Title
E-Commerce in the United States: Leader or One of the Pack?

Authors
Kraemer, Kenneth L.
Dedrick, Jason
Dunkle, Debbie

Publication Date
2002-08-01

E-Commerce in the United States: Leader or One of the Pack?

Global E-Commerce Survey:
Report of Results For The United States[1]

Kenneth L. Kraemer, Jason Dedrick and Debora Dunkle
Center for Research on Information Technology and Organizations
University of California, Irvine

The United States is commonly perceived as the global leader in using the Internet as a business tool. Does the data bear out this perception? Based on the CRITO/IDC Global E-commerce Survey, we can shed some light on this question. Comparing U.S. firms to the complete global sample of 10 countries (including the U.S.), we find a mixed picture.[2] Overall, U.S. companies are not more likely to use various on-line technologies, but they make more intensive use of the Internet as a business tool, particularly for buying and selling. They are motivated by the same business drivers to go on-line, but face fewer obstacles due to the quality of the legal environment supporting e-commerce in the U.S. They are more likely to enjoy increased sales but less likely to have reduced costs or improved efficiency by going on-line. The following are some key findings from the survey.

- **U.S. companies are not as global as the global sample of firms**. For instance, global sample firms earn 12% of total sales from abroad, compared to 5% for U.S. firms, global sample firms spend 20% of their procurement expenditures abroad, compared to just 8% for U.S. firms, and 18% of global sample firms are highly affected by global competition, compared to 12% of U.S. firms.
- **The U.S. is not far ahead in using e-commerce technologies**. U.S. firms are less likely to have an intranet or extranet, and equally likely to use e-mail or electronic data interchange (EDI). The one place where U.S. firms have a big edge is in using electronic funds transfer, which is used by 63%, compared to 43% for the global sample.

---

[1] This research is a part of the Globalization and E-Commerce project of the *Center for Research on Information Technology and Organizations* (CRITO) at the University of California, Irvine. This material is based upon work supported by the National Science Foundation under Grant No. 0085852. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

[2] It should be noted that the sample consists of large and small firms in three industries (manufacturing, retail/wholesale, and finance) that are already using the Internet for business. It is not a representative sample of firms in the U.S. or other countries. The 10 countries are the U.S., France, Germany, Denmark, Brazil, Mexico, Japan, Singapore, China, and Taiwan.

- **Business drivers for Internet use are similar for U.S. and global sample firms, but global sample firms are more affected by government drivers.** The number of firms driven to use the Internet by business factors such as pressure from customers and suppliers, competitors on-line, cost reduction, and market expansion were very similar. However, global sample firms were more likely to be influenced by government requirements (15% versus 9%) and incentives (8% versus 3%).
- **U.S. firms perceive fewer difficulties and barriers to doing business on the Internet.** The global sample companies were more likely to have problems making organizational changes necessary to doing business on-line (24% versus 15%), and were much more likely to be stymied by business laws that do not support e-commerce (24% versus 8%), and inadequate legal protection for Internet purchases (34% versus 12%). This suggests that the U.S. legal and institutional framework is better established for supporting e-commerce.
- **U.S. firms make more extensive use of the Internet, particularly for buying and selling**. To illustrate, 43% of U.S. firms make sales on-line, compared to 30% of global sample firms, 56% of U.S. firms offer customer service on-line, compared to 44% of global sample firms, and 73% of U.S. firms make purchases on-line, compared to 47% of global sample firms. On the other hand, U.S. and global sample firms are equally likely to use the Web for exchanging operational data or integrating business processes with suppliers or customers. U.S. firms also are more likely to be involved in Internet marketplaces.
- **Total e-commerce sales are small, but slightly higher for U.S. firms.** Among all establishments surveyed, U.S. firms are doing 5% of consumer sales and 5.5% of business sales on-line, compared to 3.8% and 3.9% respectively for global sample firms.
- **U.S. firms report somewhat greater impacts from doing business on-line in terms of selling and customer support, while global sample firms enjoy greater impacts on costs and efficiency.** For instance, 24% of U.S. firms said that sales increased compared to 21% of global sample firms, and 40% said customer service improved compared to 35% of global sample firms. On the other hand, 20% of global sample firms saw increased international sales, reflecting their more global orientation. In terms of cost reduction, global sample firms were more likely to have decreased procurement costs (18% versus 13%) and inventory costs (14% versus 11%). Global sample firms also were more likely to say that internal processes are more efficient as a result of going on-line (34% versus 28%).

The survey was planned to provide insights into adoption and usage of the Internet and e-commerce by country, industry and firm. Hence, the study was not concerned with measuring overall levels of e-commerce use within countries or globally, but rather with how the Internet is being used for business among relatively more technologically advanced businesses in each country. We surveyed 2,139 establishments in 10 countries—Brazil, China, Denmark, France, Germany, Japan, Mexico, Singapore, Taiwan and the United States—that "use the Internet to buy, sell or support products and services." Countries were selected to include developed, newly industrializing and developing nations. We included establishments in three major industry sectors that are known to be more extensive and have advanced users of e-commerce—manufacturing, distribution (wholesale and retail), and finance (banking and insurance). The sample breaks down into approximately 300 establishments in the U.S. and 200 in each of the other countries, and is evenly split by industry as well as firm size (from 25 to 250 and over 250 employees) in each country. Weights based on the actual distribution of establishments in each country for each sector were applied. The results in this report are based on the weighted sample.

This report focuses on the differences and similarities by industry sector and overall between the United States and the combined sample of 10 countries (referred to as the "global sample"). The following areas are addressed:

- Influence of Globalization
- Use of E-commerce Related Technologies
- Enterprise Integration Strategy
- Mobiles and the Internet
- Drivers for Internet Use
- Barriers/Difficulties to Doing Business on the Internet
- Uses of the Internet
- The Internet as a Distribution Channel
- On-line Sales
- On-line Services
- On-line Procurement
- Impacts of Doing Business On-line

Future reports in this series will focus on differences and similarities by country, firm size, and other significant comparisons.

