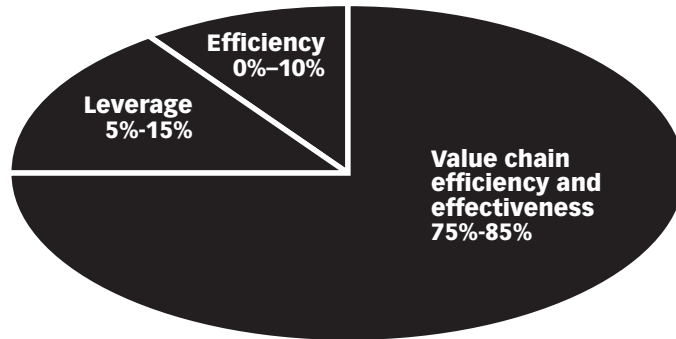
*Source: Forrester Research, 2000*



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Among the benefits that Deloitte Consulting expects from B2B exchanges, the greatest portion is anticipated to come from productivity gains that will be realized throughout entire value chains. While lower prices may be obtained from suppliers, Deloitte sees this as accounting for no more than 15% of the total savings that companies may realize through their use of online exchanges.

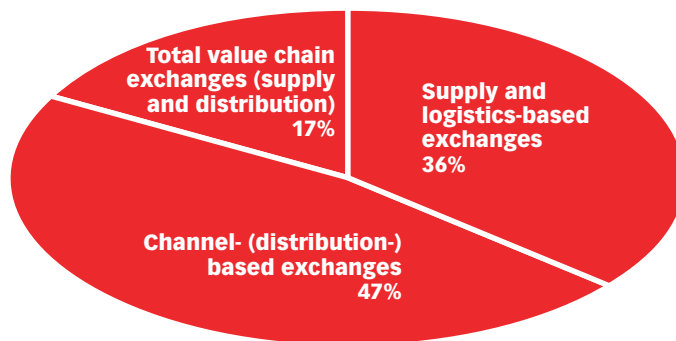
**Drivers of Estimated Savings through B2B Exchanges**



Source: Deloitte Consulting, 2001

During the last half of 2000, consulting firm Viant examined 230 public B2B exchanges, and found that most had a technology-based focus around one particular segment of the value chain. For the majority, the emphasis was on coordinating the sales, marketing and/or distribution channels of value chain networks. On the other side of the value chain, 36% of exchanges offered services that helped companies to buy products or services that contributed to production of manufactured goods.

**Public B2B Exchanges, by Primary Focus, 2000**



Source: Viant, 2000

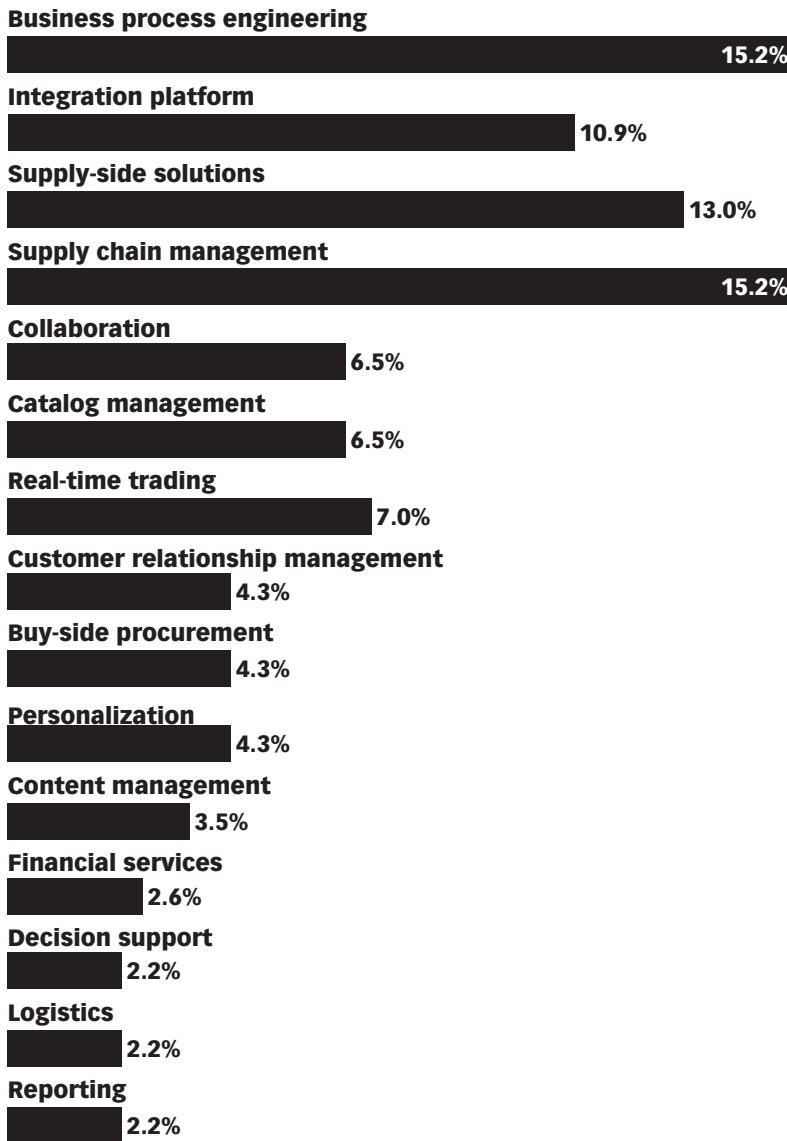
Citing Transora as an example, Viant found that there was also a significant 17% of online marketplaces that were developing solutions that would serve both the buy- and sell-side needs of their participants.

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As mentioned previously, however, in early 2001 there appears to be an emerging preference on the part of large companies to develop their own sell-side exchanges, with a priority on strengthening ties with customers. Connecting with customers or sell-side channel partners through a private network permits companies to differentiate their product and related customer-service capabilities from their competitors.

In early 2001, e-commerce software provider Idapta projected that the cost to build a public B2B exchange can range from \$5 million to \$125 million, depending on the complexity of the products that are to be traded, and the technology features that are offered by the exchange. Because spot commodity markets require less complex technology and have low integration costs, they are at the lower end of the range, according to Idapta.

