

2003

## Role of elntermediaries in the United States paper supply chain

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ROLE OF eINTERMEDIARIES IN THE UNITED STATES PAPER SUPPLY CHAIN

A Thesis  
Submitted to the Graduate Faculty of the  
Louisiana State University and  
Agricultural and Mechanical College  
in partial fulfillment of the  
requirements for degree of  
Master of Science

in

The School of Renewable Natural Resources

By  
Sanna Maria Kallioranta  
B.S., University of Helsinki, 2001  
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# TABLE OF CONTENTS

<b>ACKNOWLEDGEMENTS.....</b>	<b>ii</b>
<b>LIST OF TABLES.....</b>	<b>v</b>
<b>LIST OF FIGURES.....</b>	<b>vi</b>
<b>LIST OF FIGURES.....</b>	<b>vi</b>
<b>ABSTRACT.....</b>	<b>viii</b>
<b>1. INTRODUCTION AND STUDY OBJECTIVES.....</b>	<b>1</b>
1.1. Introduction.....	1
1.2. Objectives and Justification.....	2
<b>2. LITERATURE REVIEW.....</b>	<b>5</b>
2.1. eCommerce.....	5
2.2. An Overview of the Internet and Internet Technologies.....	5
2.2.1. System-to-System Connections in the eBusiness Customer/Supplier Interface.....	7
2.2.2. Extranet in the eBusiness Customer Interface .....	9
2.2.3. eIntermediaries in the Customer/Supplier Interface.....	11
2.3. eCommerce Usage.....	12
2.4. United States Paper and Printing Industry.....	15
2.4.1 United States Paper Industry.....	15
2.4.2. United States Printing Industry.....	18
2.4.3. eCommerce and the Paper Industry.....	19
2.5. eIntermediary Marketspace in the Paper Industry.....	23
2.5.1. eIntermediaries' Value Proposition and the Paper Industry.....	25
2.5.2. eMarketplace Evolution.....	26
2.5.3. eIntermediary Challenges and Reasons for Numerous Business Failures.....	27
2.5.3.1. Examples of Deceased eIntermediaries.....	31
2.5.4. Role of eIntermediaries in the Paper Business.....	32
2.5.4.1. Examples of Surviving eIntermediaries.....	35
2.5.5. Future Prospects.....	36
<b>3. RESEARCH MATERIALS AND METHODS.....</b>	<b>38</b>
3.1. Sample Characteristics.....	38
3.2. Survey Development.....	38
3.3. Data Analysis.....	39
<b>4. RESULTS AND DISCUSSION.....</b>	<b>40</b>
4.1. Response Rates.....	40
4.2. Paper Supplier Respondent Demographics.....	40
4.2.1. Geographic Distribution.....	40

4.2.2. Products Produced.....	42
4.2.3. Revenue.....	42
4.2.4. Number of Employees.....	44
4.2.5. Information Technology Spending.....	44
4.3. Paper Buyer Respondent Demographics.....	45
4.3.1. Geographic Distribution.....	45
4.3.2. Products Purchased.....	47
4.3.3. Revenue.....	47
4.3.4. Number of Employees.....	48
4.3.5. Information Technology Spending.....	49
4.4. Respondents Perceptions of Internet Technologies.....	50
4.4.1. Business Applications on the Internet.....	52
4.5. Use of eIntermediaries.....	54
4.5.1. Business Applications via eIntermediaries.....	57
4.5.2. eIntermediary Implementation Investment.....	58
4.6. Expectations and Experiences with eIntermediary Implementation.....	59
4.6.1. eIntermediary Selection Criteria.....	60
4.7. Characteristics of an eIntermediary.....	61
4.7.1. eIntermediary Relationships.....	62
4.8. General Perceptions on eIntermediaries.....	64
4.8.1. Hypothesis Testing: Paper Buyers Versus Suppliers Attitudes on eIntermediaries.....	66
4.8.2. Perceptions on Internet Technologies Versus eIntermediaries.....	67
4.9. Concerns About Using eIntermediaries.....	67
4.9.1. Hypothesis Testing: Paper Buyers Versus Suppliers Concerns About eIntermediary Implementation.....	68
4.10. Factors That Impeded eIntermediary Implementation.....	69
4.10.1. Hypothesis Testing: Factors Impeding Paper Buyers Versus Factors Impeding Suppliers eIntermediary Implementation.....	71
4.11. Willingness to Use eIntermediaries.....	71
4.11.1. Hypothesis Testing: Paper Buyers Versus Suppliers Willingness to Use eIntermediaries.....	73
<b>5. SUMMARY AND CONCLUSION.....</b>	<b>74</b>
<b>LITERATURE CITED.....</b>	<b>77</b>
<b>APPENDIX A: SURVEY COVER LETTER.....</b>	<b>83</b>
<b>APPENDIX B: PAPER SUPPLIER QUESTIONNAIRE.....</b>	<b>84</b>
<b>APPENDIX C: PAPER BUYER QUESTIONNAIRE.....</b>	<b>93</b>
<b>APPENDIX D: PAPER GLOSSARY.....</b>	<b>102</b>
<b>VITA .....</b>	<b>104</b>