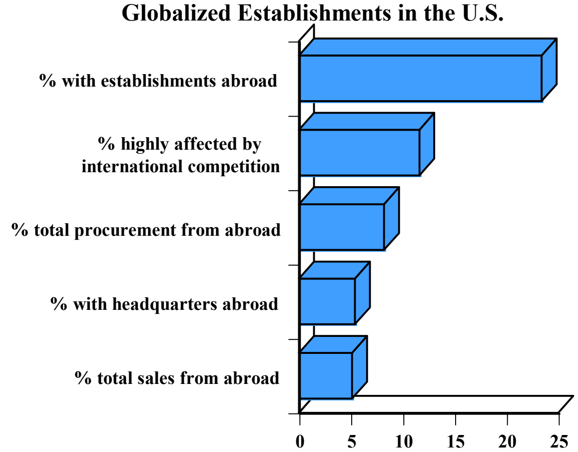
I. ENVIRONMENT

Globalization

U.S. companies are not as global as the global sample of firms. For instance, global sample firms earn 12% of total sales from abroad, compared to 5% for U.S. firms, global sample firms spend 20% of their procurement expenditures abroad, compared to just 8% for U.S. firms, and 18% of global sample firms are highly affected by global competition, compared to 12% of U.S. firms.

The measures of globalization used in the survey are indirect focusing on the extent to which establishments within the country are globalized. Five measures are used: company has establishments outside the country, the headquarters is outside the country, percent of sales outside the country, percent of procurement outside the country, and competitive pressure from outside the country is experienced by the establishment. Figure 1 displays the distribution of the U.S. establishments on these five measures. Table 1 shows the United States and the global sample (10 countries combined) frequencies broken down by industry sector for these five measures.

Figure 1.
Globalized Establishments in the U.S.



Nearly one-quarter of the establishments in the three sectors reported being part of companies that also had ***establishments located outside the United States***. The Manufacturing sector reported the highest incidence with more than one-third being part of global companies, while the Banking and Insurance sector reported the lowest (Table 1). In comparison with the global sample figure, U.S. Manufacturing is significantly higher in the number of companies with establishments abroad, while U.S. Banking and Insurance companies are significantly lower. Wholesale/Retail Distribution establishments mirror the global sample percentages.

While a significant number of establishments located in the U.S. are part of a global company, the company ***headquarters*** generally is located in the U.S. Only 5% of the establishments reported the headquarters of the company located outside of the United States in comparison to nearly 9% worldwide. Nearly 10% of the establishments in the Manufacturing sector had non-U.S. based headquarters while only 3% of the Banking and Insurance sector had the headquarters of the company located outside the U.S.

TABLE 1.
Globalization Indicators

	Manufacturing		Wholesale/Retail Distribution		Banking & Insurance		Total	
	U.S.	Global	U.S.	Global	U.S.	Global	U.S.	Global
Percent of companies with establishments abroad	36.1	27.6	21.4	22.2	13.2	23.3	23.4	23.9
Percent of companies with headquarters abroad	9.3	12.0	4.6	6.4	3.2	11.0	5.4	8.5
Mean percent of total sales from abroad	11.5	14.6	3.1	11.4	4.0	8.1	5.1	12.1
Mean percent of total procurement spending from abroad	12.6	24.0	8.9	20.8	.7	4.6	8.2	20.3
Degree is affected by competitors abroad: Low	45.1	47.3	86.2	77.2	96.0	82.8	78.5	68.3
Moderate	20.3	20.8	7.7	14.2	3.6	7.7	9.9	15.7
High	34.6	31.9	6.2	8.6	.4	9.5	11.6	18.0

Consistent with the findings above, the Manufacturing sector in the U.S., compared to the other two sectors, ***sells*** and ***buys*** more abroad. Nonetheless, for all three sectors, the percentages of buying and selling abroad by U.S. companies are less in comparison to the average worldwide. For the Manufacturing sector, on average, about 12% of total sales are from abroad, and 13% of procurement spending is from abroad. The Banking and Insurance sector is least global with less than 5% of total sales from abroad and less than 1% of total spending on procurement from companies outside of the U.S.

The global orientation of Manufacturing in relation to the other two sectors is highlighted in the responses to the degree the establishment is affected by competitors abroad. Over half of the Manufacturing sector establishments report at least a moderate impact with over one-third reporting a high impact. In contrast, 86% of the Wholesale/Retail Distribution sector and 96% of the Banking and Insurance Sector report low to no effect. Overall, a significantly lower proportion of U.S. establishments—in comparison to the global sample (12% vs. 18%)—perceive that they are greatly affected by competitors from outside the U.S.

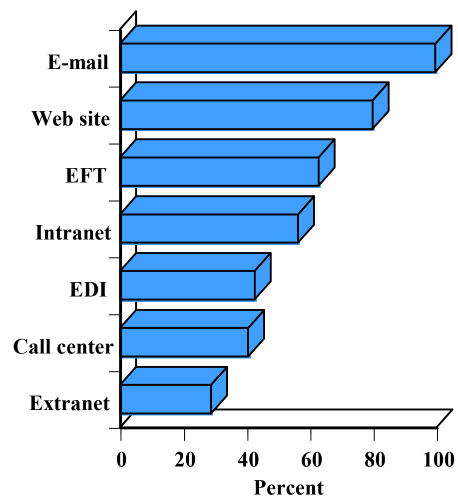
II. TECHNOLOGY READINESS

Use of E-Commerce-Related Technologies

The U.S. is not far ahead in using e-commerce technologies. U.S. firms are less likely to have an intranet or extranet, and equally likely to use e-mail or electronic data interchange (EDI). The one place where U.S. firms have a big edge is in using electronic funds transfer, which is used by 63%, compared to 43% for the global sample.

