The impact of information technology on customer and supplier relationships in the financial services

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Keywords *Information technology, Internet, Financial services, Customer satisfaction, Supplier relations*

Abstract *This study examines the role that information technology plays in supporting relationships between customers and suppliers in the financial service industry. It traces the interrelationships among the different sectors of this industry – brokerage houses, retail banks, institutional banks, mutual funds, insurance underwriters, and others – and identifies roles that information technology and electronic service delivery can play in creating and supporting inter-organizational integration across sector boundaries. It further identifies the opportunities for and threats to these relationships caused, in large part, by the continuing evolution of information technology. This study will help managers in the financial services to analyze the opportunities and assess the risks of building tighter relationships with their customers and suppliers through electronic commerce.*

Introduction

This research addresses the role that information technology plays in supporting relationships between customers and suppliers in the financial service industry. Firms in different sectors of this industry – brokerage houses, retail banks, institutional banks, mutual funds, insurance underwriters, and others – face different competitive forces and have different underlying business practices. Nevertheless, the firms in these different sectors are closely linked as customers to and suppliers of one another. Examining the industry across all sectors, this research seeks to identify common views of managers regarding the role that information technology and electronic service delivery can play in creating and supporting inter-organizational integration across sector boundaries. Furthermore, it aims to identify the opportunities for and threats to these relationships caused, in large part, by the continuing evolution of information technology.

The role of information technology in supporting relationships between customers and suppliers has generated considerable interest among academic researchers and industry practitioners. The large majority of research and knowledge in this field, however, pertains to supply chain management in the manufacturing wholesale, and retail industries. Unfortunately, this research has little value for management in pure service industries, such as consulting and financial services, because it focuses on processes supporting the movement of physical goods. Furthermore, supply chains in the manufacturing, wholesale,

International Journal of Service Industry Management, Vol. 13 No. 1, 2002, pp. 29-46.

DOI 10.1108/09564230210421146

and retail industries tend to be linear. By this we mean that raw goods move from source to consolidator to manufacturer, and finished goods move from manufacturer to wholesaler, retailer, and consumer. Rarely do entities toward the consumption end of the chain, such as retailers and consumers, close the loop by providing goods or resources to entities closer to the source of raw goods, such as consolidators and manufacturers. As we will show, such a linear relationship between suppliers and customers is uncommon in the financial services.

Our focus on the financial service industry is motivated by three factors:

(1) the paucity of research in customer and supplier relationships in service industries relative to manufacturing industries (Mabert and Venkataramanan, 1998);

(2) the sheer size of the financial service sector relative to other service sectors; and

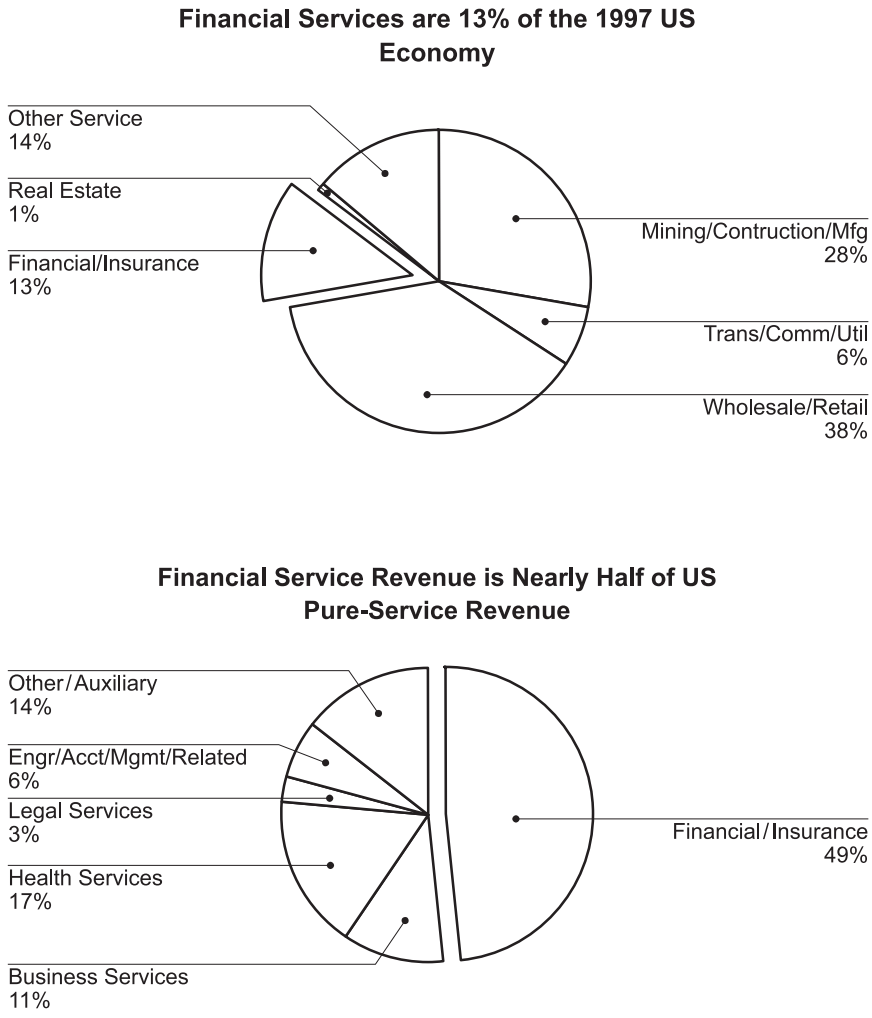
(3) the potential for information technology to positively impact firm performance through channel expansion, cost mitigation, and service level enhancement.

