

The
**Electronic
Payments
Report™**

October 2001



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Noah Elkin
Senior Analyst, eMarketer
nelkin@emarketer.com

eMarketer, inc.
821 Broadway
New York, NY 10003
T: 212.677.6300
F: 212.777.1172

October 2001

Welcome to eMarketer

Dear Reader:

eMarketer's October 2001 *Electronic Payments Report*TM offers the most comprehensive picture of emerging bill presentment and payment technologies in both the consumer and business segments.

Prepared by analyst Noah Elkin, along with the eMarketer research team, this report is a valuable reference tool for tracking the fast-evolving payments market. It provides critical data and insights for developing business and marketing plans, creating presentations, answering vital "need-to-know-now" questions and making informed decisions about e-business ventures.

Presenting statistical information from a wide range of authoritative research sources, the *Electronic Payments Report*TM provides quick answers to hundreds of questions, such as:

- How large is the worldwide payments market?
- What electronic payment models are available to business and consumers?
- Which are the leading vendors and how is the industry consolidating?
- How are businesses implementing electronic bill presentment and payment services?
- What kinds of cost savings and new revenues streams can electronic payments generate?
- How are banks capitalizing on opportunities in the payments marketplace?

If you have any questions or comments concerning eMarketer or any of the material in this report, please call, fax or e-mail us.

Noah Elkin
Senior Analyst

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Written by Noah Elkin

Also contributing to this report:
Steve Butler, *senior analyst*
Alvin Malla, *researcher*
Yael Marmon, *researcher*
Andrew Raff, *researcher*
Tracy Tang, *researcher*
Marius Meland, *editor*
Dana Hill, *production artist*
Terry King, *production artist*
James Ku, *production*

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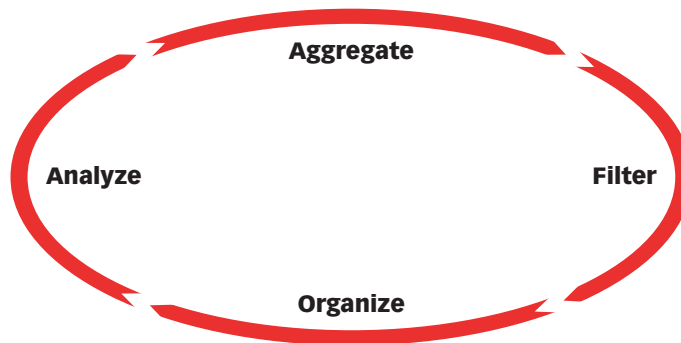
The eMarketer Methodology: Making Sense of the Numbers

eMarketer’s approach to market research is founded on a philosophy of aggregating data from as many different sources as possible. Why? Because there is no such thing as a perfect research study and no single research source can have all the answers. Moreover, a careful evaluation and weighting of multiple sources will inevitably yield a more accurate picture than any single source could possibly provide.

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eMarketer does not conduct primary research. Neither a research firm nor a consultancy, eMarketer has no testing technique to defend, no research bias and no client contracts to protect.

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Accessing information from the internet as well as a library of electronically-filed research reports, surveys and studies, the eMarketer research team first compiles publicly available e-business data from hundreds of research sources. This information is filtered and organized and then presented in the form of easy-to-read tables, charts and graphs.

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— Professor Donna L. Hoffman, Co-Director, eLab, Vanderbilt University

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What Benefits Do eMarketer Reports Provide?

There are many benefits associated with eMarketer’s aggregation approach to research. The evaluation and presentation of multiple sources means that:

- The information is more objective than that provided by any single research source. eMarketer has no bias towards any particular internet technology, e-business trend or market segment.
- The information is more comprehensive – each set of findings reflects the collected wisdom of the leading research firms, consultancies and industry analysts.
- The information is all in one place, making it easy to locate, evaluate and compare. eMarketer reports assemble all the different data points and accompanying expert opinions into one easy-to-follow reference document.
- The information is neatly organized and clearly presented to save people time and help them make better, faster and more informed business decisions.

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— Mark Selleck, Business Unit Executive, DISU e-business Solutions, IBM

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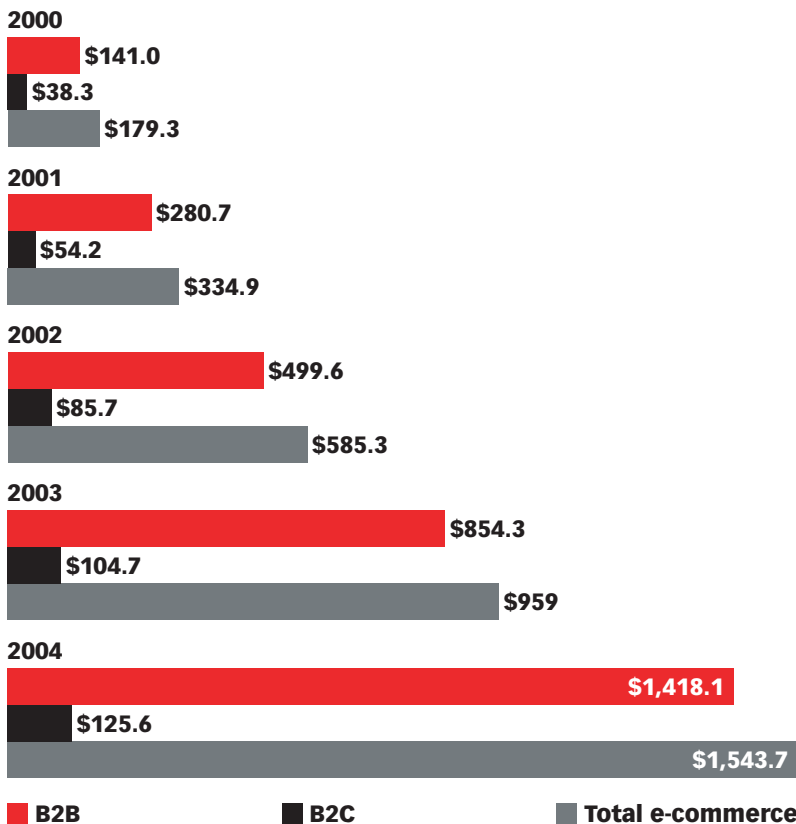
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Nothing is more fundamental to the lives of businesses and consumers than bills. Presenting and collecting on invoices for services rendered or products exchanged represents the lifeblood of companies of all sizes around the world. For consumers, meanwhile, receiving and paying bills constitutes an unfortunate but necessary staple of daily existence.

With its promise of ever-increasing speed, immediacy of information and access to markets, the internet has taken aim at long-held business practices and patterns of consumer behavior associated with the otherwise mundane processes of bill and invoice presentment and payment. In so doing, business solutions providers and software vendors have pledged to invigorate these processes, transforming bills and invoices from stolid paper documents destined for filing into living, active means of bringing companies closer to their partners and customers. Given the potential size of e-commerce markets in the US and worldwide and the growing need for companies everywhere to develop comprehensive e-business strategies, electronic payment vendors may have ample room to promote their services.

US eCommerce Revenues, 2000-2004 (in billions)



Source: eMarketer, 2001

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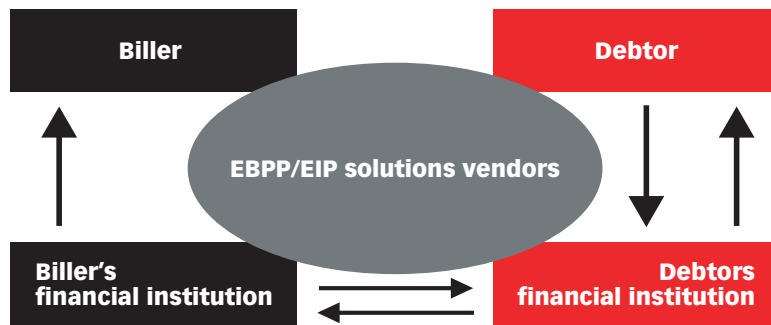
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Software and technology vendors are just one of a number of key actors in the payments value equation, which, rather than a single, linear chain, more resembles a complex overlapping of several chains. Other participants include billers, banks, financial services companies and other payment processors and debtors or bill recipients (which can be both other businesses or consumers). In many cases, third-party technology firms have sought to disintermediate the payment process, with billers and financial institutions the main targets for their products and services. The diagram below presents a simplified version of the payments value equation.

Payments Value Diagram



Note: EBPP stands for electronic bill presentment and payment; EIP stands for electronic invoice presentment and payment
 Source: eMarketer, 2001

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The electronic billing market is largely divided among solutions that serve business-to-consumer (B2C) applications and those that focus on the business-to-business (B2B) domain, although vendors and solution providers increasingly service both realms. Of the two, the B2C domain has seen higher adoption rates, but in the long run, B2B promises to be far more lucrative, although electronic billing and payment systems have yet to fully deliver on their promise in either segment. However, regardless of application, electronic billing solutions share a common goal: replacing paper documents (invoices, checks, etc.) and manual procedures with highly automated electronic processes.

In the B2C domain, the premise of electronic payments, known broadly as electronic bill presentment and payment (EBPP), is simple: online billing can cut down considerably on the costs and time associated with paper billing (from printing to postage to human labor to phone-based disputes). In addition, electronic bills themselves can provide companies that have consumer-facing operations with the strategic advantage of communicating with their customers not only directly but also in a highly targeted fashion. In effect, electronic bills, which can be embedded with rich content ranging from statements to payment advice, become a means by which to market additional products and services as well as a tool to

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build customer loyalty and retention. Companies have long used bill inserts in this manner, but electronic bills offer the advantage of eliminating the printing costs of marketing stuffers as well as offering a platform for sending a marketing message in line with each customer's historic and current spending patterns and habits.

According to a July 1999 study of 100 leading US billers by PricewaterhouseCoopers (PwC) and *American Banker*, the companies surveyed cited improved customer service and greater customer loyalty and retention as the primary drivers for offering EBPP. In this and other respects, the drive to implement EBPP fits squarely with the adoption of internet-based customer relationship management (CRM) technology and businesses' quest to obtain as detailed, micro-level view of their customers as possible. Moreover, online billing encourages electronic interactions, which can promote a company's website offerings, not only where customer care is concerned but also in terms of enhanced products and services.

Worldwide CRM Services Revenues, 1999-2005 (in billions)

	1999	2000	2001	2002	2003	2004	2005
Business management	\$4.2	\$5.4	\$6.9	\$8.9	\$11.7	\$14.7	\$18.5
Consulting	\$1.5	\$1.9	\$2.4	\$3.1	\$4.0	\$5.2	\$6.7
Development and integration	\$5.5	\$7.3	\$9.3	\$11.6	\$14.7	\$18.7	\$23.5
Education and training	\$0.3	\$0.3	\$0.4	\$0.5	\$0.6	\$0.7	\$0.9
Hardware maintenance	\$0.9	\$1.0	\$1.1	\$1.2	\$1.3	\$1.4	\$1.6
IT management	\$2.4	\$2.9	\$3.7	\$4.8	\$6.3	\$8.3	\$10.3
Software maintenance	\$0.7	\$0.9	\$1.2	\$1.4	\$1.8	\$2.1	\$2.6
Transaction processing	\$0.1	\$0.1	\$0.1	\$0.2	\$0.2	\$0.3	\$0.3
Total	\$15.6	\$19.8	\$25.1	\$31.7	\$40.6	\$51.4	\$64.4

Source: Gartner Dataquest, 2001

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For consumers, particularly those who opt to use a service that consolidates multiple bills in a single interface, the chief benefit of online billing is convenience. Rather than having to keep track of numerous paper bills, consumers can simply log into their billing service provider or, alternatively, go directly to the websites of various billers. The best systems

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allow consumers to import data into personal financial management systems such as Quicken. Moreover, because these services are available 24 hours per day, every day, customers are at liberty to pay bills at their leisure, without worrying about the constraints of standard business hours. Electronic archiving of past bills further saves the customer the worry of maintaining bulky paper files. The challenge to date has been not only to make consumers aware of electronic payment services, but also to change long-established payment habits. More comprehensive awareness campaign and greater consumer incentives will be necessary if vendors of electronic payment services and software want to raise adoption rates.

Most analysts and research firms view 2002 as the year in which adoption of electronic billing and payment by both consumers and enterprise clients finally begins its long-promised take off. Vendors, meanwhile, have been preoccupied this year with establishing a solid client base, and are looking to 2002 as their expansion year. The consolidation of leading EBPP solutions providers may help to spur adoption of the technology.

In the B2B space, implementing electronic billing, commonly referred to as electronic invoice presentment and payment (EIP or EIPP), presents additional complications (and costs) primarily associated with the systems integration required to link multiple existing IT environments. Many firms have already invested heavily in costly electronic data interchange (EDI) solutions that offer some of the same benefits promised by EIP implementations. However, studies indicate that companies can wring additional cost savings out of their existing systems by using IP-based invoice presentment, and this is the principal adoption driver for B2B electronic billing. According to a 2000 study by PwC, more sophisticated systems, in which invoicing, payment and accounting processes are already integrated, allow the EIP overlay to deliver value-added content and services similar to those typically deployed in the B2C domain, such as product specifications and links to online product catalogs.

Regardless of the application, electronic billing is a key element of the customer- or client-centric revolution that is transforming business processes. Although payment terms are still a part of many B2B transactions, e-billing implementations allow for an instantaneous exchange of information, hence facilitating a more efficient flow of money. Their benefits apply to all organizations that send bills through the mail or over electronic data interchange (EDI) networks to consumers, small businesses or large corporations.

The message from vendors of electronic payment-related software and services firms seems to be: if you bill it, they will come. However, adoption of online payment applications remains at an early stage. As a whole, the industry remains disorganized, with a wide array of vendors (despite the recent wave of consolidation), and is still struggling to deliver on the tremendous buildup surrounding its promise. EBPP and EIP are unlikely to completely replace paper-based billing and invoicing, certainly not in the

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near term. Rather, a multi-channel environment will prevail for some time in both the consumer and business segments, and firms will transition gradually to the new technology. Electronic payment systems will be a piece, albeit an important one, of the overall value chain, much like other applications associated with the buy and sell sides of online commerce.

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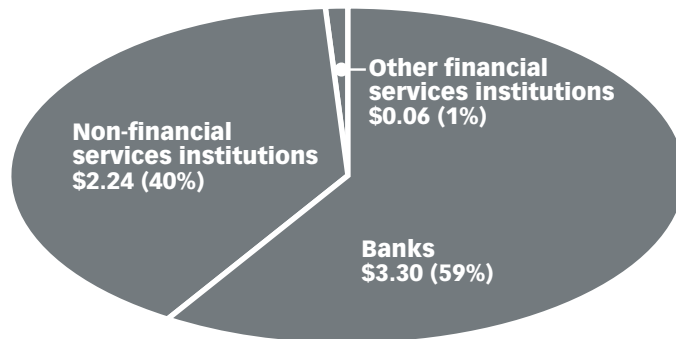
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Meridien Research, which tracks the e-payments industry with a focus on banks and financial-services firms, points out that electronic bill presentment and payment implementations must strike a balance between usability and security, particularly for rollouts in B2B environments. According to a February 2000 research brief, Meridien places advances in bill presentment and payment technology and implementation among a host of e-payment initiatives designed to improve the B2B e-procurement and security infrastructure. Meridien believes that investment in these areas is necessary to spur continued e-commerce growth in both the B2B and B2C segments.

According to Meridien, the size of the e-payments market worldwide is significant, and expected to grow as financial institutions, software vendors and business solutions providers continue to invest in payments-related technology. Meridien predicted that strategic IT spending on e-payment initiatives would total \$5.60 billion in 2000, with banks and other financial services firms accounting for 60% of total expenditures.

Strategic IT Spending for Electronic Payments, by Industry Segment, 2000 (in billions and as a % of total IT spending for electronic payments)



Source: Meridien Research, 2000

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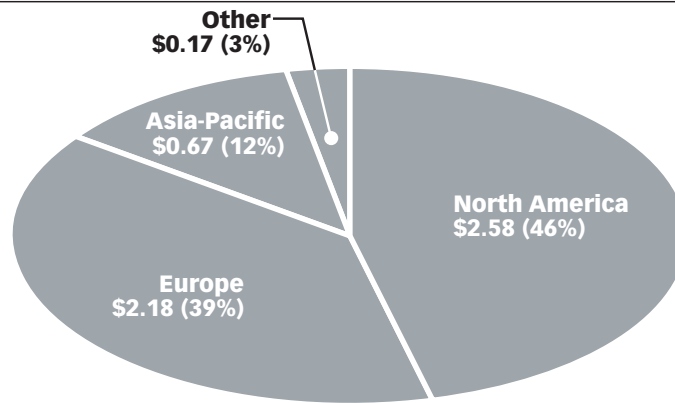
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At this point, North America and Europe are spending far more than other regions on e-payment initiatives, and have more developed and widely diffused solutions in place. This means that considerable opportunities exist in other regions, particularly in Asia.

Strategic IT Spending for Electronic Payments, by Region, 2000 (in billions and as a % of total IT spending for Electronic Payments)



Source: Meridien Research, 2000

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Below are the top 10 payments-related IT initiatives that Meridien suggests adopters consider. Note that integration, particularly to legacy back-office systems, is a key issue here. Meridien expects that the current emphasis on speed to market of e-payment initiatives will favor application service providers (ASPs) that can quickly integrate companies' existing procurement, payment and accounting systems to the middle and back-office systems of financial services firms.

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Top 10 Strategic IT Initiatives for Electronic Payment Services

Rank	Business issue/ Application
1	Electronic purchasing for B2B procurement, with XML as the leading technology driver
2	Fraud prevention and detection technology will become an increasing necessity
3	Need for financial services institutions to confront authentication and privacy concerns of wholesale and retail customers
4	Refinements to and implementations of secure integration with back-office payment systems
5	Electronic bill presentment and payment (EBPP) implementations, which both consumers and businesses will adopt in growing numbers
6	Multiple application chip cards, highlighting the growing links between convenience and security
7	Electronic wallets, which merchants and card issuers will increasingly use
8	Retail/wholesale convergence, as companies share e-payment solutions across departments/functions
9	Non-credit card payment mechanisms to bolster e-commerce growth outside of the US
10	Wireless payments, still in the early stages of development, but poised for dramatic growth

Source: Meridien Research, 2000

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With regard to the ASP industry, a July 2001 Aberdeen Group report titled “Worldwide ASP Spending Forecast and Analysis 2001-2005” found that the US would remain the largest ASP market, with Western Europe also seeing considerable growth in ASP adoption. According to Ambit International, CRM, e-commerce and electronic procurement, all of which are closely related to payments, are among the leading applications that ASPs intend to offer.

Worldwide ASP Revenue Forecast, 2001 & 2005 (in billions)

2001	\$3
2005	\$16.1

Note: CAGR of 52.2%

Source: Aberdeen Group, July 2001

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Top Applications to Be Offered by ASP Industry Players by Year-End 2001

CRM	23%
eCommerce	22%
SCM	19%
Services	18%
eProcurement	17%
ERP	17%
Custom vertical industry applications	17%
eMail	9%
Security	9%

Source: Ambit International, 2000

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A. Participants in Electronic Payment Solutions

Business-to-Consumer/Consumer-to-Business Applications

Implementing an e-payment solution typically requires the involvement of several principal stakeholders, each of which contributes a piece of the value equation. The following chart identifies the participants, their basic roles and the benefits each may garner by participating in an e-payment solution.

Participants in Electronic Payment Solutions

Stakeholder	Role	Benefits of participation
Billers	<ul style="list-style-type: none"> • Deliver bill summaries/details directly to debtors or consolidators (implement EBPP in-house or outsource) • Provide necessary customer care and sales support for value-added products/services marketed to customers via online payment solution 	<ul style="list-style-type: none"> • Cost savings • Increased contact with customers/better customer service • Targeted marketing and cross-sell opportunities
Bill receivers/debtors	<ul style="list-style-type: none"> • Bill/invoice payment 	<ul style="list-style-type: none"> • Ease of use • Convenience • Availability of information • Maintain control over payment • Payment/cash flow scheduling
Third-party providers	<ul style="list-style-type: none"> • Offer packaged solutions to companies seeking to outsource billing management systems • Host/manage bill presentment and archive • Create EBPP/EIP architecture/design/interface 	<ul style="list-style-type: none"> • Become one-stop shop for consumers/enterprise clients • Site stickiness for portals offering co-branded or private label payment services
Financial institutions, including Automated Clearing House (ACH)	<ul style="list-style-type: none"> • Back-end payment processing and fulfillment for enterprise clients • Front-end payment service via online banking tools 	<ul style="list-style-type: none"> • Opportunity to extend services already offered to corporate clients • Leverage trust and expertise to become EBPP solution provider • Increased loyalty/customer retention • Elimination of paper checks

Source: eMarketer, 2001; Association for Financial Professionals (AFP)/National Automated Clearing House Association (NACHA), 2001; PricewaterhouseCoopers, 2000 ; Meridien Research, 1999

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A report sponsored by the Association for Financial Professionals (AFP) and the National Automated Clearing House Association (NACHA), two industry trade groups, further segments third-party providers into the following groups:

Bill service provider (BSP): offers billers such as telephone companies and utilities service bureau processing services

Biller payment provider (BPP): handles payments for billers for bills presented online

Customer service provider (CSP): presents online summary information from multiple bills to consumers

Customer payment provider (CPP): handles payments for customers

Aggregator: CSP that combines bills/bill summaries for customers

Consolidator: BSP that aggregates and presents bills to the CSP

Traditionally, financial institutions, usually banks, have handled the back-end of the payment process, guaranteeing the transfer of funds to and from the appropriate parties. According to an August 2000 report by UK-based research firm Ovum, payment service providers (PSPs) have emerged as an alternative to banks. By serving as the primary payment intermediary between buyers, sellers, banks and other payment providers, PSPs may effectively supplant banks in the role of the central payment broker by becoming both the conduit and guarantor of the payment processing—the source of the trust banks have earned from consumers and enterprise customers. In short, successful PSPs can offer the benefits and simplicity of a one-stop shop.

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According to Ovum, the value PSPs provide lies in their facilitation of complex payment processes between multiple parties:

- Resolving e-payment methods from multiple providers
- Managing payment instructions
- Instituting rules for payment fees
- Providing support and mediation resources in the event of problems

In all, the Ovum report points to six basic services that PSPs typically offer.

Services Offered by Payment Service Providers (PSPs)

Service	Function	Benefits to PSP user
Brokerage	<ul style="list-style-type: none"> •Aggregate different e-payment methods •Manage multiple payment interfaces on behalf of online merchants 	<ul style="list-style-type: none"> •Save online merchants cost/time involved in building relationships with and integrating technology of multiple payment providers
Optimization	<ul style="list-style-type: none"> •Modify early e-payment methods (e.g. credit/debit cards) for use in e-commerce environment 	<ul style="list-style-type: none"> •Improved security •Convenience of stored payment method and buyer information for purchasers
Aggregation	<ul style="list-style-type: none"> •Batch transactions 	<ul style="list-style-type: none"> •More efficient payment process
Inter-nationalization	<ul style="list-style-type: none"> •Manage multi-currency transactions 	<ul style="list-style-type: none"> •Facilitates global e-commerce
Billing	<ul style="list-style-type: none"> •Support end-to-end billing process 	<ul style="list-style-type: none"> •Convenience of single provider
Provision	<ul style="list-style-type: none"> •Offer in-house e-payment method 	<ul style="list-style-type: none"> •Provide alternative to existing methods and bank providers

Source: Ovum, 2000

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Please note, however, that Ovum’s assessment of PSPs’ competitive advantage, seen as the packaged, easily implemented solutions they offer to both buyers and sellers, reflects the greater optimism of the period in which it was written. The same report, written today, might adopt a more sober view of the payments landscape, particularly in light of the degree to which disintermediation has come under question. Given the fact that business transactions continue to fundamentally revolve around questions of trust, the likelihood is that over time, banks, which remain the trusted financial partners of many firms and for which payment processing is a core competency, will begin to offer their customers the range of services that make PSPs appealing. The situation with banks and competing PSPs has a number of parallels to B2B exchanges, which have tried and in the majority of instances failed to insert themselves into long-established supply chains.

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Business-to-Business Applications

Business-to-business invoicing tends to be more complex and expensive than rendering a bill to the average consumer. For example, the Yankee Group estimates the cost of sending a paper invoice to a business customer to be \$3.00 or more, depending on the level of the transaction detail the invoice contains. By comparison, a paper bill sent to a consumer customer costs \$1.25-\$1.50. Several factors explain these differences:

- Business invoices tend to be more elaborate than the average consumer bill
- Invoices are typically reviewed by multiple people and departments at both the biller and payer end of the process
- Any solution must support payment, dispute and dispute resolution of the entire bill or simply line items
- The invoicing process, from presentment to payment, often involves massive systems integration among accounts payable and accounts receivable departments of multiple companies

One result of this complexity is that both the gross number and overall percentage of invoices disputed is much higher among business than they are between business and consumers. Research firms have indicated that as much as 10% of all invoices exchanged between businesses as well as 40% of all items on a single given invoice may give rise to disputes. These, in turn, require both human and financial resources to resolve.

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Given the existing challenges of business-to-business invoicing, the process of implementing electronic billing solutions between businesses tends to be more complex and require a longer implementation process than solutions developed by billers serving primarily consumers. However, by allowing businesses to track the origin of and resolve disputes online, electronic invoicing systems have the potential to shorten billing cycles and save companies money. Other benefits accrued to billers that implement electronic invoicing and payment solutions are similar to those that consumer-facing companies enjoy, but naturally on a much larger scale. They typically include a reduction in expenses, a reduction in days sales outstanding, improved cash flow, forecasting abilities and customer service, multiple payment options, integration with accounts receivable departments and the ability to manage credit exposure and trade with other companies that do not operate EDI systems. Payers similarly benefit from a variety of payment options, the ability to track departmental payment approvals and automated updates to accounts payable. In B2B e-payment applications, participants include the following:

- Sellers
- Buyers
- Financial institutions (of both parties)
- EIP software vendors
- EIP solutions vendors/ASPs (such as consolidators that connect multiple buyers to multiple sellers)

B. Models of Electronic Payment Systems

Electronic payment solutions are applicable to companies of all sizes. Several e-payment models and multiple providers currently exist. The applicability of each may depend on whether a given organization deals primarily with consumers, such as a telephone or other utility company, or with other firms that are part of its supply chain network.

For marketing purposes and depending on the profile of their customer base (i.e. primarily consumers, a mix of small and large businesses or consumers and enterprise clients) and their technological capabilities, firms may find that a combination of approaches best serves their needs.

Business-to-Consumer/Consumer-to-Business Electronic Payment Models

The tables and text below present characterizations of the different models by leading research firms. The PwC model includes an assessment of the advantages and disadvantages of each. Market research firm Killen & Associates predicts that by 2005, web-based and e-mail-based bill and statement delivery will have a roughly equal share of the electronic market, at 40% and 38%, respectively.

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Note that competition in the e-payments space has been fierce and the number of providers has contracted rapidly in the past two to three years. PwC notes that providers' success will depend on the following factors:

- Functional and technological superiority of the payment platform
- Ability to rapidly penetrate the market (in terms of both geographical reach and the number of users)
- Network externalities

How PricewaterhouseCoopers Breaks down E-Bill Distribution Models

Direct

Consolidator/aggregator

Thin consolidator

Thick consolidator

Delivery to desktop

Source: PriceWaterhouseCoopers (PwC), 2000

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How Gartner Breaks Down E-Bill Distribution Models

Biller direct

Consolidator

Thin consolidator

Thick consolidator

Total bill consolidator

Source: Gartner, 2000

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How Meridien Breaks Down E-Bill Distribution Models

Biller direct

Thin consolidator

Thick consolidator

Hybrid biller/consolidator

Source: Meridien Research, 1999

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“In the B2C market, the barriers are just too high to overcome now.”

-Tom Teynor, Senior Product Manager, Alysis Technologies (now part of Pitney Bowes)

Direct Model

In the in-house direct or biller direct model, each biller prepares bills in-house and sends the debtor an e-mail notification that the bill is ready. Notifications typically contain links that return the debtor to the biller’s website. Some may feature “smart” links that take the debtor directly to a personalized version of the appropriate bill. In either case, the burden falls to the debtor to log into each biller’s website to review billing details and submit payment. From the biller’s perspective, the advantage is control over the direct relationship with customers, which billers may exploit by adding electronic promotional “inserts” to bills. However, billers will need to either develop in-house capabilities to handle direct payments—which may entail significant investments—or contract out these services with a bank, service bureau or other payment processor.

Pros and Cons of Biller Direct Model

Pros	Cons
Biller	Biller
<ul style="list-style-type: none"> •Control maintained by biller •No disintermediation between biller and debtors 	<ul style="list-style-type: none"> •No cash flow projections showing scheduled payments
Debtor	Debtor
<ul style="list-style-type: none"> •Has direct contact with biller 	<ul style="list-style-type: none"> •Required to function via “self-service” •Requires multiple logins to pay multiple bills
	General
	<ul style="list-style-type: none"> •Lacks payment solution and tool

Source: PricewaterhouseCoopers (PwC), 2000

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For bill recipients, this model can be burdensome because it requires visits to multiple websites on a monthly basis. On the other hand, this model may prove attractive to consumers, particularly those who pay a limited number of bills per month, because the applications are free. PwC observes that the biller direct model is likely to function most effectively in cases in which a business payer deals with a biller that represents a large portion of the firm’s overall bills. Examples of direct billers include American Express and many fixed-line and wireless telephone companies.