There are a number of technologies that are used by establishments to electronically conduct business. Some technologies are widespread while others are infrequently used or are relevant to some businesses but not to others. Eight important e-commerce-related technologies (Figure 2, Table 2) were identified.

Figure 2.
Use of E-commerce Technologies in the U.S.



E-mail is universally used in U.S. establishments of any size for these three industry sectors.

A substantial percent of all of these businesses have some type of ***Web site*** presence that is accessible by the public, although the Wholesale/Retail Distribution sector is less saturated than the other sectors. Across all three sectors, the U.S. percentages are higher than the global sample percentages.

Over half of the companies have an ***intranet***, that is, a private, internally accessible Web site that provides information about the firm to employees. Interestingly, the U.S. percentages by sector are lower than the global sample percentage, i.e., nearly 66% of establishments are using an intranet.

Extranets (a private Web site accessible by external organizations such as clients, business partners, and suppliers but not by the general public) are less prevalent. Extranets are found at about the same rate in all three sectors. From 15-20% of the businesses have an extranet accessible by suppliers or business partners, while from 14-19% have extranets that are accessible by customers. There are no major differences among the three sectors in terms of the type of extranet.

EDI, on the other hand, is used widely in Manufacturing establishments in the U.S. with nearly 60% reporting such use in comparison to about 40% worldwide. EDI is less in use in the other two U.S. sectors although over 33% report usage. A substantial proportion of U.S. manufacturing establishments use EDI over private networks, although 31% also report the use of Internet-based technologies. Within the Banking and Insurance sector, slightly more reported using Internet-based EDI than EDI over private networks. Electronic funds transfer (**EFT**) is used by over 50% of the manufacturing establishments, 60% of Wholesale/Retail Distribution establishments and 82% of the Banking and Insurance sector.

Nearly one-half of the Manufacturing and Banking and Insurance sector establishments in the U.S. use a ***call center***, that is, a unit whose primary purpose is sales, technical support or services to customers. A significantly lower proportion of Wholesale/Retail Distribution sector establishments make use of a call center.

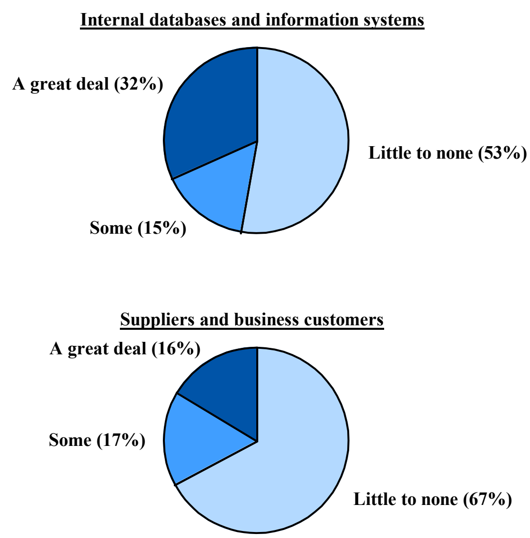
TABLE 2.
Use of E-commerce Technologies

Percent using …	Manufacturing		Wholesale/Retail Distribution		Banking & Insurance		Total	
	U.S.	Global	U.S.	Global	U.S.	Global	U.S.	Global
E-mail	98.3	95.5	100.0	99.9	100.0	99.2	99.6	98.5
Web site	85.1	80.5	76.1	69.9	85.5	81.5	79.8	74.1
Intranet	52.1	63.5	57.7	63.3	56.6	66.5	56.2	63.6
Extranet	29.9	31.4	28.9	33.4	26.3	32.4	28.7	32.7
Extranet accessible by suppliers/ business partners	20.0	18.7	15.9	21.8	16.4	21.7	16.9	20.9
Extranet accessible by customers	19.0	18.5	13.6	17.0	17.6	20.8	15.6	17.8
EDI	58.1	43.0	37.6	45.2	37.2	42.2	42.5	44.3
EDI over private networks	45.4	29.7	30.0	38.7	27.3	30.4	33.2	35.3
Internet-based EDI	30.7	27.8	19.8	22.0	32.5	27.7	24.5	24.3
EFT	53.7	40.7	60.3	42.1	82.0	62.3	62.7	43.4
Call center	48.3	32.6	35.4	31.3	48.1	38.6	40.5	32.3

Enterprise Integration Strategy

The extent to which establishments have integrated their internal databases and information systems either upstream or downstream is currently low overall, although the United States is slightly ahead of the global sample (Figure 3, Table 3).

Figure 3.
Enterprise Integration Strategy in the U.S.



Among the three sectors, the Banking and Insurance sector is the most advanced in linking Internet applications to internal organizational databases and applications with nearly one-half (49%) of the establishments reporting high linkage.

In contrast, about 20% of the Manufacturing establishments and 31% of the Wholesale/Retail Distribution establishments have achieved a comparable level. Electronic integration of company databases and information systems with suppliers and business customers is very much in its infancy with 67% of U.S. establishments reporting little to no integration. Again, the Banking and Insurance sector is slightly ahead of the pack with over 25% of the establishments reporting a great deal of integration.

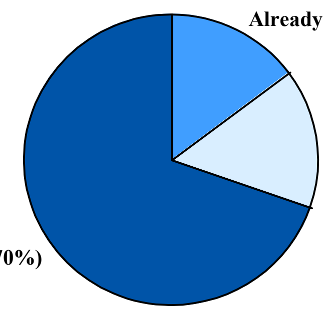
TABLE 3.
Enterprise Integration Strategy

Extent to which Internet applications are electronically integrated with …	Manufacturing		Wholesale/Retail Distribution		Banking & Insurance		Total	
	U.S.	Global	U.S.	Global	U.S.	Global	U.S.	Global
Internal databases and information systems:								
Percent little to none	58.0	60.6	55.4	49.8	37.3	39.4	52.9	52.5
Percent some	20.6	23.8	13.7	23.9	14.0	20.6	15.4	23.6
Percent a great deal	21.4	15.6	30.9	26.3	48.7	40.0	31.7	23.9
Those of suppliers and business customers:								
Percent little to none	70.9	72.6	66.2	72.6	64.8	66.2	67.2	72.1
Percent some	14.4	19.1	19.7	18.2	8.7	15.8	16.5	18.3
Percent a great deal	14.6	8.3	14.1	9.1	26.5	17.9	16.4	9.6

Mobiles and the Internet

*Content and services for **mobile customers** is still very much in the future in the U.S. as it is in the global sample (Figure 4, Table 4).*

Figure 4.
Content/Services to Mobile Customers in the U.S.