The financial service industry

The financial services industry can be defined broadly to include all Standard Industrial Classification (SIC) codes starting with the digit six (US Government, 1997). This classification includes insurance and real estate (except construction). We have limited our research, however, by excluding real estate (SIC codes 65xx), concentrating instead on those services typically classified as "financial." These include depository institutions; non-depository credit institutions; security and commodity brokers, dealers, exchanges, and services; insurance carriers; insurance agents, brokers, and service; holding and other investment offices.

Financial services account for nearly 50 percent of the service economy in the USA (see Figure 1) and have a similar importance in most industrialized nations. Financial service companies were also among the earliest commercial users of information technology (Federal Reserve Board, 1998). Electronic business among companies providing financial services should be attractive, as physical assets typically need not be exchanged. Yet, electronic business in the financial services has evolved slowly for a variety of reasons, including security concerns, regulation, lack of standards, complexity of inter-organizational relationships, and conservative principles.

For the past three decades, the service sector of the USA's economy has grown dramatically in comparison to the manufacturing sector. This trend is also evident among the countries of the European Union and other more advanced economies in the world (Rowthorn and Ramaswamy, 1997). Within the service sector, financial services easily comprise the largest component, with annual revenues nearly equaling the total of that in all other service industries, including business services, and health, legal, and engineering services (US Government, 1997).



Source: Based on annual receipts ($), 1997 Economic Census, US Government

Figure 1.
Importance of the financial sector to the US economy

Over the past two decades, the financial services industries in the USA have exhibited a trend toward merger and consolidation. The 25 largest banks, which generated about 33 percent of the industry's net income in 1980, now generate more than half the industry's income. The top ten credit card companies, which held 45 percent of all outstanding credit debt in 1987, now hold 57 percent of this debt. The top ten mutual funds control 47 percent of all assets, and the top 15 home and auto insurers write approximately 66 percent of all policies (James *et al.*, 1997). In 1997, merging investment companies and advisory firms requested exemptive relief from the Division of Investment

Management at a rate of about once per week. Additional mergers occurred that did not require such exemptive relief (Barbash, 1998).

Economic forces and technological advances, especially with the Internet, have driven this consolidation across international boundaries and across types of financial services. The prime example is the creation of Citigroup by the merger of Citibank and Travelers Group in October 1998. Citigroup provides financial services in 100 countries through the following businesses: Citibank, Commercial Credit, Primerica, Salomon Smith Barney, SSB Citi Asset Management Group, Travelers Life & Annuity, and Travelers Property Casualty. Such consolidation is likely to become commonplace as customers increasingly demand one-stop shopping for their financial services and as companies seek to accrue advantages from economies of scale and opportunities for cross-selling.

Financial service companies are relatively unique in regard to their value chains in that they typically can add value to the end product without physically possessing any intermediate product. In fact, ownership and the ability to use financial assets rarely require their physical possession. Although ownership is sometimes confirmed with a physical certificate, only an electronic record is necessary, whether the asset is a stock, bond, mutual fund, derivative, gold bullion, futures contract, insurance contract, or any form of money other than cash.

Electronic business in financial services

The financial services industry has been doing business electronically for many years. Retail and institutional customers have been trading online, paying bills online and accessing their accounts online. However, many business-to-customer information transfers continue to be executed via traditional, paper-based formats. These include such functions as prospectus delivery, statement reporting, and transaction confirmation.

The reasons for the continued adherence to traditional, physical information delivery methods are many. Tradition and the aversion of some consumers to adopt new technology dictate that firms continue to provide paper-based transaction audit trails. Regulatory statutes also demand the use of paper reporting for many types of transactions. However, as noted below, there is evidence that industry leaders will continue to pressure both customers and regulatory agencies to adopt electronic distribution and information management methods.