## LIST OF TABLES

Table 1. Comparative Estimates of the Worldwide B2B eCommerce, 2000-2005.....	14
Table 2. Paper and Paperboard Production in the U.S.....	16
Table 3. Top U.S. Paper Producing Companies.....	17
Table 4. Response Rate.....	40
Table 5. Products Produced.....	42
Table 6. Products Purchased.....	47
Table 7. t-Tests on Buyers Versus Suppliers Perceptions on Internet Technologies.....	51
Table 8. Suppliers: Year of eIntermediary Implementation.....	56
Table 9. Suppliers eIntermediaries Used.....	56
Table 10. t-Tests: Paper Buyers Versus Suppliers Attitudes on eIntermediaries.....	66
Table 11. t-Tests on Attitudes on Internet Technologies Versus eIntermediaries.....	67
Table 12. t-Tests on Paper Buyers Versus Suppliers Concerns About eIntermediary Implementation.....	69
Table 13. t-Tests on Factors Impeding Paper Buyers Versus Factors Impeding Suppliers eIntermediary Implementation.....	71
Table 14. t-Test on Paper Buyers Versus Suppliers Willingness to Use eIntermediaries.....	73

## LIST OF FIGURES

Figure 1. Frame of Reference for the Study Objectives.....	3
Figure 2. Comparative Analysis of the Worldwide IT Spending Growth in 2003.....	13
Figure 3. Respondents Geographic Regions: Suppliers Business Unit Locations.....	41
Figure 4. Respondents Headquarter Geographic Region: Suppliers Headquarter Locations...	41
Figure 5. Suppliers: Business Unit Revenue.....	43
Figure 6. Suppliers: Corporate Revenue.....	43
Figure 7. Suppliers: Employees by Business Unit.....	44
Figure 8. Suppliers: Business Unit IT Spending (2002).....	45
Figure 9. Respondent Geographic Regions: Buyers Business Unit Locations.....	46
Figure 10. Respondent Geographic Regions: Buyers Headquarter Locations.....	46
Figure 11. Buyers: Business Unit Revenue.....	48
Figure 12. Buyers: Corporate Revenue.....	48
Figure 13. Buyers: Employees by Business Unit.....	49
Figure 14. Buyers: Business Unit IT Spending (2002).....	49
Figure 15. Perception of Internet Technologies: Comparison of Suppliers and Buyers.....	51
Figure 16. Suppliers: Perception on Benefits of Using the Internet.....	51
Figure 17. Suppliers: Internet Business Applications Currently Used (2002).....	52
Figure 18. Buyers: Internet Application Currently Used (2002).....	53
Figure 19. Suppliers: Internet Business Applications Planned in the Next (2003) Year.....	53
Figure 20. Business Unit Level Usage of eIntermediaries.....	55
Figure 21. Corporate Level Usage of eIntermediaries.....	55
Figure 22. Suppliers: Business Applications via eIntermediaries.....	57

Figure 23. Suppliers Total Investment Made for eIntermediary Implementation.....	58
Figure 24. Suppliers Significance of Investments Made in eIntermediary Implementation....	58
Figure 25. Initial Expectations Versus Experience with eIntermediaries.....	59
Figure 26. "Would Your Company Change the Initial Approach for eIntermediary Usage If It Would Be Possible?".....	60
Figure 27. eIntermediary Selection Criteria.....	61
Figure 28. Characteristics of eIntermediaries.....	61
Figure 29. eIntermediary Relationship.....	62
Figure 30. Trust and Commitment to eIntermediaries.....	63
Figure 31. Attitudes on eIntermediary Usage.....	65
Figure 32. Suppliers Perception on eIntermediaries.....	65
Figure 33. Concerns About Using eIntermediaries.....	68
Figure 34. Factors That Have Impeded eIntermediary Implementation.....	70
Figure 35. Suppliers Willingness to Sell Paper Using eIntermediaries.....	72
Figure 36. Buyers Willingness To Buy Paper Using eIntermediaries.....	72



## **ABSTRACT**

In an attempt to streamline the paper supply chain, paper industry vertical business-to-business eMarketplaces were established to help industry players to decrease inefficiencies in their supply chains, to minimize negative effects of economic cyclicalities, and to achieve better visibility. eMarketplaces rode the hype of revolutionizing the way in which industries conduct business, citing the cost savings achieved by expanded market reach, operational efficiencies, aggregated purchasing, and finding the least expensive suppliers. Adoption of eIntermediaries has been lower than expected in the paper industry and many of the paper vertical start-ups failed when the economy softened and the dot.com bubble burst.

This thesis examines the expectations, experience and role of eIntermediaries in the paper supply chain. eIntermediaries failed to fulfill paper suppliers' expectations regarding key promises, such as improving cash flow, reducing cycle time, and reducing errors. None of the paper supplier respondents achieved the expected benefits from eIntermediary implementation. Overall paper suppliers lack commitment and trust for eIntermediaries.

Paper buyer and paper supplier attitudes and expectations on eIntermediaries do not differ significantly. Both suppliers and buyers are concerned that using eIntermediaries would lead to loss of contact with exchange partners, but paper suppliers have a greater level of concern. Suppliers are most concerned with profitability, security of sensitive information, technical resources, costs, and the need to restructure established business processes in the context of using eIntermediaries. Neither paper buyers nor suppliers are driving eIntermediary adoption on the paper industry.