Wholesale/Retail Distribution reports the most activity with about 18% of the establishments currently providing such content/services with a further 11% planning to add some within the year. The Banking and Insurance sector has the most plans with 29% of the establishments reporting that they plan to add such content/services within the next year while currently only 8% report that it is already available. U.S. Banking and Insurance sector appears to be doing some 'catch up' with Banking and Insurance in other countries–currently nearly three times as many establishments in the global sample already provide such content.

TABLE 4.
Content/Services to Mobile Customers

	Manufacturing		Wholesale/Retail Distribution		Banking & Insurance		Total	
	U.S.	Global	U.S.	Global	U.S.	Global	U.S.	Global
Percent providing or planning to provide mobile content or services:								
Already available	10.7	14.2	18.0	12.5	8.1	21.2	14.6	13.7
Plan to add within the next year	17.7	17.7	11.0	18.4	29.4	18.9	15.7	18.2

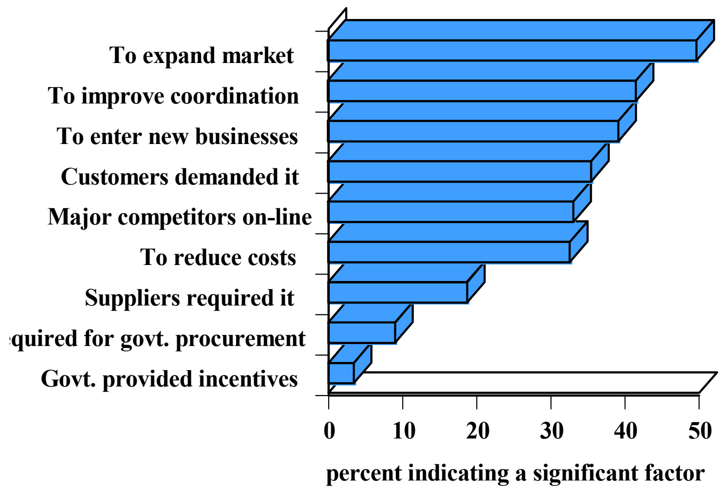
III. BARRIERS AND INCENTIVES

There are a number of factors that propel an establishment toward the adoption of e-commerce as well as a number of factors that stand as obstacles to the successful implementation of an e-commerce business strategy. Both kinds of factors are important to measure.

Drivers for Internet Use

Business drivers for Internet use are similar for U.S. and global sample firms, but global sample firms are more affected by government drivers. The number of firms driven to use the Internet by business factors such as pressure from customers and suppliers, competitors on-line, cost reduction, and market expansion were very similar. However, global sample firms were more likely to be influenced by government requirements (15% versus 9%) and incentives (8% versus 3%).

Figure 5. Drivers for Internet Use in the U.S.



More than half of the Manufacturing establishments in the U.S. indicated that market expansion of existing product/services and improved coordination with customers and suppliers were significant factors in their organization's decision to begin using the Internet for business (Figure 5, Table 5). No single driver was considered a very significant factor for a majority of the Wholesale/Retail Distribution establishments. A majority of the Banking and Insurance sector (similar to the Manufacturing sector) rated market expansion as a significant driver. In addition, 56% of establishments in the Banking and Insurance Sector rated "major competitors were on-line" as a very significant factor.

TABLE 5.
Drivers for Internet Use

% indicating a significant factor …	Manufacturing		Wholesale/Retail Distribution		Banking & Insurance		Total	
	U.S.	Global	U.S.	Global	U.S.	Global	U.S.	Global
Customers demanded it	35.2	35.4	33.8	37.6	41.9	36.7	35.5	36.9
Major competitors were on-line	30.3	31.2	28.1	29.2	55.5	47.6	33.1	31.3
Suppliers required it	21.9	26.5	18.8	21.3	14.2	12.6	18.7	22.3
To reduce costs	36.4	42.8	30.0	32.3	36.5	34.3	32.6	35.7
To expand market for existing product/services	52.1	51.0	45.4	45.6	61.7	53.0	49.8	47.9
To enter new businesses or markets	45.2	39.2	38.6	44.4	33.5	35.6	39.2	42.0
To improve coordination with customers and suppliers	50.5	50.8	37.8	40.5	42.8	39.9	41.6	43.7
Required for government procurement	13.3	19.1	8.5	13.7	4.7	11.4	9.0	15.2
Government provided incentives	4.5	10.5	3.9	7.4	.4	6.7	3.4	8.3

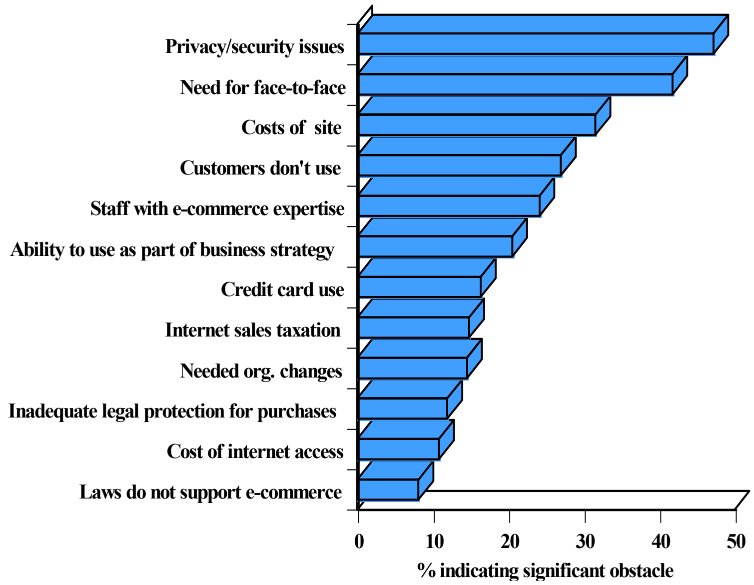
Barriers to Doing Business on the Internet

U.S. firms perceive fewer difficulties and barriers to doing business on the Internet.