The banking industry, for example, is moving rapidly to increase the ability of its customers to transact business online. The International Data Corporation estimates that the number of US banks offering online banking services will increase from 1,150 in 1998 to 15,845 by 2003. They estimate that the number of US households banking online will increase from 6.6 million in 1998 to more than 32 million in 2003 (Johnson, 1999). Similar trends emerge in Europe. BlueSky International Marketing reports that the number of Internet banking sites increased from 863 in November 1998 to 1,845 in June 1999. The

number of sites that permit customers to perform transactions increased from 448 to 1,245 in the same period. BlueSky President Suzan Nolan notes that, "In many cases, the bar for minimum functionality has been raised and simply offering online transactions is no longer a point of differentiation" (BlueSky International Marketing, 1999).

The National Association of Securities Dealers (NASD) has recently allowed brokerage firms to begin archiving data with laser-disk technology instead of traditional, acetate-based microfilm and microfiche. Cost containment is again a major motivating factor for firms adopting the new technology, although they also expect to improve customer service levels by providing faster, more accurate access to historical transaction records. An insurance industry report (Altiero, 1997) proposes the emergence of a virtual channel that removes constraints of time, place, and form from the transaction universe that currently defines the insurance industry.

A recent report compiled by Ernst & Young International (Ernst & Young, 1998) indicates that many financial institutions believe that electronic business will significantly reshape their customer relationships. This study also reports that these same institutions feel an increased need to focus on electronic connectivity, alliances, and partnerships. Over 80 percent of the firms indicated that e-commerce will alter their distribution strategy in the near future, particularly in the area of customer connection, the very area still dominated by paper. The responding organizations also express concern that there is a lack of understanding of and available insight into the emerging role of e-business as a delivery channel and customer connection mechanism.

Research methodology

This research represents the first phase of a multi-phase effort to identify the current and potential role of information technology in supporting relationships among customers and suppliers in the financial services. Our approach was to interview people in a wide range of financial services, at both operational and strategic levels. Each respondent presented, from the perspective of their own sector, a view of their supplier and customer relationships and the opportunities for and barriers to expanding these relationships through electronic commerce. We then combined and unified these views to create an industry-wide perspective. The methodology for the first phase of the research included the following steps:

(1) definition of scope;

(2) determination of survey methodology and identification of sample;

(3) creation of a survey instrument;

(4) administration of the survey;

(5) analysis of survey responses.

In this phase of our study, we limited our scope to the immediate suppliers and customers of our subject companies. That is, we did not ask our survey

respondents to identify suppliers of their suppliers or customers of their customers. Such an expansion will be handled in future research.

The open-ended nature of the research question and the lack of prior research dictated an interview rather than questionnaire format. We used a sample of senior technology and strategic managers from firms in the Boston area in each of the following sectors: retail banks, mutual funds, insurance carriers, institutional investment companies, and brokerage. We had planned to conduct two interviews in each of these sectors, but due to the availability of contacts, three of the subjects worked in the mutual fund industry and only one subject worked in retail banking, with two in each of the remaining sectors. Prior to each interview, we transmitted the interview questions to the subject so that he or she could prepare to answer them fully. Eight of the ten interviews were conducted by telephone. Two of the subjects chose to supply written responses. The typical respondent was a senior manager, vice president, or above, with direct responsibility for e-business deployment or the setting of e-business strategy.

The survey instrument (see the Appendix) was designed by the authors and tested on a business contact in the financial services prior to being administered. All questions except the first one were open-ended. The first question asked respondents to identify the industry and sector of their suppliers and customers and the types of products and services purchased and sold. The remaining questions addressed the extent to which information technology is currently used to support these supplier and customer relationships, and how the relationships might change in the face of advances in information technology or changes in the business and technical environment.

The authors administered the survey over a two-month period. Both authors were present for a majority of the interviews. Notes to the interviews were recorded manually on the survey by the authors. For reasons of confidentiality and security, surveys were not taped.

Analysis

The collected data were analyzed using the qualitative techniques advocated by Yin (1989) for the development of grounded theory. The method of grounded theory, originally proposed by Glaser and Strauss (1967), seeks to conceptualize theory from data rather than proposing theory and testing it with data. Typically, the method involves organizing and understanding interview transcripts, collected documents, and even observation of social or business practice. Yin (1989) and Miles and Huberman (1994) developed the concept of applying grounded theory techniques to multiple case studies so as to gain a deeper understanding of the phenomenon being studied. The methodology involves extracting theory from one case study and using subsequent case studies to augment, refine, or deepen the theory. In this research, the surveys were treated as mini-case studies following Yin's approach. Because the sample

was limited, we drew inferences only upon a convergence of ideas across industry sectors.