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Pros and Cons of In-House Biller Direct Model

Pros	Cons
<ul style="list-style-type: none"> •Biller retains control of customer enrollment •Biller owns billing software and infrastructure 	<ul style="list-style-type: none"> •Requires considerable up-front investment in technology vulnerable to "leap frogging" by competitors •Uses internal resources to build and maintain billing systems •Long development/implementation timeframe •Customers may balk at need to access multiple websites

Source: Association for Financial Professionals (AFP)/National Automated Clearing House Association (NACHA), 2001

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In a hosted biller direct solution, the biller outsources most service elements, from bill presentment to website hosting to payment to a service bureau. Customers then access a website branded (but not hosted) by the biller to review and pay their bills.

Pros and Cons of Hosted Biller Direct Model

Pros	Cons
<ul style="list-style-type: none"> •Biller retains control of branding •Host handles infrastructure, resources and security •Shorter implementation timeframe than in-house model •Less open to "leap frogging" than in-house model 	<ul style="list-style-type: none"> •Customers may balk at need to access multiple websites •Biller may perceive loss of control over total process

Source: Association for Financial Professionals (AFP)/National Automated Clearing House Association (NACHA), 2001

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Consolidator/Aggregator Model

Under the bill consolidator or aggregator model, currently the solution most widely deployed, customers receive all their bills through a single, web-based interface. The dedicated payments website is maintained by an intermediary, generally termed a "thin" or "thick" consolidator depending on the level of information it maintains. Billers send the consolidator either the entire bill ("thick") or just summary details ("thin") to the consolidator, which takes responsibility for notifying or invoicing customers and providing payment instruction, advice and guidelines. In general, the consolidator works with billers, financial institutions as well as debtors to complete the payment processing.

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Thin consolidators typically display bill summaries such as the amount customers owe each biller. The summaries contain links back to the biller's own website, where customers can view additional bill details. In essence, this is a hybrid solution that provides customers with the convenience of a single bill-paying interface but which also serves the biller's goal of bringing customers to its site on a repeat basis. A thick consolidator, on the other hand, presents both bill summaries and details on its website. Both types can provide full solutions that encompass the following vital functions:

- Auditing and tracking
- Choice of payment methods
- Rules-based auto-payment
- Ability to analyze statements/payment history online
- Capacity to download billing details into personal financial management software
- Customer support services
- One-to-one marketing

Examples of companies that provide bill consolidation services include market leader CheckFree, Paytrust and CyberBills (now part of Metavante).

Pros and Cons of Consolidator/Aggregator Model

Pros	Cons
<p>Biller</p> <ul style="list-style-type: none"> •Implementation is easier than with other models because consolidator manages multiple invoices •Consolidator is responsible for extending reach of solution 	<p>Biller</p> <ul style="list-style-type: none"> •Intermediation by consolidator-in thick consolidator model, biller may lose control over presentation of bill •Control of registration and subscription information resides with consolidator
<p>Debtor</p> <ul style="list-style-type: none"> •Single access point makes solution easier to implement for both enterprise clients and individual consumers •Integration of financial institutions into system can guarantee payments and reliable cash projection 	<p>Debtor</p> <ul style="list-style-type: none"> •Must provide extensive personal information to the consolidator

Source: PricewaterhouseCoopers (PWC), 2000

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Delivery to Desktop Model

In the delivery to desktop model, which is among the least commonly deployed solutions, billers send bills via e-mail to debtors, similar to what they do in the biller direct solutions. However, what distinguishes this solution from the direct model is that debtors use software installed locally on their own computers or network, rather than returning to the biller's website. Best-of-breed service providers like MessagingDirect (part of Transaction Systems Architects' ACI Worldwide), TriSense Software (now part of Group 1 Software) and MicroVault offer users a range of payment options. The advantage for bill recipients is that they retain control over their billing and payment history, which is stored locally rather than with a bill consolidator.

On the other hand, the delivery to desktop solution can prove cumbersome due to the lack of a standardized messaging format and the lack of direct involvement by a financial institution that can handle the payment processing. Market research firm Killen & Associates believes that 40% of all electronic statements and bills issued will be delivered directly to desktops around the world by 2005.

Pros and Cons of Delivery to Desktop Model

Pros	Cons
Biller	Biller
<ul style="list-style-type: none"> •Biller retains control of branding and direct communication with debtors 	<ul style="list-style-type: none"> •Distribution of proprietary software requires ongoing customer support •High number of billers and debtors complicates distribution of information •No cash flow projections showing scheduled payments
Debtor	Debtor
<ul style="list-style-type: none"> •Has all necessary tools on desktop (e-mail system and software) •Bill and payment history stored locally 	<ul style="list-style-type: none"> •High number of billers and debtors complicates distribution of information •Release of payment complicated if financial institution is not involved
General	
<ul style="list-style-type: none"> •Lacks payment solution and tool 	

Source: PricewaterhouseCoopers (PwC), 2000

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In assessing the overall transition to widespread consumer adoption of electronic billing and payments, eMarketer believes that the fundamental shift will likely begin on the payments side. That is to say, the choices consumers make in terms of the means they use for making electronic payments (i.e. whether they pay mailed bills at a consolidator site, at their bank's website or even the biller's website) will determine the success or failure of the various online payment and billing channels in the long run. Therefore, in order to spur usage of electronic bill presentment and payment services, businesses must take a consumer-centric approach by anticipating the needs of their customers. Financial institutions, in particular, must also provide appropriate incentives to boost online payment adoption rates, which have remained low to date.

Following consumers' adoption of online payment channels, wider use of electronic billing, whereby consumers receive all of their bills electronically (again, at a consolidator site or directly from billers), will come in time, albeit at a slower pace. While direct billers, financial institutions, and bill consolidators are all currently vying for position, a hybrid approach may evolve on the billing side, whereby direct billers send electronic invoices to their customers and consumers turn to their online financial institution to consolidate multiple payments.

Business-to-Business Electronic Payment Models

Payment by check continues to dominate among businesses of all sizes, but use of electronic payment services is relatively diffuse, particularly among larger firms. However, it is important to distinguish between what can be termed legacy e-payments systems, such as those using the Automated Clearing House (ACH) network, wire transfers and EDI, and more contemporary internet-based electronic invoice presentment and payment services.

Internet-based EIP promises to do away with legacy electronic billing and payment systems, but the likelihood is that they will continue to coexist for some time. Much like EDI and internet-based e-commerce, invoice presentment and payment will operate in a multi-channel environment, with gradual migration to the internet over the long term. Note that NACHA's Council of Electronic Billing and Payment, which did an extensive two-part study of electronic invoice presentment and payment systems, distinguishes between the presentment and payment sides of the process when referring to existing electronic and non-electronic payment systems.

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B2B Invoice Presentment and Payment Models

Legacy payment models

ACH network

Cash concentration or disbursement (CCD)

Cash concentration or disbursement with addenda (CCD+)

Corporate trade exchange (CTX)

Credit cards

Procurement or purchasing cards (P-cards)

Travel and entertainment cards (T&E cards)

Business credit cards

Checks

Wire transfers

Alternative electronic networks

MasterCard Remote Payment and Presentment Service (RPPS)

Visa ePay

Internet-based EIP models

Seller direct

Buyer direct

Consolidator

Source: National Automated Clearing House Association (NACHA), 2001

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Legacy Payment Models

The ACH network is an early electronic payment transfer system, developed by and connecting all US financial institutions, which provides batch transaction processing, storage and forwarding functions. It is a secure private network that routes payments (including such common applications as direct payroll deposit and debit card purchases) from bank to bank through the Federal Reserve Board or other private sector ACH operators (Electronic Payments Network, Payments Resource One and Visa). The great advantage of batch processing is that it is faster and more economical than using checks, each of which must be processed manually. All transactions are also preauthorized based on procedures established by buyers and sellers.

Businesses may choose between the following ACH options: CCS, CCD+ and CTX. All three transfer funds between a buyer's and seller's financial institution accounts in the same fashion. The distinguishing feature of CCD+ and CTX is that they allow trading partners to attach varying amounts of remittance data, whereas CCD serves only for the transfer of funds. CCD+ can include an addenda record of up to 80 characters, while CTX has the capacity for 9,999 records of up to 80 characters each. Consequently, businesses typically use CCD to pay a single invoice, while CCD+ and CTX, although often used to pay a single invoice, can also support payment of multiple invoices, as long as the addenda contain the appropriate remittance data.

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“Without legacy system cooperation and integration, there is no true end-to-end EDI solution. Right now, we have too much confusion and not enough connection.”

-Abby Auerbach, EVP, Television Bureau of Advertising

Costs for using the ACH network to make payments can vary from minimal to considerable depending on volume. According to NACHA, businesses with low ACH transaction volumes can minimize outlays by using proprietary software supplied by their financial institution, browser-based software or even phone and fax. Payments using the CTX format, on the other hand, typically require a greater investment in software in order to handle the complexity of the remittance detail that accompanies payments. The NACHA report notes that many firms making CTX-related investments also use EDI to communicate with multiple trading partners in their supply chains. Additional costs may include file, monthly account maintenance, transaction and handling fees charged by the financial institution that originates the payment transaction and/or the financial institution that receives the ACH credit or debit transaction.

Characteristics of ACH Network Payment Options

	CCD	CCD+	CTX
Origination	Buyer initiated (credit)	Buyer initiated (credit)	Buyer initiated (credit)
	Seller initiated (debit)	Seller initiated (debit)	Seller initiated (debit)
Transaction type	Debit/Credit	Debit/Credit	Debit/Credit
Payment type	Single invoice	Single or multiple invoices	Single or multiple invoices
Functionality	Funds transfer only	Funds transfer	Funds transfer
		Exchange of remittance data	Exchange of remittance data
Remittance detail	N/A	Single addenda record of up to 80 characters	9,999 records of up to 80 characters each
Settlement time	1-2 days	1-2 days	1-2 days

Source: National Automated Clearing House Association (NACHA), 2001

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Wire transfers use the FedWire Funds Transfer System, an e-payment system established and maintained by the US Federal Reserve. Unlike the ACH network, which processes payments in batches, FedWire features real-time transfer of funds. Typically used for large-amount, time-sensitive payments, wire transfers can support single or multiple invoices, but have little capacity

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for remittance detail. High transaction fees generally limit use of wire transfers to large corporations or government agencies. According to NACHA figures released in May 2001, the number of FedWire transactions totaled 108 million in 2000, with an accumulated value of \$379.756 trillion. Note that this was the highest value recorded for any electronic transaction format.

For cost and infrastructure reasons, eMarketer believes that the well-established ACH network is the existing system most likely to make the transition to the internet. A decline in fees for ACH services (down 49% since 1996, according to NACHA), resulting in part from a trend towards consolidation in data processing centers and a growing transaction volume made possible by electronic payment processing, has helped to boost usage of the ACH network. Accordingly, vendors of EIP software and solutions will target the ACH network to craft payment services that bridge legacy and emerging technologies.

Alternative electronic networks

The MasterCard Remote Payment and Presentment Service (RPPS) and Visa ePay are proprietary, fully electronic networks designed to support B2B payment processing. Unlike the ACH network, both RPPS and Visa ePay are available on a 24/7 basis. Also unlike the ACH network, both have online directories listing sellers that can accept payment from the respective networks. However, they differ slightly in operation.

MasterCard's payment processing service has been in operation since 1987, and in September 2000, it added bill presentment facilities to provide businesses with an end-to-end solution. It serves both one (seller/buyer)-to-many (buyers/sellers) and many-to-many connections, although only buyers can initiate transactions on the RPPS network (e.g. one buyer can connect to multiple sellers and one seller can receive payments from many different buyers). Each transaction can support a single invoice and also include remittance data: a 94-byte record plus 657 bytes of addenda capacity across multiple records. All payments are sent via FedWire, while MasterCard sends the remittance details in a separate file over the RPPS in the system's proprietary format. The system also features payment trace and dispute mechanisms and supports payment returns. Participants in the system can connect via mainframe, server, PC or the internet. Participation costs include a one-time service implementation fee, monthly customer service and account maintenance fees and per transaction fees based on transaction volume.

As on the MasterCard network, only buyers on the Visa ePay system can initiate transactions, although sellers do have the option of originating payment returns. Payments are handled by FedWire transfers, as on the MasterCard network. Buyers can send remittance data in a detailed 300-byte record, while sellers can opt to receive the data in the same format or choose a 94-byte record with addenda. All transactions are also preauthorized based on procedures established by the buyer and seller. Like MasterCard, Visa charges a one-time implementation fee. Additional costs include payment initiation and receipt transaction fees for all payments, payment returns and payment rejections (also based on transaction volume).

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Costs Associated with Legacy and Alternative Electronic Network Payment Models, 2001

	ACH			Alternative electronic networks	
	CCD	CCD+	CTX	MasterCard RPPS	Visa ePay
Investment costs (for buyers and/or seller)					
Hardware	No	No	No	No	No
Software	Optional	Optional	Optional	Optional	Optional
Other one-time start-up costs	Yes	Yes	Yes	Yes	Yes
Transaction costs/fees					
File transmission (if used)	Yes	Yes	Yes	No	No
Payment initiation	Yes	Yes	Yes	Yes	Yes
Payment receipt	Yes	Yes	Yes	Yes	Yes
Remittance delivery	–	Yes	Yes	No	No
Interchange	–	–	–	–	–
Participation fee (monthly, quarterly, annual, etc.)	Yes	Yes	Yes	Yes	No
Returns (charge-backs)	Yes	Yes	Yes	No	No
	Credit cards	Traditional			
	(P-cards, T&E cards, business cards)	Check	Wire transfer		
Investment costs (for buyer and/or seller)					
Hardware	Optional	No	No		
Software	Yes	No	No		
Other one-time start-up costs	Yes	No	No		
Transaction costs/fees					
File transmission (if used)	No	No	Yes		
Pay initiation	–	Yes	Yes		
Payment receipt	–	Yes	Yes		
Remittance delivery	–	Potential	No		
Interchange	Yes	–	–		

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Participation fee (monthly, quarterly, annual, etc.)	Yes	Yes	No
Returns (charge-backs)	Yes	Yes	-

Source: National Automated Clearing House Association (NACHA), 2001

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Internet-Based EIP Models

Both the seller and buyer direct models are based on a one (seller/buyer)-to-many (buyers/sellers) relationship, while the consolidator model functions on a many-to-many relationship. Unlike in the first two instances, the consolidator is usually a third party, which, in addition to aggregating invoices, may provide other value-added financial services such as credit ratings and insurance. Additional services provided by all three models include payment processing, automatic updates to the seller's accounts receivable and buyer's accounts payable, dispute management functions and trend analysis tools. Some consolidators, such as online trading network TradeCard, specialize in managing international transactions. In all three cases, buyers typically receive an e-mail notifying them when invoices are available for review and payment.

Of the three models, the seller direct is the most established. Sellers that have existing relationships with and issue a large number of invoices to multiple buyers are the most likely candidates to implement this sort of solution. Some companies in the manufacturing, telecommunications, utilities, health care and financial services industries already use the seller direct model.

As the host of the EIP application and all invoice data, the seller enjoys the benefit of control over all aspects of the system. Depending on a seller's position in the marketplace vis-à-vis buyers, it may either require buyers to use its system or, alternatively, may be compelled to offer buyers incentives in order to spur adoption of the system.

“For now it looks as if buyers as well as sellers are unsure of what steps to take next.”

-John Hagerty, VP and General Manager, Financial Services, AMR Research

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As in other biller direct models noted in the preceding section, sellers may opt to develop proprietary software and implement their EIP solution entirely in-house. This naturally offers the seller the greatest degree of control over the system, but may entail operational details (such the need to guarantee appropriate levels of security and scalability) that go beyond a seller's expertise. As a result, sellers may choose to use an EIP software vendor (which still gives the seller control over invoice data and relationships with buyers) or outsource the solution entirely to a third-party provider or ASP (in which case the seller cedes some control over the presentment and payment options).

For the buyer, using this solution to view invoices entails little in the way of implementation costs: All it requires is a web browser. However, assuming that a buyer deals with more than one seller, it may be compelled to sign up for many such services, and, ultimately, be required to integrate its accounts payable system with multiple sites (with different processes and presentment requirements). Fortunately, firms may be able to avoid this outcome if industry-sponsored exchanges or other industry groups are able to select standardized EIP applications, as many industries already have done with other business-to-business software solutions.

Benefits and Challenges of the Seller Direct EIP Model

Benefits	Challenges
<p>Seller</p> <ul style="list-style-type: none"> •Control over buyer enrollment, invoice presentment and payment processes and disputes •Control over and ability to use website for other purposes (such as marketing messages) •Ability to integrate EIP system with other functions/departments 	<p>Seller</p> <ul style="list-style-type: none"> •Bears costs/responsibility for building/maintaining EIP system •Need to convince buyers to use system (incentives often required) •May be responsible for integrating system with multiple buyers' accounts payable processes
<p>Buyer</p> <ul style="list-style-type: none"> •Limited execution costs •Potential benefit from financial incentives offered by seller to enroll in EIP system 	<p>Buyer</p> <ul style="list-style-type: none"> •Need to enroll at/use multiple trading partner sites, each with different processes and requirements •Need to integrate accounts payable systems with multiple EIP solutions •Must accept seller's payment option

Source: National Automated Clearing House Association (NACHA), 2001

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The emergence of high-volume, repeat buyers has led some large companies to implement buyer direct EIP systems, which allows them to retain control over invoicing and payment processes. This sort of application assumes that a buyer carries considerable weight in the marketplace, and has existing relationships with sellers that can be convinced or induced to join the buyer's system. In this model, buyers enjoy similar benefits as sellers in the seller direct model and vice versa. Chief among the benefits for sellers are the potential for speedier invoice payment (due to the system's direct, integrated nature) and the potential for strengthening their relationship with buyers by using the system. Challenges for both parties are likewise inverted from the seller direct model.

Benefits and Challenges of the Buyer Direct EIP Model

Benefits	Challenges
<p>Buyer</p> <ul style="list-style-type: none"> •Control over seller enrollment, invoice presentment and payment processes and disputes •Ability to integrate EIP system with other functions/departments 	<p>Buyer</p> <ul style="list-style-type: none"> •Bears costs/responsibility for building/maintaining EIP system •Need to convince buyers to use system (incentives often required) •May be responsible for integrating system with multiple sellers' accounts payable processes
<p>Seller</p> <ul style="list-style-type: none"> •Potential to receive buyer payments more quickly •Using system may benefit/strengthen relationship with buyer 	<p>Seller</p> <ul style="list-style-type: none"> •Need to enroll at/use multiple trading partner sites, each with different processes and requirements •Need to integrate accounts receivable systems with multiple EIP solutions •Must accept buyer's payment options

Source: National Automated Clearing House Association (NACHA), 2001

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As in the business-to-consumer segment, the consolidator model is emerging as a popular solution because it provides a third party-hosted platform for sellers and buyers to exchange and resolve invoices. Because multiple sellers and buyers can use a consolidator-hosted EIP solution, they eliminate the need to enroll in and integrate multiple solutions, as in the above two models. Sellers can reach multiple buyers and vice versa, and both parties can make use of the value-added services the consolidator may offer. Both parties face the challenge of integrating the consolidator's EIP solution and each must convince (or require) the other to participate if they hope to achieve the promised economies of scale. Examples of consolidator sites include BillingZone and Tradepaq.

Benefits and Challenges of the Consolidator EIP Model

Benefits	Challenges
<p>Seller</p> <ul style="list-style-type: none"> •Ability to reach multiple buyers through single site •Standardized processes with buyers (enrollment, presentment, payment, disputes) •Potential to leverage value-added services provided by consolidator 	<p>Seller</p> <ul style="list-style-type: none"> •Need to convince buyers to use system •Must accept consolidator's payment options and enrollment requirements •Integrating consolidator EIP solution with other functions/departments •Ability to use website for other purposes (such as marketing messages) is more limited than in seller direct model
<p>Buyer</p> <ul style="list-style-type: none"> •Ability to reach multiple sellers through single site •Standardized processes with sellers (enrollment, presentment, payment, disputes) •Potential to leverage value-added services provided by consolidator 	<p>Buyer</p> <ul style="list-style-type: none"> •Need to convince sellers to use system •Must accept consolidator's payment options and enrollment requirements •Integrating consolidator EIP solution with existing accounts payable and purchasing/receiving systems

Source: National Automated Clearing House Association (NACHA), 2001

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“Electronic bill presentment and payment is designed to achieve the same benefits as EDI (electronic data interchange), sharing electronic data and information between companies while limiting upfront investments and infrastructure costs.”

-Francine Miltenberger, EVP, PNC Bank Treasury Management

The following table summarizes and places in comparative context the main benefits and challenges to participants in the three internet-based EIP models identified by NACHA.

Benefits and Challenges of Internet-Based EIP Models

	Seller direct	Buyer direct	Consolidator
Enrollment	Seller retains control	Buyer retains control	Consolidator may retain control
Features and functions	Seller retains control	Buyer retains control	Consolidator may retain control
Payment options	Established by seller	Established by buyer	Established by consolidator and/or buyer and/or seller
Data access	Seller retains control	Buyer retains control	Consolidator retains control
Integration with other company functions/ applications	Established by seller	Established by buyer	Consolidator determines whether or not it offers integration services
Related messaging	Established by seller	Established by buyer	Consolidator determines whether or not it offers messaging
Number of trading partner sites to access	Declines for seller; rises for buyers	Declines for buyer; rises for sellers	Declines for both buyers and sellers
Incentives provided to trading partners	On occasion	Unknown	Unknown
Operational resource requirements	Seller retains responsibility	Buyer retains responsibility	Consolidator retains responsibility
Scalability	Seller retains responsibility	Buyer retains responsibility	Consolidator retains responsibility
Security features	Seller retains control	Buyer retains control	Consolidator retains control

Source: National Automated Clearing House Association (NACHA), 2001

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Although the business-to-business software market appears complex, in very broad terms it can be divided into buy-side and sell-side systems. In this context, many companies may need to consider separate sell-side and buy-side billing and payment solutions. In addition, businesses will need to choose separate internet-based billing and payment models that effectively work alongside their legacy payment systems. In short, a multi-channel environment will exist over the medium term as companies migrate to new systems. Taking a lesson from past installations of enterprise resource planning (ERP) systems, most companies will likely make the conversion to online payment systems in stages, one buyer or customer at a time, and/or incrementally within their own organizations.

Over time, eMarketer believes that the seller direct model, which is already the most firmly entrenched, is likely to prevail, with banks continuing to participate in the settlement role. The payments side is less clearly defined, however, as electronic payments will likely correlate strongly with the multiple channels through which electronic transactions are initiated. For example, should a large company adopt a hybrid approach to e-commerce that connects its largest suppliers via a private exchange while at the same time consolidating its smaller customers through a public B2B exchange, payment flows will likely move through at least two separate electronic channels. Add to this the numerous offline transactions that companies will continue to make along with those that occur via EDI systems and it becomes apparent that large businesses will need to consolidate their payment operations at some point. In general terms, this will occur where most companies' business-to-business payment software connects with their financial/ERP systems. To the extent that EIP vendors are able to integrate with leading ERP systems, or the degree to which ERP vendors are able to offer online payment solutions, the more rapidly the adoption of business-to-business electronic payments will be able to proceed.

C. How Electronic Payment Systems Work

The complexity of the online payment process varies according to the application and the targeted end users. For example, a system designed to consolidate consumer utility and credit card bills and facilitate payment, which handles a limited number of monthly transactions with a consumer's one financial institution, is potentially less complicated than a system intended to serve businesses sending, receiving and paying multiple invoices from different firms each month.

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Business-to-Consumer/Consumer-to-Business Electronic Payments

An important factor with B2C e-payment implementations, notes PwC, is whether billers and debtors can opt to route payments through financial institutions of their own choosing or whether the system requires them to utilize those partnered with the PSP. In the first instance, payment may be effected in one of the following manners, depending on how the system is configured:

Example 1

- Consumer receives bill notification
- Consumer sends payment instructions to PSP
- PSP sends debits to consumer's bank
- Bank processes debits and includes transaction data in consumer's monthly printed statement or real-time online banking statement

Example 2

- Consumer receives bill notification
- Consumer sends payment instructions to bank
- Bank forwards payment instructions to PSP
- PSP processes debits and sends transaction data back to consumer's bank for inclusion in monthly printed statement or real-time online banking statement

Example 3

- Consumer receives bill notification
- Consumer sends payment instructions to bank via online banking interface
- Bank processes debits and includes transaction data in consumer's monthly printed statement or real-time online banking statement

The above examples refer to a closed, streamlined solution in which the PSP (bank or other third-party provider) manages and effects end-to-end payment processing within the confines of the e-payment system. Payment consolidators or aggregators typically deploy this kind of system. However, it is also possible for a system to handle payment instructions and executions involving multiple financial institutions. In this case, the debtor receives a bill notification, sends payment instructions to the PSP, which notifies the biller. The biller then forwards the debtor's payment instructions to its own financial institution, which, in turn, executes and completes the payment process in conjunction with the debtor's financial institution. This model can also be extrapolated to include multiple billers and financial institutions.

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Business-to-Business Electronic Payments Legacy Payment Models

The following tables summarize and place in comparative context the payment process associated with ACH network transactions, credit cards, transactions made using the MasterCard and Visa systems, check and wire transfers. Note that the process differs depending on whether the buyer or the seller initiates payment.

Buyer-Initiated Payment Process Flows in Legacy Payment Models

	ACH			Alternative electronic networks	
	CCD	CCD+	CTX	MasterCard RPPS	Visa ePay
Payment	Buyer originates	Buyer originates	Buyer originates	Buyer originates	Buyer originates
Settlement	Buyer's bank debits buyer's account	Buyer's bank debits buyer's account	Buyer's bank debits buyer's account	MasterCard RPPS settlement bank initiates a Fedwire against buyer's settlement account	Visa ePay settlement bank initiates a Fedwire from buyer's bank
Remittance	N/A	Seller's bank transmits details to seller	Seller's bank transmits details to seller	MasterCard RPPS settlement bank sends details to appropriate receiver	Visa ePay sends details to receiver
Funds transfer	Buyer's bank credits seller's bank	Buyer's bank credits seller's bank	Buyer's bank credits seller's bank	MasterCard RPPS settlement bank credits seller's bank via Fedwire	Visa ePay settlement bank credits seller's bank via Fedwire
Settlement time	1-2 days	1-2 days	1-2 days	0-1 day	0-1 day
	Credit cards	Traditional			
	(P-cards, T&E cards, business cards)	Check	Wire transfer		
Payment	Buyer originates	Buyer originates	Buyer originates		
Settlement	Card issuer or merchant processor transfers funds using an ACH file	Seller's bank collects funds from buyer's bank	Federal Reserve Bank debits buyer's reserve account		

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Remittance	Card issuer sends details to seller	Buyer sends details to seller	Buyer's bank transmits details to seller
Funds transfer	Card issuer transfers funds to seller	Buyer's bank credits seller's bank	Buyer's bank credits seller's bank
Settlement time	Varies	1-5 days	0-1 day

Source: National Automated Clearing House Association (NACHA), 2001

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Seller-Initiated Payment Process Flows in Legacy Payment Models

	ACH			Alternative electronic networks	
	CCD	CCD+	CTX	MasterCard RPPS	Visa ePay
Payment	Seller originates	Seller originates	Seller originates	Seller can initiate returns only (reverse above process)	Seller can initiate returns only (reverse above process)
Settlement	Seller's bank credits seller's account	Seller's bank credits seller's account	Seller's bank credits seller's account	-	-
Remittance	-	Buyer's banks transmits details to buyer (not a typical scenario)	Buyer's banks transmits details to buyer (not a typical scenario)	-	-
Funds transfer	Seller's bank credits seller's account	Seller's bank credits seller's account	Seller's bank credits seller's account	-	-
Settlement time	1-2 days	1-2 days	1-2 days	-	-
	Credit cards (P-cards, T&E cards, business cards)	Traditional			
		Check	Wire transfer		
Payment	Seller originates	-	-		

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Settlement	Card issuer or merchant processor transfers funds using an ACH file	-	-
Remittance	Card issuer sends details to seller	-	-
Funds transfer	Card issuer transfers funds to seller	-	-
Settlement	Varies	-	-

Source: National Automated Clearing House Association (NACHA), 2001

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Internet-Based EIP Models

The following table summarizes and places in comparative context the payment process in the three internet-based EIP models identified by NACHA. The process is similar in all three cases, with an eye to maintaining simple, relatively friction-free transactions.