B2B exchanges seem to have underestimated the complexity of the paper industry and overestimated companies' ability to adopt eCommerce. Organizational changes, changes in

business processes, development of industry standards, and improvements in integration technology systems are all needed to capture benefits from B2B exchanges.

# **1. INTRODUCTION AND STUDY OBJECTIVES**

## **1.1. Introduction**

The eBusiness revolution is impossible to ignore. It has transformed businesses in virtually every industry and reshaped the global economy. eCommerce has revolutionized the way companies buy and sell goods and services, and eBusiness has transformed the way companies interact with customers, partners and employees (Timmers, 1998).

For the past three decades, the history of business information systems has been deployed by the information system and business process automation within the four walls of an enterprise. After separately automating business and production processes, enterprise application integration (EAI) gained popularity in the later part of 1990s, as a means to connect separate business process automation applications within companies. Also, since the beginning of the 21<sup>st</sup> century, global paper industry companies have been implementing enterprise resource planning (ERP) projects across their worldwide operations. In the new millennium with the promise of the new eEconomy based on Internet technologies, eMarketplaces, eInformediaries, and other eIntermediaries gained momentum as industries realized the need to extend their internally integrated operations outside the company walls and to create connectivity in the supply chain.

In the context of this research paper, eIntermediary is defined to include: Providers of on-line paper product buying and selling services, including auctions, also referred to as eMarketplaces; providers of on-line paper-industry-specific information, also referred to as eInformediaries; providers of information technology infrastructure for the paper industry; and providers of on-line services for paper suppliers and buyers that facilitate business transactions. eIntermediaries can either be owned by a paper industry consortium or an independent third-party entity. However, a single paper supplier or a buyer practicing

private selling or buying is not considered to be eIntermediary. In other words, private storefronts or Extranet applications are not considered to be eIntermediaries.

“eBusiness is not about websites. It is about how you grow revenue, drive time and cost out of your supply chain, and improve relationships with customers,” said Kirk Lowery, Oracle’s Vice President of eBusiness strategic services, in the first eBusiness paper and converting conference in June 2000 (Pponline.com (a), 2000). Online eMarketplaces rode the hype of “revolutionizing the way in which industries conduct business”, citing potential cost savings achieved by expanded market reach, operational efficiencies, aggregated purchasing power, and finding the least-expensive suppliers. However, the downturn in the economy and the bursting of the dot.com bubble had a significant and negative impact on business-to-business (B2B) eIntermediaries in 2001. The boom era of the late 1990s is now facing its share of harsh criticism (Moore, 2001).

## **1.2. Objectives and Justification**

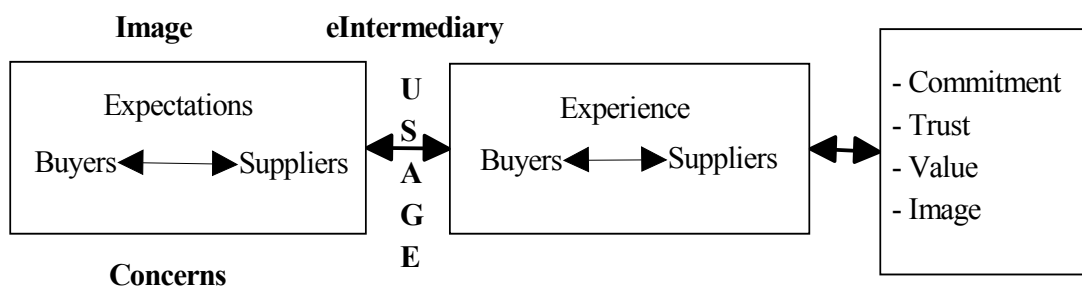
The most important challenges that the global paper industry has been facing in recent years have been consolidation, globalization, and overcapacity. The paper industry is characterized by high inventories and variable lead times, which often lead to inefficiencies in the paper supply chain. Inefficiencies have been exacerbated by manual transaction processing and inefficient use of information. In an attempt to streamline the paper supply chain, paper industry vertical B2B eMarketplaces were established to help industry players decrease inefficiencies in their supply chains, to minimize negative effects of economic cyclicalities, and to achieve better visibility (ForestExpress, 2001).

Industry adoption of eIntermediaries, operating in the electronic cyberspace of the Internet, has been low. Many of the paper vertical start-ups established in the dot.com boom of the 1990s failed when the economy softened and the dot.com bubble burst. The marketplace was unable to sustain the viability of all the start-up companies that attempted

to capture a share of the approximately \$750 billion global paper industry supply chain (ForestExpress, 2002).

Defining the expectations, experiences, and images held by paper vertical eIntermediaries in the minds of paper suppliers and buyers could help to identify the reasons why eIntermediaries failed to gain business liquidity and what should be done to secure the paper industry's participation to eEconomy. Understanding what went wrong in the past helps to do things right in the future. The study objectives of this Thesis research are:

1. To review the United States paper industry's experience with Internet technologies and supply chain management applications.
2. To explore how widely and intensively eIntermediaries are used in the paper supply chain in the United States.
3. To explore expectations and experiences of paper suppliers and buyers interacting with eIntermediaries in the paper supply chain.
4. To explore the image of eIntermediaries in the paper supply chain.
5. To examine the main concerns and impediments in eIntermediary implementation.