### Cost Breakdown for Building a Low-End Enterprise Marketplace, 2001

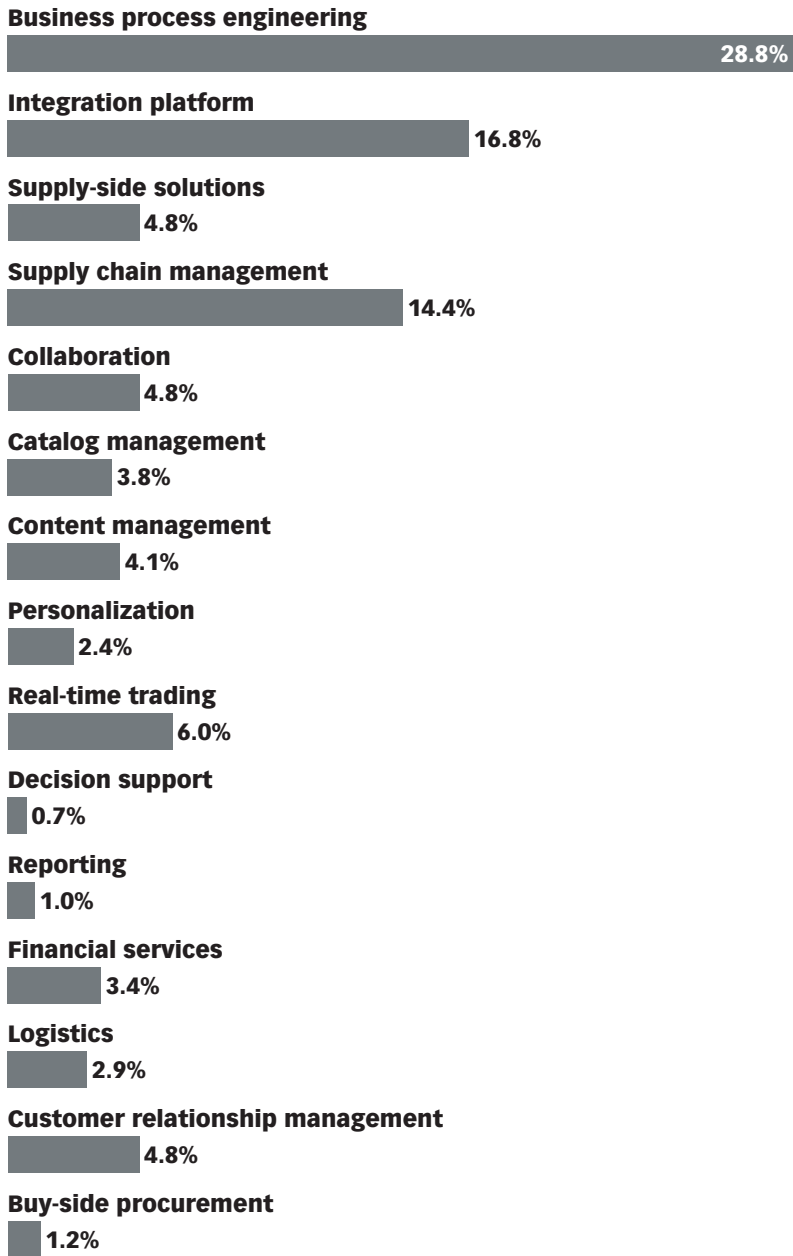


Source: Idapta, 2001

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On the other hand, enterprise-based exchanges are expected to require more integration work, and are therefore projected to be more expensive to build. Business process reengineering is much more complex for those companies planning to integrate their own internal systems with exchange-based supply chain management or procurement systems. As a result, the required integration work is necessarily more expensive as well.

### Cost Breakdown for Building a High-End Enterprise Marketplace, 2001



Source: Idapta, 2001

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As part of its effort to put a price on public exchanges, Jupiter Media Metrix projects that consortia-exchanges will spend as much as \$50 million to \$100 million on integration alone. By contrast, Forrester Research estimates that individual companies will spend between \$5.4 million and \$22.9 million each as they integrate with online marketplaces over the next 5 years. The research firms projects that the market for exchange integration services will grow to \$3.2 billion by that time.

Forrester’s estimate of integration work includes everything from transaction fees that an individual company will pay to an exchange, to the purchase of procurement applications, and most significantly, the cost of integrating the exchange-based technology with its own internal systems. Integration fees are expected to vary by the type of exchange technologies that companies use, with integration work for more complex solutions naturally costing more.

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### **Integration Costs for Companies to Connect with Online Exchanges (in millions)**

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Source: Forrester Research, 2001

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As for the overall market opportunity for B2B exchange services, IDC breaks it down between services that are purchased by the B2B exchanges themselves, and those services that are purchased by marketplace users. For both groups, exchange services include the consulting, integration, and maintenance work that is required to not only build B2B exchanges, but to run them over the long term. At present, IDC notes that exchanges themselves account for as much as 85% of spending on marketplace services, but that this portion is expected to decline to 50% as a greater portion of the costs for exchange services will shift to their users over the next 4 years.

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The research firm predicts that the market for exchange services will reach \$17 billion by 2005, growing at a CAGR of 27% between 2000 and 2005. Among the several consulting firms that have gained a leadership position in this market, IDC lists PricewaterhouseCoopers, IBM Global Services and Cap Gemini Ernst & Young as three of the top ten marketplace service providers. As a group, the top ten service providers are estimated to account for 47% of the B2B exchange services market revenues in 2001.

### Worldwide B2B Exchange-Services Spending, 2000 & 2005 (in billions)

2000	\$5.2
2005	\$17.0

Source: International Data Corp. (IDC), 2001

## A. Independent Trading Exchanges

Through closures, mergers and changing business plans, a great deal of consolidation is occurring among third party trading exchanges. Estimates place the number of such exchanges as having topped off at about 1,500 such businesses, with no more than 200 expected to remain in operation by the time consolidation is complete.

As an example of the problems faced by independent trading exchanges, Partsbase.com is one company that is continuing its struggle to survive. Serving the aviation parts industry by facilitating the online purchase and sale of new and used aircraft parts, Partsbase has come under pressure from industry-sponsored exchanges that are backed by major airlines – one-time potential customers have now become competitors.

Thanks to its head start online, Partsbase.com had signed up more than 4,800 paid subscribers at the end of the first quarter of 2001. Annual subscriptions were being sold for an average \$1,469 during the first quarter of 2001, down from \$1,620 during Q4 2000 because of the company's need to encourage renewals. Despite this effort to hold on to its early customers, the company had a renewal rate for annual subscriptions of just 52% in its latest quarter, indicating that many of its customers appear to be looking forward to the rollout of consortia-led exchanges in the aerospace industry, such as Exostar or Cordiem.