Payment Process Flows in Internet-Based EIP Models

Process	Seller direct	Buyer direct	Consolidator
Enrollment	Buyer enrolls at seller's site	Seller enrolls at buyer's site	Both parties enroll at consolidator site
Invoice posting	Seller posts data to seller EIP system	Seller posts data to buyer EIP system	Seller posts data to consolidator EIP system
Invoice present-ment	Buyer logs into seller's site to view invoice	Seller logs into buyer's site to view invoice	Buyer logs into consolidator's site to view invoice
Invoice review, routing, accounts payable integration	Seller may offer buyers workflow protocols to direct invoices to appropriate department within buyer organization	Buyer may offer to direct invoices to appropriate department within buyer organization	Consolidator may offer both parties workflow protocols
Dispute resolution	EIP systems allows buyer to communicate with seller according to predetermined business rules	EIP systems allows buyer to communicate with seller	Buyer communicates with seller via consolidator

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Invoice approval and payment authorization	Buyer approves invoices and agrees to full or partial payment	Buyer approves invoices and agrees to full or partial payment	Buyer approves invoices and agrees to full or partial payment
Funds transfer	Seller's financial institution processes payment transaction	Buyer's financial institution processes payment transaction	Either seller's or buyer's financial institution can process the payment transaction
Settlement and remittance	Buyer's financial institution debits buyer's account; seller's financial institution credits seller's account	Buyer's financial institution debits buyer's account; seller's financial institution credits seller's account	Consolidator supplies remittance files for seller's accounts receivable and buyer's accounts payable

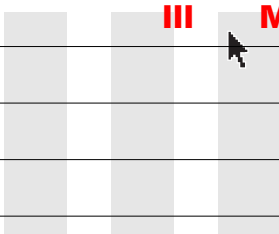
Source: National Automated Clearing House Association (NACHA), 2001

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“If you’re a big buyer, and you can force your suppliers to integrate with your processes, you get the benefits, they are forced into meeting the standards you imposed on them. That’s what we’re seeing right now.”

-Russ Schmalz, Research Director, Aberdeen Group

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In August 2000, TowerGroup predicted that the volume of electronic payments in the world's more developed economies would exceed that of paper-based transactions by the end of 2000, thanks in large part to the start of a slow decline in US check volume. Overall, the number of non-cash payments totaled 170 billion last year, and will rise to 200 billion in 2003.

Worldwide Non-Cash Payments, 2000 & 2003 (in billions)



Source: TowerGroup, 2000

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Market research firm Killen & Associates further distinguishes between electronic bill presentment and payment and electronic statement presentment (ESP), which it views an additional area of opportunity for EBPP vendors. Unlike electronic payment applications, electronic statements do not require any return of payment. Rather, they are reports that document activity and change to a customer's account, such as a monthly bank statement. Typically, electronic statements are issued on either a vertical basis by firms in industries that offer accounts and transactions or on a horizontal basis across different industry lines for functional applications such as payroll and various benefits. Government regulations require companies in many industries to issue these statements, and given the regularity with which they are emitted, many firms, particularly in the financial services industry, have turned to outsourcing. Killen & Associates focuses on the three principal statement types:

- Regular statements, which include periodic or monthly status reports
- Activity reports, which result from interim account activity
- Issuer copies, which include usage of copies of regular statements and activity reports for inquiry, customer service and account analysis purposes

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Killen & Associates believes that ESP markets will develop more quickly than EBPP services, and that the complexity of electronic statements will favor ESP vendors seeking to move into the EBPP space (rather than vice versa). Nevertheless, by 2005, Killen & Associates expects that worldwide penetration of ESP and EBPP to reach similar levels, and the revenues from EBPP to be roughly double those associated with ESP.

Worldwide EBPP and ESP Revenues, 2005 (in billions)

EBPP	\$34.00
ESP	\$18.20

Source: Killen & Associates, 2000

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Worldwide Electronic Statements and Electronic Statement Presentment Processing Revenues, 2000, 2003 & 2005 (in billions)

	2000		2003		2005	
Statement type	Number (in billions)	Processing revenues (in billions)	Number (in billions)	Processing revenues (in billions)	Number (in billions)	Processing revenues (in billions)
Regular statements	18.50	-	24.40	-	27.50	-
Electronic @ .50 cents ea.	3.10	\$1.60	12.20	\$6.10	22.00	\$11.00
Activity reports	20.80	-	24.80	-	27.90	-
Electronic @ .10 cents ea.	3.60	\$0.30	12.40	\$1.20	21.30	\$2.20
Issuer copies	93.00	-	111.00	-	131.00	-
Electronic @ .5 cents ea.	15.80	\$0.80	55.00	\$2.80	105.00	\$5.00
Total	132.30	-	160.20	-	186.40	-
Electronic total	22.50	\$2.70	79.60	\$10.10	148.30	\$18.20

Source: Killen & Associates, 2000

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Worldwide Penetration of Electronic Statements, Electronic Bill Presentment and Electronic Bill Payment, 2005

Electronic Statements	80%
Electronic bill payments	80%
Electronic bill presentment	70%

Source: Killen & Associates, 2000

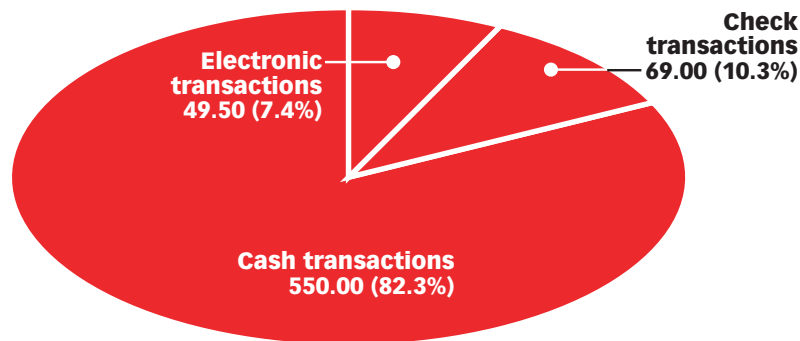
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A. US Market

NACHA has calculated that in 2000, the number of payments in the US totaled 668.50 billion, with a value \$782.200 trillion. Electronic transactions, including ACH network and FedWire transfers, accounted for 7.4% of this total.

US Payments, 2000 (in billions and as a % of total transactions)



Source: National Automated Clearing House (NACHA), 2001

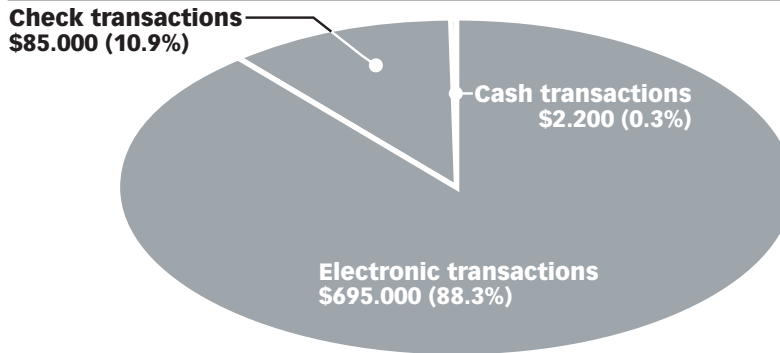
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Cash transactions were by far the most numerous, but represented a much lower total value than electronic transactions. In fact, the value of cash transactions was inversely proportional to their volume. Still, the overwhelmingly dominant use of checks and especially cash for transactions means that e-payment providers (including both legacy and internet-based formats) can still find significant opportunities by making inroads in the cash and check marketplace.

Value of US Payments, 2000 (in trillions and as a % of total value)



Source: National Automated Clearing House Association (NACHA), 2001

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Note that the electronic payment formats with the lowest volume-Clearing House Interbank Payments Systems (CHIPS) and FedWire-had by far the highest value. This is no doubt in large part due to the fact that users of FedWire include the government and large corporations-institutions involved in high dollar value transactions.

Volume and Value of US Electronic Transactions, 2000

Payment method	Volume (in millions)	Value (in billions)
ACH	6,900.0	\$20,300.00
ATM	13,200.0	\$800.00
Credit card	20,000.0	\$1,400.00
Offline debit	5,300.0	\$294.50
Online debit	3,975.0	\$105.50
CHIPS	58.0	\$292,147.00
FedWire	108.0	\$379,756
Total	49,541.0	\$694,803.00

Source: National Automated Clearing House Association (NACHA), 2001

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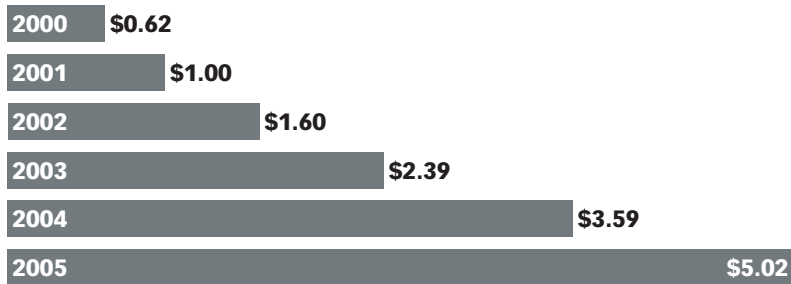
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Research released by the Yankee Group in December 2000 forecasts steady growth in IP-centric billing and customer care revenues. According to Yankee Group findings, revenue growth will derive from both in-house and outsourced solutions, including the following areas:

- Software licenses
- Consulting services
- Systems integration
- Ongoing maintenance

Billing and Customer Care Revenues, 2000-2005 (in billions)



Source: Yankee Group, 2000

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The Yankee Group’s forecasts look at a large market segment that includes a variety of product and service areas associated with electronic billing, hence accounting for the aggressive revenue growth predictions. The Aberdeen Group, which looks more specifically at the revenues generated from online transactions themselves, predicts that the market will grow to \$1.90 billion by 2005.

In terms of expenditures, TowerGroup looks at five major stakeholders in the consumer-related billing and payment process:

- Banks
- Billers
- Third-party vendors
- Consumers
- US Postal Service (USPS)

It estimates that these five stakeholders spend \$86 billion per year on billing and bill payment. Consequently, the potential for cost savings in the payments arena remains significant. TowerGroup estimates that between 1995 and 2000, banks around the world spent in excess of \$50 billion on IT for multiple payment processing mechanisms—paper, cards and electronic. Banking industry spending on IT-related payment processing mechanisms continues at approximately \$10.8 billion per year.

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In the US alone, TowerGroup estimates that by converting to fully electronic bill presentment and payment, banks could generate \$7 billion in new revenue, while major billers (utilities and telecommunications, insurance and finance firms) could save \$5.5 billion per year. Consumers could also realize significant savings of up to \$4.4 billion per year.

Cost Savings and New Revenue Generation Derived from Conversion to EBPP in the US, 2000 (in billions)

	New revenue	Savings
Banks	\$7.00	–
Third-party vendors	\$15.70	–
Major billers	–	\$5.50
Consumers	–	\$4.40

Source: TowerGroup, 2000

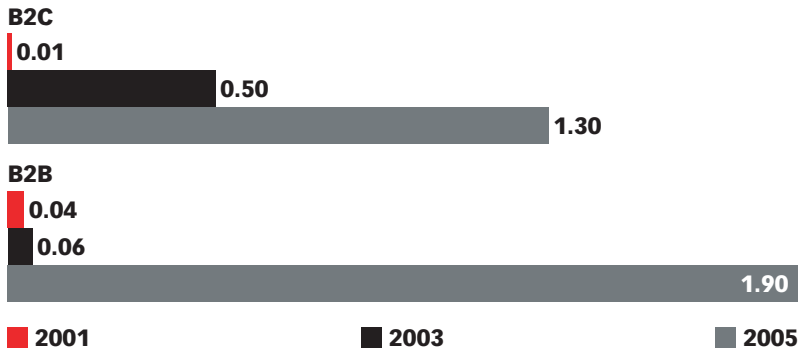
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The volume of bills from major billers in the four leading segments noted above reached 15.4 billion in 2000, according to TowerGroup estimates. Only 1% of that volume was presented and processed electronically (from end-to-end, i.e. from biller to payee and back); by 2005, the percentage will rise to 10%.

Overall, the volume of bills delivered and paid electronically (in both the business-to-consumer and business-to-business markets) will amount to less than 1% of the total bill volume in 2001. By 2005, TowerGroup expects the round-trip electronic bill volume to rise to 9% of the total bill volume.

Volume of US Round-Trip Electronic Bills, 2001, 2003 & 2005 (in billions)



Source: TowerGroup, 2001

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B. European Market

The European billing market is significant: according to Killen & Associates, European billers and statement issuers account for more than 33% of all bills and statements issued worldwide. An April 2000 Killen & Associates report predicted brisk growth in European ESP markets. Increases in EBPP, meanwhile, will be consistent with those at the worldwide level.

Electronic Bills and Electronic Statements Issued in Europe, 1998 & 2005 (in billions)

	1998		2005	
	Europe	Worldwide	Europe	Worldwide
EBPP	23.00	61.00	28.00	80.00
ESP	43.00	112.00	65.00	186.00
Total	66.00	173.00	93.00	266.00

Source: Killen & Associates, 2000

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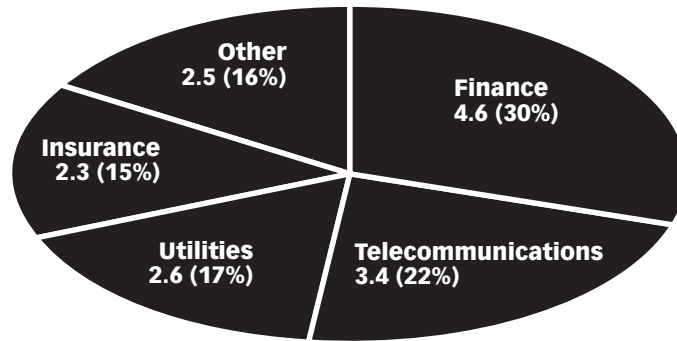
Billing in Europe is highly concentrated, on both a region-wide and individual country basis. For example, the UK, Germany and France, which represent Europe's largest billing markets, are responsible for nearly five billion bills per year. In some national markets, fewer than 40 billers render approximately 80% of all bills, in part due to the existence of state-run monopolies. The US market, by contrast, is far more decentralized, with around 2,000 firms responsible for 80% of all bills.

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C. Business-to-Consumer (B2C) Market

TowerGroup research indicates that the volume of consumer bills reached 15.4 billion in 2000 (totaling \$2.6 trillion), dominated by bills from financial services, telecommunications, utilities and insurance firms. Hence, the opportunities for achieving efficiencies in the consumer segment through electronic billing remain considerable.

US Consumer Bills, by Industry, 2000 (in billions and as a % of total volume)



Source: TowerGroup, 2001

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US Consumer Bills, by Industry, 2000

Finance/ 4.6 billion bills		Telecom/ 3.4 billion bills		Utilities/ 2.6 billion bills		Insurance/ 2.3 billion bills	
Revolving cards	47%	Telephone	36%	Electric	51%	Revolving cards	47%
Charge cards	17%	Cable	24%	Water/ sewer	27%	Charge cards	17%
Mortgages	15%	Cellular	23%	Gas	22%	Mortgages	15%
Other	14%	Other cellular	11%	-	-	Other	14%
Auto	7%	Other	7%	-	-	Auto	7%
Total	100%	Total	100%	Total	100%	Total	100%

Source: TowerGroup, 2001

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Another potential growth area in the consumer segment is online payments to government agencies. These range from local, state and federal taxes to fees for permit applications and motor vehicle license renewals. According to Forrester Research, online revenue collections by government agencies will reach nearly \$24 billion in 2001 and rise as high as \$602 billion by 2006 (with federal agencies absorbing the majority of consumer payments). In 2000, most of the \$5 billion government agencies collected online came via credit card payments.

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However, Forrester cautions that a host of barriers to more widespread consumer-to-government e-payments remain. Many government agencies, particularly those at the state and local levels, lack the requisite funding, back-end processing capabilities and IT staff to implement online payment systems. In addition, laws requires most government agencies to collect the exact amount owed by a consumer, thereby preventing them from surrendering a percentage of a transaction to the payment processor. As a result, many agencies accept payments via authorized, private-sector third parties, which can charge consumers "convenience fees" for using their services.

Online Consumer Payments to US Government Agencies, 2000-2006 (in billions)

	2000	2001	2002	2003	2004	2005	2006
Local	\$0.70	\$2.90	\$6.70	\$14.50	\$29.10	\$54.90	\$84.80
State	\$0.80	\$3.60	\$9.40	\$20.30	\$34.40	\$58.60	\$101.50
Federal	\$3.60	\$17.3	\$39.20	\$71.20	\$129.00	\$243.40	\$416.10
Total	\$5.10	\$23.80	\$55.30	\$106.00	\$192.50	\$356.90	\$602.40

Source: Forrester Research, 2000

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The problem for billers remains successfully capitalizing on the opportunity before them. TowerGroup estimates that of the 15.4 billion bills delivered in the US last year, only 1% made the round trip (from presentment to payment) electronically. According to Gartner research released in November 2000, only 17% of adult internet users in the US prefer to view their bills online. Nearly half of the adult internet user population favors traditional paper bills, with the rest uncertain of their preferences. 40% of consumers surveyed by Gartner cited concerns about invoice security as a leading reason why they prefer to stick with paper-based bills.

"If consumers cannot get six to eight bills presented electronically, they do not see the convenience and benefits of EBPP."

-Cathleen M. Conforti, VP, Remote Payment and Presentation Services, MasterCard International

The Gartner report indicates that the biller direct model is far and away the most popular EBPP application, with approximately three million active users. The electronic bill consolidation and total bill consolidation (thin and thick formats) models have fewer 100,000 subscribers each.

Despite its limited initial market penetration, Gartner expects the consolidator model to post dramatic gains over time, reaching 25 million subscribers by 2004. By that point, subscribers to biller direct solutions will total 15 million. Overall, Gartner expects the percentage of US households paying bills online to triple from 7% in 2000 to 20% in 2005.

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US Consumer Subscribers to Electronic Billing Solutions, 2004 (in millions)

Consolidator model	25.0
Billers direct model	15.0

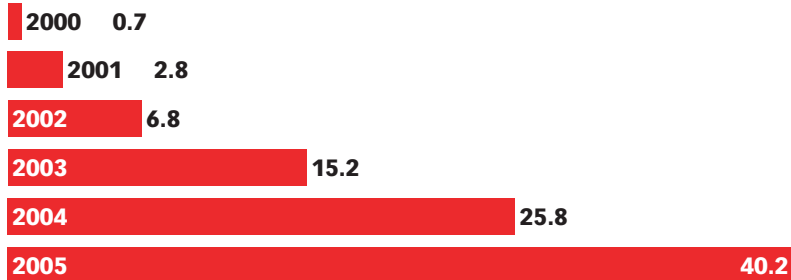
Source: *Gartner, 2000*

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Similarly, Jupiter Research expects US households to adopt EBPP in rapidly increasing numbers in 2001 and beyond. In 2003, Jupiter predicts, online bill presentment, viewing and payment will exceed in popularity the current method of receiving bills delivered by more traditional means and simply paying them online. Jupiter also believes that banks, not direct billers or other third-party consolidators, will become the leading intermediaries with consumers, and that technology-based services like EBPP will allow larger banks to dominate the market (to the exclusion of smaller, community-based banks and credit unions).

US Electronic Bill Payment and Presentment Households, 2000-2005 (in millions)



Source: *Jupiter Research, 2000*

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Meanwhile, in a more recent study released in May 2001, the Yankee Group, drawing conclusions from the slow rate of consumer EBPP adoption, has issued far more conservative projections than Jupiter. The Yankee Group places the burden of jump-starting EBPP adoption squarely on the shoulders of consolidators and direct billers, charging them with devoting more resources to increasing consumer awareness levels and making EBPP more appealing to end users. Celent Communications has issued even more conservative forecasts, predicting around 4.5 million users of EBPP in the US by 2004.

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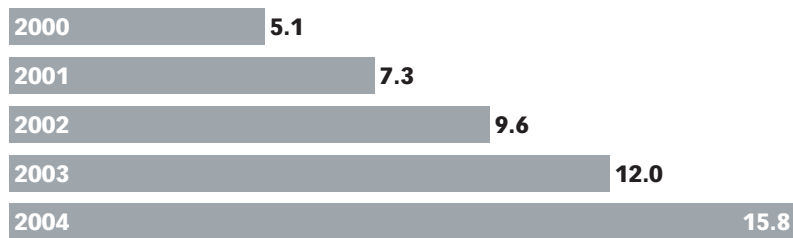
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US Electronic Bill Payment and Presentment Households, 2000-2004 (in millions)

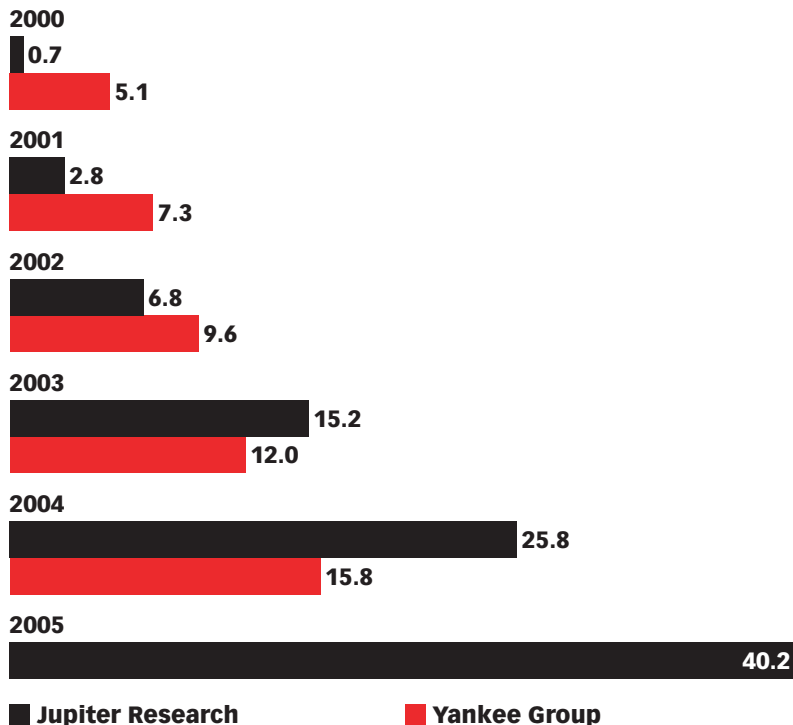


Source: Yankee Group, 2001

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Comparative Estimates: US Electronic Bill Payment and Presentment Households, 2000-2005 (in millions)



Source: Yankee Group, 2001; Jupiter Research, 2000

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Person-to-Person (P2P) Market

In January 2001, Meridien Research reported findings that 99% of all person-to-person (P2P) payments used traditional means-cash, checks and credit cards. However, TowerGroup predicts that the volume of electronic P2P payments will explode in the next five years, largely fueled by growth in online auction transactions, which will account for 95% of all P2P transactions.

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“Consumers don’t want to send money to each other electronically unless there is no other way.”

-Avivah Litan, VP and Research Director, Gartner

Despite this forecast of aggressive growth, TowerGroup expects that P2P payments will remain a small part of the overall consumer online payments market. For example, in 2005, the total number of consumer-initiated online payments will reach more than 31 billion, representing 88% of the online payment volume. Of these transactions, just over 4 billion will be P2P payments, accounting for only 11% of the total volume. In addition, other types of consumer-to-business online payments will generate far more value than P2P payments by 2005 (68% versus 29% of the total).

Volume of Person-to-Person (P2P) Payments Online, 2000, 2001 & 2005 (in millions)

2000	42
2001	100
2005	4,000

Source: TowerGroup, 2001

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The growth in P2P accounts notwithstanding, TowerGroup findings indicate that the existing dynamic of the P2P payment space is such that solutions vendors not already operating in the online auction arena will have difficulty penetrating the market. Moreover, TowerGroup research suggests that due to the limited near-term profit potential of the P2P payments market, solutions vendors must focus on leveraging their technology investments to capitalize on other, more lucrative segments of the online consumer payments market.

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D. Business-to-Business (B2B) Market

Gartner expects brisk growth in the number of companies worldwide using the internet to issue invoices as well as in the volume of B2B electronic invoicing. Gartner believes the greatest increases will come between 2001 and 2002, consistent with the significant investments that large and medium-sized firms have been making in technology platforms. However, given the economic and investment climate prevailing at the end of 2001, true progress may have to wait until the end of 2002.

Share of Companies Worldwide Using the Internet to Deliver Invoices, 2001, 2002 & 2004



Source: Gartner, 2001

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Growth in electronic invoicing will also be considerable among companies Gartner defines as high-revenue, meaning that they bill more than \$500 million per year. Note that these firms already use EIP to a greater extent than other companies.

Share of High-Revenue Billers Worldwide Using the Internet to Deliver Invoices, 2000 & 2001



Source: Gartner, 2000

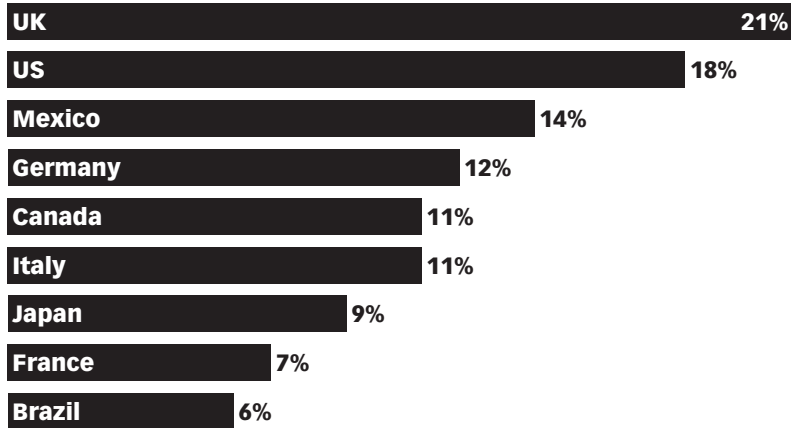
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Research from the International Data Corporation (IDC) likewise confirms that large enterprise firms, led by companies in the UK and US, are leading the deployment of electronic payment systems. By 2005, Celent Communications expects that nearly 10% of US firms will adopt electronic invoicing.

Share of Large Enterprise Sites That Can Take Online Payments, by Country, 2001



Source: International Data Corp. (IDC), 2001

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Gartner estimates that IP-based invoicing currently accounts for 8.6% of all B2B electronic billing, a far lower percentage than invoices sent out over the existing EDI infrastructure. Similarly, in a study released in March 2001, the now-defunct Zona Research conducted interviews with 104 enterprise decision-makers, finding that 50% use EDI today. Many are either currently deploying EIP solutions or planning to do so by next year. By 2002, Gartner expects internet invoicing to be nearly equal in proportion to EDI invoicing. These dramatic increases are due in part to Gartner's prediction for considerable growth in the percentage of companies billing their customers online.

EDI and Internet Invoicing as a % of Total B2B Electronic Invoice Volume, 2000 & 2002



Source: Gartner, 2001

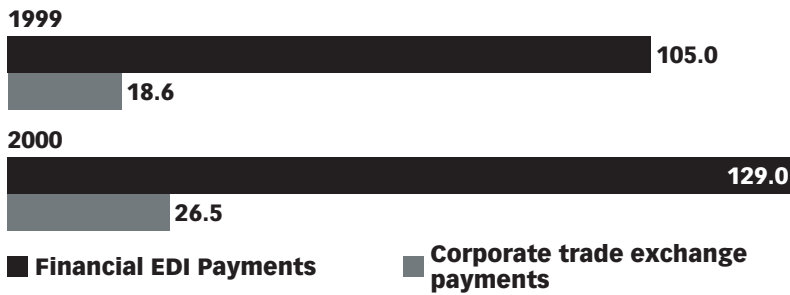
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Data from NACHA show that EDI-based payments via the ACH network have seen substantial growth between 1999 and 2000, rising 22.6%. More than 129 million financial EDI transactions were processed over the ACH network in 2000, compared to 105 million during the previous year. Meanwhile, growth in Corporate Trade Exchange (CTX) payments—multiple invoices that are paid via a single financial EDI transaction—reached 42.5% between 1999 and 2000, bringing the number of payments to 26.5 million. These trends strongly suggest that growth in electronic invoicing is taking place using existing systems. A decline in fees for ACH services (down 49% since 1996, according to NACHA), resulting in part from a trend towards consolidation in data processing centers and a growing transaction volume made possible by electronic payment processing, have helped to boost usage of the ACH network.

Number of Financial EDI Payments, 1999 & 2000 (in millions)



Source: National Automated Clearing House Association (NACHA), 2001

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In all, Gartner estimates that 17% of all US business-to-business payments are currently made electronically (versus 13% in 2000), with the rest made via paper checks or money orders. Breaking down electronic payments, Gartner estimates that 33% are ACH payments, while 39% are wire transfers. The costs of using wire transfers are such (each transfer typically costs between \$10 and \$40) that this is an option viable only for a select group of large enterprises.

Electronic Payments as a % of Total Business-to-Business Payments, 2000 & 2001



Source: Gartner, 2001

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EIP solutions provider Clareon (a spin-off of FleetBoston Financial) estimates that banks in the US process 25 billion checks US each year, representing 84% of all business payments. UK-based research firm Ovum believes that by turning to electronic invoicing and payments capabilities, companies may save as much as 70% of their paper-based distribution and processing costs. In all, various research firms estimate that 84% to 98% of B2B invoices involve some degree of paper processing, indicating the considerable opportunity for electronic invoicing and payment mechanisms. As noted in the following section below, many more companies use legacy electronic payment services (such as ACH and wire transfers) than internet-based electronic payment services, again highlighting the likelihood that a multi-channel environment will continue to exist for some time.