**Figure 1. Frame of Reference for the Study Objectives**

The frame of reference of the study is directly linked to the research objectives. Commitment, trust, value, and image are derived from expectations and experience. The initial expectations are based on the prevailing image and concerns of the service (Kapferer, 1998). When potential users decide to take the step from expectations to

experience, they reshape their perceived images according to the experience achieved from using the service. Based on the positive or negative difference between expectations and experience, users decide if the service is worthy of their trust or/and commitment, and whether it brings additional value to their business (Kotler and Armstrong, 2001; Kotler, 2000).

Paper suppliers and buyers are the target groups with whom paper vertical eIntermediaries want to engage in business. These target groups have different sets of business needs and wants. This study's goal is to investigate if paper suppliers' and buyers' expectations, experience, and image on eIntermediaries differ from each other.

## 2. LITERATURE REVIEW

### 2.1. eCommerce

Electronic commerce, or eCommerce, can be defined loosely as “doing business electronically,” as defined by the European Union in 1997. eCommerce is the electronic trading of physical or intangible goods. This includes all the trading steps from on-line marketing, ordering, and payment to support delivery. eCommerce also includes electronic support for collaboration between companies (Timmers, 1998). In Turban, et al. (2002), Kalakota and Whinston defined eCommerce from four perspectives:

- From a **communications** perspective, eCommerce is the delivery of information, products/services, or payments over telephone lines, computer networks, or any other electronic means.
- From a **business process** perspective, eCommerce is the application of technology toward the automation of business transactions and workflow.
- From a **service** perspective, eCommerce is a tool that addresses the desire of a firm, consumers, and management to cut service costs while improving the quality of goods and increasing the speed of service delivery.
- From an **on-line** perspective, eCommerce provides the capability of buying and selling products and information on the Internet and other online services.

eCommerce is changing the traditional linear appearance and functionality of a supply chain. It is altering the supply chain to become a supply web with an open marketplace available to new suppliers and customers despite country borders or time zones (Fazio, 2000).

### 2.2. An Overview of the Internet and Internet Technologies

Internet-based technologies offer numerous applications in order to increase efficiency and productivity, such as linking employees, offices, customers, and partners from remote

locations, regardless of time or place, distributing sales information more promptly and efficiently, and saving operation costs (Vlosky and Fontenot, 1997).

The Internet is a global network that enables computers to communicate and share services around the world. The Internet is an enormously valuable shared global resource of information and knowledge, as well as means of collaboration and cooperation among countless diverse communities (Internet Society, 2001). The Internet is a public, cooperative, and self-sustaining facility accessible to hundreds of millions of people and organizations worldwide. Physically, the Internet uses currently existing public telecommunication networks. Technically, what distinguishes the Internet is its use of a set of protocols called TCP/IP (Transmission Control Protocol/Internet Protocol). TCP/IP is the basic communication language of the Internet. TCP/IP is a program that manages the assembling of a message or a file into smaller packets that are transmitted over the Internet. These information packets are received by a TCP program in the receiver's computer, which reassembles the packets into the original form. IP (Internet Protocol) handles the addressing of each packet so that it gets to the right destination (Whatis.com (1)).

Global Internet usage in 2003 is estimated to be 762.3 million users, according to eMarketer Research (2001). North America accounts for 185 million users. These figures are based on the International Telecommunication Union's estimate of Internet users aged two years and older, who have accessed the Internet within the previous 30 days (eMarketer, 2001).

eCommerce offers options to handle business transactions and communication in the customer/supplier interface. Traditionally, business transactions and customer relationships in the pulp and paper industry have been handled by fax, phone, and mail. The majority of sales representatives' work has been preparing of documents required for order processing and delivery, and answering customer inquiries on the status of their orders. This routine



work has required considerable time and effort without creating any additional value in the customer relationship. Instead of using phone and fax, business transactions data can be transformed from supplier to customer through system-to-system connection, extranets, or using eIntermediaries, such as eMarketplaces, exchanges, and hubs all based on Internet platforms. These solutions can offer value-added services to customers and give sales representatives time to concentrate on business and customer relationships instead of spending considerable time with routine paperwork (Kivinen, 2001).

### **2.2.1. System-to-System Connections in the eBusiness Customer/Supplier Interface**

Even before the Internet was launched, companies were trying to reach out beyond their four walls to create the process of information exchange between vendors and customers. For decades, companies had been exchanging data in the form of electronic documents between supply chain partners using system-to-system connections over value-added networks. System-to-system connection refers to standardized computer-to-computer message exchange of business documents, such as purchase orders, order confirmations, shipping notices, invoices, shipping documents and, customs documents, between an organization and its suppliers and customers. Traditional system-to-system connection is based on Electronic Data Interchange (EDI) connections. EDI is a computer-to-computer electronic communication method whereby trading partners exchange business transactions. The transactions consist of documents in structured formats that can be processed by the recipient's computer application software (Senn, 1998). Because the data is processed and stored automatically, tasks such as re-keying data and printing orders and invoices are eliminated.

In North America approximately 16 percent (Dupuy and Vlosky, 2000) of the paper purchase transactions are handled through EDI. The expense, complexity, lack of

flexibility, and limited functional scope of EDI implementation has limited its use to large enterprises with large transaction volume and deep pockets (Acly, 2000).