The global sample companies were more likely to have problems making organizational changes necessary to doing business on-line (24% versus 15%), and were much more likely to be stymied by business laws that do not support e-commerce (24% versus 8%), and inadequate legal protection for Internet purchases (34% versus 12%). This suggests that the U.S. legal and institutional framework is better established for supporting e-commerce.

Regardless of industry sector, the most frequently cited barriers to doing business on the Internet were the need for face-to-face interaction to sell products and the concern about privacy of data or security issues (Figure 6, Table 6).

Figure 6. Barriers/Difficulties in the U.S.



In general, the U.S. establishments, in contrast to the global sample, report fewer significant obstacles to ability to do business on-line. There are two important findings.

First, in contrast to the global sample, the U.S. is more likely to view the need for face-to-face interaction as a significant obstacle. For all three sectors, U.S. establishments have a higher frequency than the global sample. Interestingly, however, the Banking and Insurance sector is also significantly higher on this concern when compared with the other two U.S. industry sectors. Over half of the Banking and Insurance sector indicate that the need for face-to-face interaction is a significant obstacle.

Second, the U.S. establishments are much less likely to identify legal protection for Internet purchases (12% U.S. vs. 34% global) and 'business laws do not support e-commerce' (8% U.S. vs. 24% global) as significant obstacles. In comparison with the global sample, legal protections are not a major obstacle for the U.S. companies.

TABLE 6.
Barriers/Difficulties

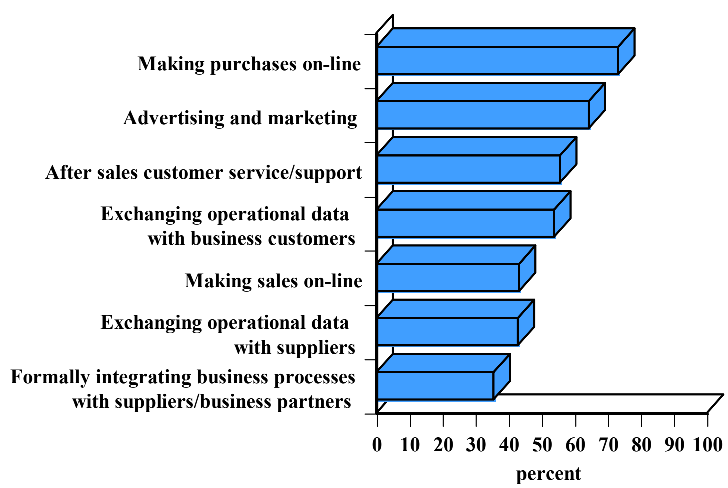
% indicating it as a significant obstacle:	Manufacturing		Wholesale/Retail Distribution		Banking & Insurance		Total	
	U.S.	Global	U.S.	Global	U.S.	Global	U.S.	Global
Need for face-to-face customer interaction	43.3	31.5	37.8	34.2	53.5	40.1	41.7	33.8
Concern about privacy of data or security issues	48.8	47.1	40.9	40.4	66.7	62.0	47.1	44.2
Customers do not use the technology	17.5	30.3	32.4	33.1	20.8	23.2	26.9	31.4
Finding staff with e-commerce expertise	22.8	23.8	25.5	28.8	21.1	19.9	24.1	26.5
Prevalence of credit card use in the country	12.8	22.4	19.1	19.9	10.9	15.4	16.3	20.3
Costs of implementing an e-commerce site	27.0	32.6	31.2	34.9	39.3	27.6	31.5	33.6
Making needed organizational changes	20.0	23.8	12.7	24.8	12.9	17.5	14.5	23.9
Level of ability to use the Internet as part of business strategy	18.6	28.0	21.5	23.7	19.7	20.8	20.5	24.8
Cost of internet access	4.5	13.5	12.3	16.3	14.4	12.7	10.8	15.1
Business laws do not support e-commerce	4.4	27.6	9.0	22.6	10.1	23.3	8.1	24.2
Taxation of Internet sales	6.2	14.0	21.3	18.8	.4	8.2	14.8	16.5
Inadequate legal protection for Internet purchases	11.5	37.3	11.2	33.6	14.8	26.0	11.9	34.1

IV. USES OF THE INTERNET

U.S. firms make more extensive use of the Internet, particularly for buying and selling. To illustrate, 43% of U.S. firms make sales on-line, compared to 30% of global sample firms, 56% of U.S. firms offer customer service on-line, compared to 44% of global sample firms, and 73% of U.S. firms make purchases on-line, compared to 47% of global sample firms. On the other hand, U.S. and global sample firms are equally likely to use the Web for exchanging operational data or integrating business processes with suppliers or customers. U.S. firms also are more likely to be involved in Internet marketplaces.

The most frequently mentioned use of the Internet for all three sectors in the U.S. was ***making purchases on-line*** (73%), followed by using the Internet for ***advertising and marketing*** purposes (64%) (Figure 7, Table 7). Both Manufacturing and Banking and Insurance also are high users for ***exchanging operational data*** more so with business customers (65% and 64% respectively) than with suppliers (50% and 41% respectively). ***After sales customer service and support*** is also done by more than half of the establishments (56%) in all three sectors.