Results

The results of the interviews suggest that there are consistent patterns in the thought, planning, and implementation processes of the various participants. For reporting purposes, we have grouped the results into five topical categories, as described below. The first category addresses how information technology supports existing customer and supplier relationships. The second, and third address, respectively, the opportunities and threats that these managers foresee as they continue to expand their firm's investment in technology-enabled service delivery and inter-organizational integration. The fourth section addresses the drivers of change. Finally, we examine how managers envision the future with respect to their customer and supplier relationships.

Current activities

Our analysis of current activities begins with an examination of the partnerships that support inter-organizational business activities within the respondent's respective industries. Figure 2 illustrates the resulting interrelationships. It shows a high degree of interdependence among the various financial service industries. The relationships among the parties is clearly non-linear and, in many instances, reciprocal. The existence of reciprocal relationships confirms the findings of a recent study by Sampson (2000) on what he terms "customer-supplier duality" – the concept that a customer can also be a supplier – in service organizations.

The set of relationships shown in Figure 2 is more akin to a network than the linear supply chain one usually sees in the manufacturing and retail industries. The relationships demonstrate a high level of complexity and variability that cannot be captured in a single graphical model. For example, retail banks sell

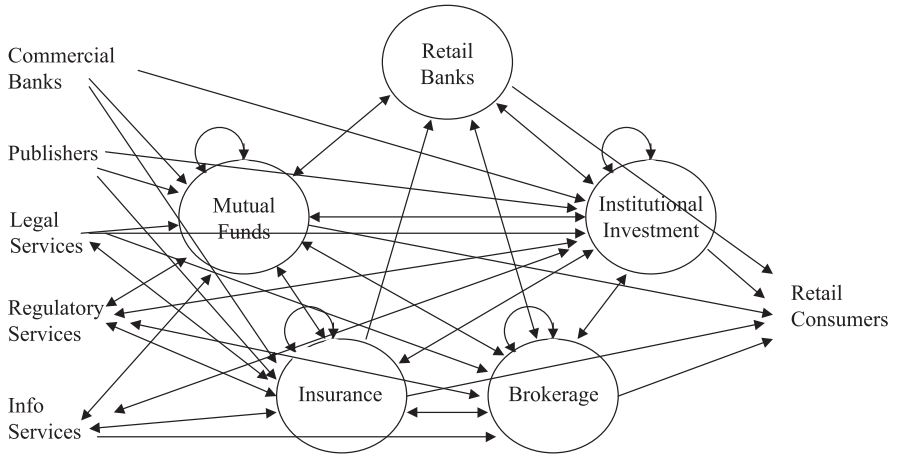


Figure 2.
Interrelationships among financial service providers

some types of insurance through various alliances. Additionally, these same banks form a different set of alliances with traditional insurers to allow electronic debiting of accounts to pay monthly premiums. As a result, the value of the relationship diagram may become secondary to an understanding of the current activities, future plans, and industry trends that we discovered during the analysis process.

All respondents reported extensive use of audio response networks, business-to-business EDI, and Web-based technologies to support the relationships between them, their suppliers, and their customers. The functionality incorporated in these relationships included access to accounts for inquiries, many types of transactions, and to a limited extent, advice. Generally, account maintenance was not available. Participants believed that existing audio response and Web-based account access functions had significantly reduced the cost of delivery for many customer account services such as account balance inquiries and transaction validation.

Opportunities

The respondents see many opportunities to use technology to strengthen relationships with customers and suppliers. These opportunities include improving customer service levels, increasing customer switching costs, increasing the geographic reach of their relationships, and displaying technological leadership.

Information technology can improve customer service levels by providing new forms of service delivery, improving customer intimacy, responding more rapidly to customer needs, and affording customers the opportunity to help themselves. Web-based systems increase the opportunity for companies to support their customers' growing desires for mobility and remote access to information and services. The Web also enables the service being provided to be on a continuous basis in contrast to the discrete nature of non-Web interactions, which are limited by the availability of service personnel. The Web also allows companies to reach their customers seven days a week, 24 hours a day. Companies can make customers aware of new services instantaneously through a Web interface, rather than through expensive mailings and advertising. The electronic medium, in these cases, acts not as a substitute, but rather as an extension of the existing product or brand.

Respondents see an opportunity to use information technology to increase switching costs for their customers. They believe that they can create technology and information-based dependencies between them and their customers by providing systems that add more value to the transaction than the systems provided by their competition. They view their future added-value as extending beyond transaction execution to include the assimilation of information that supports the investment decision and motivates the transaction execution.

Respondents see information technology creating the opportunity to extend the reach of both customer and supplier relationships world-wide. Respondents

noted that pending regulation to the contrary, anyone with a computer becomes a potential customer, no matter how far they are from a branch office or service representative. Similarly, the opportunity exists to create new relationships with suppliers beyond regional boundaries to create, purchase, and provide new products and services.