EDI is best applied for large companies that have close relationships with suppliers. EDI serves customers who seek transaction efficiency. EDI is most economical for companies with a limited number of suppliers and great numbers of transactions.

According to Wigand (1997), EDI offers numerous advantages compared to manual document processing. First, when data are in electronic form, they can be collected, transmitted, stored, retrieved, processed, and analyzed more readily than if they are in paper form. Errors associated with keying in data into one system and then re-keying in the same data into a different system can be virtually eliminated. Second, EDI speeds the transmission of data between organizations, enabling just-in-time<sup>1</sup> (JIT) processes. Moreover, it eliminates the labor-intensive tasks of collecting, sending, and receiving paper-based documents, thus increasing productivity within the organization. Electronic transactions allow reduction in personnel time for employees involved in paper-based records handling. Finally, the use of EDI helps a company's marketing efforts by controlling costs and providing better customer service. Sales people are able to focus on selling rather than on bureaucratic paperwork (Wigand, 1997).

The paper industry has been using an industry-specific EDI message standard EDIPAP (Electronic Data Interchange for Paper Industry) since the early 1990s (CEPI, 2000). The next step beyond traditional EDI is the use of the Internet to improve and transform the way enterprises conduct business with their exchange partners. Modern system-to-system connections use the Internet network as its platform, which eliminates expensive cabling and maintenance costs (Acly, 2000).

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<sup>1</sup> Delivery of ordered items at a designated time (Turban, et al., 2002)

The paper industry has made an industry-wide joint effort to develop a set of unified Extensible Markup Language (XML) messaging standards for business transactions for the buying, selling, and distribution of paper products. XML is an emerging Internet standard for sharing data between computer applications (Technology Reports, 2000). This paper industry-specific messaging standard project is called papiNet (papiNet, 2001). In 1999, the papiNet standards effort was initiated by a group of European forest product manufacturers. In autumn 2000, papiNet Europe and forest industry companies from North America united their efforts, realizing that global standards would be needed in order to maximize participants' benefits. The goal of papiNet is a single set of unified, international XML-based eBusiness standards designed to improve the efficiency and accuracy of transactions throughout the paper supply chain, while reducing the cost of operations (papiNet, 2003). Development of industry standards, which will enable efficient transactions between customers and suppliers and prevent a fragmented and thus costly eCommerce infrastructure, is a critical part of the foundation for eBusiness (CEPI, 2000). PapiNet standards' development has been generative; by the end of 2002 the extensive papiNet message standard library covered the following 23 transactions: purchase order, order confirmation, call off, delivery message, invoice, request for quote and confirmation, goods receipt, debit/credit memo, business acknowledgement, forecast, usage, information request, order status, inventory status, inventory change, product attributes, production plan, quality report, transportation-related messages, complaint claim, and complaint comment (papiNet, 2003).

### **2.2.2. Extranet in the eBusiness Customer Interface**

An extranet is a private network that uses the Internet protocol and public telecommunication systems to securely share business information with suppliers, vendors, partners, customers, or other businesses. (Whatis.com (3)). Extranets can extend key

information to business partners throughout the supply and distribution chain and facilitate collaborative relationships with business partners widely separated geographically (Vlosky, et al., 1998). Suppliers have realized the need to offer customers easy access to the customer-specific information. This has led to the development of password-secured extranets over the Internet. These “premium” web-pages can offer customers value-added services as well as fulfillment services and order management functions (Biros, 2001).

In a survey conducted by Vlosky in 1998, 10 percent of surveyed forest product industry companies had an extranet. Considering the general tendency to lag other corporate sectors in technology development, this figure is significant. A large percentage, 68 percent of the surveyed companies with extranet, had implemented extranet in the past three years. According to the survey, order management services such as order tracking, status enquiries, and shipping notices were the most frequently used extranet applications. To be successful, extranets may require a change of business culture. Information that has traditionally been unavailable to customers becomes far more broadly available (Vlosky, 1998).

Extranets serve best for non-system equipped companies and companies with a limited number of suppliers and transactions. Extranet services are a great marketing tool for value-added services. Using extranet enables efficient distribution and sharing of key information; cost reductions by reduced delivery times; decreased order processing costs; and savings on operation costs. Furthermore, sales representatives are able to move from routine work to establishing a close customer relationship. Extranet services create supply chain visibility, enabling 24/7 availability to information. Using an Extranet solution does not require IT competence, because it is based on Internet connection (Vlosky, et al., 2000). The impediments of extranet are it is supplier-specific. A customer with multiple suppliers would need to use several separate supplier-specific extranet log-ins and sessions

in order to interact with the suppliers. Besides, data entry on the customer's end is mainly based on keyboard entry (Dipoli Media, 2001).

### **2.2.3. eIntermediaries in the Customer/Supplier Interface**

In this research context, eIntermediary is defined to include:

- Providers of on-line pulp and paper product buying and selling services, including auctions (also referred as eMarketplaces).
- Providers of on-line pulp and paper-industry-specific information (also referred to as eInformediaries).
- Providers of information technology infrastructure for the pulp and paper industry.
- Providers of on-line hubs for pulp and paper suppliers and buyers to transact with each other.

These eIntermediaries can be owned by a pulp and paper industry consortium or an independent third party entity.