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Purchase Processing Methods, by Industry

Figures cited in chapter seven of this report indicate the high degree of penetration of purchasing cards among US industries. The Center for Advanced Purchasing Studies (CAPS), an independent research organization with links to the Arizona State University and the National Association of Purchasing Management, compiles and publishes benchmark reports on purchasing practices in leading industry segments, primarily by interviewing purchasing professionals in representative companies in each industry (i.e. companies whose sales comprise a majority of the industry’s overall sales). The reports are published annually or bi-annually and although the data cited for some industries date back to 1998 and 1999, the numbers cited constitute valuable information, especially given the long-term and often static nature of industry spending patterns. The table below contains summary demographic data for each industry segment.

Summary Demographics of Industries Surveyed by CAPS, 1998-2000

Industry segment	Data year	Number of segment companies surveyed	Total sales of segment companies (in billions)	Average sales of segment companies (in billions)
Aerospace/defense contracting	1998	38	\$97.13	\$2.56
Carbon steel	2000	12	\$21.79	\$1.82
Chemicals	1999	9	\$97.20	\$16.20
Computers/telecommunications equipment/IT services	1999	11	\$108.40	\$10.84
Engineering/construction	1999	14	\$54.82	\$3.92
Food manufacturing	1998	13	\$43.00	\$3.31
Life insurance	1999	7	\$884.85	\$126.41
Machinery	1999	8	\$38.91	\$4.86
Mining	1998	6	\$9.73	\$1.62
Petroleum	1999	9	\$378.44	\$54.06
Pharmaceuticals	1999	9	\$65.42	\$7.27
Semiconductors	1998	11	\$76.18	\$7.62
Shipbuilding	1999	9	\$5.76	\$0.64
Telecommunications services	1999	11	\$253.16	\$28.13
Transportation	1999	16	\$159.94	\$10.00
Utilities	2000	19	\$61.92	\$3.26

Note: Only 6 chemical industry companies reported data for global sales; life insurance industry figures represent corporate assets; only 10 semiconductor firms reported sales data
 Source: Center for Advanced Purchasing Studies (CAPS), 1999-2001

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Most CAPS industry reports contain information on the use of purchasing cards as well as electronic functions used to process purchasing transactions. The following table compares use of purchasing cards on an industry-by-industry basis.

Percent of Total Purchase Transactions Processed via Procurement Cards, by Industry, 1998-2000

Industry	Number of companies reporting data	Percent of total purchase transactions processed via procurement cards	Data year
Aerospace/defense contracting	35	7.6%	1998
Beverage	8	3.2%	1998
Carbon steel	11	0.6%	2000
Chemicals	9	18.1%	1999
Computers/telecommunications equipment/IT service	8	5.9%	1999
Engineering/construction	13	4.8%	1999
Food manufacturing	13	4.8%	1998
Machinery	8	2.8%	1999
Mining	6	11.9%	1998
Petroleum	5	0.8%	1999
Pharmaceuticals	9	24.2%	1999
Semiconductors	10	13.4%	1998
Shipbuilding	8	4.3%	1999
Telecommunications services	7	21.0%	1999
Transportation	12	9.1%	1999
Utilities	19	19.1%	2000

Source: Center for Advanced Purchasing Studies (CAPS), 1999-2001

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The following charts, which reproduce data from CAPS research reports, look at the use of electronic formats for purchase processing on an individual industry basis. Unless otherwise noted, the data apply to the respective industry at the worldwide level, as the companies surveyed include both US and non-US firms.

An important consideration to make when considering industry purchasing patterns is that just because firms may use one type of purchase processing technology, this does not mean that they conduct all or even a majority of their transactions via that medium (unless specified). For

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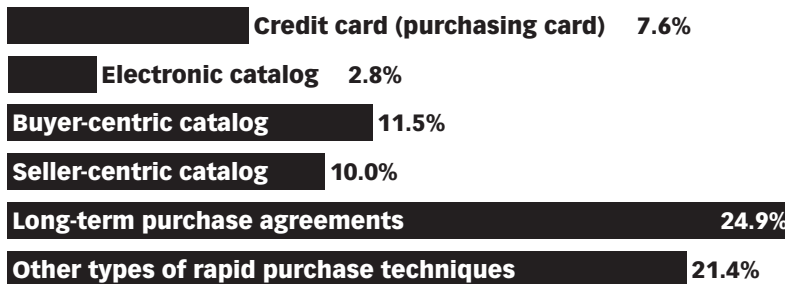
example, 56% of the aerospace and defense contractors surveyed used e-mail for e-commerce purposes, albeit not for every transaction or even every phase of a transaction.

In addition, many of the purchase processing methods noted below are legacy systems, upon which future EIP systems may be built. By taking note of the current landscape, software vendors and solutions firms can gauge the likelihood that a multi-channel environment will emerge in a given industry and the subsequent need for integration activity.

Aerospace/Defense Contracting

According to the 1999 CAPS study of 38 aerospace and defense contractors, 75% of the firms used EDI for e-commerce purposes in 1998, while 56% used e-mail and 47% used the internet. Internally, 39% of the companies surveyed used the internet to finalize purchase agreements.

Methods of Processing Purchase Transactions in the US Aerospace & Defense Industry, 1998 (as a % of all transactions)



Note: Other types of rapid purchase techniques include paperless invoicing, blanket purchase orders/releases and web public relations
 Source: Center for Advanced Purchasing Studies (CAPS), 1999

Carbon Steel

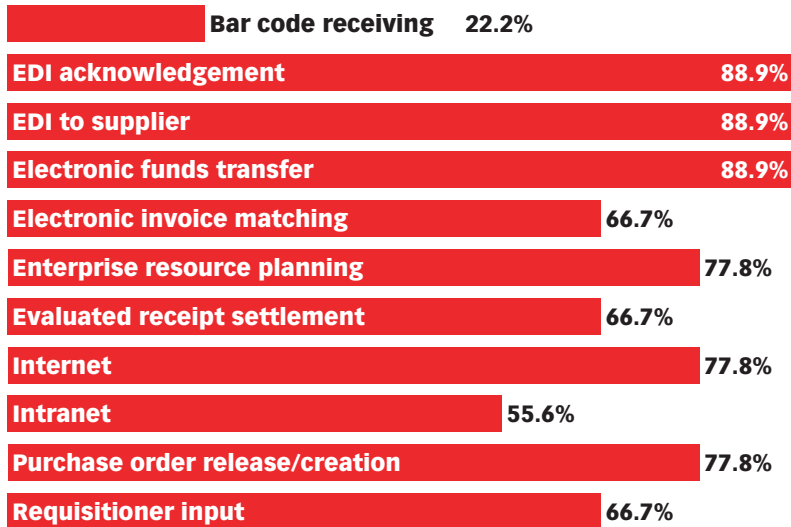
The CAPS study of the carbon steel industry, released in July 2001, provides minimal detail about the industry’s use of electronic purchase processing formats. It does note, however, that 41.7% of the 12 companies surveyed process purchase transactions via the internet. EDI accounts for just 1.2% of total purchase dollars spent—a slightly different measure than the share of transactions *processed* using the internet.

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Chemicals Industry

The 2000 CAPS study reveals that 17.0% of chemicals industry purchase transactions at the global level were fully automated (from requisition to payment) in 1999. 1.8% of purchase transactions were partly processed via internet-based technology.

Companies in the Chemicals Industry Using Electronic Purchase Processing Functions, 1999



Source: Center for Advanced Purchasing Studies (CAPS), 2000

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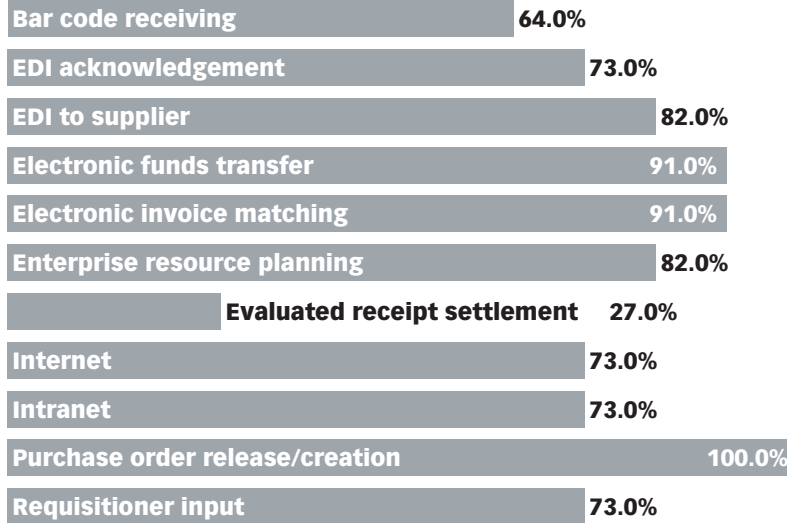
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Computers/Telecommunications Equipment/IT Services

Use of the internet for purchasing is extremely widespread in this industry segment, with 100% of the firms reporting that their purchasing departments use web-based technology. 60% use both trade networks and reverse auctions for online procurement.

Companies in the Computers/Telecommunications Equipment/IT Services Industry Using Electronic Purchase Processing Functions, 1999



Source: Center for Advanced Purchasing Studies (CAPS), 2000

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Engineering/Construction

Companies in the Engineering/Construction Industry Using Electronic Purchase Processing Functions, 1999

Bar code receiving



EDI acknowledgement



EDI to supplier



Electronic funds transfer



Electronic invoice matching



Enterprise resource planning



Evaluated receipt settlement



Internet



Intranet



Purchase order release/creation



Requisitioner input



Source: Center for Advanced Purchasing Studies (CAPS), 2000

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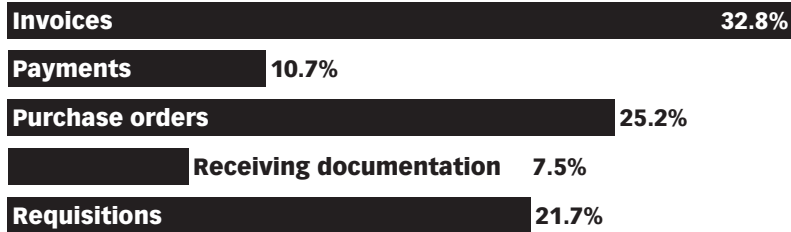
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Life Insurance

Although life insurance companies widely use electronic processing formats, the current figures actually have declined in relation to the previous CAPS study, conducted in 1997. However, the most current benchmark report does not provide an explanation of this downward trend.

Companies in the Life Insurance Industry Using Electronic Purchase Processing Functions, 1999



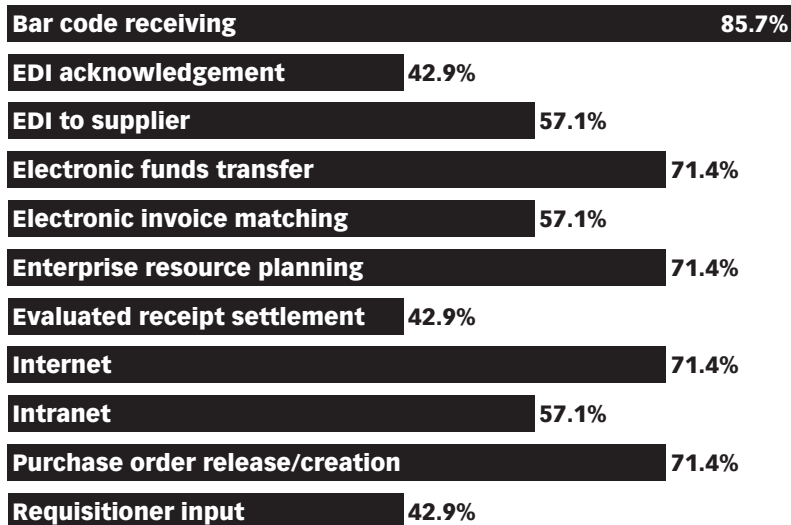
Source: Center for Advanced Purchasing Studies (CAPS), 2000

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Machinery

Companies in the Machinery Industry Using Electronic Purchase Processing Functions, 1999



Source: Center for Advanced Purchasing Studies (CAPS), 2000

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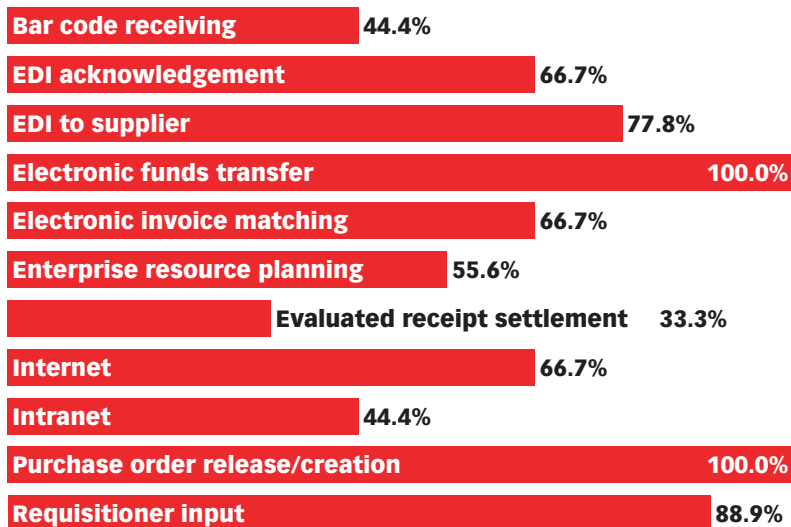
Mining

The 1999 CAPS study of the mining industry, conducted in 1998, found that none of the companies responding to the survey (an admittedly low total of 3) were using the internet for purchasing processing-related functions. Companies were surveyed about the following functions: confirmations/acknowledgments, funds transfer, invoices, purchase orders and requests for quotes.

Petroleum

Note that the figures in the following chart reflect US operations only.

Companies in the Petroleum Industry Using Electronic Purchase Processing Functions, 1999



Source: Center for Advanced Purchasing Studies (CAPS), 2000

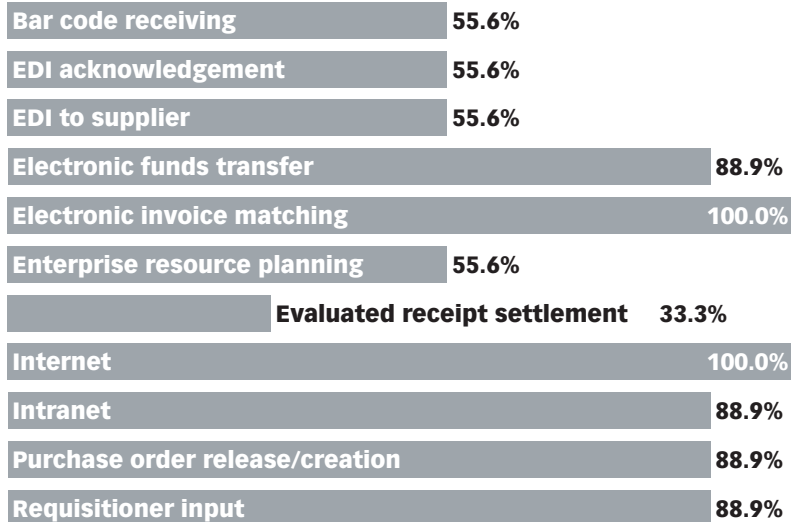
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Pharmaceuticals

Companies in the Pharmaceutical Industry Using Electronic Purchase Processing Functions, 1999



Source: Center for Advanced Purchasing Studies (CAPS), 2000

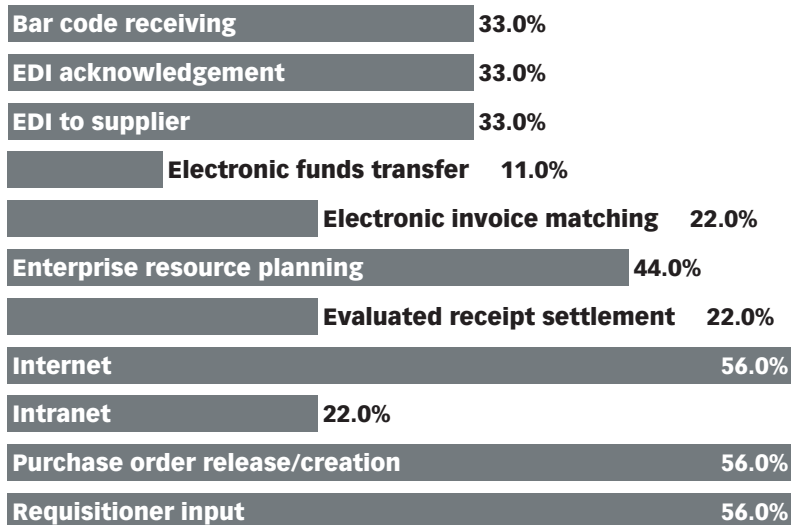
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Shipbuilding

According to the 2001 CAPS study of shipbuilding firms, 22% of the companies surveyed used the internet internally to finalize purchase agreements. Externally, the figure was 11%.

Companies in the Shipbuilding Industry Using Electronic Purchase Processing Functions, 1999



Source: Center for Advanced Purchasing Studies (CAPS), 2001

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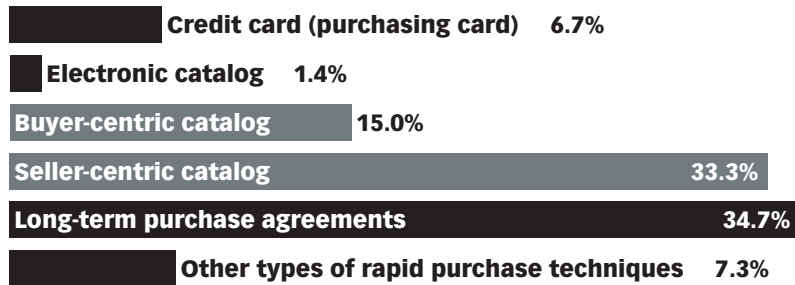
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Methods of Processing Purchase Transactions in the Shipbuilding Industry, 1999 (as a % of all transactions)



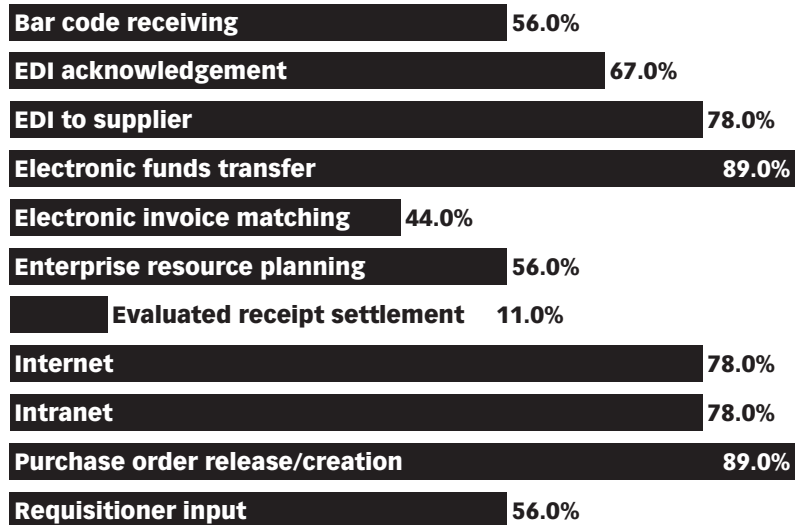
Note: Other types of rapid purchase techniques include paperless invoicing, blanket purchase orders/releases and web public relations
Source: Center for Advanced Purchasing Studies (CAPS), 2001

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Telecommunications Services

Companies in the Telecommunications Services Industry Using Electronic Purchase Processing Functions, 1999



Source: Center for Advanced Purchasing Studies (CAPS), 2001

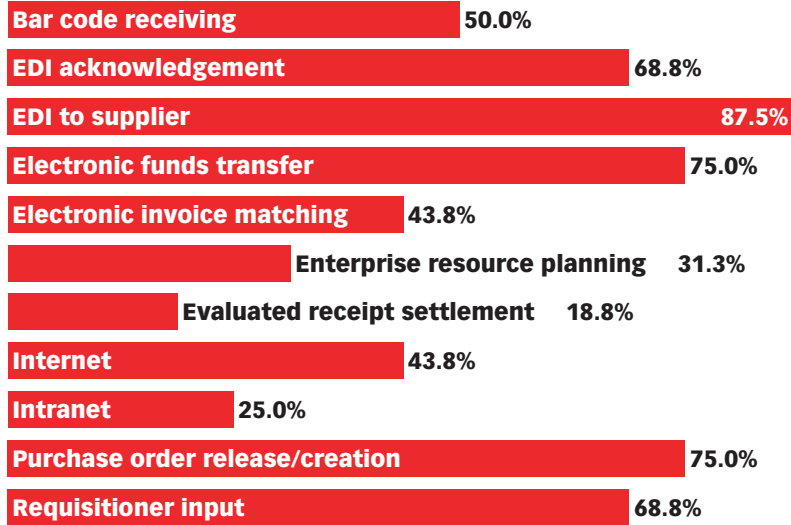
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Transportation

Companies in the Transportation Industry Using Electronic Purchase Processing Functions, 1999



Source: Center for Advanced Purchasing Studies (CAPS), 2000

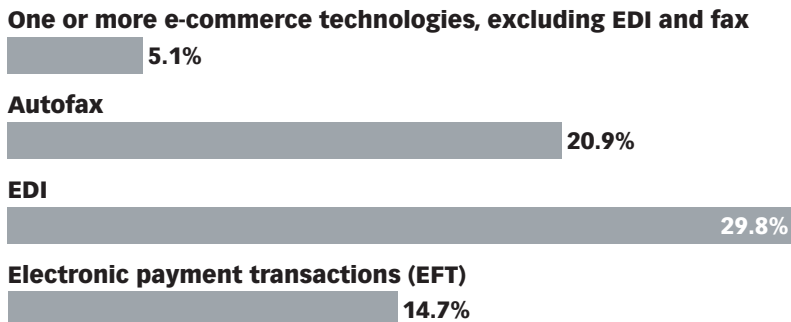
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Utilities

21.6% of all purchasing transactions processed by companies in the utilities industry are fully automated (from requisition to payment). However, web-based processing currently accounts for just 1.2% of all purchasing transactions. As the chart below indicates, use of traditional electronic formats remains more prevalent.

Methods of Processing Purchase Transactions in the Utilities Industry, 2000 (as a % of all transactions)



Source: Center for Advanced Purchasing Studies (CAPS), 2001

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More data on industry purchasing habits and processes can be found in eMarketer's eCommerce: B2B Report. To order copies, visit the eMarketer website (www.emarketer.com) or send an e-mail to sales@emarketer.com.

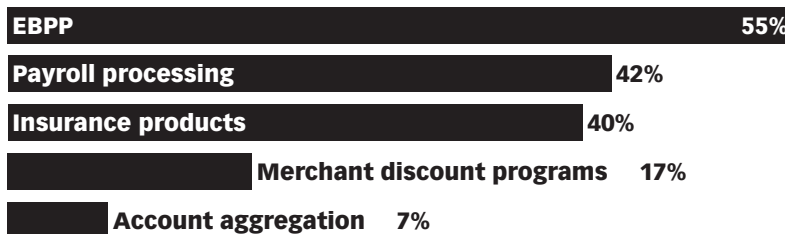
Small- and Medium-Sized Business Market

The mid-market represents a significant opportunity for vendors of online payment solutions, as small and mid-sized firms have largely been left out of EDI settlement mechanisms, while at the same time having the greatest interest in online purchasing. Among mid-sized firms surveyed by American Express, 37% of those companies that were not already trading online planned to move their trading activity onto the internet by the end of 2001.

In their efforts to target the small business market for online services, which often extends to mid-sized clients as well, most North and South American banks have begun to pursue their own portal strategies. According to a survey of 100 banks by Speer & Associates, 88% of respondents have small business initiatives underway. However, the survey revealed that many of these programs are often seen as ill defined, with no clear definition of the size of companies are being targeted.

Most banks have focused upon financial services, with EBPP leading their list of offerings. For other services, such as web hosting or procurement applications, most banks have been partnering with technology providers.

Services Offered via North and South American Banks' Small Business Portals, 2001



Source: Speer & Associates, 2001

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According to NFO World Group Financial Services, the percent of small businesses using web-based services increased from 10% in 1999 to 17% in 2000. However, as many banks have discovered, serving business customers online, be they large or small businesses, requires a multi-channel effort that maintains offline customer service capabilities.

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A. Comparing the Electronic Payment Vendors

Businesses may find that implementing an electronic bill or invoice presentment and payment solution is as complicated process as building ERP and CRM systems, in large part because implementations cross multiple departmental lines and may require substantial reengineering of long-established business processes. What makes the prospect of embarking on an EBPP or EIP implementation that much more complicated is the vast universe of electronic billing software products and solutions vendors, many of which are intertwined in alliances and partnerships.

Despite the industry consolidation noted below, the electronic payment marketplace remains disorganized and crowded with vendors. Moreover, businesses, particularly large enterprises, may find it necessary to turn to more than one software and/or solutions vendor to fill their billing and/or invoicing needs. For example, as noted in chapter two, billers and sellers may need to adopt or consider separate solutions for their buy-side and sell-side payment systems.

Many vendors in fact provide services to each other, even to companies that are, in some respects, ostensible competitors. Still others, like CheckFree, for example, offer consumers front-end services (such as online bill consolidation and payment options) while also providing back-end bill presentment and payment processing infrastructure for businesses and financial institutions. In this example, CheckFree's services are available to consumers through the company's own website but also may be accessible via their bank. This means that many companies serving the consumer (B2C) market are effectively serving the business (B2B) market as well.

In short, where billing and companies providing aggregation, presentment and payment services are concerned, the line between the consumer and business sides of the equation becomes blurry. Furthermore, where vendors once handled just a piece of the billing puzzle, some have now embarked on acquisition sprees in an effort to build end-to-end solutions capabilities (see the section on vendor consolidation below).

Vendors fall along a continuum, with some firms offering solutions that may be applied more closely to billers on one end and others that are more consumer-focused on the other. The Yankee Group has broken down vendors into the following categories:

- Presentment software and solutions vendors: firms focused on providing both outsourced and in-house services (including systems integration software and training) to billers and financial institutions—in other words, the billing infrastructure
- Payment facilitation vendors: companies that handle and assist in processing of online payments by businesses and consumers, often in close association with banks and other financial institutions
- Customer service providers (CSPs): organization specialized in scanning, consolidating and presenting consumer bills online

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Electronic Payments Vendor Continuum



Source: eMarketer, Yankee Group, 2001

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Some vendors are specifically targeting the small business market, which has often been neglected due to the fact that small businesses tend to be lower volume billers and purchasers than large corporations. However, smaller scale may mean easier implementations. Vendors with offerings geared towards small- and medium-sized business include Avolent, CyberBills (now part of Metavante), Fidesic (formerly CheckSpace) and CheckFree. In June 2001, for example, broadband provider Cbeyond Communications announced that it would use CheckFree's i-Series software to offer electronic billing services to its small business customers.

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Product and Service Offerings of Leading Electronic Payments Companies, 2001

Company	Leading product/service
Anachron	Pulse Suite
Avolent	BillCast, BizCast
BCE Emergis	e-Invoicing
BillingZone	BillingZone.com
Billserv	eServ, eCare, eInsert, eConsulting
Bottomline Technologies	NetTransact
CallVision	I-Statement
CheckFree	i-Series
Derivion (now part of Metavante)	inetBill
edocs	eaSuite (including eaDirect), BillDirect
Fidesic (formerly CheckSpace)	Electronic Payment Service (for businesses, home offices, individuals and banks)
Gelco Trade Management Group	Gelco Payment System
GlobalCollect	WebCollect
iPlanet	iPlanet BillerXpert
MessagingDirect	M-Statement, M-Bill
MicroVault	NetCourier
Miradient Global Network	Enterprise Suite
NETdelivery	Invoice Module, Consolidate Module
Paytrust	SmartBills
Pitney Bowes docSense/Alysis Technologies	Digital Document Delivery (D3), WorkOut (Alysis Technologies)
Princeton eCom	ePayBill, e-billing, paymentprocessing and electronic lockbox services and Quicken Bill Manager
TriSense Software (now part of Group 1 Software)	DOC1 Paysense
YourAccounts.com	e.bill.anywhere and anywhere.B2B

Source: eMarketer, Platts.com, various, as noted, 2001

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In November 2000, the Yankee Group, prompted by Avolent's acquisition of competitor Solant (see section on vendor consolidation below), released a study that provided a look at leading e-payment vendors' customer base. The following chart reproduces the customer data presented in the report. Note that since the Yankee Group report was released, the industry has undergone further consolidation. In particular, Metavante absorbed Derivion, the third-ranked EBPP enabler in November 2000, which may have affected its position in the rankings. Note also that Tier 1 refers to enterprise-class clients.