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	<b>Subscription revenues</b>	<b>Gross revenues</b>	<b>Subscription revenues as a % of gross revenues</b>
Q1 2000	\$1,182,000	\$1,311,000	90.2%
Q2 2000	\$1,191,000	\$1,303,000	91.4%
Q3 2000	\$1,607,000	\$1,666,000	96.8%
Q4 2000	\$2,083,000	\$2,103,000	99.0%
Q1 2001	\$1,557,000	\$1,660,000	93.8%

*Source: Company SEC filing, eMarketer, 2001*

Partsbase.com is faced with several of the classic problems of independent exchanges. Besides the competitive threat of industry-led marketplaces that are moving into its space, it is also heavily reliant on subscription revenues, with advertising accounting for most of its other revenues. And typical of many third party exchanges that have come under pressure, as a means of improving its bottom line, Partsbase has been forced to reduce overhead by laying off employees and cutting salaries. At the same time, the company has undertaken efforts to expand its product offering so that it may retain customers and eventually raise subscription fees.

But despite the difficulties experienced by several independent trading exchanges that have found themselves in similar positions as Partsbase, there are some success stories to be found among independent exchanges as well. In fact, there are a handful of independent exchanges that have begun to significantly ramp up their online transaction activity in the first two quarters of 2001. This has especially been true for those exchanges that trade commodity-based goods.

One example of an independent exchange that has so far withstood the competitive pressure of private and industry-sponsored exchanges is Altra Market Place. Despite the strength of EnronOnline – which had transacted \$50 billion worth of energy products by June of 2000 and announced its one millionth transaction in May of 2001 – Altra has managed to not only hold its own, but successfully grow its online transaction activity.

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The year 2000 saw strong growth in its established markets for natural gas and natural gas liquids trade, with 30 million barrels of NGLs being traded in December alone. Altra’s trading exchange for electricity products, which was only opened in October of 1999, saw the highest rate of growth in 2000 as business started to gain traction. By the end of 2000, more than 500 companies worldwide were trading via Altra Market Place.

**Year over Year Growth Rates for Exchange-Based Trade via Altra Market Place, 1999-2000**

Volume of natural gas liquids trade	30%
Volume of natural gas trade	35%
Volume of electricity trade	725%
Total transaction fee revenue	20%

*Source: eMarketer, 2001*

Because of the thin margins associated with transaction fees, Altra has since expanded its product offerings to become a technology provider to companies that want to build private trading exchanges. The company has also continued working on the development of its software, which is now 100% web based.

When it comes to competition between third party exchanges, nowhere has there been so much action as in the chemicals industry, where, as of early 2001, there were an estimated 36 exchanges competing for market share. Since the start of this year, two emerging leaders – CheMatch and ChemConnect – have been issuing dueling press releases as a means of demonstrating their strength in this market.

According to CheMatch, its exchange has transacted 900,000 tons of chemical products through its Global Trading Network in the first quarter of 2001, which is a 91% increase in volume from the fourth quarter of 2000. As a leader among third party exchanges, CheMatch has set high standards for businesses that want to trade on its exchange, requiring companies to go through a screening process before they may begin trading.

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Not only does the exchange itself screen participants to ensure that they are known within the chemicals industry, but individual companies are also provided with the opportunity to preselect their own trading partners, thus ensuring the credit worthiness and reliability of any potential trading partners. As a result of this preselection process, CheMatch claims a completion rate for its transactions that is better than 99%.

**Exchange Profile: CheMatch, April 2001**

Founded	1997
Number of participants	750
Transaction activity Q1 2001	900,000 metric tons of commodity chemicals

*Source: eMarketer, 2001*

Like the majority of successful independent trading exchanges, CheMatch provides an online spot market trade for commodity-based products. However, CheMatch is also one of the first third party exchanges to move into futures contracts by selling over-the-counter products, which are now being supported through its partnership with the Chicago Mercantile Exchange.

And in a further effort to expand its operations, CheMatch executives have indicated that the exchange is in discussions with two industry-sponsored consortia-led exchanges about possible partnerships. Any possible agreements would combine the dynamic trading capabilities of CheMatch with the supply chain management offerings of the consortia-led exchanges.

Indeed, this is what CheMatch competitor ChemConnect has successfully accomplished through its merger with consortium-led exchange Envera. The combined exchange, which was announced in June, will provide Envera's users with integrated access to ChemConnect's World Chemical Exchange trading platform.



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Prior to the merger, ChemConnect had transacted 1.9 million metric tons of commodity chemicals between January and April of 2001, with 500,000 tons being transacted in April alone. The average transaction value on ChemConnect was \$1.3 million for the year as of April.

**Exchange Profile: ChemConnect, May 2001**

Founded	1995
Number of participants	450 members
Transaction activity January-April 2001	11.9 million metric tons of commodity chemicals
Average transaction value	\$1.3 million

Source: eMarketer, 2001

Note that the combined company will continue to operate under the name of ChemConnect and retain a management structure typical of a third party exchange.

eMerge Interactive, another commodity-based trading exchange, is an example of an online marketplace that has achieved success with its internet business thanks to its roots in the offline world. Based on its ownership of twelve livestock marketing and buying facilities throughout the United States, eMerge is migrating some of its offline cattle trade onto the internet.

CattleInfoNet is the company’s online cattle marketing and auction service, which has seen steady growth in transaction activity since the fourth quarter of 2000. As a percent of total cattle that are sold through its brokerage network, online sales have more than doubled from 4% to almost 11% during Q1 2001.

**eMerge Interactive: Total and Online Sales of Cattle, Q4 2000 & Q1 2001**

	Cattle sold online	Total cattle sold	Online sales as a % of total sales
Q4 2000	26,000	659,000	4.0%
Q1 2001	73,000	676,000	10.8%

Source: eMarketer, 2001

But just like many other independent trading exchanges, eMerge Interactive has also found that transaction fees do not provide enough revenues on their own. For this reason, eMerge has also developed technology solutions that help cattle ranchers monitor the quality and safety of beef products, thereby adding value within the supply chain.

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One final example of a third party exchange that has met with limited success in a small vertical industry is Marex.com. As the only B2B exchange in the recreational marine industry, Marex announced that as of May 2001, it had processed in excess of \$10 million in orders since its launch just 1 year before.

An independent exchange, Marex relies on transaction fees of between 1% and 4% on the sale of products offered through its services. It is primarily a catalog and procurement application hosting service, which eventually expects to offer value-added features such as collaborative design within the next 3 to 4 years.