Business communities have started to form eMarketplaces on the Internet, enabling them to automate and leverage transactions with one another as a community. By bringing together large numbers of buyers and sellers, eMarketplaces give sellers access to new customers, expand the choices available to buyers, reduce transaction costs, and provide valuable information. Bringing multiple buyers and sellers together in a single, online location, trading hubs, or eMarketplaces has been projected to be the fastest-growing segment of B-to-B eCommerce (Raisanen, 2000).

Establishing supplier-specific point-to-point connections to facilitate electronic business transactions can become a challenge when there are many suppliers.

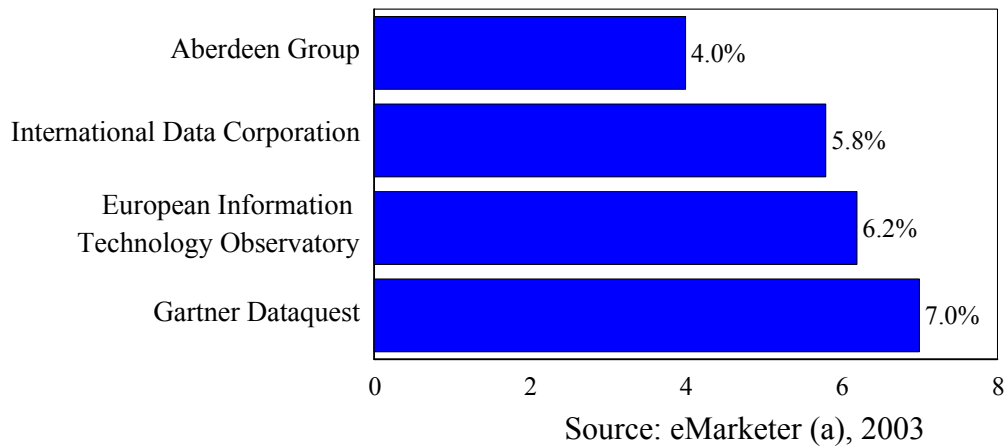
eMarketplaces offer a smooth option to route business transactions through their hubs. A customer can build only one interface with a marketplace, and the hub will take care of the IT infrastructure needed for message routing (UPM-Kymmene, 2001). eMarketplaces

decrease the need of IT resources when establishing and maintaining point-to-point connection. Thus, eMarketplaces are particularly suitable for customers who have several suppliers and who seek supply-chain optimization. By improving better supply-chain visibility eMarketplaces can create savings in inventory and procurement costs. Users are able to browse suppliers' aggregated inventories and production schedules, enabling optimization in procurement. Those customers with large numbers of transactions and a desire to decrease hassle and errors while increasing efficiency benefit the most from eMarketplaces. eMarketplaces are beneficial also for customers who are looking for spot purchases. A quick RFQ (Request for Quote) can be sent based on search results in catalogue or inventory and production schedule to multiple vendors simultaneously (Dipoli Media, 2001; Kivinen, 2001).

The pulp and paper industry saw the emergence of eMarketplaces in the past couple of years. These eMarketplaces were either industry verticals, dot.coms that operate only in the forest and paper industry, or horizontal players that operated across industries and focused on a special area such as logistics. Some of the eMarketplaces were independent companies, and some were owned by the industry itself, like the North American initiative, ForestExpress, and the European initiative Expresso. In 2000 there were more than 50 dot.coms competing to capture their share of the \$750 billion paper industry revenue. After the economic slowdown and the dot.com crash in 2002, as projected by experts, there were only a few paper vertical eMarketplaces left standing (Hayhurst, 2001).

### **2.3. eCommerce Usage**

Despite the downturn in the world economy, overall information technology (IT) spending and eBusiness investments are increasing. As seen from Figure 2, worldwide IT spending is expected to grow between 4 percent to 7 percent in 2003, depending on the research institution (eMarketer (a), 2003).



**Figure 2. Comparative Analysis of the Worldwide IT Spending Growth in 2003**

Regardless of the dot.com decline, B2B eCommerce has a bright future. Steve Butler, senior analyst at eMarketer stated in Spring 2002:

“Despite the last year’s difficult economic climate, many companies pressed on with their eBusiness initiatives, continuing to lay the foundation for eCommerce trade. Leading Electronic Data Interchange<sup>2</sup> (EDI) vendors and industry-backed exchanges are currently helping large enterprises bring their smaller suppliers online, setting the stage for significant eCommerce growth” (Cyber Atlas, 2002).

According to eMarketer 2002, the B2B eCommerce spending accounted for 79.2 percent of total eCommerce spending in 2001, and its share is estimated to grow to 87 percent by 2004 (PaperAge, 2001). Various experts define eCommerce differently and project inconsistent figures for eCommerce revenues, but as seen in Table 1, they all agree on one thing: eCommerce represents a growing piece of the overall commerce pie, and its share is expected to grow steadily (Hirsh, 2000). According to eMarketer, worldwide B2B eBusiness revenues will nearly triple from 2001 figures, to \$1,409 billion in 2003. Other analysts are even more optimistic. Goldman Sachs, AMR Research, and Morgan Stanley are estimating B2B revenues to increase to around \$2 trillion in 2003. Gartner Group and Forrester Research top that number estimate of \$3.6 trillion (eMarketer (b), 2003). These eCommerce growth figures are supported by the fact that eCommerce has become a fact of

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<sup>2</sup> EDI: Computer-to-computer electronic communication connection for trading partners to exchange business transactions.

life for business as of all sizes. Big companies have already invested heavily in B2B eCommerce and are now compelling their vendors to get online as well, creating a cohesion effect (B2B Outlook, 2002).