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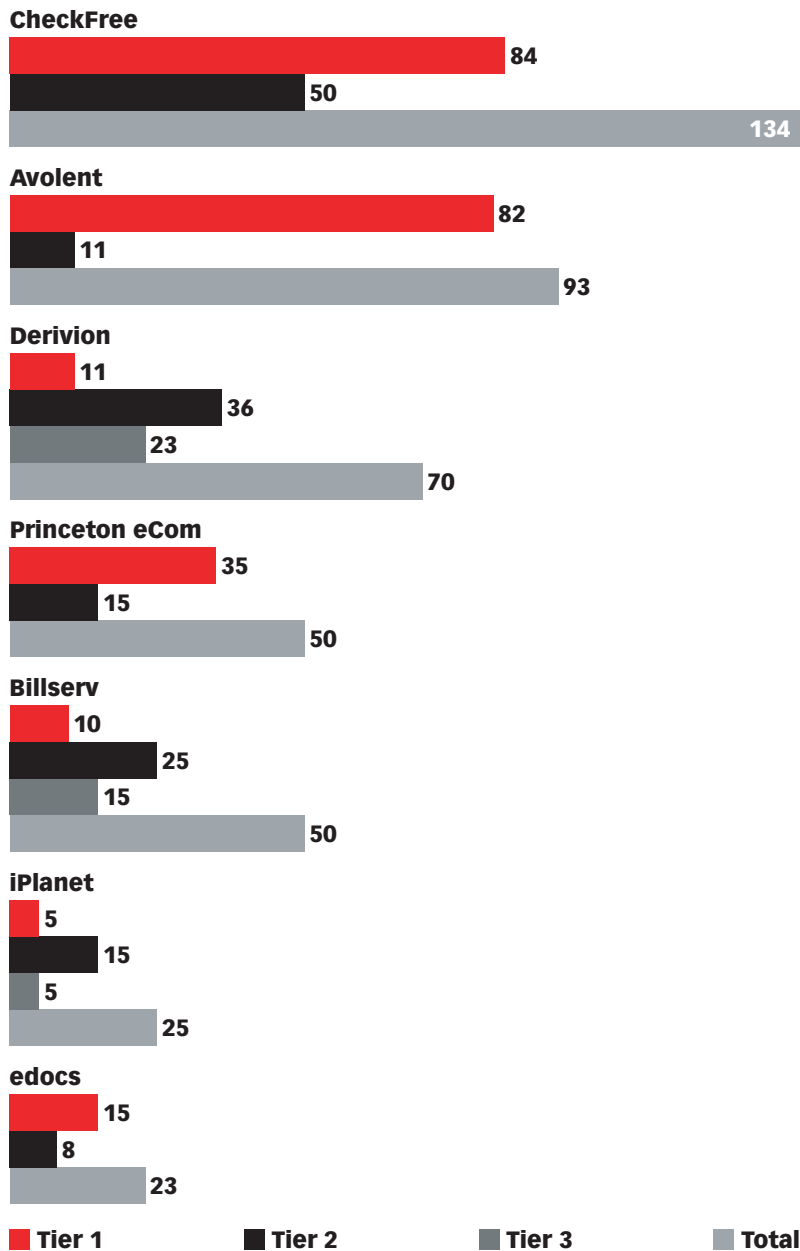
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Billers Signed by EBPP Solution Vendors, November 2000



Source: Yankee Group, 2000

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Electronic Payment Solutions Vendors, by Rank, 2001

Rank	Vendor
1	BCE Emergis
2	Bottomline Technologies
3	Avolent

Source: *Celent Communications, 2001*

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As noted above, the payments space is crowded with companies, but those profiled below constitute the emerging leaders. Most fall toward the presentment enabler (software and solutions vendors) end of the spectrum above, which, if the electronic payments market ever takes off as predicted, promises to be the most lucrative segment. However, both BCE Emergis and Avolent also offer consumer-oriented bill presentment products, which, in Avolent's case, can be integrated with distribution and payment modules.

Company Capsule: BCE Emergis

BCE Emergis benefits from a multi-pronged business model. Its roots lie in products on developed for the consumer-facing segment in Canada, most notably a consumer EBPP service for e-route, a consortium of Canadian banks (including Royal Bank of Canada, Canadian Imperial Bank of Commerce, TD Bank Financial Group, Scotiabank Group, National Bank of Canada and Movement des Caisses Desjardins) that accounts for over 90% of all Canadian depositors. Emergis can also rely on continued support and business from its parent company, BCE, Inc., which is Canada's largest company and also has extensive telecommunications, technology and media interests.

Emergis' acquisition of US-based InvoiceLink in August 2000 and the promotion of its EIP enablement software, e-Invoicing, signaled Emergis' aggressive push into the US market, particularly in the B2B segment. Its main clients include companies in the healthcare and financial services sectors. However, Emergis targets companies (and industries) that serve simultaneously as clients and channels for its products. For example, JP Morgan Chase and Bank One have signed agreements with Emergis to implement the company's e-Invoicing software solution. The agreements will allow the banks to extend use of the tool to their large corporate client bases.

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BCE Emergis' Strategic and Technology Partners, 2001

Ariba	Internshop Communications
Can-Act	Logica
CheckPoint	Maxon
Compaq	Microsoft
Entrust Technologies	National Bank
First Data	Open Market
Freddie Mac	Polaroid
Global Payment Systems	Royal Bank
Hewlett-Packard	ValiCert

Source: BCE Emergis, 2001

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BCE Emergis' Clients, 2001

Aetna US Healthcare	Fortis	Principal Life Insurance Company
Aliant	FNC, Inc.	Procuron
Bell Canada	Freddie Mac	PSI Gate
Canada Life	General American Corporation	Royal Bank
Canada Trust	Golden Rule Life Insurance Co.	Scotia Bank
CIBC	Grand & Toy	Stewart Title
Clarica	Great-West	Stratégis
CN	JP Morgan Chase	Sun Life Assurance
Commonwealth of Kentucky	Kodak	Sun Life Financial
Coordinated Vision	Landsafe	UniCare
CSST	Molson	United HealthCare
Desjardins	National Bank	

Source: BCE Emergis, 2001

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Company Capsule: Bottomline Technologies

Bottomline Technologies is firmly focused on providing software solutions for the business-to-business market. In addition, the company provides consulting and implementation services that can help guide clients from paper-based to electronic invoicing and payment platforms. In August 2000, the company acquired UK-based Checkpoint Holdings, which provided Bottomline with new distribution channels and extended its reach throughout Europe. Among Checkpoint's clients were American Express, British Telecom, Deutsche Bank and Axa Financial Services. In addition, it had already established channel partnerships with HSBC, Barclays, Royal Bank of Scotland and Lloyds TSB Group.

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Bottomline's leading electronic invoicing product is NetTransact software, which is available in bank-hosted, corporate-hosted and outsourced models. Payments are settled using the ACH network. The software offers companies the following features:

- Capacity to send bills and receive payments electronically
- Integration with billers' and payers' accounts receivables and payables processes
- Storage of payment history and report generation capabilities
- Online invoice review, modification and approval and payment scheduling
- Online communication between trading partners prior to transfer of funds

Strategic partners in Bottomline's NetTransact-based trading community include:

- Citibank
- eCredit.com
- FleetBoston Financial
- Ledgent
- Magnet
- Northern Trust
- Princeton eCom
- Royal Bank Financial Group
- SEI Information Technology
- UPS Capital

Bottomline may face increased competition from companies that began with a focus on the business-to-consumer market but which have subsequently been striving to penetrate the more complex (although ultimately more profitable) B2B segment. These include established firms like CheckFree, edocs, Metavante and the Spectrum consortium of banks.

Company Capsule: Avolent

Of the three leading e-payment solutions vendors cited by Celent, Avolent (formerly Just in Time Solutions) is the only privately held company. Lead investors include Intuit, Wells Fargo, Advanced Technology Ventures and Norwest Venture Capital. Avolent, together with Intuit, CheckFree and Microsoft, was a pioneer in developing the Open Financial Exchange (OFX) standard for online bill presentment, which has gained broad acceptance in the industry.

Avolent's e-billing products include BillCast, designed to serve the consumer market, and BizCast, marketed for use in B2B applications. The consumer-focused products, which include distribution and payment

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modules that may be added as needed, can also be integrated with internet-based customer self-care features. Avolent also delivers systems integration, implementation, technical support and education services for the BillCast product, which is compatible with third-party payment processors such as CheckFree as well as billers' in-house direct debit systems. BizCast incorporates features similar to those offered by Avolent's main competitors, including online line-item dispute resolution and cash flow forecasting.

The company's strategy, particularly where consumers are concerned, centers on delivering bills to a range of intermediaries and devices, including banks, consolidator websites, personal financial management software and personal digital assistants as well as permitting integration with companies' existing billing systems.

Avolent works with a range of strategic partners, including other leading payments vendors such as CheckFree and CyberBills (now part of Metavante). Among its clients are leading financial services and payments firms, including banking industry consortium Spectrum, with which Avolent has collaborated closely on standards issues. It has also targeted large periodic billers in the telecommunications industry such as AT&T.

Avolent's Strategic Partners, 2001

Resellers and OEM partners	Systems integrators	Software and platform partners	Consolidators and distribution partners
Asia Financial Network	American Management Systems	Art Technology Group	CheckFree
Bluem	Art Plus Technology	E.piphany	CyberBills
Financial Fusion	EFORCE	Portal	Intuit
Metavante	iDesk	Sefas	
SpaceWorks	LASERCOM Systems	Sun Microsystems	

Source: Avolent, 2001

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Avolent's Clients, 2001

AT&T	Metavante
Bank of America	MaterCards
CyberBills	Spectrum
Direct Insite	Wells Fargo
Intuit	YourAccounts.com

Source: Avolent, 2001

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It should be noted that many vendors focus on the US e-payments market, particularly those offering solutions geared towards the consumer segment. This is understandable given the size of the US market, the US' status as the world leader in online commerce (in both the consumer and business segments) and the relative ease of facilitating electronic transfers of funds across a unified banking system. However, Europe, Asia and Latin America, regions where consumers buying on the internet often prefer payment methods other than credit cards and where banking regulations differ on a country-by country basis, represent growing markets for US-based online merchants.

Enter Netherlands-based GlobalCollect (a subsidiary of the TNT Post Group), which targets its WebCollect solution at US merchants selling overseas. Merchants have the option of either a GlobalCollect-hosted or a private-label solution. The WebCollect interface supports a broad portfolio of other payment options, including credit cards, debit cards, direct debits and checks, which is its leading value proposition for online merchants. In addition, GlobalCollect opens local accounts with the leading bank in each country in a given region so that consumers can have the option of paying for goods ordered online via bank transfers. This relieves a US-based company of the responsibility of building an international network of relationships with local banks, but still provides consumers with the option of paying according to the method they prefer.

In all, WebCollect currently supports 36 payment methods in multiple currencies and 10 languages. The company charges merchants low, up-front fees to implement a WebCollect solution, a process that takes 15 business days. Revenues come from fixed fees charged on a per transaction basis, hence GlobalCollect's focus on high volume retailers. Merchants using WebCollect receive daily reports about authorized payments, while payment transfers to merchants take place twice a week. GlobalCollect derives 30-40% of its revenues from US-based companies, and expects to expand its market presence worldwide by offering more local payment options and adding resellers and distributors.

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Transactions Processed Worldwide by GlobalCollect, 2000 (in millions)

Volume	7.0 million
Value	\$800.0 million

Source: GlobalCollect, 2001

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Select GlobalCollect Clients in the US, 2001

Apple Computer	McGraw-Hill
Dow Jones/The Wall Street Journal	The Sharper Image
IBM	

Source: GlobalCollect, 2001

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eMarketer's eAsia Report, eEurope Report and eLatin America Report contain more data on online consumer buying patterns, including details on 26 core countries. To order copies, visit the eMarketer website (www.emarketer.com) or send an e-mail to sales@emarketer.com.

Person-to-Person (P2P) Electronic Payment Services

The P2P arena is crowded with vendors all trying to make money off the growing number of people using digital payment services. At this point, PayPal has emerged as the leader of the field, with the largest number of registered users and highest daily transaction value. In April 2001, PayPal announced that it had more than seven million registered users and had processed \$2 billion in payments since the service's launch in November 1999. Most payments go to businesses, but PayPal also noted that it has become the leading settlement service for online auctions, accounting for 28% of all settlements on eBay, the leading auction site.

"PayPal scares the hell out of me because they are creating a parallel network to what we have spent generations creating."

-Sandy Kemper, CEO, eScout.com and former Chairman and Chief Executive, UMB Financial Corp.

All the systems allow users to electronically send money from bank accounts and credit cards and then employ e-mail to notify recipients of an impending funds transfer. Most require the sender to register with the P2P site, while only some require the recipient to do so. What distinguishes the bank-based services is that unlike non-bank, web-only alternatives such as PayPal, they provide FDIC protection. Consumers stand to lose funds if a

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non-bank P2P service were to go out of business. Recent casualties in this market include the two leading e-currency companies, Beenz and Flooz, both of which abruptly shut down in August 2001. Flooz offered consumers an alternative form of money they could buy with hard money and then spend online at e-commerce sites that accepted the e-currency, while Beenz rewarded members for shopping online and visiting select websites (among other activities) with an alternative scrip that could be used to make purchases at participating online retailers. Like Meridien Research, eMarketer believes that security, ease of use and settlement speed are among the factors that will determine the success of both bank and non-bank P2P services.

P2P Electronic Payment Services, 2001

Payment services	Sponsor/Partner
BillPoint	eBay, Wells Fargo, Visa
c2it	Citibank
Ecount	-
EmoneyMail	Bank One
Gmoney	-
MoneyZap	Western Union
PayDirect	Yahoo, CIBC National Bank
PayPal	X.com
ProPay	-
WebPay	CheckFree

Source: eMarketer, 2001

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B. Vendor Consolidation

With the vast promise of electronic billing and payment (in both the consumer and business segments) engulfed in hype, many software and solutions vendor companies rushed into the e-payments space, with the expectation that they could quickly cash in on the rush to adopt the technology. Initially, the marketplace was filled with a wealth of vendors offering key pieces of the bill presentment and payment puzzle.

As noted above, adoption by both consumers and businesses has come far slower than expected. Meanwhile, consolidation among vendors in the past year has been brisk. Acquisitions have come at a high price in many cases, despite the fact that many of the companies and products acquired had yet to deliver on their promise of attracting a critical mass of users. Rather, the goal of the companies making the acquisitions was manifold: get access to their competitors' client portfolios, industry relationships, market penetration and, most importantly, their technology.

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No longer content to serve just one function along the e-payment value chain, a handful of companies are positioning themselves to offer businesses and consumers end-to-end bill presentment and payment solutions. Contributing to this trend has been the slow uptake of e-payment offerings by consumers, which has prompted payment software and solutions vendors that began with consumer-oriented products and services scrambling to move into the more promising but also more challenging business-to-business space (a path that many e-commerce enablers outside the payments arena have followed as well).

According to the Yankee Group, a group of three companies—Princeton eCom, CheckFree and Metavante—are emerging with end-to-end capabilities, thanks in large part to the spree of acquisitions on which they have embarked in the past year. In the business-to-business segment, add Bottomline Technologies and BCE Emergis to this group.

However, simply acquiring additional capabilities will not in and of itself be sufficient to spur adoption of online bill payment technology and services. As the Yankee Group points out, acquisitions may strengthen an individual company’s product portfolio, but of nearly equal importance in raising adoption rates of the technology among both enterprise clients and consumers is maintaining industry relationships (see below for more details) established prior to the mergers.

Acquisition Activity among Electronic Payment Vendors, 1999-2001

Acquirer	Acquired company/product	Date of acquisition announcement
Metavante	CyberBills	May 29, 2001
Princeton eCom	Intuit's Quicken Bill Manager	May 16, 2001
Metavante	Derivion	May 1, 2001
Pitney Bowes	Alysis Technologies	March 20, 2001
eTime Capital	Dynamic Transactions	January 23, 2001
Avolent	Solant	October 18, 2000
BCE Emergis	InvoiceLink	August 29, 2000
Bottomline Technologies	Checkpoint/Flashpoint	August 28, 2000
Paytrust	PayMyBills.com	August 22, 2000
CheckFree	TransPoint	February 15, 2000
	BlueGill Technologies	December 21, 1999

Source: eMarketer, 2001; Yankee Group, 2000-2001; various, as noted, 1999-2001

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C. Industry Partnerships

As noted above, bill presentment and payment touch many departments and functions with corporations of all sizes. Because billing is connected to many other business processes, e-payment software and solutions vendors have actively sought and forged alliances with other companies in the payments arena as well as those in the business services, technology marketing and consulting fields. Their goals include expanding electronic billing and payment services to other technology platforms (with wireless, in particular, as one of their main targets) and gaining access to partners' customer bases in order to improve adoption rates of their own offerings.

One of the more interesting alliances is the decision of the United States Postal Service (USPS) to adopt CheckFree's end-to-end bill payment and presentment services (for both billers and consumers). The USPS launched its EBPP service in April 2000 under the eBillPay banner. The alliance is significant because, as noted in the section on consumer attitudes toward electronic billing above, US households (including those that are already online and using EBPP services) continue to rely on (and even prefer) the USPS for provide secure, private and reliable delivery of bill payments. According to TowerGroup, postage on bills accounts for 21% of the USPS' \$12 billion in annual revenues.

The USPS has the enviable option of exploiting its vast branch network by placing kiosks in many of its 38,000 post offices so that consumers without internet access can use the eBillPay service. Consequently, if the USPS can convert a large portion of US merchants and consumers to electronic bill delivery and payment, it will be able to deliver a considerable volume of business to CheckFree.

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Industry Partnerships among Electronic Payments Vendors, 2000 & 2001

ePayments company	Partner company	Nature of relationship
Avolent	LASERCOM (UK)	Provide Avolent's BizCast to LASERCOM's customers in financial services, telecommunications and utilities industries
	Direct Insite	Integration of Avolent's BizCast with Direct Insite's dbExpress data visualization software
BCE Emergis	Visa USA	Provide Visa with payment-related application tools to facilitate consumer adoption/implementation of Emergis' EBPP platform
	JP Morgan Chase	Extend use of Emergis' EIP enablement solution, e-Invoicing, to JP Morgan Chase's treasury services/wholesale banking clients and their trading partners
	Bank One	Bank One to include Emergis' e-Invoicing in its portfolio of electronic banking products for US commercial client base
	Netegrity	Emergis to use Netegrity's SiteMinder as engine of its managed portal security service (Emergis Centralized Privilege Management Services) and include SiteMinder in suite of e-commerce services
Billserv	Visa/Aether	Offer bill presentment and payment solution to consumers over wireless devices
Bottomline Technologies	eCredit.com	eCredit.com to use Bottomline's NetTransact EIP solution to deliver invoices to customer base (includes Eastman Chemical, Chevron, Cisco, Fidelity, Ryder System, Intel, Gateway, Microsoft and Fleet Leasing)
CallVision	The Network Management Group (TMNG)	Strategic alliance to provide CallVision EBPP clients with consulting and marketing services
CheckFree	724 Solutions	Offer wireless bill presentment and payment solution to consumers over wireless devices
	Equifax	Integrate Equifax's online authentication engine into CheckFree's EBPP platform
	United States Postal Service (USPS)	USPS to offer CheckFree's front-end EBPP services under eBillPay brand
edocs	IBM	IBM to promote edocs' online account management and billing software for the telecommunications industry
Metavante	Corillian	Provide electronic bill payment processing capabilities to financial institutions licensing Corillian's Voyager platform

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Princeton eCom	Spectrum EBP	Princeton eCom to distribute biller clients' electronic bills via Spectrum's member banks
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Source: eMarketer, various, as noted, 2001

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As consumer-based internet commerce grows, credit card companies have been working to expand their payment offerings and increase the security of online shopping. Visa International has teamed with over 60 payment software, security, fraud detection and customer management companies to deploy the Visa Authenticated Payment program. Under the program, consumers buying online will enjoy the same level of transaction guarantees and protection as they do when shopping offline. The payment program is part of Visa's stated goal of facilitating "universal commerce"—transactions made from any kind of device, all with the same level of security and convenience.

Partners in Visa's Global Authenticated Payment Program, 2001

Accenture	iPin
ACI Worldwide	iPrivacy
Aether Systems	iShopSecure
Apletix	Microsoft
Arcot Systems	MobilWay
BORDIA Group	Molan Corporation
Brokat Technologies	Myespace
Camtech	Oasis Technology
Cap Gemini Ernst & Young	One Empower
CardinalCommerce Corporation	Oracle
Clear Commerce	Orbiscom
Cybersource Corporation	QSI Payments
CYOTA	Schumberger Sema
Equifax	SkyGo
Ericsson	Sonera SmartTrust
Experian	SunMicrosystems
First Ecom	Toshiba
GEMPLUS	Transale
Go Software	Trintech Group
Gpayments	Unisys
IBM	Valicert

Source: Visa, 2001

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Most business-to-business exchanges are only beginning to announce partnerships with internet billing companies, as online settlement has only recently become a priority as a value-added service for next-generation exchange offerings. Purveyors of corporate purchasing cards have also been moving to capture business from the B2B exchange market. American Express, the leading provider of corporate purchasing cards, has established interoperability agreements with more than 10 of the world's largest online procurement systems and e-business software vendors, including Commerce One, Oracle, SAP and Ariba. The target market for American Express' corporate purchasing cards includes large and mid-sized firms (although as noted above, American Express also has a sizable presence in the small business market as well). By targeting and building alliances with leading e-procurement systems, American Express' strategy is to provide payment options for its own customers on the leading purchasing platforms that they use.

As part of the agreement with Oracle, for example, American Express' corporate purchasing card and accounting software will be integrated into Oracle's E-Business Suite, enabling a complete, end-to-end electronic purchasing solution. The agreements with Commerce One and SAP offer corporate buyers and sellers similar benefits. In essence, by serving as the guarantor of payment (via the purchasing card) for both buyers and sellers, American Express provides enterprise clients with what it terms a "closed-loop" or "one network" solution. All parties benefit from advanced levels of data capture, which is vital for reporting and accounting purposes. An additional benefit to sellers is that they get paid quickly (within 48 hours, according to American Express).

Beyond its efforts to extend its leverage in the purchasing card market, American Express announced last year that it would team with Ariba to build a new electronic payment network that would expand upon the reach provided by the companies' existing payment platforms. The agreement provides for the same level interoperability that American Express has insured with other e-procurement vendors and also has a "pay on ship" feature that triggers payment authorization and settlement. In addition, it allows the two companies to pool their customer bases and market integrated solutions to a broader segment of enterprise clients. American Express and Ariba will share responsibility for supporting each other's products as integration of the software platforms moves forward. Also as part of the deal, American Express has pledged to use Ariba's B2B Commerce solution to streamline its global procurement activities.

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In addition to its purchasing card-related agreements with American Express, Ariba has been working directly with leading financial institutions to integrate its product offerings with online payment processing.

Online Banking Partners with Ariba, 2000

Bank of America Corporation

ABN AMRO

US Bancorp

FleetBoston Financial Corporation

PNC Financial Services Group

Source: American Banker, 2000

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ERP-vendor SAP has also announced plans to enter the EIP arena. The enterprise software vendor already offers users the ability to directly invoice their customers. In May 2001, SAP announced plans to roll out a version of its mySAP Financials that incorporates electronic invoicing and payment features, including delivery of invoices to WAP-enabled mobile devices. The new application will also support an indirect model that lets banks and bill consolidators to send invoices to customers.

More data on online exchanges and marketplaces can be found in eMarketer's eCommerce: B2B Report. To order copies, visit the eMarketer website (www.emarketer.com) or send an e-mail to sales@emarketer.com

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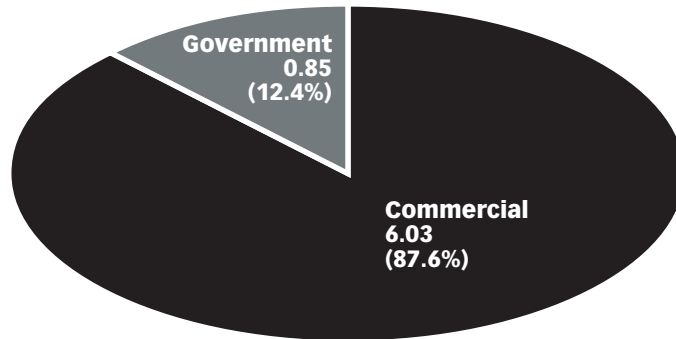
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Banks and financial services firms play a key role in electronic payment processes for both consumers and enterprise clients. Many EBPP and EIP services use one or more banks to effect and complete payments initiated by their customers. Many also use the ACH network. Because the cost per transaction tends to be low (ranging from 2.5 to 25 cents) and payments are processed more quickly than paper checks, use of the ACH network has been on the rise, particularly for business-to-business and business-to-government payments. The total number of ACH payments reached 6.88 billion in 2000, with corporate payments of 1.24 billion. Bill payments and consumer debit payments (including charitable contributions and mutual fund and stock investments) made over the ACH network totaled 2.20 billion, which resulted in a \$700 million savings for consumers on postage alone.

ACH Transaction Volume, 2000 (in billions and as a % of total transaction volume)

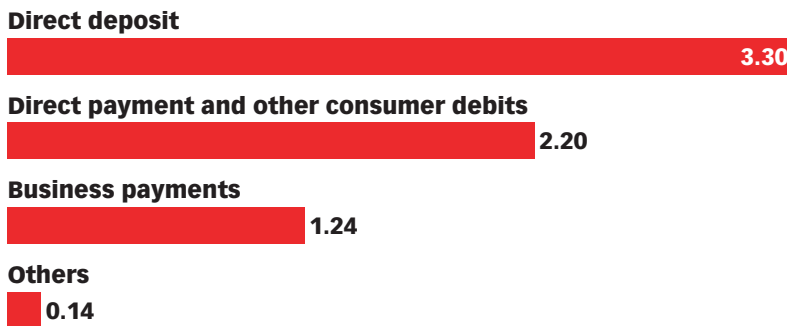


Source: National Automated Clearing House (NACHA), 2001

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ACH Transaction Volume, by Type, 2000 (in billions)



Source: National Automated Clearing House Association (NACHA), 2001

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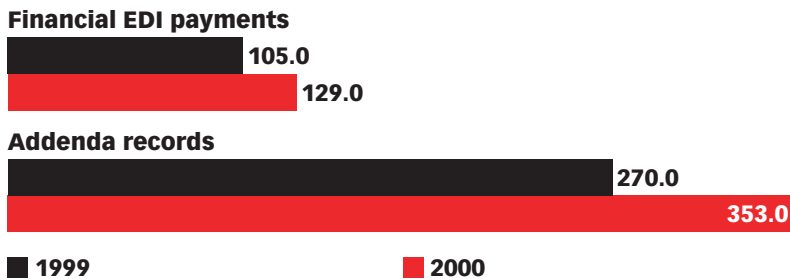
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At the same time, the rise of internet-based third-party payment processors has meant that banks' central role in the payments chain is under attack by companies that offer consumers and corporate customers a wider range of payment options. These include developments based on the existing ACH platform such as systems to attach more detailed billing and invoice data to ACH transactions. NACHA figures indicate that the volume of addenda records has also been rising steadily. The use of financial EDI payments grew from 105 million in 1999 to 129 million in 2000, representing a 22.6% increase. Use of addenda records showed even steeper growth, rising 30.1% from 1999 to 2000. CTX payments, a form of financial EDI, increased from 18.6 million in 1999 to 26.5 million in 2000.

Volume of Financial EDI Payments and Addenda Records, 1999-2000 (in millions)



Source: National Automated Clearing House Association (NACHA), 2001

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In addition, most banks have been slow to move into the e-payments space, despite its considerable promise of added revenues and customer retention. Part of their reluctance stems from the costs associated with building, supporting and integrating multiple service delivery channels to serve a wide array of customers, ranging from consumers to small businesses to large corporate clients. However, consulting and market research firm Celent Communications believes this situation will change dramatically in the next five years, with bank spending on B2B e-payment solutions alone rising from \$27 million in 2000 to over \$100 million in 2005.

“Banks historically are good at moving and managing money but not at making decisions elsewhere.”

-Jeetu Patel, EVP, Research, Doculabs

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Meridien Research's February 2000 research brief on strategic IT initiatives in e-payments places responsibility for expansion of online payment services in the hands of financial services firms for two main reasons:

- They have already earned the trust of both consumers and corporations as a reliable third-party payment processor
- Payment processing is a core competency of financial services firms, particularly banks, hence representing an area where they can leverage their competitive advantage

Similarly, PwC and *American Banker's* 1999 survey found that major billers tend to choose EBPP partners on the basis of the reputation of the vendor as well as their previous relationship with the vendor. One of the study's conclusions was that this is an area in which financial institutions can leverage their strengths and position themselves as electronic bill creators and/or distributors for their corporate clients in utilities, telecommunications, credit card, insurance and publishing firms. Key tasks for financial institutions include:

- Defining role and positioning themselves in the EBPP marketplace
- Creating and marketing a flexible EBPP model, including related services such as bundled products, that will satisfy the needs of leading billers
- Focusing on highest priority billers with a constant eye to developing a customer value proposition that allows consumers to consolidate bills in a single location, integrate electronic billing with other online banking activities and select a variety of payment providers and methods
- Working with enterprise clients to promote and incentivize consumer adoption of EBPP services
- Promoting unified standards

A. Business-to-Consumer/Consumer-to-Business

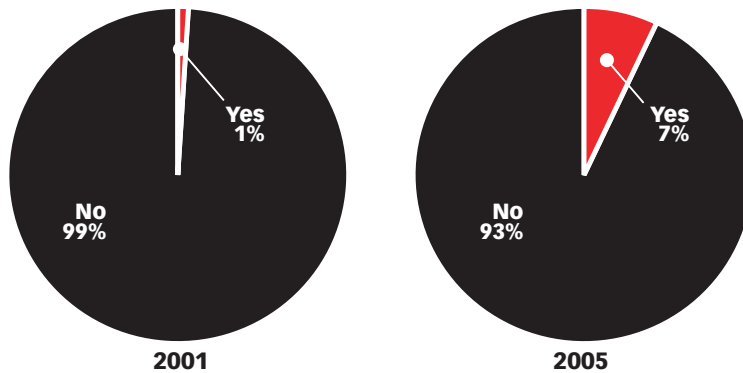
In a February 2000 report, Gartner stated its belief that banks must offer consumers financial incentives, citing reduced checking account fees as an example, to induce them to sign up for and regularly use the banks' online banking and bill payment services.