Figure 7. Uses of the Internet in the U.S.



The sectors are differentiated more on the degree to which the Internet is used for ***making sales*** with Wholesale/Retail Distribution using the Internet significantly more than Manufacturing, and Banking and Insurance (52%, 28% and 32% respectively). What is quite noticeable about the three sectors' uses of the Internet is that there are a few uses that appear to be uniformly used by establishments within a sector. For both Manufacturing and Banking and Insurance, these are advertising and marketing (81% Banking and Insurance and 71% Manufacturing), making purchases on-line (77% for both) and exchanging operational data with business customers (65% Manufacturing and 64% Banking and Insurance), while for Wholesale/Retail Distribution, only making purchases on-line (71%) is frequently used by establishments in that sector.

TABLE 7.
Uses of the Internet

	Manufacturing		Wholesale/Retail Distribution		Banking & Insurance		Total	
	U.S.	Global	U.S.	Global	U.S.	Global	U.S.	Global
Advertising and marketing purposes	71.3	55.8	56.6	57.1	81.4	68.3	64.3	57.6
Making sales on-line	27.9	25.1	52.4	31.9	31.5	33.0	43.2	29.9
After sales customer service and support	57.9	48.4	54.6	40.7	55.9	48.3	55.6	43.7
Making purchases on-line	76.6	43.4	70.9	47.8	76.5	52.2	73.2	46.8
Exchanging operational data with suppliers	46.0	49.9	42.2	48.0	40.9	41.9	42.8	48.1
Exchanging operational data with business customers	64.6	53.4	46.7	49.0	64.4	52.5	53.8	50.7
Formally integrating the same business processes with suppliers or other business partners	38.5	26.8	34.2	37.5	36.3	33.5	35.5	33.9

When the U.S. is compared with the combined frequencies for the global sample, there are significant differences. There is more than a 10% difference between the U.S. and the global sample for three major uses of the Internet: transactions (sales and procurement) and customer service and support. Seventy-three percent of the U.S. establishments use the Internet for making purchases (versus 47% global); 56% provide after sales customer service and support (versus 44% global) and 43% do on-line sales (versus 30% global). The U.S. is also slightly more likely to use the Internet for advertising and marketing (64% vs. 58%) and for integrating business processes (35% vs. 34%). The U.S., on the other hand, trails the global frequency for exchanging operational data with suppliers (43% U.S. vs. 48% global).

About 78% of the establishments in the U.S. have heard of the concept of an **Internet marketplace**, exchange, or trading community, through which multiple businesses buy and sell goods and services (Table 8). Awareness of these types of marketplaces appears to be more prevalent in non-U.S. establishments since among the global sample, about 84% of the establishments were aware of the concept. However, while awareness is slightly lower in the U.S., participation in these trading communities is significantly higher for the U.S. establishments in comparison with the global sample. Among those establishments aware of the concept, over 80% of Banking and Insurance, 57% of Wholesale/Retail Distribution and 54% of Manufacturing establishments in the U.S. have participated as a buyer. Participating as a seller is less frequent for Banking and Insurance (36%) while 75% of the U.S. Manufacturing establishments and 82% of Wholesale/Retail Distribution establishments do participate as a seller. These participation percentages are significantly higher than the global figures.

TABLE 8.
Participation in an Internet-based Trading Community

	Manufacturing		Wholesale/Retail Distribution		Banking & Insurance		Total	
	U.S.	Global	U.S.	Global	U.S.	Global	U.S.	Global
Percent who have heard of the concept of an Internet marketplace:	77.6	84.4	69.0	77.9	76.7	79.3	72.3	80.0
Percent participating as a buyer	54.0	18.4	57.4	26.9	84.1	18.4	58.3	52.7
Percent participating as a seller	74.8	30.5	81.5	29.1	36.4	20.3	76.6	29.1

The establishments differ on ***how the Internet is used to sell products and services*** although for both Manufacturing and Wholesale/Retail Distribution, the most frequent use is 'addresses traditional distribution channels only' (Table 9). The Banking and Insurance sector, however, overwhelmingly (60%) views the use of the Internet as competing directly with traditional distribution channels. The U.S. distribution does not differ that much from the global distribution.

TABLE 9.
How Establishments Use the Internet to Sell Products and Services

	Manufacturing		Wholesale/Retail Distribution		Banking & Insurance		Total	
	U.S.	Global	U.S.	Global	U.S.	Global	U.S.	Global
Addresses new markets only	11.6	23.2	8.2	12.2	5.2	12.6	8.5	15.3
Addresses traditional distribution channels only	49.9	38.8	47.3	47.8	20.3	33.4	44.6	44.1
Competes directly with traditional distribution channels	23.5	25.7	25.0	26.2	59.6	42.3	28.8	27.4
Replaces traditional distribution channels	15.1	12.2	19.4	13.8	15.0	11.8	18.1	13.2

V. E-COMMERCE

Total e-commerce sales are small, but slightly higher for U.S. firms. Among all establishments surveyed, U.S. firms are doing 5% of consumer sales and 5.5% of business sales on-line, compared to 3.8% and 3.9% respectively for global sample firms.

On-line Sales

About 33% of U.S. establishments in the three industry sectors under study engage in on-line business-to-business (B2B) sales (33%) and on-line business-to-consumer (B2C) sales (32%) (Table 10). These percentages exceed the totals for all countries combined (27% B2B and 20% B2C). Among the three industry sectors in the U.S., the Wholesale/Retail Distribution sector is the highest with about 39% of the establishments engaging in B2B sales and in B2C sales. For the U.S. Manufacturing sector, more establishments engage in B2B sales (29%) than in B2C sales (16%). U.S. Finance and Insurance sector are the reverse with more establishments engaging in B2C sales (28%) than B2B sales (16%).