If B2B eMarketplaces are able to improve their business offerings and their way of doing business, an even bigger increase in eCommerce is possible. From research conducted by Giga Information Group, Inc., and Booz Allen Hamilton, nearly half of the surveyed companies reported that eMarketplaces have failed to meet their expectations. Only 10 percent of the survey respondents felt eMarketplaces had met their expectations. However, a majority of the companies indicated that they expect to use more eMarketplaces in the future (Cyber Atlas, 2002).

**Table 1. Comparative Estimates of the Worldwide B2B eCommerce, 2000-2005  
(in billions of USD)**

	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
<b>eMarketer</b>	278	474	823	1,409	2,367	-
<b>Goldman Sachs</b>	357	740	1,304	2,088	3,201	-
<b>AMR Research</b>	371	704	1,375	2,261	3,350	4,739
<b>Gartner Group</b>	433	919	1,929	3,632	5,950	8,530
<b>Forrester Research</b>	604	1,138	2,061	3,694	6,335	-

*Source: eMarketer.com, 2002*

Looking at these trillion dollar eCommerce prospects shown in Table 1, it does not come as a surprise that many companies have been trying to claim their piece of the pie and position themselves as intermediaries to facilitate B2B eCommerce. Although the figures look enticing, analysts point out that B2B eCommerce is still in its youth. In 2001, eCommerce accounted for only about 2 percent (B2B Outlook 2002, 2002) of all B2B trade in the U.S. Spending on eBusiness currently accounts for less than a fifth of all companies' total IT spending, and only 11 percent of the corporations have fully



implemented eBusiness strategies, according to A.T. Kearney and Line 56 (B2B Outlook 2002, 2002). It is clear that B2B eCommerce has a long way to go before it reaches its maturity in the paper sector.

The United States continues to be the largest market for B2B eCommerce, an annual expected eCommerce revenue growth rate of 68 percent from 2001 to 2005. The second-largest B2B eCommerce region is Western Europe, with a 91 percent compound annual growth rate projected over the same time period. Asian markets are experiencing the fastest growth, with a growth rate of 109 percent from 2001 to 2005 (Cyber Atlas, 2002).

Companies continue to invest in eBusiness initiatives because their customers demand it. According to a report from IDC research, 42 percent of the 2000 companies questioned in the firm's eWorld 2002 survey said that their eCommerce operations were a response to customer demand. The same number of respondents indicated that they enter into eBusiness to cut costs. Also, 40 percent believed that using the Internet could boost customer service, and more than 50 percent of the respondents said they invested in eBusiness in order to improve coordination with suppliers and customers (Robinson, 2002).

## **2.4. United States Paper and Printing Industry**

### **2.4.1 United States Paper Industry**

Papermaking has its origins thousands of years ago in China. Paper is a general name for all kinds of matted or felted sheets of fiber formed on a fine screen from a water suspension. Paper and paperboard are the two broad categories of paper. Paper is considered to be lighter in basis weight, thinner, and more flexible than paperboard. Paperboard is heavier in basis weight, thicker, and more rigid than paper. All sheets 12 points (0.012 inch) or more in thickness are classified as paperboard (AF&PA, 2003).

The total paper and paperboard production in U.S. in 2000 was 94,624 tons (Table 2) (Pulp & Paper North American Fact Book 2001, 2001). Pulp production capacity in U.S. was 62,986 tons in 2001 (PaperLoop, 2003). The U.S. accounts for 26 percent of worldwide paper and paperboard production and 30 percent of worldwide pulp production (Conservatree, 2003). Paper and paperboard are primarily produced in large mills. Today, the paper industry employs 198,800 people in the U.S. (PaperLoop, 2003). Employment at pulp and paper mills declined dramatically in the 1980s and 1990s due to consolidations, mergers, and mill closings. On the other hand, labor productivity has steadily increased over the last 10 years (Pulp and Paper North American Fact Book 1998-1999, 1998).

**Table 2. Paper and Paperboard Production in the U.S..**

<b>Grade</b>	<b>Production (000 tons)</b>	<b>Percent of Paper Production</b>
<b>Paper</b>	<b>45,638</b>	
Printing/Writing	26,935	59%
Newsprint	7,360	16%
Tissue	6,911	15%
Packaging and Industrial Materials	4,432	10%
<b>Paperboard</b>	<b>48,986</b>	
<b>TOTAL Paper and Paperboard</b>	<b>94,624</b>	

Source: American Forest & Paper association, published in Pulp & paper North American Factbook 2001, Ppaerloop Publications

Most of the pulp and paper industry is concentrated in the northwest, midwest, and southeast where forest resources are available and accessible. Wisconsin and Pennsylvania account for 14 percent of the total U.S. pulp and paper shipments, whereas the leading southern paper-producing states, Georgia and Alabama, account for 10 percent (DOC, 1996). There are 499 paper and paperboard mills and 176 pulp mills in the U.S. (PaperLoop, 2003). The top paper producing companies are shown in table 3.