Research released in May 2001 by TowerGroup indicates that just 1% of all US depository institutions offer some type of electronic bill presentment services. By 2005, 7% of financial institutions will offer these services. A survey of leading financial institutions (with 27 respondents) released by banking marketplace Microbanker Online in August 2000 found that 90% offer online bill payment (but not presentment) services. The small sample

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size may account for the considerable discrepancy between Microbanker's and TowerGroup's results.

US Banks Offering Electronic Bill Presentment Services, 2001 & 2005

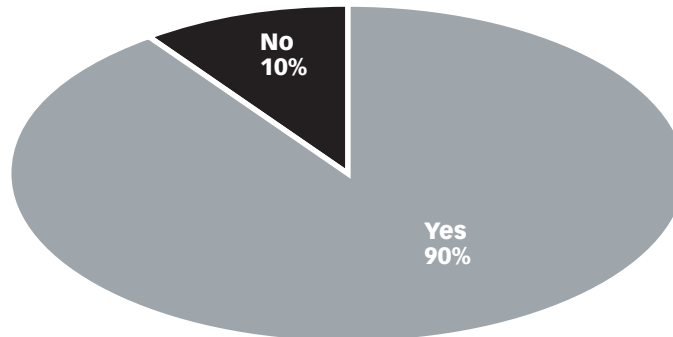


Source: TowerGroup, 2001

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US Banks Offering Electronic Bill Payment Services, 2000



Source: Microbanker Online, 2000

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“The acceleration of EBPP activity among financial institutions of all sizes will provide critical stimulus to the electronic presentment market.”

-Elizabeth Robertson, Senior Analyst, TowerGroup

According to Microbanker, only 4% of banks surveyed provide electronic bill presentment in addition to bill payment. Of those banks offering electronic payment services, 74% outsource them to a third-party payment provider; CheckFree and Princeton eCom are the leading providers, each with 39% of the market. However, as the report points out, because CheckFree works mainly with the larger banks, it has a larger overall number of customers that use its service.

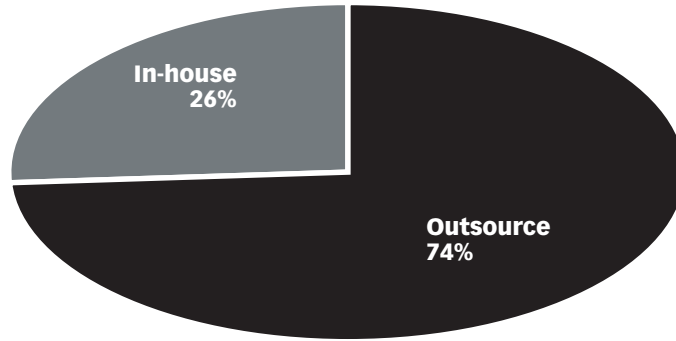
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Banks that outsource (or which are considering the prospect of outsourcing) payment processing should strongly consider the fees charged by the payment processor per customer and/or per payment, particularly given the fact that high fees are a leading barrier to consumer e-payment adoption.

US Banks Outsourcing Electronic Payment to a Third-Party Provider, 2000



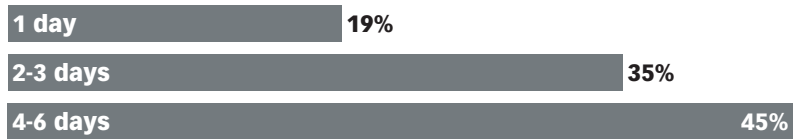
Source: Microbanker Online, 2000

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Microbanker Online findings indicate that most payment lead times tend to be between two and six days. This requires the customer to make payments in a timely fashion or risk late fees.

Lead Times for Electronic Payments Issued by US Banks, 2000



Source: Microbanker Online, 2000

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An additional disadvantage for customers is that 35% of banks withdraw funds the same day they issue a payment instruction; 32% debit customers' accounts on the day that a payment is processed, thereby giving the customer the benefit of several more float days. The remaining 35% debit the customer at some point between the time the payment instruction is issued and the moment payment is sent. Most of the services (65%) alert the customer online if a payment is returned due to insufficient funds in the customer's bank account.

Electronic Payment Processing Schedules for US Banks, 2000

Same day payment instruction is issued



Between day payment instruction is issued and day payment is sent



Same day payment is processed



Source: *Microbanker Online, 2000*

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For 72% of the financial institutions surveyed by Microbanker Online, customers' bill payment instructions are routed through the bank before proceeding to the third-party payment processor. The advantage here for banks (and for customers) is that they retain greater control over the payment process, resulting in fewer payments issued against inadequate funds.

According to a September 2000 report by Jupiter Research, EBPP, combined with online banking, will be the strategic lynchpin in a suite of products and services that future financial "supermarkets" will offer, as it provide banks' websites with the stickiness they need to attract customers to their other products. These include: insurance, mortgages, credit cards, checking, savings and brokerage accounts and financial advice.

Person-to-Person (P2P) Electronic Payments

Leading commercial banks are also looking to cash in on the burgeoning person-to-person (P2P) e-payments market. Services like PayPal, which use the ACH network, have jumped out to an early lead in the P2P arena. In April 2001, PayPal, backed by technology company X.com, announced that it had more than seven million registered users and had processed \$2 billion in payments since the service's launch in November 1999. Banks clearly want to tap into this market, which moves \$8 million per day on PayPal alone.

Accordingly, Citibank launched its c2it service in October 2000. It allows people to transfer funds via e-mail for a variety of personal business,

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ranging from repaying money borrowed from a friend or family member to settling an auction bid. Registered users, who need not have an account of any kind with Citibank, can move money from a bank account, brokerage account or a credit card from any financial institution. Recipients of funds can choose to have the payment applied electronically to a credit card or bank account or receive it in check form. The minimum amount the system will process is \$1.00 for domestic transactions. However, the minimum for some international transactions is the equivalent of US \$250. For senders, the c2it service is fee-based, costing a minimum of \$0.50 per transaction, up to a maximum of 1.0% of the transaction value. International fees are the range of \$10-\$15.

Citibank has signed distribution deals with America Online (AOL) and Microsoft in an effort to broaden the audience for its c2it service. Under the agreements, both AOL and Microsoft have launched co-branded versions of the payment service, which is available to the millions of monthly visitors to and users of the AOL family of sites and Microsoft's MSN. Citibank has also established a relationship with AuctionWatch, which will let buyers and sellers use c2it to settle online transactions. Users still have other payment options, but transactions settled using c2it receive preferential treatment, including faster processing.

Key Partners for Citibank's c2it Service, 2001

America Online

Microsoft

AuctionWatch

Source: Citibank, 2000-2001

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Other banks with P2P offerings include Wells Fargo, Bank One and the US operations of CIBC National Bank. Wells Fargo, in addition to providing account holders with a P2P option through its own online bill payment system, has also taken a 35% stake in BillPoint, a company acquired by eBay in 1998. BillPoint is designed primarily for online auction use, but permits P2P funds transfer for general use as well. Bank One's system, eMoneyMail, is a PayPal alternative, while CIBC acts as the clearing agent for Yahoo's PayDirect service.

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Mobile Payments

TowerGroup views mobile payments as an emerging opportunity for banks to retain control over relationships with customers, primarily by providing them with innovative service offerings. In TowerGroup’s definition, mobile payments are those made via a wireless network and effected in one of the following manners:

- Charged to a user’s debit or credit card or wireless phone bill
- Withdrawn from the user’s bank account
- Deducted from pre-stored value on user’s wireless device

Europe and Asia, with more advanced wireless networks unified around a single standard, will see faster adoption of mobile payments than the US, which must still contend with multiple wireless standards.

Mobile Payment Users, by Region, 2005 (in millions)

Asia	28.8
Europe	26.2
US	3.5

Source: TowerGroup, 2001

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To learn more about online banking technology and services for the consumer market, see eMarketer’s September 2001 US eBanking Report. In addition, to explore more detailed statistics on the North American mobile data and telephony market, see eMarketer’s August 2001 North American Wireless Report. To order copies, visit the eMarketer website (www.emarketer.com) or send an e-mail to sales@emarketer.com.

B. Business-to-Business

At present, most banks are in the process of either evaluating or rolling out pilot projects for their business-to-business e-payment strategies by selecting technology partners and meeting with their commercial customers. Several large banks have adopted multi-pronged strategies that include efforts to partner with leading exchange builders (among them Oracle, Commerce One/SAP and Ariba), develop and market payment technology solutions to exchanges and enterprise customers and offer EBPP services to the consumer market.

Until the payments market matures and leading solutions emerge, efforts sponsored even by leading banks are likely to include their fair share of

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failures. At present, the field remains relatively open, and some trial-and-error can be expected. Thus, some offerings still in development, including those that introduced with considerable fanfare, may not reach or succeed in the evolving marketplace. Nevertheless, bear in mind that banks have a crucial role to play thanks to their position within the payment process. As a result, banks are looking to capitalize on the opportunities in the space where electronic invoicing meets electronic payments.

Among emerging success models and leaders to watch are Spectrum, started by a consortium of banks that includes JP Morgan Chase, First Union National Bank and Wells Fargo; Citigroup; JP Morgan Chase, which has developed EIP and EBPP services both outside of and in conjunction with Spectrum; and ABN AMRO Bank. Other offerings that are relatively new to market are Clareon, a spin-off of FleetBoston Financial, and Deutsche Bank's db-ebills. As for payment technology solutions, the leaders are Bottomline Technologies and BCE Emergis. Cap Gemini Ernst & Young has estimated that about one in four US banks offered some kind of electronic invoicing presentment and payment services in 2000, with one third offering electronic services via the internet.

Leading Banks' EIP Technology Partners, 2001

Bank	Technology partners
ABN AMRO	BillingZone (PNC Bank/Perot Systems), Derivon (now part of Metavante)
Citigroup	Bottomline Technologies, Commerce One/SAP, Oracle
FleetBoston Financial	Bottomline Technologies, Ariba, edocs
JP Morgan Chase	BCE Emergis

Source: eMarketer, 2001

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“The banking industry is missing an enormous opportunity to take advantage of the fact that we are still the trusted third party.”

-Harry Tempest, CEO, North American subsidiary of ABN AMRO Bank

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Spectrum

Not content to stand by as startups like CheckFree embarked on the disintermediation of the payments market, JP Morgan Chase, First Union National Bank and Wells Fargo formed Spectrum in October 1999, with the stated goal of maintaining financial services institutions at center of the payments process. In addition to the three founding members, 19 other banks have joined the Spectrum network or signed letters of intent to do so.

Spectrum's offering centers on secure, open standard switching technology for exchanging bills, invoices and payments, which, in effect enables a virtual private network accessible to all authorized participants. The product and technology package is designed to provide banks with the tools they need to offer business and consumer customers a full range of electronic billing and payment services. The value proposition lies in offering more rapid payment processing than vendors that settle payments using ACH network transfers.

Additional offerings include systems consulting and implementation, marketing services and support for e-commerce initiatives, although the main revenue stream is likely to be subscription fees charged to institutions participating in the Spectrum network. The switch is accessible via the internet or private circuits.

Key technology partners for Spectrum include Metavante, which provides "pay anyone" capabilities and Oracle for database management services. Meanwhile, Spectrum selected Sun Microsystems and a joint ALLTEL/InteliData team to develop the switch's hardware platform.

Key Partners for Spectrum's Switch Technology, 2001

Role	Partner
Billing platform and services	ALLTEL/Intelidata
Switch hardware platform	SUN Microsystems
Switch software	Avolent
Database management	Oracle
"Pay anyone" capability	Metavante

Source: *Spectrum, Killen & Associates, 2001*

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Citigroup

Citigroup is taking a two-pronged approach to its online financial services offering. By partnering with exchange builders such as Oracle, SAP and Commerce One, Citigroup has relegated itself to the role of providing payment services for online transactions that occur over B2B exchanges. However, while Citigroup's services are often offered on these exchanges, users are under no obligation to conduct their transactions via the bank's offerings. CitiConnect is Citigroup's technology solution, which is also being marketed to those companies building private exchanges. The second part of Citigroup's online payments strategy is through its joint venture in FinancialSettlementMatrix.com (see below).

Citigroup's EIP Activities, 2001

Financial services provider	OracleExchange.com, Commerce One/SAP
Payments technology solution	FinancialSettlementMatrix.com

Source: eMarketer, 2001

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In an effort to serve the payment processing and financial collaboration activities between online trading partners, Citigroup and Wells Fargo have teamed up with i2 Technologies, S1 Corporation and Enron Broadband services to create FinancialSettlementMatrix.com. The partners announced this venture August 2000, with the stated aim of facilitating global settlements, letters of credit and foreign exchange services to public and private B2B exchanges. Although the venture has been relatively quiet since its founding, it began to offer a broader range of online financial services such as electronic checks, purchasing cards and ACH services in October 2001. Revenues will come from transaction and subscription fees.

Lead Players in FinancialSettlementMatrix.com, 2001

Banking partners	Contribution
Citigroup	
Wells Fargo & Co.	
Technology partners	
i2 Technologies	Exchange platform
S1 Corporation	Internet banking technology
Enron Broadband Services	Broadband services

Source: eMarketer, 2001

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JP Morgan Chase

As the US' second-largest bank, JP Morgan Chase has likewise adopted a multi-faceted approach to online billing. It was founding member of the Spectrum network (described above), and has also begun to offer customers electronic billing based on Spectrum technology. Clients of this service include Rochester Gas and Electric, Sunoco and retail customers. In addition, Chase has a biller-direct EBPP that was developed internally, a consolidation solution for retail customers developed with Metavante's CyberBills (Chase Bill Management Center) and an EIP service developed in conjunction with BCE Emergis.

The principal markets for these products are large and medium-sized billers and retail customers. According to a Killen & Associates profile of JP Morgan Chase, specific industry targets include telecommunications firms, utilities, financial services firms and insurance, health care, cable, retail and diversified manufacturing companies. All services require billers to pay an initial implementation fee plus monthly maintenance charges and fees based on the volume of presentments and payments.

JP Morgan Chase's EIP Activities, 2001

Technology partner	BCE Emergis
Target market	Corporate and middle market customers, online marketplaces, financial institutions
Solution characteristics	Supports buyer- and seller-centric models, multi-lingual, multi-language transactions, collaborative e-mail/CRM-based dispute management and detailed reporting capabilities
Cost	Requires payment of implementation fee plus monthly maintenance charges and fees based on volume of invoice presentments and payments
Competitors	Bottomline Technologies, BillingZone, Avolent, Metavante, Pitney Bowes docSense, Citibank, FleetBoston, Deutsche Bank, Bank One, Bank of America, Mellon Bank, CheckFree, ERP providers (SAP, Oracle)

Source: Killen & Associates, 2001

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ABN AMRO Bank

ABN AMRO, the world's seventh-largest bank, is targeting mid-sized companies with \$25 to \$500 million in revenues. These constitute the core of ABN AMRO's North American commercial banking interests. The bank is focusing on the US market first, because it has demonstrated the greatest e-commerce potential, and expects Europe and Asia in that order to follow suit in coming years. Specifically, ABN AMRO has adopted a payer-centric approach, relying heavily on its payment technology partners BillingZone and Derivion (now part of Metavante).

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BillingZone is a joint venture by PNC Bank and Perot Systems that facilitates the online consolidation and payment of business-to-business invoices between online trading partners. The fee-based service permits billers to submit invoices to their customers via the internet, who are in turn notified by e-mail of a new invoice. Invoice payers are able to log on to the BillingZone website to examine and pay their invoices, and then submit payment instructions through BillingZone to their own bank which then settles the transaction via ACH services.

The online billing consolidator offers dispute-settlement capabilities, giving buyers the capacity to adjust invoice payments and communicate the reason for an adjusted payment electronically. BillingZone handles the transmission of payment instructions to the payer's bank, thus eliminating the need for companies to settle transactions via a third party.

At the same time, Oracle has struck a deal with ABN AMRO that will address payment-related issues on two fronts. First, ABN AMRO will work to offer its payment, collection and settlement services in conjunction with Oracle's B2B Exchange software. The services will be available to Oracle Exchange customers as well as to participants in Oracle's global open marketplace (Exchange.Oracle.com). Second, the two companies have collaborated on an automated transaction and payment-processing infrastructure for Oracle EMEA Division's Shared Service Center in Dublin, Ireland.

ABN AMRO Bank's EIP Activities, 2001

Exchange platform	Ariba Commerce Services Network
Payments technology partners	BillingZone, Derivion
Target market	Mid-sized companies (\$25-\$500 million in revenues) in the US
Goals	Move escrow, credit risk management, letters of credit and foreign exchange services online

Source: Line56, 2001

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Other Bank Offerings

Deutsche Bank's EIP effort aims to offer a global, multi-currency online payments system to large corporate customers. It is one of the more ambitious programs proposed by an individual financial institution. Deutsche Bank has partnered with iPlanet eCommerce Solutions, the payments joint venture of SunMicrosystems and America Online, and has successfully tested its new system, called db-ebills, in Asia. It began to conduct a limited rollout with large customers in Europe and the United States during the summer of 2001.

Deutsche Bank's EIP Strategy, 2001

Name of service	db-ebills
Technology partner	iPlanet eCommerce Solutions

Source: eMarketer, 2001

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Other online billing and payment services with roots in the financial services industry include Clareon, which was originally spun off from FleetBoston Financial, and BankServ. Both Morgan Stanley and FleetBoston now offer their customers services via Clareon, which as of early 2001 had signed up 45 corporate customers and transacted about \$500,000 in payments. BankServ, on the other hand, aims to facilitate more traditional electronic payment formats, such as ACH transfers, credit card payments and wire transfers.

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A. Biller Adoption/Implementation of EBPP

United States

Currently, many billers that have consumer-facing operations and that are considering implementing an EBPP solution are faced with a Catch-22: they are unwilling to invest in an EBPP solution until a critical mass of consumer adopters coalesces. At the same time, consumers are reluctant to adopt the technology until more of their bills are available online. Given the low consumer adoption rates that currently prevail, many merchants are unwilling and unable to bear the high costs associated with developing electronic billing systems and maintaining their legacy paper-based systems. Large billers, particularly credit card companies, telecommunications firms and utilities, have been more successful at enrolling customers in their online account management (biller direct) programs.

An additional factor that might bear upon the delays is the lack of consistent organization of EBPP activities by leading billers. A 1999 PwC-*American Banker* survey of 100 leading US billers from six high-volume billing segments (communications, utilities, credit cards, consumer lending publishing and insurance) in the US revealed that EBPP activities:

- are managed by a broad variety of departments
- require cross-functional input

Departments managing or involved in EBPP implementations typically include the following: IT, marketing/product management, finance, operations and customer service. Given the multiple ways in which electronic billing can touch consumers, it is only logical that many different departments should be involved in the process. The key, of course, is reconciling internal exigencies with external customer demands.

Factors Affecting Corporate B2C Electronic Payment Adoption

Unwillingness of bill recipient to change existing payment habits

Pre-existing automated payment services (e.g. direct debit/online banking)

Lack of secure transaction environment

Consumer privacy concerns

Costs associated with usage of e-payment services

Source: PricewaterhouseCoopers (PwC), 2000

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A report released in March 2001 by software vendor Primus Knowledge Solutions (based on a web-based survey designed by Fleishman-Hillard Research and conducted by Greenfield Online in October-November 2000) suggests that companies should do the following when trying to boost consumer EBPP adoption:

- Raise consumer awareness of convenience and control factors associated with EBPP using e-mail and online marketing
- Improve customer service by offering prompt, accurate answers to customers' questions
- Offer secure payment, receipt and processing methods, including transaction receipts

The consolidator model may very well become the dominant EBPP solution, but it is unlikely to satisfy all consumers or even corporations interested in offering their customers online bill payment services. Alternately, a model with banks acting as consolidators may prevail. Given the current uncertainty, eMarketer is waiting for a critical mass of banks to drive their own online banking operations in the direction of more sophisticated and comprehensive bill presentment and payment services.

Companies, particularly those with consumer-facing operations, must therefore be careful to balance their internal needs and objectives with the needs and preferences of their customers. This may mean offering consumers (via opt-in online registration, with mutable profile options) a variety of EBPP solutions (none of which are mutually exclusive), or, at the very least, a hybrid of the existing models. Hybrid models can be effective because they can solve a company's need for control over contact with its customers as well as assist with customer service and convenience.

For example, utility companies, especially telecommunications, wireless and cable concerns that are interested in up-selling their existing customers, may find it advantageous to send bills via e-mail that bring customers back to their websites, where they can promote not only new products and services but also greater use of the website itself, including online customer care features. For example, a wireless company's website may offer customers the ability to log in and analyze their usage patterns (e.g. calls by state, rate period, number and home versus roam). This scenario, which plays on the interactive nature of the bill, has the potential for a dual cost-cutting effect:

- Cost savings on the bill printing and postage
- Promotes use of online customer service features, which leads to savings on telephone-based or in-person customer support

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The above scenario also provides an example of how billing can become a strategic point of contact between a company and its customers, one that may generate not only cost savings but also the potential for additional revenues from up-selling customers to enhanced products and services. The type of implementation depends on an individual firm's objectives and how these square with the needs and preferences of its customers.

Business Reasons for Offering EBPP, 1999

Primary

- Improved customer service
- Increased customer loyalty/retention
- Necessity to remain competitive

Secondary

- Contribute to cost cutting
- Integrate presentment and payment services
- Consumer requirement
- Possibilities of generating revenue

Source: PricewaterhouseCoopers/American Banker, 1999

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Cost Comparison: Online versus Paper Bills, 2000

Average cost per online bill	\$0.35-\$0.50
Average cost per paper bill	\$1.35-\$1.50

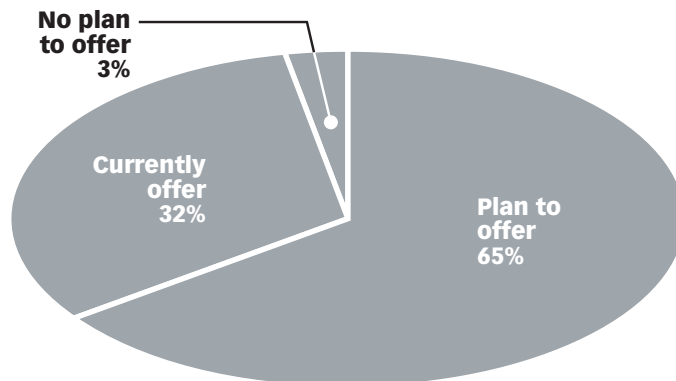
Source: Yankee Group, 2000

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The PwC-American Banker survey found that in 1999, 97% of respondents were offering or planning to offer EBPP. Most respondents stated that they were planning on rolling out the service within in the following 12 months. They expected to serve 13% of their customers and present over million e-bills by 2002, primarily on their company websites or by using a consolidator.

Availability of EBPP among Leading US Billers, 1999



Source: PricewaterhouseCoopers (PwC)/American Banker, 1999

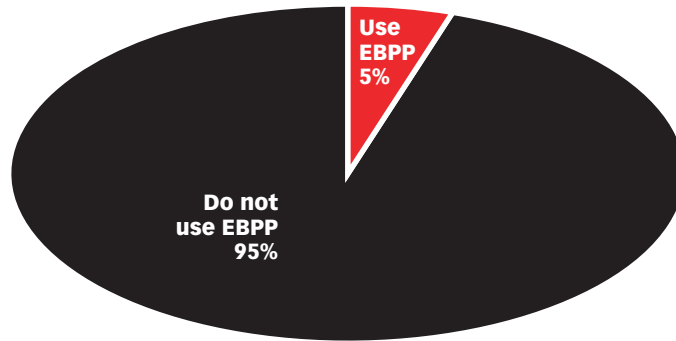
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A report released by the market research firm PSI Global (now NFO Financial Services) in April 2000 found that only 5% of 200 leading US billers surveyed were offering EBPP services. However, like the PwC-*American Banker* study, the PSI Global survey determined that firms would place increasing emphasis on implementing electronic billing solutions in 2001. Note the sample used for the PSI Global study was twice the size of that in the PwC/*American Banker* survey, which may in part explain the considerable discrepancy in the percentage of billers using EBPP.

Leading US Billers Using EBPP, 2000

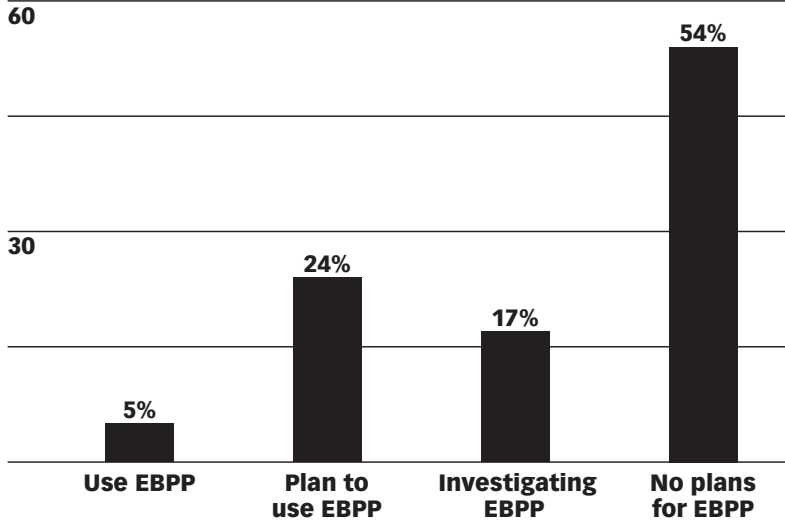


Source: PSI Global, 2000

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EBPP Adoption among Leading US Billers, 2000



Source: PSI Global, 2000

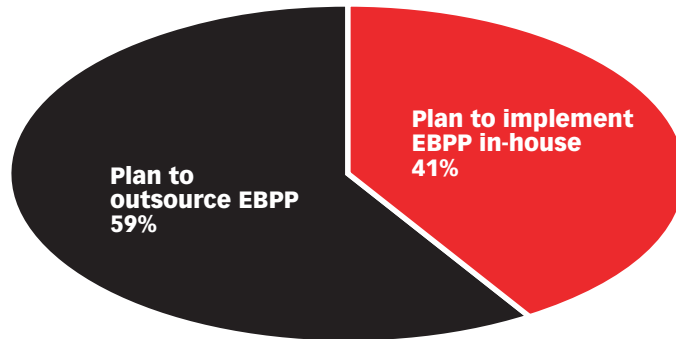
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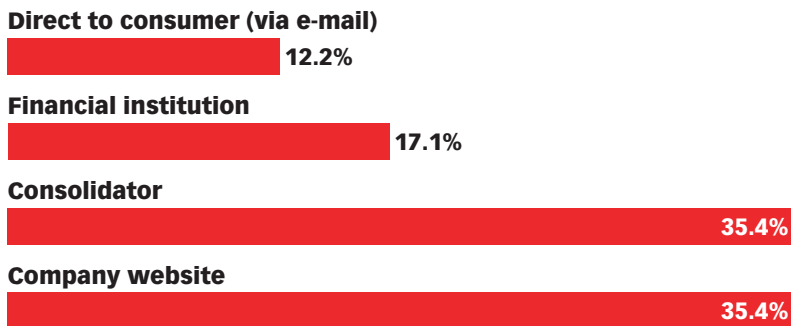
Most leading billers surveyed in 1999 by PwC and *American Banker* stated that they planned to outsource their EBPP implementations, although only 17% of the companies planned to work with their financial institutions. Note that one of the goals of the survey was to determine areas of opportunity in EBPP for leading financial institutions.

In-House Implementations vs. Outsourcing of EBPP among Leading US Billers, 1999



Source: PricewaterhouseCoopers (PwC)/American Banker, 1999
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EBPP Solutions Adopted by Leading US Billers, 1999



Note: Does not add up to 100% due to rounding
 Source: PricewaterhouseCoopers (PwC)/American Banker, 1999
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Canada

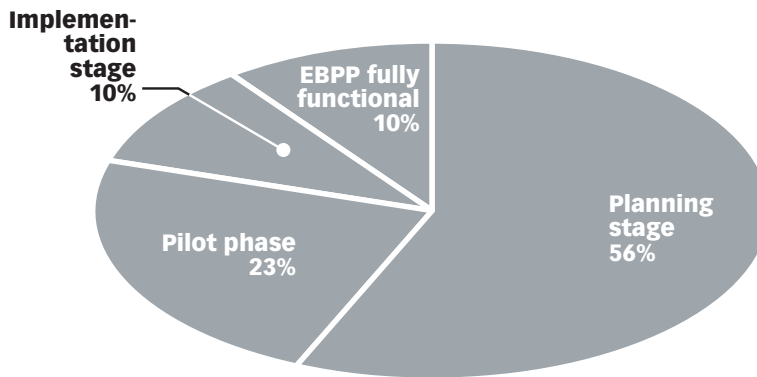
Implementation of electronic billing solutions is firmly underway with Canada's leading billers, according to a June 2000 survey fielded by the Optus Corporation and Ipsos-Reid that surveyed 45 senior decision-makers at Canada's largest billers. The study indicated that 87% of the country's top billers are actively considering an EBPP initiative. However, most companies surveyed (31%) listed implementation of EBPP services as sixth or lower on a list of corporate priorities. Only a total of 20% ranked it first (10%) or second (10%), indicating the perceived benefits of EBPP have yet to penetrate many of Canada's boardrooms.