Some respondents believed that the ability to demonstrate technological leadership is an opportunity that could result in improved market perception. One brokerage company representative claimed that it allowed his company to "reassert itself as a technology leader." Another manager referred to his company's need to "get the eyeballs." While nobody cited specific benefits of being a technology leader, one participant in institutional investment claimed that, "industry prominence is impossible without it." An opposing view from a retirement services provider, however, noted that the cost of being the first mover seems to be going up while the first mover's advantages appear to be shrinking due to the speed at which second movers are imitating the technology leaders.

The trade press provides ample support for our respondents' observations. For example, Citibank cited the opportunity to reduce costs in their launching of a new business-to-business (B2B) electronic commerce service in Australia that includes financial settlement and reconciliation. The company forecasted that the service would result in a 75 percent reduction in end-to-end order management and transaction administration costs (Reuters, 1999). New York Life, on introducing a Chinese-language page as part of its corporate Web site, noted the opportunity to improve customer service. The Web site gives Chinese-American customers "an easier way to obtain information about the company, its products and services," as well as access to information "critical when making insurance-related decisions" (Best, 1999; KPMG, 1999).

Threats and obstacles

Managers noted a variety of threats to their existing relationships and obstacles to improving and extending these relationships. Among the threats were disintermediation, the distinct possibility of cannibalizing existing channels, the risk of standardizing on the wrong technology platform, and the inability to keep pace with change. The obstacles included security risks, network and systems instability, and the difficulty of integrating different systems.

The opportunity for some firms to create new channels and relationships creates a threat of disintermediation for others. The respondents cited potential problems with maintaining customer relationships, such as loss of client control and lack of personal touch. Brokerage houses, for example, felt that their close relationships with institutional clients might become less profitable as the customers of these institutions increasingly used electronic trading alternatives. A related threat is the commoditization of product, which is common in all industries. With personal relationships becoming less important in the selling process, the end-product becomes little more than a commodity.

Most respondents admitted to a fear of such an eventuality, as many financial service companies have historically relied on established customer relationships to build profit margins and create loyalty. The dual threat of disintermediation and product-service commoditization raises concerns with respect to customer loyalty and retention.

Respondents were, in addition, worried about cannibalizing their existing channels and relationships. They felt that the adoption of emerging electronic commerce technologies would put them in direct conflict with currently established channels. While opportunities exist to get closer to their end customers, the reverse side is that they risk alienating existing distributors. They also feared that new entrants, competing without the baggage of legacy systems, traditional ways of doing business, or existing channels, would be able to cannibalize their relationships if they did not succeed in cannibalizing their own relationships first.

Many respondents feared what we call platform risk, that is, the risk of adopting the wrong standard. Because the technology is moving so rapidly, these risks include both the failure to adopt soon enough and the failure to wait long enough for a true standard to emerge. Also, the standards are changing so fast that it is almost as if there are no standards. One manager commented, "how can this be the 'standard' if it changes every six months?"

Another common concern was the challenge of keeping pace with escalating technological and business change. The greatest threat, most felt, was the threat of doing nothing and being "Amazoned." Several respondents worried whether or not their companies would have the required skill and knowledge to support the developing infrastructure. They also worried that they may be unable to move fast enough because they cannot get their management to see the upside potential and downside risk of inactivity. A related difficulty is keeping cost structures aligned with products and services. Some traditional revenue streams are shrinking and could dry up. For example, as one participant noted, trades that once generated $200 commissions are now $19.95 and could someday be free. Old-line firms rely on commission-based revenue streams, but "new players are playing by new rules."

Inadequate security in electronic commerce was commonly seen as an obstacle to the strengthening of supplier and customer relationships. Unlike consumer goods, financial service transactions often deal in thousands or even hundreds of thousands of dollars. The exposure of interconnectivity increases the risk of fraudulent transactions and potentially exposes confidential financial data. The cost of ensuring network security, including using encryption and monitoring firewalls, adds to the cost of maintaining customer and supplier relationships.

Network and systems instability is also an obstacle. As companies rely more and more on technology to cement their relationships, the impact of systems failure increases. One interviewee noted that, "the (virtual) chain is only as strong as its weakest link. One player goes down and we all go down." Investors seem to agree. When Etrade Group Inc.'s Web site became

unavailable to traders for under two hours, the company's stock price fell 50 percent (Collett, 1999).

The difficulty of integrating systems among business partners also creates obstacles. Although the Web may be a common denominator, participants in a customer-supplier relationship still need to tie their Web systems to their back-end systems, and that has proved to be difficult for most firms.