Despite its limited revenue stream, the exchange has posted steady growth in its transaction activity since the beginning of 2001, demonstrating that buyers and sellers are just beginning to significantly increase their participation in online marketplaces. Offering a hosted solution by RightWorks, Marex claims that 17 boat builders and 64 suppliers use its procurement applications alone.

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**Exchange Profile: Marex.com, May 2001**

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Launch date	June 2000
Number of participants	134 suppliers, 39 boat builders
Q1 2001 transaction activity	\$3.8 million

*Source: eMarketer, 2001*

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By the month of May, transaction activity on Marex had reportedly passed the \$3.8 million in transactions that were conducted via the exchange during its first quarter, with a record single-day volume surpassing \$300,000 during the month of May.

But despite the steady growth of transaction activity after 1 to 2 years of building their businesses, many third party exchanges are by no means guaranteed long-term success. This is especially true for those that are heavily reliant on transaction fees, which do not provide adequate revenues. As a result, several independent exchanges are racing to build out other value-added services while working against the depletion of their investment funds.

Several more third party exchanges will likely cease to exist over the coming months, as they fail to keep up with this struggle. Mergers and closures will continue to be the main story among third party exchanges through the end of 2001.

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## B. Consortia-Led Exchanges

Although they are often criticized for moving too slowly, industry-backed exchanges have made considerable progress to arrive at where they are today. Most consortia-led exchanges have gone from being nothing more than a rough business plan to a pilot phase within 3 to 6 months of their initial press release, and several are now able to conduct reverse auctions, host supplier catalogs, and regularly execute indirect procurement transactions.

But despite the growth in activity that these consortia-led exchanges are seeing, few have moved beyond what most observers consider to be a demonstration phase of their operations. Only a handful of exchanges have signed up what may be considered regular users, and even fewer are able to offer supply chain management or real-time collaborative features as part of their core technology services. The original vision for consortia-led exchanges included these capabilities, and to the extent that most have not yet achieved this functionality, the door has been left open for those who would doubt their long-term viability.

Note, however, that consortia-led exchanges have been charged with the task of building entire technology infrastructures from the ground up. In most cases, these companies have necessarily been established as new businesses, with their own separate management and corporate structures.

Indeed, most of the industry-backed exchanges now see themselves as completely independent companies. They have been required to develop their own businesses plans that, despite the deep pockets of their initial investors, provide them with no guarantee that their brick-and-mortar backers will choose to adopt their services.

Taking this independent sink-or-swim approach, many of these exchanges have proceeded to build their businesses as if they must compete with other online trading alternatives. Most have adopted a subscription-based model that requires users to pay a fee for the use of hosted e-business solutions. Because they are structured as a cross between an application service provider and a utility, these industry-sponsored ventures are expected to save their users the significant costs associated with building and maintaining their own private exchanges.

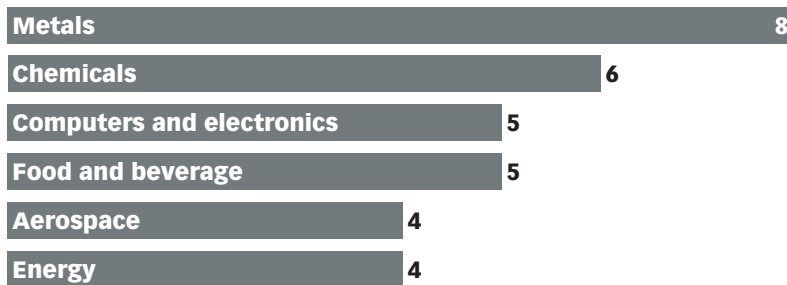
Most of these industry-backed exchanges are presently working to build on their early core offerings of auction, catalog and indirect procurement services to provide a wider selection of buy-side or sell-side online trading solutions. Once they assemble this core package of services, consortia-led exchanges will be able to price them and promote their subscription offers to potential users. As of the second quarter of 2001, only a few early leaders among these exchanges had emerged with such offerings.

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Because of their adoption of a technology-as-a-service business model, most consortia-led exchanges may be better defined as technology service providers, rather than exchanges or online marketplaces. While a consensus has not yet emerged around a new name for these industry-backed companies, it is still possible to refer to them as consortia-led exchanges, as most of them typically offer a platform that facilitates business-to-business e-commerce transactions.

At the end of 2000, McKinsey & Co. noted that the metals and chemicals industries had the most consortia-led exchanges, followed by the high tech and food & beverage industries. But as with the independent trading exchanges, consolidation has also begun to reduce the number of consortia-led exchanges, with MyAircraft.com and AirNewco merging in the aerospace industry to form Cordiem, and Elemica merging with ElastomerSolutions.com in the chemicals industry.

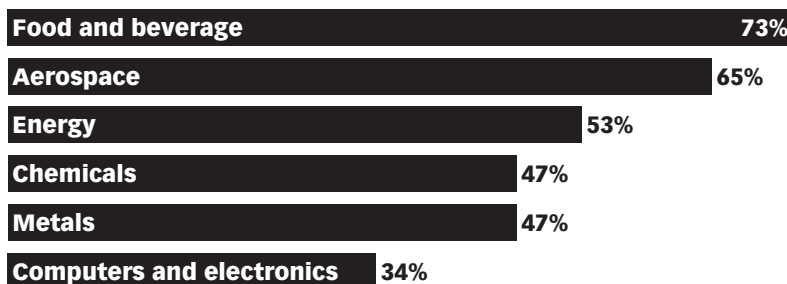
### Number of Consortia-Led Exchanges, by Industry, 2000



Source: McKinsey & Co., 2001

As for large business involvement in consortia-led exchanges, the highest penetration rate was in the food and beverage industry, with almost three quarters of Fortune 500 firms participating in an industry-backed exchange. This was followed by the aerospace industry, which has a history of inter-company cooperation among air carriers. As for the computers and electronics industry, many companies already have well-developed private exchanges, although their interest in public exchanges has been growing.