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The majority of programs are still in the planning phase, although the companies surveyed clearly have high hopes for the impact that electronic billing will have. For example, they expect that the percentage of customers receiving bills online to more than triple between 2000 and 2002 and fully 85% plan to stop emitting paper bills altogether once customer move to their EBPP programs.

In terms of factors that they believe will accelerate consumer adoption of EBPP, one-third of the firms surveyed pointed to financial incentives and ease of use as the leading motivations for consumers. A nearly equal percentage (31%) indicated the need to address consumer's security concerns and increased consumer awareness.

Status of EBPP Initiatives among Leading Billers in Canada, 2000



Note: Does not add up to 100% due to rounding
 Source: Ipsos-Reid, 2000

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Share of Customers That Leading Billers in Canada Expect Will Receive Bills Online, 2000-2002



Source: Ipsos-Reid, 2000

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Still, the study suggests that Canadian firms are looking at the prospect of implementing electronic billing with an eye to potential returns. As many as 56% of the companies have built a business case to assess the ROI of an EBPP initiative and 50% of the cases measure ROI in dollar terms. The fact that 72% of the businesses surveyed have established an EBPP strategy team, with most teams (71%) including internal and external resources, is another indication that Canadian companies are proceeding methodically with their EBPP programs. 45% have brought in external resources to leverage their technical expertise.

Benefits of EBPP Cited by Leading Billers in Canada, 2000

Cost reduction

71%

Customer relationship management (including better customer service, retention and loyalty)

20%

Faster payment process

20%

Corporate positioning

13%

Customer convenience

11%

*Note: Multiple answers allowed
Source: Ipsos-Reid, 2000*

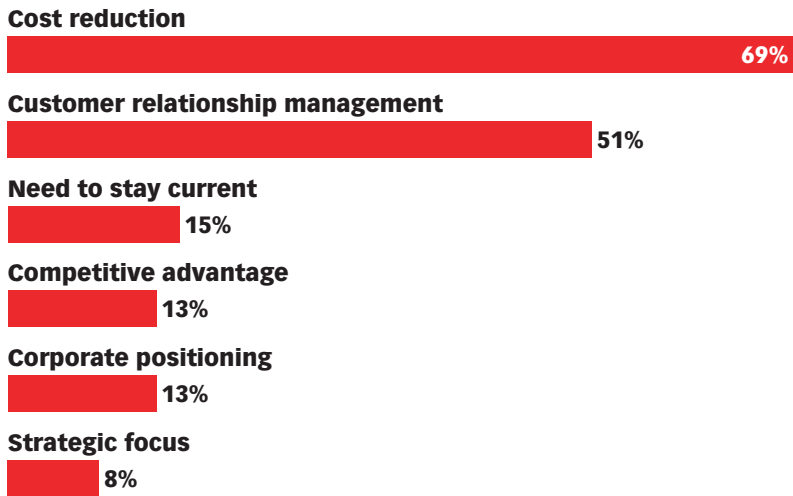
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Cost cutting and customer relationship management are the leading perceived benefits of and drivers behind the EBPP programs. Security issues and the costs associated with building and maintaining an up-to-date technology platform are among the factors that Canadian companies mentioned as the leading challenges to their EBPP programs.

Drivers of EBPP Initiatives among Leading Billers in Canada, 2000

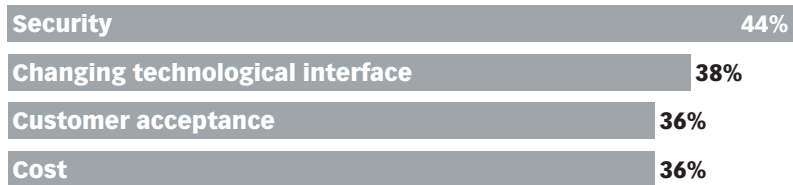


Note: Multiple answers allowed
Source: Ipsos-Reid, 2000

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Barriers to EBPP Initiatives Cited by Leading Billers in Canada, 2000



Note: Multiple answers allowed
Source: Ipsos-Reid, 2000

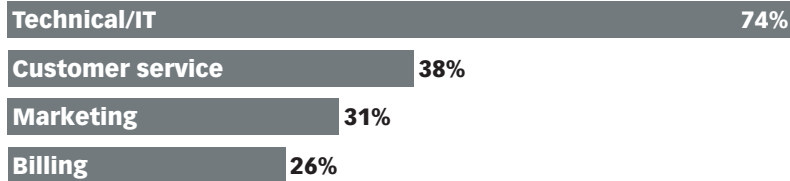
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For the most part, technical and IT departments are leading EBPP implementations. However, as elsewhere, designing an electronic billing program involves cross-functional input from other areas.

Departments Driving EBPP Initiatives among Leading Billers in Canada, 2000



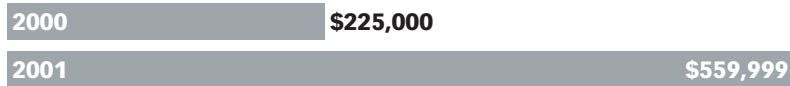
Source: Ipsos-Reid, 2000

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The companies surveyed expected their EBPP budgets to more than double from 2000 to 2001, with technical and IT departments receiving the largest portion of allocated funds.

EBPP Budgets Allocated by Leading Billers in Canada, 2000 & 2001

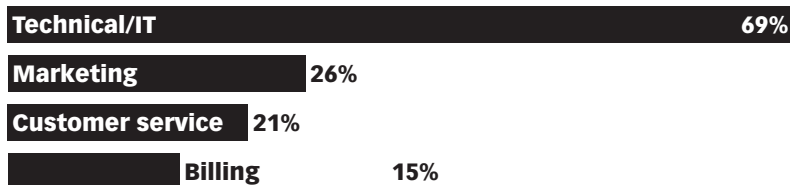


Source: Ipsos-Reid, 2000

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EBPP Budgetary Allocations, by Department, among Leading Billers in Canada, 2000



Source: Ipsos-Reid, 2000

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Most companies surveyed (82%) have already turned or intend to turn to an external vendor to implement their EBPP programs, primarily because they offer expertise not available in-house. They are divided, however, on which EBPP model to adopt, with 36% opting to present bills on their own websites, 23% planning to use a consolidator and 28% choosing both. Factors here include implementation costs, customer convenience and control over the bill presentment and payment processes.

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Reasons for Outsourcing Implementation of EBPP Initiatives among Leading Billers in Canada, 2000



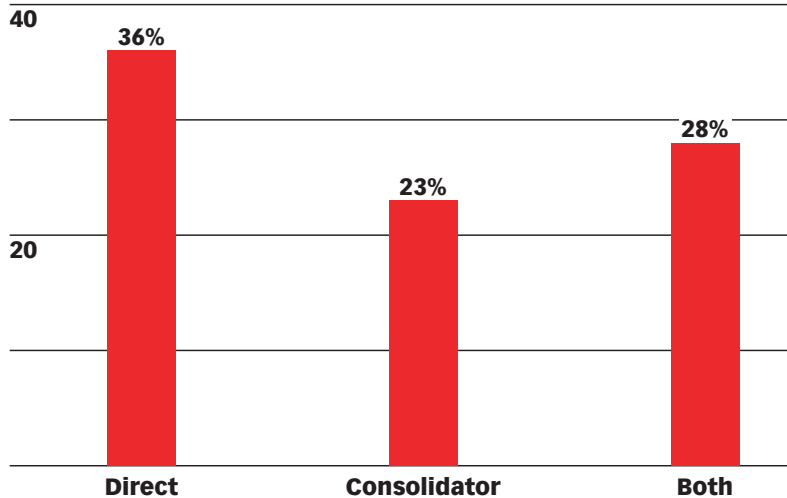
Source: Ipsos-Reid, 2000

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In terms of companies establishing benchmark EBPP strategies, billers tend to look to Bell Canada, Royal Bank, CIBC, TD Bank, Telus and Sears Canada for examples to follow. All told, 59% still believe that given the option, consumers would opt to receive and pay all their bills at their bank's website, a belief confirmed by Ipsos-Reid's consumer research.

EBPP Models Adopted by Leading Billers in Canada, 2000



Source: Ipsos-Reid, 2000

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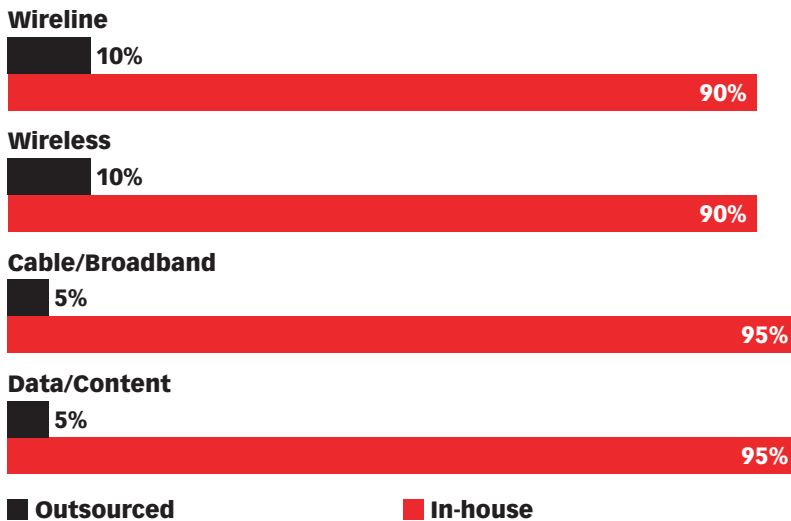
Europe

In a report released in April 2000, Killen & Associates predicted that by 2005, 70% to 80% of all bills and statements issued in Europe would be presented electronically. The Killen report, which focused on the region's leading billers (utilities, telecommunications firms and other communications providers, companies in the financial services and retail products industries and government agencies), concluded that nearly half would turn to outsourcers by 2005.

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However, Yankee Group research on the European e-payments market, released in April 2001, reveals that unlike in the US and Canada, most leading billers—telecommunications, cable/broadband and data/content firms—prefer to create their EBPP solutions in-house. The research findings indicate that European firms tend to contract with a limited number of sample EBPP vendors when either building a in-housesolution or looking outside to host it.

EBPP Insourcing vs. Outsourcing among Leading Billers in Europe, 2001



Source: Yankee Group, 2001

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Sample EBPP Vendors Used by Leading Billers in Europe, 2001

	Outsourced	In-house
Wireline	Sema	Kenan, Amdocs, Geneva
Wireless	TelesensKSCL, Portal, Geneva	TelesensKSCL, Sema
Cable/Broadband	TelesensKSCL, Convergys	Kenan, Geneva, Amdocs, Portal
Data/Content	Amdocs	Amdocs, Portal, Geneva, Digiquant

Source: Yankee Group, 2001

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B. Consumer Attitudes Towards Electronic Billing

Consumer-to-Business Electronic Payments

United States

Yankee Group research indicates that consumers still prefer to make payments with cash and personal checks by an overwhelming margin. In terms of sheer volume, cash transactions remain well in the lead, but payments by check are far and away the most important revenue generators. A survey by PSI Global indicates that three-quarters of consumers like both the convenience and privacy afforded by checks. Overall, 64% of consumers surveyed by PSI Global responded that they do not use electronic billing services because they simply prefer to pay by check. The category that the Yankee Group refers to as “next-generation” payment systems, including electronic payment methods, remains a promising, although largely untapped market.

Consumer Payment Methods, 2000 (in billions of \$ and transactions)

Cash

\$1,500.00 (140.00)

Personal checks

\$52.20 (4400.00)

Credit cards

\$22.00 (1350.00)

Debit cards

\$8.50 (300.00)

Other methods

\$6.00 (150.00)

*Note: Billions of transactions in parentheses
Source: Yankee Group, 2000*

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Gartner’s November 2000 study, which surveyed the population of 127 million adult internet users in the US, concluded that only 17% definitively want their bills presented online. Moreover, these 22 million adult internet users were divided in the presentment format they favored, with the majority preferring the biller direct model, which entails separate visits to each biller’s website.

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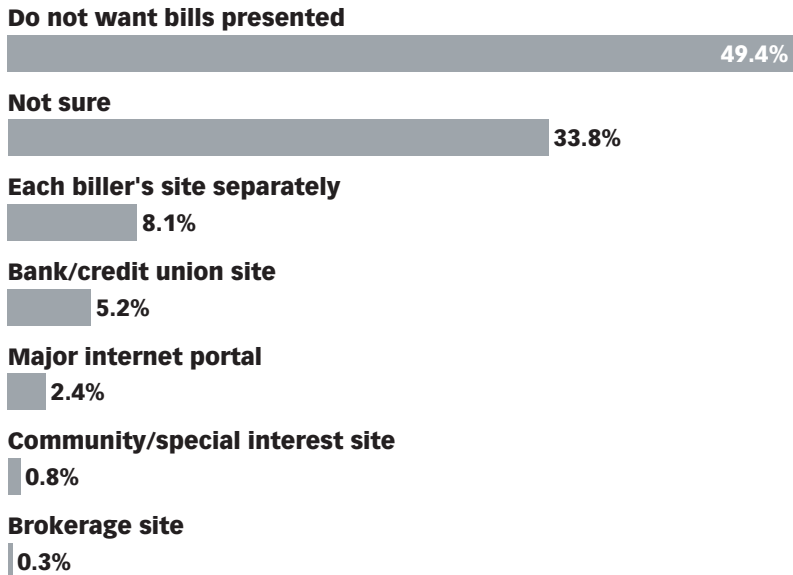
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Note that Gartner’s November 2000 sample of 127 million adult internet users exceeds by a considerable margin the International Telecommunication Union’s figure of 95.4 million, which eMarketer considers the most reliable estimate.

Bill Presentment Preferences among US Adult Internet Users, 2000 (as a % of adult internet users)



Note: Base = 21.3 million adult internet users in the US
Source: Gartner, 2000

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“We just don’t hear people screaming for new ways to pay their bills.”

-Jeanne Capachin, Analyst, Meridien Researchx

Only 1% of all US households currently pay their bills online, according to a study conducted by CUNA & Affiliates, a not-for-profit trade group serving US credit unions, and the market research firm NFO WorldGroup. The study examined attitudes and behaviors among two groups of online households—those that currently use internet account aggregators and those that do not but which are interested in using the services. Figures are higher among online households. The April 2000 PSI Global survey reached similar conclusions among both the population of both on- and offline households in the US.

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Online Financial Behaviors among US Households, 2000

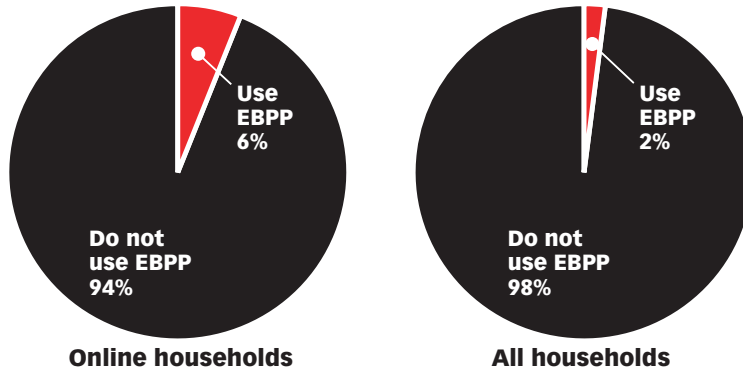
	Online households currently using account aggregators	Online households interested in using account aggregators	Total US (includes all on- and offline households)
Online banking	68%	38%	8%
Electronic bill payment online	8%	9%	1%
Buy/sell investments online	<1%	5%	2%
Research loan/credit products online	22%	33%	12%
Apply for loan/credit products online	19%	13%	6%

Source: CUNA & Affiliates/NFO WorldGroup, 2001

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Online Financial Behavior among US Households, 2000



Source: PSI Global, 2000

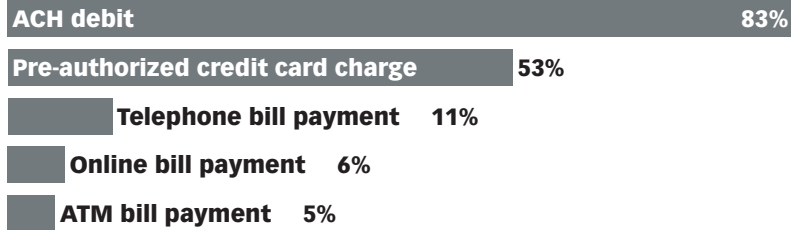
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A second CUNA/NFO study found that online bill payment ranks low among electronic payment methods used by online households in the past year. Most households used ACH debits—pre-authorized deductions from checking or share draft accounts.

Electronic Payment Methods Used by US Online Households, 2000



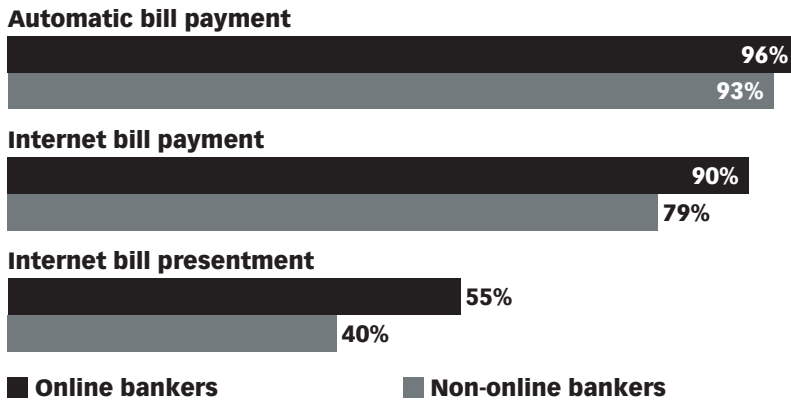
Note: Multiple responses allowed
Source: CUNA & Affiliates/NFO WorldGroup, 2001

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The Primus study, which included 846 respondents, 57% of whom perform routine banking activities online and 43% of whom do not bank online but use the internet, indicates that considerable opportunity exists for online billers, although those consumers who regularly use online banking services are more likely to be aware of electronic payment programs than internet users who do not bank online. They also expressed greater interest in receiving their bills online.

Awareness of Electronic Billing Services among US Online Consumers, 2000



Source: Primus, 2001

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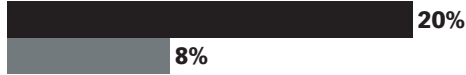
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Interest in Receiving Bills Online among US Online Consumers, 2000

Extremely interested



Very interested



Somewhat interested



Not very interested



Not at all interested



Don't know



■ Non-online bankers ■ Online bankers

Source: Primus, 2001

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Usage fees and customer service imperfections are among the factors currently inhibiting the growth of the consolidator model. Vendors that offer EBPP services based on a consolidator model differ in their interpretation of the factors that will spur consumer adoption. Proponents of thin consolidation believe that the ability to pay all bills in one place will drive consumers to use their solutions. Vendors of thick consolidator solutions, on the other hand, maintain that consumers will not gravitate to EBPP services unless all of their bills, complete with details, are available at a single website. However, most vendors and research firms agree that more aggressive marketing campaigns are needed to make consumers aware of the benefits of online billing services. Some research firms, with Gartner leading the charge, believe that both banks and consolidators must offer consumers clear-cut financial incentives to sign up for their services.

Popularity of Electronic Billing Models in the US, by Ranking, 2000

Ranking	Model
1	Billing direct
2	Electronic bill consolidation
3	Total bill consolidation

Source: Gartner, 2000
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Factors Inhibiting Growth in Consolidator EBPP Model, 2000

- High usage fees
- Time-consuming, confusing enrollment process
- Unsuccessful marketing campaigns
- Customer service flaws

Source: Gartner, 2000
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According to the Primus study, regular users of online banking services are more likely to use online payment services than non-online bankers. Not surprisingly, they are also less concerned with privacy and security issues associated with online bill payment. The CUNA & Affiliates/NFO WorldGroup study, which surveyed online households that currently use EBPP services as well as those that do not, reached similar results, with privacy and security issues topping the list of concerns cited by non-EBPP users.

Online Payment Methods Used by US Consumers, 2000

Type of payment	Online bankers	Non-online bankers
Credit card payments	39%	9%
Residential phone bills	25%	3%
Electricity bills	21%	2%
Cable television or satellite bills	19%	1%
Cellular phone bills	18%	2%
Gas bills	15%	1%
Water or sewer bills	15%	1%
Auto loan payments	11%	<0.5%
Mortgage payment	10%	2%
College tuition/loan bills	6%	1%

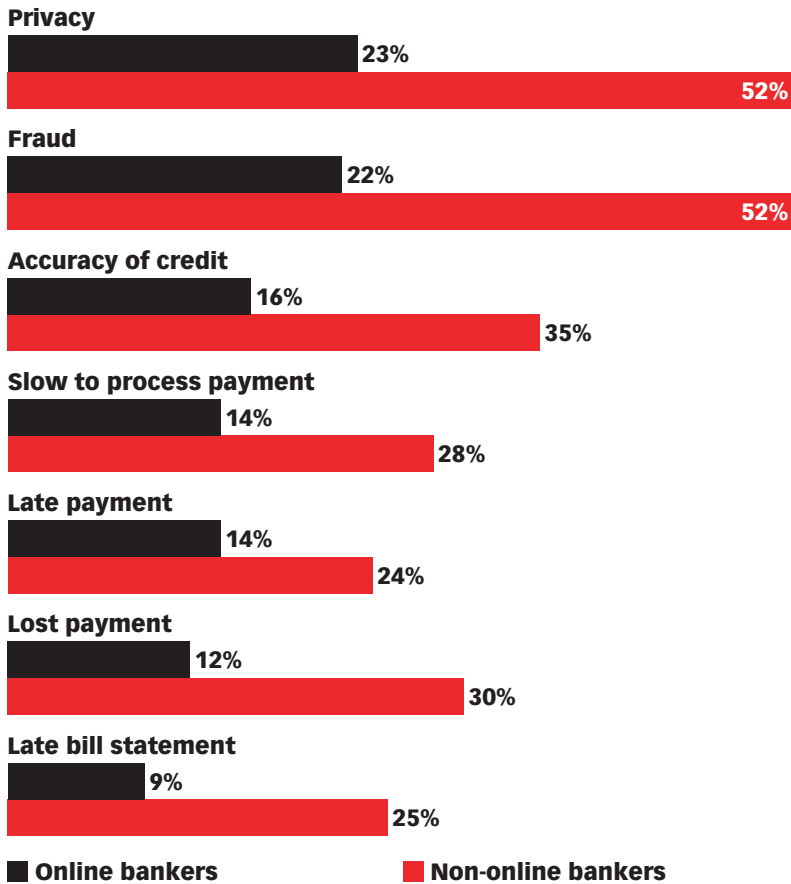
Source: Primus, 2001

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Concerns about Making Payments Online among US Consumers, 2000



Note: Extremely and Very concerned ratings
 Source: Primus, 2001

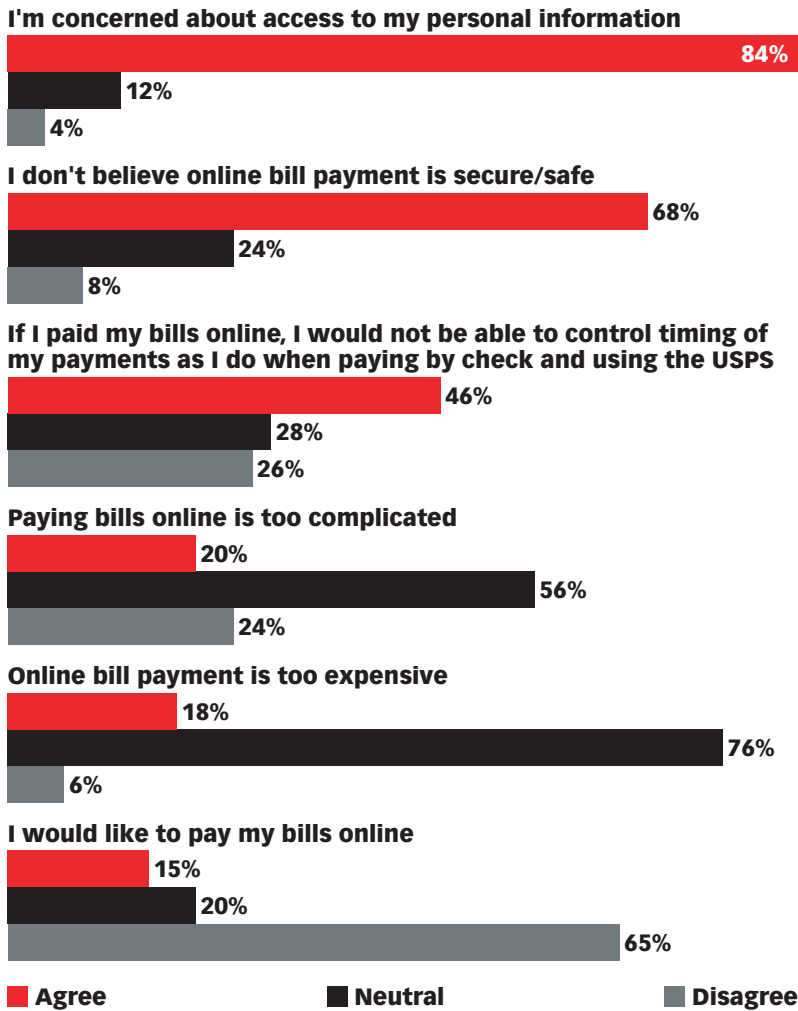
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The PSI Global study also highlighted the importance of security concerns, but pointed to consumers' continued preference for payment by check as the leading reason why they do not use EBPP. However, the survey did find that all US households, including those that are already online and using EBPP services, believe that the US Postal Service is a more reliable, secure and private means for bill payment.

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Attitudes Toward Paying Bills Online among US Online Households Not Using Currently EBPP, 2000

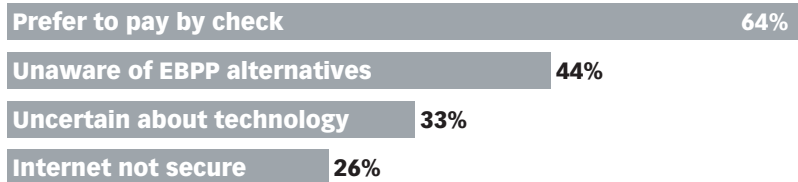


Source: CUNA & Affiliates, NFO WorldGroup, 2001

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Reasons for Not Using EBPP Cited by US Consumers, 2000



Source: PSI Global, 2000

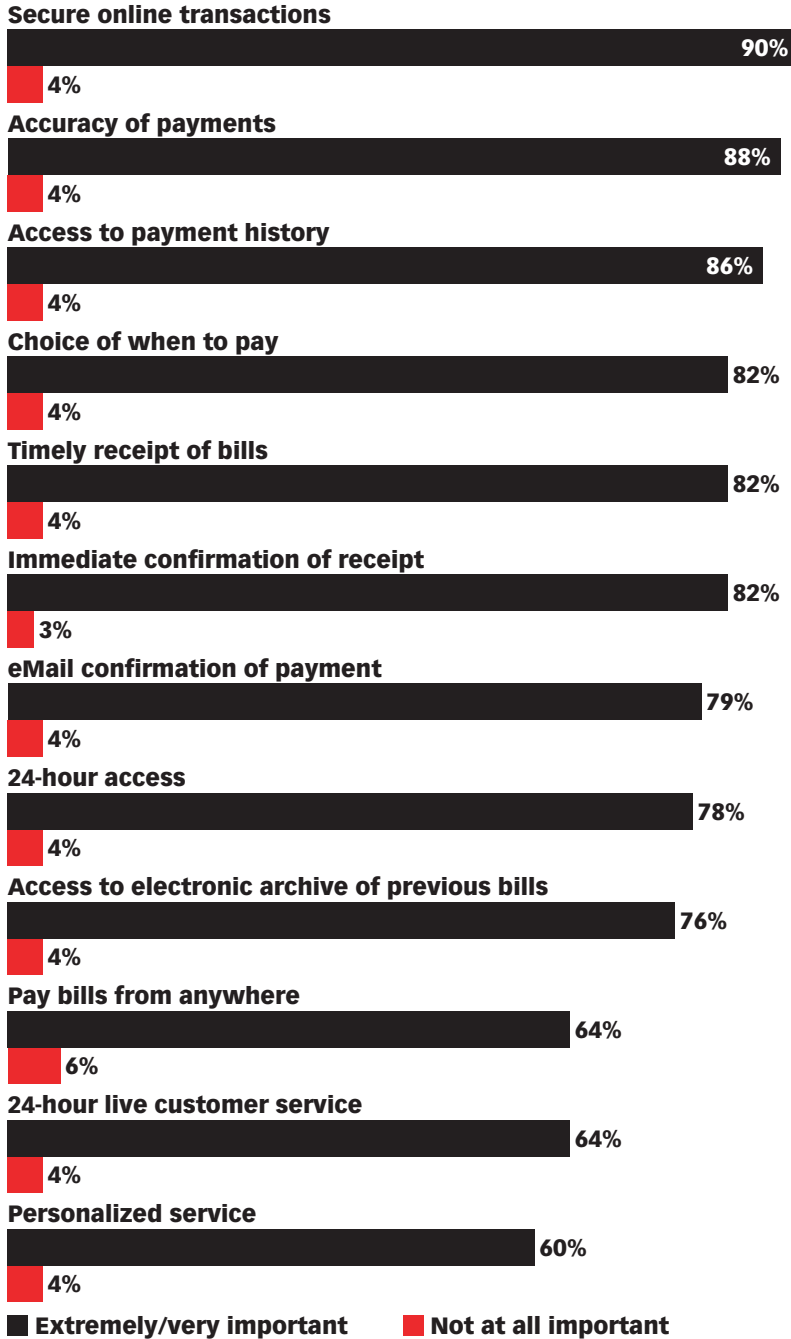
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Overall, security remains the biggest concern of online bankers and non-online bankers alike. All firms considering or in the process of rolling out online EBPP services would do well to note that the consumers surveyed by Primus place a premium on secure, accurate online transactions. Over 40% of the respondents stated that their interest in EBPP would increase if security and other concerns were addressed systematically; 44% declared that their interest level would remain unchanged.