The participants acknowledged technical threats and obstacles but accepted them as risks of doing business in an electronic world. Many found the business threats to be of greater concern and, perhaps, more worthy of management attention. Respondents expressed concern that IT development costs were high in this arena but that their companies could rarely charge a premium for improved service. Several implied that they were being pushed by their customers, particularly business customers, to use information technology to improve service levels and that their response was a competitive necessity more than an opportunity. One institutional investment (retirement services) manager suggested that "customers are bringing 'day-trader' demands for instantaneous information and service to a segment of the industry that neither requires nor rewards this level of service."

Industry and technological drivers

The respondents demonstrated remarkable agreement in identifying industry forces that are shaping their strategy for inter-organizational communication and e-business. All noted continuing cost pressures and shrinking margins within their respective industries. They also cited industry and customer pressure to develop "one-look, one-feel" interface technology for service delivery and increased customer readiness to adopt new forms of technology-enabled service. The need to react to new entrants with no "previous baggage," in the form of brick and mortar facilities and legacy systems, was also forcing their response.

Evolving customer expectations are also impacting e-business strategies. Customers now demand access to real-time data and expect this access to be available at any time, any place, and via any means that the customer may choose – financial transactions are now being executed on customer terms, not industry or individual company terms. Customers are also more technically and financially savvy, which motivates them to self-manage their investments. The desire to self-manage requires the firms to make market and analytical data available to customers – data that was formerly only available to internal financial analysts.

The subjects agreed, as well, on many of the technology trends that will influence their continued investment in e-business products and services. All sectors noted the continuing advancements of technical capabilities and the ongoing cost-performance benefits of bandwidth, Web-access, and hardware processing power. All felt that this would be a significant factor in improving inter-organizational communication and coordination, particularly as it applies

to end-customers due to the increasing prevalence of Web usage in home and business environments.

All sectors believe that improvements in security technology are also driving change, although security will remain a constant concern. Similarly, respondents believe that internal and public network reliability is improving and will facilitate more rapid expansion of services, though several expressed concern that any extended outage could reverse or retard expansion of e-services.

The convergence of the Web, traditional telephone, and wireless technologies is also a trend of great importance to our subjects. Several respondents indicated a desire to integrate traditional phone center technology with Web-technology. The resulting service delivery system would permit customers to access account, advice, and educational information via the Web. However, should customers desire to speak with a representative, they could click through to the phone center and complete their transaction with the assistance of the service representative.

Future practices

Respondents identified two primary areas for future investment in inter-organizational integration. The first path reflected an expanded commitment to existing forms of technology to deliver new or expanded functionality. The managers' second area of interest addressed investment in new technology forms to tighten and enhance their firms' inter-organizational relationships.

Participants believe that the next opportunity for cost savings and service enhancement resides in the expansion of customer account maintenance services delivered via the Web. These services reduce labor costs by eliminating the need for company representative assistance. They also improve quality of service by eliminating service queues, allowing customers to complete transactions at their convenience, placing responsibility for data maintenance and verification in the hands of the customer, thereby reducing the mis-interpretation and mis-spelling of customer data.

All respondents reported plans to place increased emphasis on the development of technology-enabled education and advice services. Further development of these services will include some form of mass-customization and/or account segmentation in order to personalize the delivery of education and advice services. A vital component of this service level expansion and customization will include the linkage of inquiry and advice functionality to available tools such as online calculators for college expense planning, wealth accumulation strategies, tax preparation services, and asset allocation modeling.

Among the newer technologies most anticipated are voice recognition units and wireless communication. Implementation plans and schedules varied among sectors of the industry, but most managers believed that initial applications would continue to address improvement of customer service functionality and service expansion through integration of multiple technology forms.

The need to integrate newer technologies and services with existing systems, and the anticipated transition to mobile services are motivating these firms to pursue more alliances with both software and hardware suppliers. For example, one respondent reported plans to leverage such alliances to support its customer acquisition process by allowing customers to open accounts via the "click-through" from public information services. Another reported immediate plans for a hardware-based alliance that will place the brokers' reporting and account access functionality in the base-level product offering of one of the major personal digital assistant (PDA) products.

Conclusions

Our research suggests that the relationships between suppliers and customers in financial services are less linear than those typically found in manufacturing industries. A high degree of interdependence exists among sectors of the financial service industry, creating a complex, often reciprocal set of relationships that resembles more a network than the traditional, linear supply chain of comparably sized manufacturing and retail firms.

Figure 3 presents a pictorial overview of our findings with regard to the forces shaping these relationships over time. The industry's attempts to improve customer and supplier relationships are being pushed by a variety of threats, pulled by the opportunities that present themselves, moved to change by both business and technological drivers, yet obstructed by various obstacles, mostly technical.