### Percent of Fortune 500 Companies Involved with Consortia Exchanges, by Industry, 2000



Source: McKinsey & Co., 2001

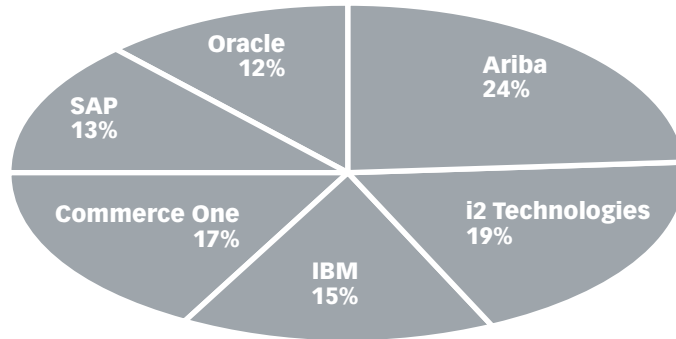
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Jupiter Media Metrix finds that, of the 60 industry-backed exchanges it studied in late 2000, Ariba is the lead technology provider for almost one-quarter of the exchanges. Although IBM had a lead role in 15% of those exchanges, it was also participating in another 43% of exchanges through its partnerships with i2 Technologies and Ariba, bringing its total participation in consortia-led exchanges to almost 60%.

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### Lead Technology Providers to the Consortia-Led Exchanges, 2000

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Source: Jupiter Media Metrix, 2001

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Leading enterprise software vendors Oracle, SAP and Microsoft have begun to promote the use of their software solutions on a hosted basis, with each of these companies making the software-as-a-service business model an important priority of their sales strategies. The result will be a widespread effort to educate businesses about the benefits of outsourcing their software solutions.

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Consortia-led exchanges will be a part of this push as well, which will likely contribute to the increased acceptance of hosted software solutions over time. Among American CIOs surveyed by Morgan Stanley in January, 51% already indicated a favorable opinion toward using hosted supply chain management solutions, while 21% said that they did not see the advantage of using hosted solutions.

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**Opinions of US CIOs towards the Use of Hosted SCM Solutions via ASP or Industry Exchange, January 2001 (as a % of CIOs)**

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**No, concerned about not being able to control a key competitive advantage**



**No, concerned about performance**



**No, concerned about privacy**



**No, don't see the advantage**



**No, don't think the concept is viable**



**Not applicable**



**Not near term, but won't rule it out**



**Not sure**



**Yes**



**Yes, but only if there are substantial cost savings**



**Yes, but only modestly**



Source: Morgan Stanley, 2001

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With the cost of building a private exchange estimated to be as high as \$50 million to \$100 million for a Fortune 500 company, it should come as no surprise that several large firms have turned to the cost-sharing alternative of building an industry-wide online trading platform. As for the total cost of building these larger business-to-business exchanges, some estimates run as high as \$500 million. However, initial investments for most of the consortia-led efforts have been around \$100 million, with Covisint and Transora expected to spend in excess of \$200 million before they become entirely self-funding.

**Initial Investment Funds Raised by B2B Exchanges, 2001 (in millions)**

Transora	\$250
Pantellos	\$100
GlobalNetXchange	\$100 (1)
Worldwide Retail Exchange	\$100 (1)
Elemica	\$100
ForestExpress	\$51

*Note: 1) approx.  
Source: eMarketer, 2001*

With more than 57 companies listed as initial investors, Transora has spread the cost of building its industry-wide trading infrastructure among several companies, with individual businesses contributing between \$500,000 and \$15 million for an ownership stake, depending on their annual revenues. Based on its own calculations, Transora estimates that large businesses may save as much as \$100 million in IT costs over a 5-year period by using its hosted solutions.

AMR Research has gone on to estimate that Covisint had already spent \$140 million on technology licenses and services contracts by the spring of 2001, and that by the time it is profitable in 2002, the exchange will have spent over \$350 million. Meanwhile, *Fortune* magazine has reported that by the second quarter of 2001, Transora had gone through at least \$140 million of its initial funding, and it expects to have spent \$214 million before it is profitable in the summer of 2002.

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It should be noted, however, that as these exchanges are beginning to see growth in their transaction activity, they are at the same time collecting revenues as well. Through the first quarter of 2001, the retail industry's GlobalNetXchange had posted more than \$600 million in transactions, while Covisint claimed to have transacted \$350 million in goods.

**Online Transaction Totals for Consortia-Led Exchanges, March 2001 (in millions)**

GlobalnetXchange	\$600
Covisint	\$350
Worldwide Retail Exchange	\$100
<b>Total</b>	<b>\$1,050</b>

Source: eMarketer, 2001

Adding significantly to these early returns, Daimler Chrysler announced during the month of May that it had conducted over \$3 billion in auction activity through Covisint, while in June GlobalNetXchange announced that it had conducted 1,000 transactions worth more than \$1 billion since it was initially opened for business. The retail exchange went on to claim that 20% of transaction activity was for indirect or MRO goods, while the remaining 80% of items were for goods intended for resale by retailers.

Despite all of the talk about its slow start, Covisint has in fact succeeded in implementing several components of its service offering. By the spring of 2001, more than 200 supplier catalogs were available on its site, with 2.5 million items available. In the first quarter alone, the exchange processed 6,000 transactions for indirect materials.

Covisint has so far set up operations in the United States and Europe, with its European operations having hosted \$85 million in auctions since they began during the first quarter of 2001. As of April, research firm Datamonitor estimates that about 50 of the top 150 auto industry suppliers had signed on with Covisint, with an additional 30 believed to be close to signing.



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Covisint divides its own core services offering into two main elements. The first is its online trading exchange platform through which its users may do their direct and indirect purchasing. The second is its hosted supply chain management solutions that users will deploy to improve supply chain visibility and online collaborative capabilities with their own trading partners.

In December of 2000, Covisint made the decision to base its trading exchange platform on Commerce One’s MarketSite solution and offer a hosted version of Commerce One’s Enterprise Buyer solution for its members’ e-procurement needs. Covisint is also running Commerce One’s auction and catalog software, while it has turned to Oracle for security, sign-on capabilities, pricing and registration functionality. As for its internal business operations, Covisint is using Oracle’s e-Business Suite.

Both Oracle and Commerce One were given a 2% ownership stake in Covisint, while Commerce One will also receive transaction revenues from the exchange for 10 years. However, in return for its preferential position, Commerce One gave up an ownership stake of 28.8 million of its own shares to both GM and Ford.

As several other consortia-led exchanges have done, Covisint has decided to build out its service offering by selecting technologies from several best-of-breed solution providers. For example, Covisint has gone with NexPrise for complex request for quotation (RFQ) solutions that enable buyers to synchronize their sourcing activities with multiple trading partners. All of Covisint’s global hosting infrastructure will be turned over to Exodus Communications, while master services agreements have been signed with three leading consulting firms that are qualified to implement Covisint’s solutions for any user of its network.