EBPP Features Important to US Consumers, 2000



Source: Primus, 2001

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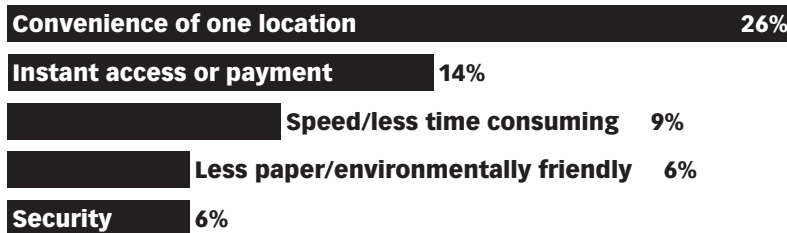
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Canada

Like their counterparts in the US, consumers in Canada are relatively enthusiastic about using electronic payment services. And, according to the Ipsos-Reid study, they share similar concerns. In other words, Canadians are attracted to the convenience afforded by EBPP systems, but they have concerns about privacy and security issues (although interestingly enough, 6% of the consumers surveyed viewed security as a benefit of making payments online). However, the survey sample included 1,500 Canadians aged 18 or older, rather than specifically a population of internet users. As such, it may have included a segment of the population with less online experience. As other research has shown, consumers tend to become more comfortable with using the internet for commercial and financial transaction as their usage increases.

Benefits of EBPP Cited by Consumers in Canada, 2000

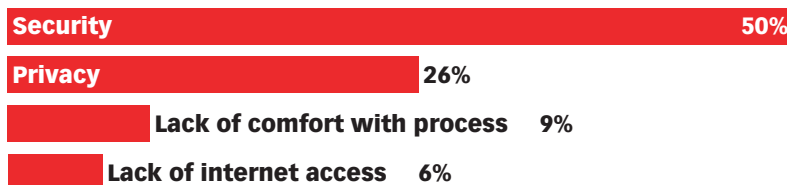


Source: Ipsos-Reid, 2000

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Concerns about Making Payments Online among Consumers in Canada, 2000



Source: Ipsos-Reid, 2000

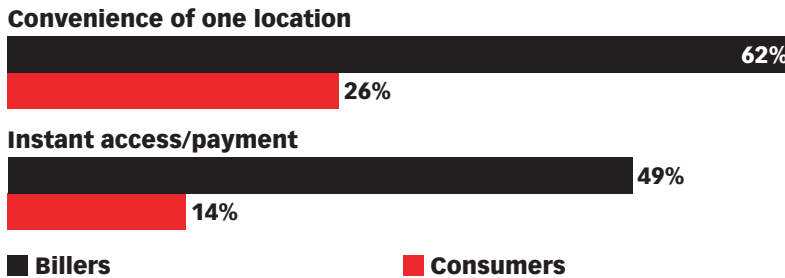
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A particularly interesting finding of the Ipsos-Reid report was the lack of correspondence between business and consumer perceptions about both the benefits of and barriers to implementing EBPP services for consumers. For example, 62% of the billers surveyed responded that they regarded the convenience of consolidating consumer bills in a single location as the main benefit of EBPP for consumers. However, as noted above, only 26% of consumers returned the same response (although this was the chief benefit that they cited).

Billers and Consumer Perceptions of Benefits of EBPP for Consumers in Canada, 2000



Source: Ipsos-Reid, 2000

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Likewise, 82% of businesses pointed to security as a customer concern, while only 50% of consumer identified security as a barrier to using e-payment systems. Still, the ranking of these issues by both businesses and consumers was consistent, even if the numeric results were not. Convenience was the number one benefit for consumers cited by both groups, while security was the leading concern for consumers and businesses alike.

Billers Perceptions of and Consumer Concerns about EBPP in Canada, 2000



Source: Ipsos-Reid, 2000

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A. Biller Adoption/Implementation of EIP

Although payment by check continues to dominate among businesses of all sizes, use of electronic payments services is relatively diffuse, particularly among larger firms. However, it is important to distinguish between what can be termed legacy e-payments systems (even though they are still widely used), such as ACH, wire transfers and EDI, and newer internet-based electronic invoice presentment and payment services.

Even if EIP promises to do away with legacy electronic billing and payment systems, the likelihood is that they will continue to coexist for some time. For example, an August 2000 AFP survey of 535 finance and treasury professionals, representing a cross-section of industries (among them, manufacturing, insurance, retail, government, financial services and utilities), found that more than half of respondents planned to implement internet-based services by the end of 2002. At the same time, nearly 50% of the professionals surveyed did not expect to migrate the majority of payments to trading partners from checks to electronic formats by the end of 2003. As with business adoption of EDI, full-scale implementation of electronic invoicing and payment systems may be a process that takes from five to 10 years.

According to the AFP survey, lack of integration between electronic payment and accounting systems has been and remains the major barrier to more widespread use of the online technology, although 43% of respondents did cite plans to install integration software by the end of next year. Most respondents tended to be of the belief that the internet had a more important impact on business processes and customer service rather than on e-payment practices. Therefore, the likelihood is that payments will be more of a lower priority and a piece of longer-term business strategies than more immediate e-business concerns, such as CRM implementations.

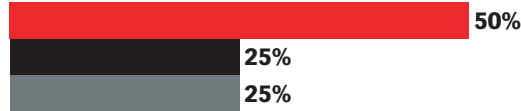
Among the forward-looking trends to emerge from the AFP survey were the following (note that respondents were asked how likely they would be to use different payment services in the next two years):

- A majority of respondents (60%) said they would use web-based delivery of payment information
- On average, a marginally higher percentage of respondents (53% versus 47%) said their organizations would adopt Internet-based billing with their trading partners; utilities, communications/media and insurance companies demonstrated greater-than-average interest in online billing
- A marginally higher percentage of respondents (55% versus 45%) said they did not expect to use the internet to bill individuals; again, interest was considerably greater among utilities and communications/media firms—the target market for EBPP services

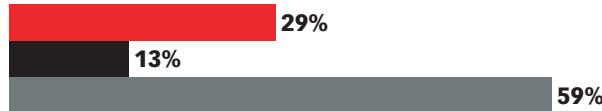
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Current and Future Electronic Payment Practices among US Companies, 2000

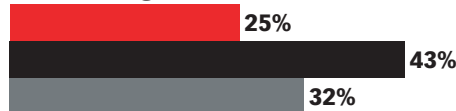
Use my bank's electronic remittance services



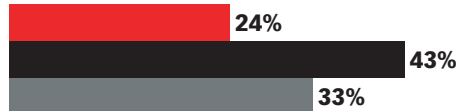
Change bank



Install integration software



Respond to trading partners requirements



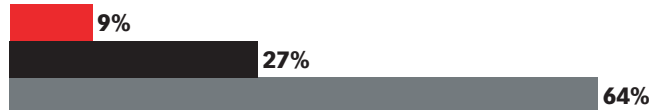
Require trading partners to use e-payments



Use web-based services to communicate payment information



Renegotiate float terms



Outsource disbursements



■ Done prior to 2000 ■ Will do within 2 years ■ No plans

Source: Association for Financial Professionals (AFP), 2000

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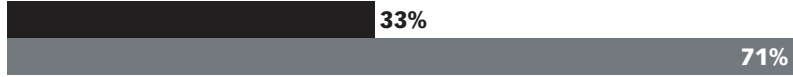
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Current and Future Use of the Internet for Payment-Related Functions among US Companies, 2000

Cash management



Purchasing



Billing



Accounts receivable



Accounts payable



■ Use now

■ Within next 2 years

Source: Association of Financial Professionals (AFP), 2000

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Trends in Payment Practices among US Companies, 2000

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
Lack of standard formats and procedures is the major problem my organization faces when making international payments	15.6%	25.7%	24.2%	22.4%	12.1%
Within the next three years, my organization will convert the majority of its payments to trading partners from checks to e-payments	11.9%	33.3%	20.2%	26.0%	8.5%
Use of purchasing cards and other payment cards is significantly reducing the number of check payments made by my organization	19.3%	25.7%	19.0%	25.9%	10.1%
High cost of international payments is a key concern at my organization	24.7%	32.1%	19.8%	17.4%	6.0%
My organization might change its payments service provider if the service is offered by a securities/brokerage firm or other non-bank	21.3%	38.2%	28.3%	8.1%	4.0%

Source: Association of Financial Professionals (AFP), 2000

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Legacy Electronic Payment Services

Businesses use electronic payment services for a variety of purposes not limited to sending, receiving or paying invoices to trading partners. Other functions include tax payments to the government and direct deposit of payroll to employees. On average, 68% of the companies surveyed by the AFP pay their employees via direct deposit. Although use of the ACH, particularly debits for tax collection purposes is fairly widespread, the AFP survey points out that ACH transactions only account for a fraction of companies' annual transaction volume. More than 75% of the payments issued and received by the firms surveyed are by check.

Electronic Payment Practices among US Companies, 2000

Wire transfers



ACH credits



ACH debits



Cards



Debit cards



■ Make payments ■ Receive payments

Source: Association for Financial Professionals (AFP), 2000

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A comparative survey of 165 purchasing professionals conducted by Visa USA in May 2000 found that 41% of online buyers paid for their purchases using checks, with 40% responding that they used purchasing cards. Although payment by check was more firmly entrenched at most companies, 2% of those surveyed responded that they believed this payment method was inefficient.

Payment Methods for Online Purchases by US Purchasing Professionals, 2000

Checks	41%
Purchasing cards	40%

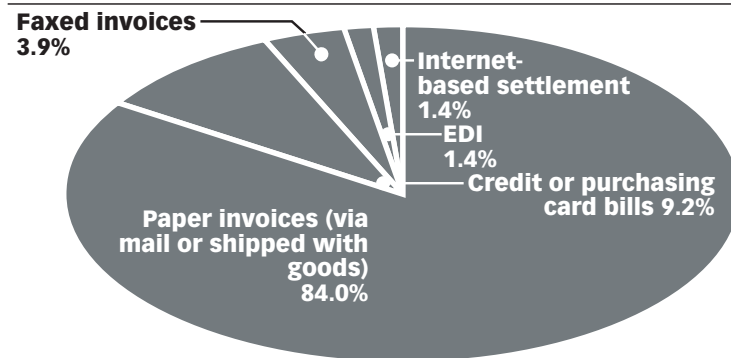
Source: Visa USA, 2000

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A survey of 500 purchasing decision-makers at mid-sized companies (with revenues ranging from \$5 to \$500 million) sponsored by American Express found that paper-based billing continues to dominate over credit or purchasing card bills and other electronic billing formats. Similarly, in terms of payment methods, corporate checks and credit and/or purchasing cards far outweigh use of all electronic payment formats, which account for just 3% of online purchases. However, of the companies already purchasing online, 49% responded that they found corporate purchasing cards preferable for making purchases online, versus 24% that cited credit cards.

Billing Methods for Online Purchases by US Mid-Sized Companies, 2000



Note: Does not add up to 100% due to rounding
Source: American Express, 2000

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The American Express survey also found that 43% of the 500 purchasing managers from mid-sized companies responded that they pay for internet purchases with either corporate credit cards or purchasing cards. By comparison, Electronic File Transfer, ACH, EDI and direct deposit combined accounted for just 3% of online payments.

Note that due to its interest in financing a greater portion of online purchases, American Express has pointed out the advantages of using purchasing cards for mid-sized businesses. These include a 95% savings in processing costs thanks to the consolidation of corporate purchasing onto single procurement card statements. By contrast, for those companies that engage in EDI billing, for example, EDI does not consolidate bills or data over multiple vendors, making it an inefficient for paying low-volume vendors.

Payment Methods for Online Purchases by US Mid-Sized Companies, 2000

Corporate checks	44.0%
Credit or purchasing card bills	43.0%
Electronic file transfer/EDI/ACH/Direct deposit	3.0%

Source: American Express, 2000

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The AFP survey revealed that most companies use some type of electronic transmission to transmit payment remittance information to payees:

- 57% use banks
- 9% use other third parties
- Nearly 1/4 transmit information directly to payees

Use of IP-based transmission formats (internet, e-mail or extranet) is on the rise among the organizations surveyed by the AFP: Almost 1/4 send and receive data via one or more of these formats. Meanwhile, only 24% of respondents use EDI to send payment-related data, while 36% receive data via EDI, with larger organizations more likely to use the format than smaller firms. Still, most firms reported that they use EDI with 10% or less of trading partners.

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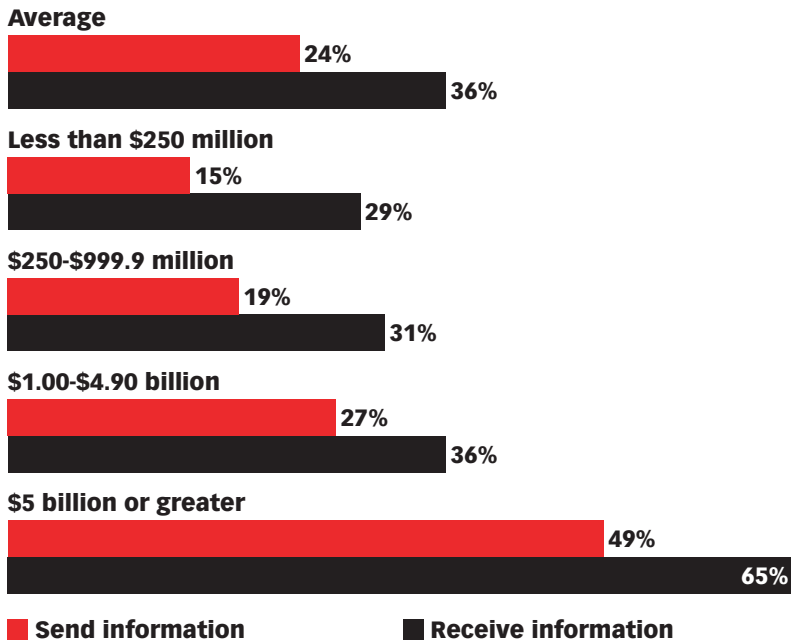
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Share of US Companies That Send and Receive Remittance Information in EDI Format, by Company Size, 2000



Source: Association for Financial Professionals (AFP), 2000

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The Aberdeen Group has estimated that 90% of all invoices between Fortune 1000 companies are handled via EDI, but as a total of all business-to-business invoicing, this accounts for less than 10% of activity. Overall, the Aberdeen Group has calculated that the cost of business billing amounts to \$42 billion per year, while the cost of paying all of the related invoices is \$48 billion.

Among manufacturers, 47% of respondents to an *IndustryWeek* survey affirmed that they had implemented payment processing systems via EDI, compared to just 7% of respondents that were using web-based technologies. However, this early result by web-enabled EDI shows that this method of electronic payment holds considerable promise.

“The only online solution you really have that accommodates unknown trading partners is usually a purchasing card.”

-Paul Walsh, Chairman and CEO, Clareon

Respondents to the AFP survey pointed to a continued lack of integration (both within their own firms and externally with trading partners’ systems) between payment and accounting systems as a leading barrier to making and receiving electronic payments. Representatives of firms with less than \$5 billion in revenues also cited limited information systems resources as a major hurdle.

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Barriers to Making More Electronic Payments among US Companies, 2000

	Not at all important	Low importance	Moderate importance	High importance
Lack of integration between e-payment and accounting systems	8.2%	13.8%	27.6%	50.4%
Payees cannot receive e-payments with remittance information	4.9%	16.8%	34.7%	43.7%
Limited information systems resources	5.9%	18.1%	40.7%	35.2%
Organization cannot send e-payments with remittance information	12.7%	16.9%	31.1%	39.2%
Cost of new software/hardware	8.4%	22.3%	40.5%	28.8%
Payees do not want to receive e-payments	7.8%	28.7%	36.5%	27.1%
Lack of senior management support	13.6%	32.1%	33.7%	20.6%
High cost of bank's e-payment service	9.5%	37.9%	35.4%	17.3%
Loss of disbursement float	12.5%	40.3%	28.4%	18.8%
Bank cannot send remittance information electronically	28.3%	24.0%	19.6%	28.0%

Source: Association for Financial Professionals (AFP), 2000

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Barriers to Receiving More Electronic Payments among US Companies, 2000

	Not at all important	Low importance	Moderate importance	High importance
Payers cannot send e-payments with remittance information	3.4%	17.0%	32.0%	47.6%
Limited information systems resources	5.2%	17.5%	36.9%	40.4%
Lack of integration between treasury and accounting systems at organization	9.5%	24.4%	31.4%	34.7%
Cost of new software/hardware	9.1%	25.2%	41.4%	24.4%
Organization cannot accept e-payments with remittance information	15.4%	23.4%	29.7%	31.5%
Lack of senior management support	13.4%	34.9%	30.4%	21.3%
Bank cannot provide remittance information electronically	18.0%	32.5%	28.1%	21.4%
High cost of bank's e-payment service	10.3%	46.1%	30.0%	13.6%
Unable to negotiate favorable float terms	15.5%	41.2%	28.9%	14.4%

Source: Association for Financial Professionals (AFP), 2000

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Other staffing and budget priorities stand in the way of companies' efforts to integrate e-payments and accounting systems. Note that the barriers highlighted by the AFP study apply to legacy e-payments systems. Nevertheless, as noted in the following section below, similar factors also come into play with internet-based systems.

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Barriers to Acquiring Capability to Integrate Electronic Payment and Accounting Systems among US Companies, 2000

	Not at all important	Low importance	Moderate importance	High importance
Other demands on information systems staff time	0.3%	5.6%	27.2%	67.0%
Other budget priorities	2.5%	11.6%	41.9%	44.1%
Cost of new software	2.8%	15.7%	45.9%	35.5%
Volume of e-payments does not justify acquiring this capability	9.7%	26.2%	33.0%	31.1%
Lack of senior management support	11.4%	27.8%	35.5%	25.3%
Treasury and accounting file formats are not compatible	13.1%	25.9%	34.7%	26.3%
Software vendor does not offer this capability	13.5%	28.7%	32.9%	24.9%

Source: Association for Financial Professionals (AFP), 2000

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Internet-Based EIP Services

A key benefit to businesses that use IP-based electronic billing is the savings they can realize on dispute resolution. Research firms have indicated that as much as 40% of items on an average bill, and as much as 10% of all invoices may give rise to disputes, which, in turn, require both human and financial resources to resolve. By allowing businesses to track the origin of and resolve disputes online, electronic invoicing systems have the potential to shorten billing cycles and save companies money.

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Drivers of and Barriers to B2B Electronic Billing, 2001

Drivers

- Reduced billing costs
- Improved payment processes
- Customer bill review

Barriers

- Lack of payer readiness to use e-billing
- Payer integration issues

Source: *Gartner, 2001*

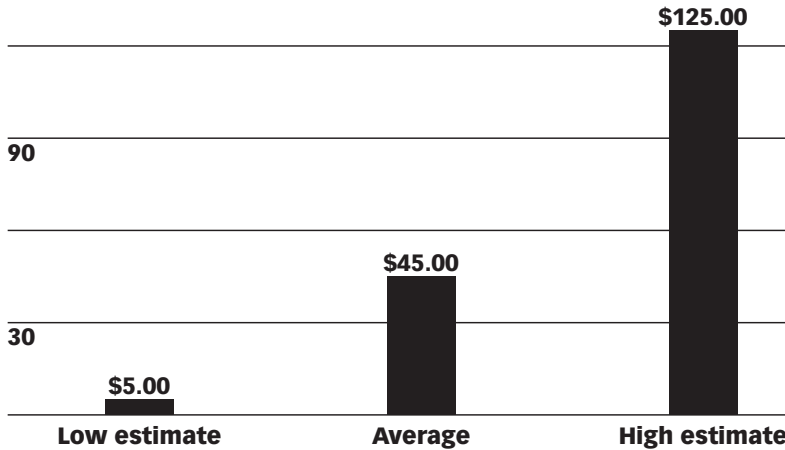
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For example, Gartner estimates that using EIP will reduce the cost of producing an invoice from \$5 to \$1.65, a savings of nearly 70%. Similarly, while resolving a disputed invoice over the telephone costs \$20, using an internet-based dispute-settlement mechanism cuts this cost in half. Further, Gartner also found that the average number of days outstanding for business invoices is 41 days, with an average bill payment of \$99,000. There are substantial financial savings to be had for companies that are better able to monitor and offer incentives for companies to pay their invoices on time.

Average Costs to Pay a B2B Paper Invoice, 2001

150



Source: *YourAccounts.com, 2001*

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Cost Comparison: Online versus Paper Invoices, 2001

Average cost per online invoice	\$1.65
Average cost per paper invoice	\$5.00

Source: Gartner, 2001

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Cost Comparison: Online versus Manual Invoice Disputes, 2001

Average cost per online invoice dispute

\$10.00

Average cost per manual invoice dispute

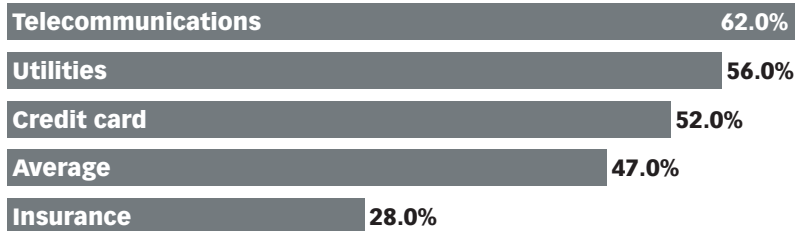
\$20.00

Source: Gartner, 2001

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Potential Biller Cost Savings from Using Electronic Invoicing, by Industry, 2001



Source: Gartner, 2001

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The benefits aside, a number of other factors can stand in the way of companies' adoption of electronic invoicing and payment systems, as the table below containing information from PwC indicates. The cost and complexity of implementing an EIP system are clearly important considerations: although firms can achieve cost savings by using electronic invoicing, they also must outlay significant amounts of capital to put the system in place. Integrating electronic invoicing and payment with existing systems likewise raises a host of cost concerns. Gartner estimates that B2B e-billers spent an average of \$490,000 in their first-year implementations; 33% of that total went to outsourcers.

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Factors Affecting B2B Electronic Payment Adoption

Existence of highly automated systems for processing paper-based payments

Pre-existing EDI-based payment processing systems that offer some of same benefits as IP-based payment solutions

Lack of universal messaging formats

Costs associated with usage of e-payment services

Investments in existing invoicing infrastructure (e.g. print factories)

Source: PricewaterhouseCoopers (PwC), 2000

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In addition, the AFP survey highlighted security concerns as a leading impediment to e-payment adoption. Over 2/3 of respondents, who included both internet users and non-users, cited this issue as highly important.

Barriers to Using the Internet for Payment and Remittance Information among US Companies, 2000

	Not at all important	Low importance	Moderate importance	High importance
Security concerns	1.0%	4.9%	26.7%	67.4%
Inability to guarantee integrity of message	1.0%	11.2%	33.1%	54.7%
Inability to verify the identity of organizations or individuals	1.6%	11.6%	34.1%	52.7%
Lack of integration of payment information with accounting systems	1.0%	14.0%	33.8%	51.1%
Time and expense of implementation	1.2%	13.8%	41.9%	43.1%
Lack of standards	1.4%	12.8%	46.5%	39.3%
Uncertain reliability	1.4%	16.9%	39.0%	42.8%
Lack of acceptance by organizations and/or individuals	1.8%	16.7%	42.2%	39.4%
Bank unable to provide the service	10.3%	29.2%	33.8%	26.7%

Source: Association for Financial Professionals (AFP), 2000

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In a survey of its 2,500 members in the document systems industry, Xplor International, an industry's trade association, found that financial services, insurance, and manufacturing companies were the leaders in putting electronic payment programs in place. Overall, 17% of firms in all industries had an electronic payment program in place in 2000, up from 10% in 1999. Among Xplor user member companies, the figures are slightly higher: 29% currently have an electronic invoicing and payment program in place and another 27% are evaluating the prospects of implementing one.

According to the February 2001 Gartner study, 30% of the companies surveyed use e-procurement systems, but just 3% have linked them to online payment systems. The ability to authenticate customer interactions is also at a very early stage, with 57% of companies employing user IDs and passwords to verify customers that access their online channels. However, only 14% of companies have deployed digital certificates, and overall, just 1% of business-to-business transactions are conducted using secure digital certificates.

Complications associated with integrating electronic invoicing and payment systems with back-end accounting systems, as well as ERP and logistics systems are one reason why companies have been slow to adopt them. However, the main reason for slow adoption of EIP lies with the banks—very few are prepared to contribute their services to electronic payment solutions. Moreover, many banks were only beginning to finalize partnership agreements with technology providers during the early months of 2001.

Percent of Companies With EBPP Programs in Place, by Industry, 1999-2000

	Program in place		Pilot program in place	
	1999	2000	1999	2000
Finance/Banking	26%	48%	19%	10%
Insurance	4%	11%	4%	17%
Manufacturing	11%	11%	–	17%
Government	–	–	9%	5%
Other	17%	13%	12%	10%
All industries	10%	17%	10%	12%

Source: Xplor International, 2000

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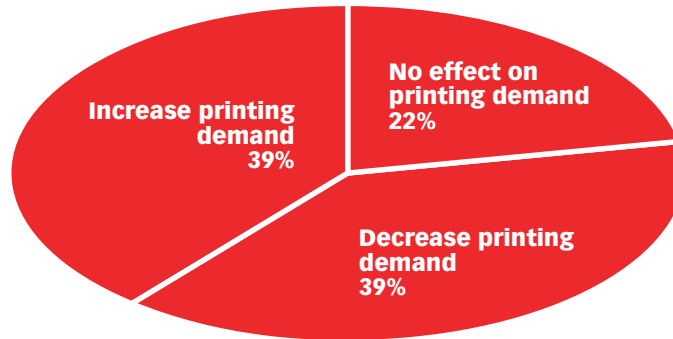
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The impact that electronic invoicing and payments will have on demand for printing and mailing services remains unclear, according to the Xplor International survey. 37% of the user member companies surveyed cited the move from paper to e-mail or other digital formats as more of an opportunity for them rather than a threat to their core business.

Service Provider Predictions of Effect of Electronic Billing on Printing Demand, 2001

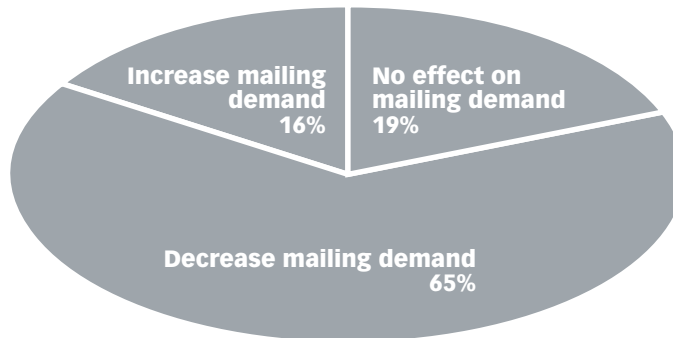


Source: Xplor International, 2001

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Service Provider Predictions of Effect of Electronic Billing on Mailing Demand, 2001



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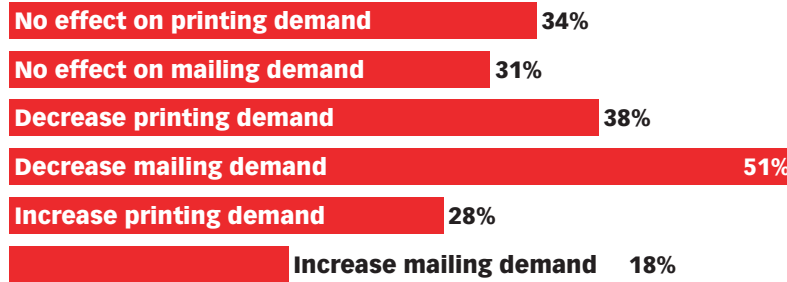
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Predictions of Effect of Electronic Billing on Printing and Mailing Demand by Companies Using Electronic Billing, 2001



Source: Xplor International, 2001

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Phone: 212.677.6300

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Web: www.emarketer.com

For media inquiries:

Gary Galati, Communications director, ggalati@eMarketer.com

For inquiries about this report or other eMarketer reports:

Marius Meland, editor, mmeland@eMarketer.com