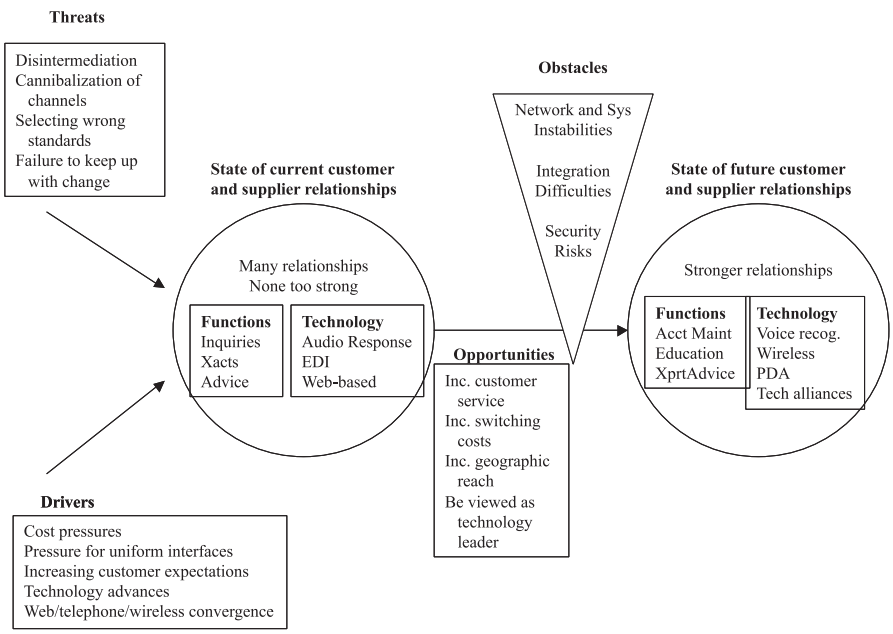


Figure 3.
Overview of forces and changes

Our research confirms and reinforces many notions put forth in other research reports and in the popular press. Many of these findings could have been predicted and, therefore, are not surprising. For example, it is widely believed that threats of disintermediation and channel cannibalization are forcing companies, in almost all businesses, to address their relationships with their customers. Similarly, systems integration difficulties have thwarted companies' attempts at forming tighter relationships with their suppliers. In this section, we therefore focus instead on the more subtle shifts in the nature of supplier and customer relationships that were not foreseen and which offer considerable insight into the future role of information technologies in the financial services.

The participants believe that the next opportunity for cost savings and service enhancement resides in the expansion of customer account maintenance and advice-education services delivered via the Web. This belief is driven by the continuing growth in the richness and sophistication of the functionality embedded in electronic connections between suppliers and customers. Early e-business functions provided account access or viewing functionality, which in time was expanded to include transaction execution. These functions are easily controlled and restricted by the service provider. New forms of functionality such as maintenance and education place more control, hence responsibility, in the hands of the customer. This trend supports the firm's objectives for labor savings and mass customization, while simultaneously providing the customers with functionality that supports their need for mobility and their desire to self-manage their investments. As one discerning manager pointed out, "we're now doing business on the customer's terms, not the terms dictated by our firm or our industry."

The trend toward expanded delivery of advice and education services mirrors the oft-cited transition from data to information and, ultimately to knowledge. Delivering this form of knowledge-enriched services requires formation of new alliances with both software and hardware vendors, as well as alliances with other financial service providers. These alliances allow firms to combine client data with diagnostic software in order to establish client financial goals, assess current financial health, and suggest strategies to fill gaps uncovered by the analysis. Firms also plan to use alliances with browsers, search engines, Internet Service Providers (ISP), and PDA vendors as a means to increase their electronic visibility.

The managers interviewed share many concerns pertaining to competitive threats and the risk of expanding e-business activity. They fear the capabilities of new, "brick-and-mortar-less" competitors who rapidly enter new markets without the millstone of legacy systems and traditional organizational cultures that can retard the progress of industry incumbents. These fears prompt firms to respond with new services and pricing – sometimes producing service-price models with imbalanced cost structures. These managers worry about the sustainability of these service-price models, given the cost of integration with legacy technology.

Overwhelmingly, the respondents believed that the greatest risk was to do nothing or to rest on their laurels. The financial services industry is moving toward electronic products and services an at ever increasing rate. The managers foresee further opportunities to reduce costs, increase the quality of service, provide new services, reach customers world-wide, and improve their company's speed to market for new products and services. Several managers also stated a belief that, due to the increased visibility of technology issues, demonstrating technology leadership was a vital component of establishing industry leadership and promoting customer acquisition and loyalty. These managers admit that uncertainty exists with regards to the industry's emerging technological landscape but harbor no doubts with respect to their firm's need to actively participate in its development.