**Covisint’s Technology Partners, 2001**

<b>Partner</b>	<b>Contribution</b>
Commerce One, Oracle	Lead technology partners
NexPrise	RFQ management
Documentum	Content management
Mercator Software	Application integration
SupplySolution	Supply chain execution
Engineering Animation Inc.	Collaborative design software
Sun Microsystems	Web and application servers
Exodus Communications	Infrastructure hosting
Cap Gemini Ernst & Young, Deloitte Consulting, PwC	Consulting and implementation services

Source: eMarketer, 2001

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As for the potential savings that Covisint is expected to bring to its users, leading automakers are expected to gain the most. Broken down as a portion of the total anticipated savings from the cost of building a single car, OEMs are estimated to save about 48% of this cost, while second tier suppliers are projected by Roland Berger to save 18%. Adding potential efficiency gains, tier one suppliers such as Dana Corporation are planning to build their private exchanges as well.

**Projected Cost Savings per Automobile via Covisint, 2001**

Participant	Savings	% of total
Dealers	\$145	12%
Original equipment manufacturer	\$565	48%
Tier 1 suppliers	\$213	13%
Tier 2 suppliers	\$159	18%
Tier 3 suppliers	\$87	7%
Tier 4 suppliers	\$19	2%
Total	\$1,188	100%

Source: Roland Berger, 2001

Transora is another leader among the industry-backed exchanges, built to serve the consumer packaged goods industry. It is one of the first consortia-led exchanges to have moved out of pilot transactions and begin signing up regular users of its technology services. Beyond the typical indirect procurement and reverse auction activity to which other exchanges have been limited, Transora provides a hosted CPFR solution as well.

For companies that want to use its hosted technology services, Transora sells what it calls “collaboration units” to subscribers. The collaboration units are refundable, and they are sold at varying rates, with discounts for high-volume users. Depending on the technology that is used, subscribers also pay various prices for the use of different software solutions.

For example, a reverse auction feature may only wind up costing a company \$10,000 to \$20,000 per event, while the use of a CPFR solution will cost about \$175,000 for 6 months. In May of 2001, Transora estimated that it had already achieved about \$15 million in annualized subscription fees, with a goal of reaching \$28 million by the end of the year.

And while it is continuing to add other features to its core services offering, Transora is currently working to convert most of its initial investors into regular users. But not unlike the experience of several other exchanges, a great deal of education and preparation is necessary before many companies are ready to become active users, especially for some of the more complex technology offerings.

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For example, in an informal survey of more than 450 consumer products manufacturers, retailers and suppliers that were participating in a web seminar hosted by Transora, the exchange found that 37% of respondents were only in the early stages of gathering information about CPFR, or just establishing their plans for its use. An additional 40% of the participants said that they were either already using CPFR technology, or they were preparing to use it with at least some of their trading partners.

**Transora Poll: Preparation of Companies for CPFR, March 2001**



Source: Transora, 2001

As for its technology platform, Transora is using Ariba’s marketplace, dynamic trade, and sourcing solutions to form the core of its online trading platform, while turning to i2 Technologies for its TradeMatrix content and planning solutions. Other best of breed providers that it has brought on board include Syncra Systems for CPFR and eBreviate for reverse auction services.

**Transora’s Technology Providers, 2001**

Transora	Contribution
Ariba/i2 Technologies	Lead technology partner
Ariba, ICG Commerce	Indirect procurement software
eBreviate, Ariba	Auction solutions
Syncra Systems	CPFR
ATG	Website software
PricewaterhouseCoopers	Consulting and integration services

Source: eMarketer, 2001

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Converge is yet another leader among the consortia-led exchanges that is continuing to build out its core offering of technology solutions. Serving the high tech industry, Converge is in the process of selecting technology partners that will support its portfolio of core services, including online sourcing, planning, ordering and supply chain management solutions. Compared to its consortium rival e2open that has placed a priority on providing its users with collaborative design technology, Converge has focused on offering solutions that facilitate internet-based trade.

At the core of Converge’s trading services is the former independent electronic components exchange NECX – now called ConvergeTrade – through which the consortium not only facilitates online strategic sourcing and buying, but also makes a market in several of the products that are traded. Converge is unique among consortia-led exchanges in its market-making operations, which in turn are a source of revenue that provide better profit margins than straight transaction fees.

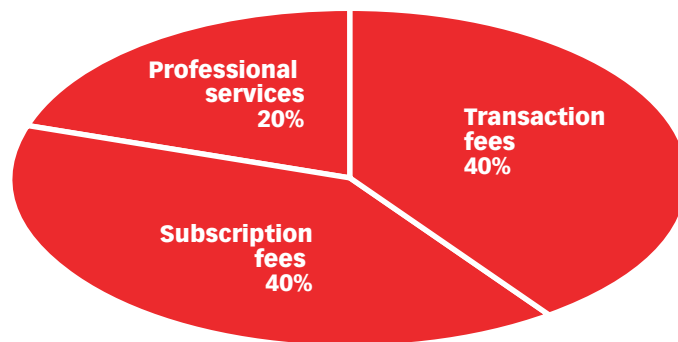
Since its purchase of NECX in December of 2000, ConvergeTrade has continued to serve 6,500 online and offline trading partners by selling products from more than 180 separate categories. Approximately 10% of ConvergeTrade’s transaction activity is conducted online, with further web-based trading capabilities being developed through the deployment of VerticalNet Solutions’ Tradeum platform. Converge has also tapped Manugistics for its supply chain management offering and transportation-software provider Celarix to provide its customers with logistics services and real-time, in-transit inventory tracking capabilities.

Like most industry-backed ventures, Converge plans to support its operations through a mixture of transaction and subscription-based revenues, along with professional services fees as well. It is interesting to note that most early adopters of Converge’s services are typically creating their own private web-based supply chain networks within the infrastructure of Converge, with plans to extend their networks and link with other participants over time.

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### Converge’s Planned Revenue Distribution, 2001

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Source: Converge, 2001

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Following the lead of Converge, other industry-backed exchanges have also begun to purchase or partner with independent trading exchanges as a means of rapidly acquiring dynamic trading capabilities. An example is Envera, which in June of 2001 merged with ChemConnect to combine its own supply chain management technology solutions with ChemConnect's real-time, spot market trading platform. ChemConnect also brings its independent corporate structure to the consortia-led exchange, which was previously being run by representatives of its founding investors.

Although it remains without dynamic trading capabilities at this time, another consortia-led exchange in the chemicals industry, Elemica, has instead focused on putting together its hosted technology platform. With pricing for its hosted supply chain solutions offering announced in April of 2001, users will be charged a membership fee of \$1,000 for the first 18 months that they participate in the exchange. They will then be given a choice of packages for their transaction activities: they may either play a flat fee for up to 4,000 transactions, or adopt a pay-per-use model that costs \$10 to \$25 per transaction plus additional set-up fees.