If we consider all establishments (both those engaging in on-lines sales and those that are not), roughly 5% of total consumer sales are conducted on-line in the U.S. among these three sectors and about 5.5% of total business sales are conducted on-line. In both instances, the U.S. exceeds the percentage sales for the global sample.

From 32% to 40% of the Web sites of the U.S. establishments support on-line payment. Wholesale/Retail Distribution sector establishments are similar to the global sample (40% versus 37%); while U.S. Banking and Insurance sector establishments fall below the global sample (32% versus 37%). There is more than a 10 percent difference for the Manufacturing sector with 36% of U.S. Manufacturing establishments supporting on-line sales in contrast to 25% globally.

TABLE 10.
On-line Sales

	Manufacturing		Wholesale/Retail Distribution		Banking & Insurance		Total	
	U.S.	Global	U.S.	Global	U.S.	Global	U.S.	Global
Type of On-line Sales:								
B2B	29.1	27.2	39.9	26.2	16.2	26.5	33.4	26.5
B2C	15.7	15.1	39.1	21.1	28.2	31.0	31.8	19.7
Mean percent of total consumer sales conducted on-line (all establishments)	4.7	2.1	4.8	4.5	6.1	5.1	5.0	3.8
Mean percent of total business sales conducted on-line (all establishments)	2.5	3.2	7.3	4.4	3.4	4.0	5.5	3.9
Mean percent of total consumer sales conducted on-line (only those doing B2C sales on-line)	32.9	15.3	12.8	19.5	23.8	19.6	16.6	18.6
Mean percent of total business sales conducted on-line (only those doing B2B sales on-line)	9.2	12.2	19.7	16.1	22.8	21.9	17.8	15.2
Percent of Web sites that support on-line payment (only those doing on-line sales)	36.2	25.0	39.9	36.7	31.5	37.4	38.3	33.6

On-line Services

Web site on-line services are a popular use of the Internet both in the U.S. and global sample (Table 11). Eighty-six percent of the U.S. establishments with Web sites and 69% of all establishments provide some type of on-line service whether for consumers or other businesses. In the U.S., establishments in the Wholesale/Retail Distribution (72%) sector are less likely to provide on-line services than the Manufacturing (83%) and Banking and Insurance (82%) sectors. On-line services in the Manufacturing sector are more likely to be for business services, while in the Banking and Insurance sector, services are more likely to be for consumers. Wholesale and Retail Distribution establishments are about equally likely to provide B2B and B2C services. For the Manufacturing sector, the most frequently provided Web site services include product specification (81%), service and technical support (56%) and product configuration (51%). A product catalog (61%) and product reviews (55%) are the most frequently provided Web site services for establishments in the Wholesale/Retail Distribution sector. Sixty-two percent of the Banking and Insurance sector establishments provide access to account information and 63% provide on-line tools such as research and planning tools. And, over half (54%) provide such on-line services as filing applications, filing claims, paying bills or transferring funds.

TABLE 11.
On-line Services

	Manufacturing		Wholesale/Retail Distribution		Banking & Insurance		Total	
	U.S.	Global	U.S.	Global	U.S.	Global	U.S.	Global
Type of On-line Service:								
B2B	71.9	69.8	50.6	50.7	46.3	45.5	55.1	56.4
B2C	47.7	43.1	55.5	45.4	71.8	65.6	56.2	46.2
Mean percent of total consumer services conducted on-line (all establishments)	5.5	7.0	7.5	7.4	11.0	11.7	7.6	7.6
Mean percent of total business services conducted on-line (all establishments)	12.8	15.5	5.8	9.1	8.1	8.9	7.8	11.0
% of manufacturing Web sites which support …								
Product configuration	50.6	54.7						
Order tracking	20.3	21.5						
Service and technical support	56.4	54.4						
Product specification	80.7	79.9						
Account information	15.8	17.0						
% of wholesale/retail distribution Web sites that support								
Gift certificates and/or registry			23.2	20.6				
Product catalog			61.0	69.8				
Product reviews			54.8	48.6				
Individual customization			36.7	21.3				
Account information			36.3	21.7				
% of banking and insurance Web sites supporting …								
On-line services such as filing applications, filing claims, paying bills, transferring funds					53.3	53.9		
Access to account information					62.3	57.3		
On-line tools such as research tools, planning tools, etc.					62.9	52.0		

VI. IMPACTS

U.S. firms report somewhat greater impacts from doing business on-line in terms of selling and customer support, while global sample firms enjoy greater impacts on costs and efficiency. For instance, 24% of U.S. firms said that sales increased compared to 21% of global sample firms, and 40% said customer service improved compared to 35% of global sample firms. On the other hand, 20% of global sample firms saw increased international sales, reflecting their more global orientation. In terms of cost reduction, global sample firms were more likely to have decreased procurement costs (18% versus 13%) and inventory costs (14% versus 11%). Global sample firms also were more likely to say that internal processes are more efficient as a result of going on-line (34% versus 28%).

The single biggest impact of doing business on-line in the U.S. and the global sample is that the customer service improved for the establishments (40% and 35% respectively) (Figure 8, Table 12). Having said this, however, it is clear from Table 12 that significant impacts of doing business on-line have yet to be realized. No single impact has been achieved by more than 50% of the establishments, either within sector or nationally. The U.S. Manufacturing and Wholesale/Retail Distribution sectors show similar patterns in where the highest impacts are centered. Forty percent of U.S. Manufacturing and Wholesale/Retail Distribution establishments assess high impacts to customer service improvements. The second highest area for both sectors is a widening of the sales area (39% Manufacturing and 35% Wholesale/Retail Distribution). The Banking and Insurance Sector shows a different pattern with the highest impacts being achieved in customer service improvement (41%), staff productivity increases (39%), and more efficient internal processes (37%).

Figure 8. Impact of Doing Business On-line in the U.S.