It is tempting to consider Figure 3 as a model that represents the dynamics of supplier and customer relationships in the financial services, but, as such, it has many limitations. For one, it has short-term applicability, as several of its components will need to be recalibrated with the passage of time. In particular, the longevity of the obstacles we have identified is unclear. And, of course, the description of the current and future state of customer and supplier relationships is ephemeral. Other factors have a much longer life and may be permanent. For example, the longevity of disintermediation as a threat is not known. Disintermediaries might succeed in breaking down existing customer and supplier relationships and forming new ones that are immune to further disintermediation. Alternatively, disintermediaries might create new channels that bypass existing channels for some companies and consumers, but that do not completely destroy existing relationships or the business models upon which these relationships are based. In the latter case, the threat of disintermediation would remain a significant one for companies that continue to do business with their traditional partners. To parry the threat of disintermediation in the relationship, the threatened party will need to add value vigilantly, for example, by providing excellent service and education.

Another limitation of the "model" is that it is largely descriptive rather than prescriptive. Ideally, a model of customer and supplier relationships should be able to determine the impact on relationships of a change in the type or nature of threats and drivers. Clearly, this capability is beyond the limits of this study.

Finally, the conclusions drawn from this study are limited by the small size of the sample. Although insights were obtained from a relatively broad spectrum of sectors within the financial services industry, as was necessary to satisfy the study's objectives, the number of subjects within each sector was small.

Despite its limitations, however, this study has importance for both researchers and practitioners. In particular, it should attract the attention of researchers in traditional supply chain management disciplines, and entice them to compare customer and supplier relationships in supply chains with those of the financial services and, perhaps, other service industries. The relationships we found between customers and suppliers in the financial

services are based on the exchange of information rather than materials, as is common in traditional supply chains. Nevertheless, we anticipate that the lessons learned in the development of customer and supplier relationships in supply chain management research can be applied to the financial service industry and its sectors and vice versa.

This study will also help managers in the financial services industry to analyze the opportunities and assess the risks of building tighter relationships with their customers and suppliers through electronic commerce. With a better understanding of the threats to existing relationships, the opportunities of improved relationships, and the drivers for and obstacles against change, educated managers can implement strategies that will allow them to serve their customers more rapidly, accurately and cheaply. The struggle among companies to bring customers into their own network and keep them away from their competitors' networks will be won by companies whose managers have a better grasp of the alternatives and their associated risks and rewards.

Future research directions

We anticipate five types of future research to complement and validate this study. First, deep, single-company case studies can provide additional evidence to support our findings as well as uncover some of the causal mechanisms behind the processes and strategies that we have observed. Second, within-sector case studies can bring clarity to the issues faced by particular sectors, especially if they differ from those faced by the industry as a whole. Third, longitudinal studies can determine the degree to which our findings remain valid as IPFS becomes more common and as technology continues to evolve. Fourth, additional cross-sector case studies can help validate and refine our conclusions as well as elucidate differences among sectors. Finally, a large-scale, questionnaire-based study could help to validate statistically the results of our research.

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Appendix. Survey outline

(1) Please review the attached matrix of customers and suppliers for your industry (see Table AI). Use this matrix to identify your firm's primary customers and suppliers from the list of industry participants provided in column 1. It is not necessary to identify specific customers/suppliers by name. Simply consider the types of service received from or provided to the listed industry participant. Use the available space to add additional customers/suppliers as necessary.

(2) How does your firm currently utilize electronic business to support inter-organizational communication and coordination?

(3) How does your firm currently utilize other forms of information technology (IT) to support inter-organizational communication and coordination?

(4) What are your firm's future plans concerning electronic business and inter-organizational communication and coordination?

(5) What are your firm's future plans regarding other forms of IT application to support inter-organizational communication and coordination further?

(6) What industry trends drive your strategy concerning electronic business?

(7) What are the industry trends that influence your strategy regarding inter-organizational communication and coordination in general?

(8) What technology trends are influencing your approach towards support of inter-organizational communication and coordination and electronic business?

Column	Do you purchase/acquire services, products or information from companies in column 1	Do you sell/supply services, products or information from companies in column 1?
Retail banks		
Mutual fund		
Insurance		
Brokerage		
Institutional investment		
Commercial banks		
Publishers		
Legal services		
Regulatory services		
Information services (pricing)		
Infomation services (news/analysis)		
Retail consumers		
Other		

Table AI.
Matrix of customers and suppliers

(9) What do you see as the primary opportunities associated with the integration of electronic business with inter-organizational communication and coordination?

(10) What do you see as the primary business threats associated with electronic business and inter-organizational communication and coordination in your industry?

(11) What do you see as the primary technology threats associated with electronic business and inter-organizational communication and coordination in your industry?

(12) Are there any additional comments you wish to make concerning current and future utilization of IT and e-business in the management of your firm's inter-organizational coordination and communication?

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