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### Service Fees for Users of Elemica, 2001

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<b>Membership fee</b>	\$1,000 for 18 months
<b>Transaction fees</b>	
Subscription package	\$100,000 for 4,000 transactions
Per-transaction fee	\$10 to \$25 per transaction, plus preparation fee

*Source: Chemical Week, 2001*

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Dairy.com is a consortia-led exchange that has brought together 34 leading organizations such as Kraft Foods, ConAgra Foods, the Dannon Company and the Dairy Farmers of America to bring online trade to the dairy industry. Dairy.com is owned by Momentx, which was formed following the December 2000 merger between Dairy.com and INC2inc, an independent exchange that operates in the food and beverage industry.

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Once again, a consortium-led group has acquired the technology of an independent exchange, to build out its online trading capabilities. Using the technology developed by INC2inc, Dairy.com will be able to rapidly add supply chain and inventory management solutions to its core online trading platform. Following several pilot transactions for commodity-based dairy goods during the first quarter of 2001, the exchange opened for business on March 27<sup>th</sup> after having traded more than \$25 million in goods during its demonstration phase.

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### Exchange Profile: Dairy.com As of April 2001

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Launch date	March 27th, 2001
Number of participants	34 industry leaders
Q1 2001 pre-launch pilot transaction activity	\$25 million

*Source: eMarketer, 2001*

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Among the many online marketplaces in the aerospace industry, Cordiem is one of the first to be formed through an early consolidation in the space. Announced in October of 2000, Cordiem brings together the manufacturers that had backed MyAircraft.com with those airlines that had formed an alliance under the name of AirNewco during the first half of 2000. The combined exchange brings together both buyers and sellers, and plans to offer procurement and supply chain capabilities in five operational areas: general procurement, maintenance and engineering, fuel and fuel services, catering and cabin services, and airport services.

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### Exchange Profile: Cordiem As of April 2001

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MyAircraft/AirNewco Merger	October 2000
Manufacturer participants	Honeywell, United Technologies, BF Goodrich
Airline participants	United, American Airlines, Air France, British Airways, Continental, Delta, Iberia Airlines, SairGroup, UPS
Technology partners	i2 Technologies, Ariba, IBM
Planned rollout	Q2 2001

*Source: eMarketer, 2001*

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Following a late start on account of its merger, and in addition to regulatory delays that followed the founding of MyAircraft.com, the name of the combined exchange was announced during the first quarter of 2001 along with plans to begin rolling out its services in the second quarter. And in addition to its original founders, there are reportedly several other airlines that are planning to join the exchange over the course of this year.

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One of the main rivals to Cordiem is an airline-backed marketplace called Aeroxchange. With 31 members as of May 2001, the exchange has begun to roll-out its Oracle-based system since February. Oracle's exchange platform provides sourcing, inventory management, maintenance management and database service, while webMethods' integration platform is being used to connect the exchange technology to the airlines' disparate back-end ERP systems.

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**Exchange Profile: Aeroxchange, May 2001**

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Airline participants	Air Canada, All Nippon, America West, Cathay Pacific, FedEx, Japan Airlines, Lufthansa, Northwest, Scandinavian Airlines, Singapore Airlines
Technology partners	Oracle exchange platform, webMethods integration platform

*Source: eMarketer, 2001*

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Aeroxchange has also signed an agreement with the Air Transport Association, which has provided it with access to the ATA's database of 260 supplier catalogs and 3 million inventory items.

Looking at the broader development of consortia-led exchanges since their initial press releases a year ago, the majority remain in an early stage of their development. While some leaders such as Covisint or Transora provide an indication of the technology strategies and revenue models that other exchanges will build, most are still selecting, deploying, and pricing their hosted solutions.

As industry-backed exchanges continue to assemble their service offerings, the third quarter of 2001 will see more announcements of technology partnerships, along with a few mergers. Several exchanges will move out of the pilot phase of operations and into regular transaction activity as well, with emerging leaders beginning to highlight the success stories of their early adopters, which will in turn be used to drive broader membership growth in 2002.

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## C. Success and Failures among B2B Exchanges

As predicted by many observers at the peak of exchange-building activity in mid-2000, there has been an ongoing shakeout of B2B exchanges through the first half of 2001. Through mergers, acquisitions, and outright closures, the number of exchanges has fallen from its peak of more than 1,500 last year.

Hardest hit have been the independent exchanges, which have seen their numbers fall almost as rapidly as they had grown. It is interesting to note that while most of the weakest independent exchanges have been quickly swept out of business, several of the stronger exchanges have reinvented themselves as technology providers. These latter businesses had typically developed some kind of trading platform or industry-specific software solution, which they are now selling to large companies that are building their own private exchanges.

Whether this strategy has only prolonged these companies' operations for 1 or 2 more years is yet to be determined, but there are some former exchanges that appear to have successfully made this transition. One example is SciQuest, which has managed to adapt its business model to become an internet catalog solutions vendor within the life sciences industry. By contrast, its former rival Chemdex was not able to make the transition from independent exchange to technology provider in time.

In addition to the failure of many entrepreneurial dot-coms, several ventures backed by large brick-and-mortar firms have been quickly folded up as well. Often moving more rapidly than their dot-com counterparts, several large companies closed their online efforts once it became apparent that making money in the B2B exchange business would not be an easy game.



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For example, Potomac Electric’s Pepmarket.com was closed down after an initial \$1.4 million investment, and only 4 months of operations. Dellmarketplace was also shut down after just 4 months, once Dell Computer learned that traffic from its successful Dell.com website did not readily translate into office supplies sales on Dellmarketplace.

**B2B Exchange Closures, 2001**

	<b>Industry/Product</b>	<b>Main sponsors(s)</b>
Dellmarketplace.com	Small business services	Dell Computer
FreightWise	Railroad freight	Burlington, CN Rail, GE Transport
Silicon Valley Oil Co.	Petroleum lubricants and fuels	Chevron
MaritimeDirect	Shipping	Independent
Pepmarket.com	Electricity	Potomac Electric Co.
MetalMaker	Metals processing	Independent
TotalMRO, MROverstocks	MRO products	WW Grainger
PetroCosm	Petroleum	Chevron, Texaco
GoCaro.com	Shipping, logistics	Independent
eGarden	Lawn and garden	US Home & Garden
MetalSite	Steel industry	Weirton Steel, LTV Steel

Source: eMarketer, 2001

Other exchanges have lost out to their competitors, which have managed to gain critical mass by more aggressively signing up large brick-and-mortar companies. But big industry backers are by no means a guarantee for success either, as Pepmarket or PetroCosm can attest. While consortia-led exchanges have managed to gain the greatest mind-share in several industries, they generally need to be supported by more than just one or two lead partners.