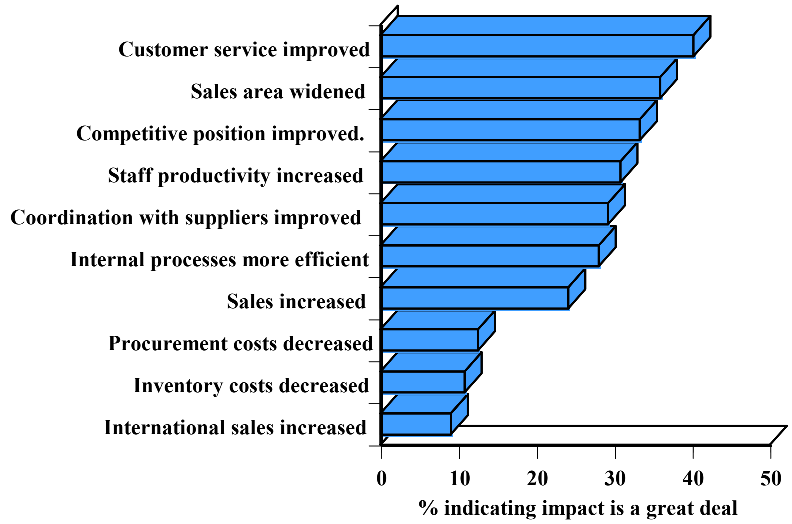


TABLE 12.
Impacts of Doing Business On-line (percent indicating impact is a great deal)

	Manufacturing		Wholesale/Retail Distribution		Banking & Insurance		Total	
	U.S.	Global	U.S.	Global	U.S.	Global	U.S.	Global
Internal processes more efficient	34.8	37.5	22.9	32.2	36.5	33.8	28.0	33.9
Staff productivity increased	29.0	25.9	29.4	27.6	38.6	29.6	30.8	27.2
Sales increased	25.6	18.8	25.8	21.5	15.6	19.5	24.1	20.5
Sales area widened	39.1	33.7	34.9	30.3	34.8	30.8	35.9	31.4
Customer service improved	40.4	40.8	39.9	31.1	41.1	39.7	40.2	34.8
International sales increased	14.4	24.0	7.0	18.5	7.8	9.1	9.0	19.5
Procurement costs decreased	18.3	23.5	8.7	15.2	17.8	13.8	12.5	17.7
Inventory costs decreased	6.4	16.0	10.6	13.1	18.4	12.8	10.8	14.0
Coordination with suppliers improved	32.9	32.7	26.6	28.9	33.4	25.2	29.2	29.8
Competitive position improved	36.9	34.1	32.3	27.5	31.7	30.9	33.3	29.8

In terms of the degree to which there have been increases in the number of distribution channels, suppliers and competitors, the sectors are remarkably similar in the U.S. and share a high similarity with the global distributions (Table 13). For the U.S. Manufacturing sector, over 40% of the establishments report increases in distribution channels (49%), suppliers (48%), and intensity of competition (52%). For the Wholesale/Retail Distribution sector, increases in the number of distribution channels (44%) is where the impact has been felt the most; this is also the case for the Banking and Insurance sector (44%).

TABLE 13.
Impacts of Doing Business On-line (percent indicating impact is a great deal)

% indicating	Manufacturing		Wholesale/Retail Distribution		Banking & Insurance		Total	
	U.S.	Global	U.S.	Global	U.S.	Global	U.S.	Global
Number of distribution channels increased	48.7	36.6	44.4	42.1	44.1	39.8	45.4	40.2
Number of suppliers increased	48.3	37.7	28.7	26.1	34.2	29.9	34.2	29.9
Number of competitors increased	30.1	28.9	28.2	27.3	28.2	28.8	28.6	27.9
Intensity of competition increased	51.5	40.4	32.2	42.0	37.7	42.3	37.7	41.5

About the Survey

This report is based on the responses to a telephone survey conducted in 10 countries (United States, Mexico, Brazil, Denmark, France, Germany, Taiwan, Singapore, China and Japan) during the period February 18, 2002 – April 5, 2002. Except for Japan, all surveys were conducted by Market Probe (subcontracted and managed by the International Data Corporation (IDC) located in Framingham, MA). The questionnaire was designed by researchers at the University of California, Irvine and reviewed/critiqued by IDC consultants. The questionnaire was translated into Spanish, Portuguese, Chinese, French, German, Japanese and Danish; translations were reviewed by country experts selected by IDC and by CRITO.

The establishment (site) was the sampling unit and is the unit of the database. An establishment is defined as the physical location. The sampling was a stratified random sample; stratified by size (large – 250 or more employees and small – between 25 and 250 employees) and by industry (manufacturing -- SIC 20-39, wholesale/retail distribution -- SIC 50-54,56-57, 59; and banking & insurance -- SIC 60-65). A stratified sampling method without replacement was used, with sites selected randomly within each vertical/size cell.

The sample frame was obtained from a list source representative of the entire local market, regardless of computerization or Web access. Dun & Bradstreet was used for the United States, Denmark, France and Germany. Kompas was used for Brazil, Mexico, Taiwan and Singapore. The Census of Enterprises and Yellow Pages was used for China. The Teikoku Data Bank was used for Japan.

A predetermined number of interviews were completed in each establishment size and industry category to ensure an adequate sample to report on for each establishment size and industry group for each country at the 95% confidence interval. Interviews were conducted only with those companies that make use of the Internet in conducting its business. Target completes were a minimum of 200 interviews per country (except for 300 interviews in the U.S.) equally divided by size (large/small) and sector (manufacturing/wholesale & retail distribution/banking & insurance).

A national sampling approach was used in data collection for all countries except China. That is, sites were selected regardless of geographic location within the country. In China (PRC), however, the sites were selected from the following cities: Beijing, Shanghai, Guangzhou, and Chengdu.

Eligible respondents were the individuals at each site best qualified to speak about the site's overall computing activities. For medium/large sites, the respondent was the CIO, an IT Director, or IT Manager. For small sites, it was an IT Manager or Owner.