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Through the combination of their customer bases, mergers have been a way for some independent exchanges to stave off closure. Citadon and LevelSeas are examples of this approach, with uncertainty still remaining on their respective horizons. Some businesses have also begun to consolidate their own private initiatives, as WW Grainger has done by rolling up its FindMRO.com into its successful Grainger.com venture. And as consortia-led exchanges such as Envera or Dairy.com have shown, merging or acquiring an independent exchange is a fast way for industry-backed exchanges to get up and running with an online trading platform.

**Consolidation Activity among B2B Exchanges, 2000-2001**

<b>New exchange</b>	<b>Former exchanges</b>	<b>Date of merger</b>	<b>Industry</b>
Citadon	Cephren, Bidcom	2000	Commercial construction
Momentx	Dairy.com, INC2inc	Dec 2000	Dairy/food and beverage
Cordiem	MyAircraft, AirNewco	Oct 2000	Aerospace/airline industry
Rooster.com	Rooster.com, Pradium	Feb 2001	Agricultural commodities
LevelSeas	LevelSeas, SeaLogistics	Mar 2001	Bulk ocean shipping
Grainger.com	Grainger.com, FindMro.com	Apr 2001	MRO products
ChemConnect	ChemConnect, Envera	Jun 2001	Commodity chemicals

Source: eMarketer, 2001

One final example of two exchanges that have come together is the merger of Rooster.com and Pradium. Rooster.com was initially an independent marketplace backed by Cargill that was designed to serve the purchasing needs of local farmers and their grain elevators or seed dealers. On the other hand, Pradium was focused on building an online commodities trading platform, and was backed by leading agricultural companies such as Cargill, Cenex Harvest and ADM. Because of their complementary missions, the two exchanges were merged in early 2001 to provide the agricultural community with an end-to-end online trading solution.

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And as a final look at those exchanges that have met with some early success, AMR Research names ten that have emerged as leaders in their respective industries.

**Top 10 Industry Trading Exchange Services, 2001**

<b>Exchange</b>	<b>Industry</b>
Exostar	Aerospace and defense
Covisint	Automotive
CheMatch	Commodity chemicals
Transora	Consumer packaged goods
Converge	High tech and electronics
eSteel	Metals
FuelQuest (1)	Oil and gas
PaperExchange	Paper
GTlobalNetXchange	Retail
Altra Energy Technologies	Utilities

*Note: 1) Since original publication, company has changed business plan to become a technology provider*  
*Source: AMR Research, 2001*

Since the original publication of this list, FuelQuest has changed its business model to become a technology provider, rather than focus on its exchange activities. It should also be noted that PaperExchange has closed its European operations. As these latter two examples illustrate, there is still a long road ahead for business-to-business exchanges, even before the leaders may be assured of their survival.

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**Also Available from eMarketer**

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**ASPs**

- Market size & growth
  - Industry leaders
  - Usage patterns
  - Customer satisfaction
- 

**Broadband**

- Users by access method (dial-up, fiber, DSL, cable, satellite, wireless)
  - Residential and business usage
  - Access revenues
  - User demographics
  - Country profiles
- 

**CRM**

- Market size & growth
  - Leading vendors
  - Budgeting & implementation
- 

**eAdvertising**

- eAdvertising revenues worldwide
  - Spending by ad format (banner ads, sponsorships, e-mail, etc.)
  - Spending by industry category
  - Measurements and standards (click-through rates, CPMs, ROI)
- 

**eAsia**

- Economy & infrastructure
  - Internet users & demographics
  - eCommerce, eFinance & eAdvertising
  - Country profiles
- 

**eBanking**

- Online banking around the world (US, Europe, Asia)
  - Mobile banking
  - Electronic bill presentment and payment
- 

**eBrazil**

- Economy & infrastructure
  - Internet users & demographics
  - eCommerce, eFinance & eAdvertising
- 

**eCanada**

- Economy & infrastructure
  - Internet users & demographics
  - eCommerce, eFinance & eAdvertising
- 

**eCommerce: B2B**

- eCommerce: B2B revenues around the world, country by country
  - eCommerce: B2B by industry
  - Internet penetration among businesses
  - Online marketplaces, auctions and exchanges
-

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**eCommerce: B2C**

- eCommerce: B2C revenues worldwide
- Top B2C categories
- Online shoppers, buying frequency and size of transactions
- eConsumer attitudes and behaviors

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**eDemographics**

- User demographics worldwide
- Age, gender and race
- Income, education and occupation
- Usage patterns

---

**eEurope**

- Economy & infrastructure
- Internet users & demographics
- eCommerce, eFinance & eAdvertising
- Country profiles

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**eGlobal**

- Internet infrastructure, by region
- Users and usage, by region
- eDemographics, by region
- eCommerce, by region

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**eHealth**

- Consumer demographics and attitudes
- Healthcare personnel, demographics and usage
- B2C spending
- B2B spending

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**eInvesting**

- Online brokerages
- Online mutual funds
- Online asset management
- Online investment advice

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**eJapan**

- Economy & infrastructure
- Internet users & demographics
- eCommerce, eFinance & eAdvertising

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**eLatin America**

- Economy & infrastructure
- Internet users & demographics
- eCommerce, eFinance & eAdvertising
- Country profiles

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**eMail Marketing**

- eMail marketing revenues worldwide
  - eMail users and user demographics
  - Permission, opt-in and opt-out
  - eMail marketing techniques and strategies
-



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**ePoland**

- Economy & infrastructure
- Internet users & demographics
- eCommerce, eFinance & eAdvertising

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**ePrivacy & Security**

- Consumer attitudes & behavior toward online privacy
- Online fraud
- Credit card security
- Corporate security (hacking and denial-of-service attacks)
- Virus attacks

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**eWireless**

- Mobile internet use around the world, country by country
- mCommerce
- mFinance
- mAdvertising

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**Interactive Television**

- User forecast
- Revenue forecast
- Business attitudes & behavior
- User attitudes & behavior

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**Marketing Online to Kids & Teens**

- Demographics
- Advertising & marketing
- eCommerce
- Special considerations

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