**Table 3. Top U.S. Paper Producing Companies**

Company	
1. International Paper	6. Weyerhaeuser
2. Georgia-Pacific	7. Westvaco
3. Procter & Gamble	8. Mead
4. Kimberly-Clark	9. Willamette Industries
5. Smurfit-Stone Container Corporation	10. Bowater Incorporated

Source: Paperloop, 2003

The U.S. paper industry is fueled by the U.S. being the world's largest paper consumer. The U.S. consumed close to 99 million tons of paper in 1997 or about 738 pounds per capita (Pulp and Paper North American Fact Book 1998-1999, 1998).

Characteristics of the U.S. paper industry are highly cyclical, dependent on commodity prices, and consumer markets. The industry has also gone through significant globalization, consolidation, and downsizing process in the 1990s. To stay competitive and to develop processes and products that will comply with tightening environmental regulations, the pulp and paper industry directs about 1 percent of its sales for research and development annually (Pulp and Paper North American Fact Book 1998-1999, 1998).

The year 2001 was a difficult year for the paper industry with U.S. demand falling for the second straight year and production falling to 1994 recession levels. This decline led to major restructuring, including mill and paper machine shutdowns and continuing consolidation (PaperLoop, 2003).

Counter to popular belief, paper has not become obsolete with the emergence of the Internet. In fact, paper used in newspapers, magazines, direct mail or yellow pages has remained the number one choice for advertisers. In 2000 paper publishing amounted to

\$119 billion in advertisement spending compared to \$59 billion spent for television, and \$4 billion spent on the Internet (Wong, 2001).

#### **2.4.2. United States Printing Industry**

Printing has played a major role in the spread of literacy and understanding. In the U.S. paper is used to publish more than 2 billion books, 350 million magazines, and 24 billion newspapers annually (Pulp and Paper North American Fact Book 1998-1999, 1998). Printing is generally regarded as a European 15<sup>th</sup> century innovation. Europeans had the advantage of a simple alphabet compared to Chinese, who were already printing from wooden blocks in the 8<sup>th</sup> century. Johan Guttenberg invented printing with individually cast metal letters in 1546 (Dotprint, 2001). Today, there are five printing methods that use plates or some other form of image carrier –litography, letterpress, flexography, gravure, and screen-printing. Non-impact and plateless techniques include electronic, electrostatic, and inkjet printing (U.S. Department of Labor, 2003).

The printing industry produces items ranging from newspapers, magazines, books, brochures, labels, and newsletters, to postcards, memo pads, business order forms, checks, maps, consumer packages, and even T-shirts. The printing and publishing industry is a \$1 trillion business in the U.S. (Hoover's, 2003). The printing industry contains a number of segments. The largest segment of the industry is commercial printing (newspaper inserts, catalogs, pamphlets, and advertisements), accounting for 50 percent of total establishments and 36 percent of employment. The second largest segment is newspapers. These two largest segments make nearly 70 percent of the sector's total employment. The printing industry is a large industry formed by numerous small size printing establishments (U.S. Department of Labor, 2003). Other segments include book printing, periodicals, blankbooks and bookbinding, manifold business forms, and typesetting. Printing facilities are evenly dispersed throughout the U.S. (U.S. Department of Labor, 2003).

The printing industry continues undergoing technological change, as computers and technology alter the way in which work is performed. Technological innovations and consolidation through mergers and acquisitions are the major forces creating turbulence in the industry (U.S. Department of Labor, 2003; Hoover's, 2003).

#### **2.4.3. eCommerce and the Paper Industry**

According to PricewaterhouseCoopers' Global Forest & Paper Practice, the global forest and paper industry represents a supply chain of approximately \$750 billion, with the U.S. share representing \$250 billion of products (ForestExpress, 2002). The most important challenges the global paper industry has been facing over the past years are consolidation, globalization, and overcapacity. High inventories and variable lead times characterize the paper industry due to the inefficiencies in the paper supply chain (ForestExpress, 2002; Juslin and Hansen, 2002). The inefficiencies are caused by manual transaction processing and inefficient use of information or resources. The need to streamline the paper supply chain has become evident. Streamlining the supply chain by using eCommerce technologies includes more efficient information flow by integrating supply chain systems with trading partners via system-to-system connections. It has the potential to lower transaction costs of identifying, negotiating, and purchasing from multiple suppliers by using eMarketplaces. Consolidated and customized pricing information, real-time news, and industry data can be easily achieved by using Internet technologies. eMarketplaces can potentially eliminate low value-added intermediary brokers and dealers currently used to reach customers. Overall, the Internet offers an expanded universe of buyers and sellers (PaperAge, 2001).

Goldman Sachs has been quoted as determining that eBusiness in the paper industry in 2000 was \$5 billion/year and that worldwide, the paper industry is expected to have \$45 billion in eCommerce revenue by 2004 (Thompson, 2001). In a survey done in 2000, 71

percent of the interviewed forest products industry companies indicated that they are not yet where they want to be in implementing Internet capabilities. But only about 20 percent of the forest products industry companies have already implemented eCommerce capabilities, with an additional 20 percent planning to do so in the future (Vlosky 2002).

The spectrum of information technology sophistication and e-enabled business in the American pulp and paper industry is wide (Vlosky et al., 2003). Some companies in the industry have established eBusiness strategies and are now in the implementation stage, using fairly sophisticated Internet concepts in operations. On the other hand, some companies are still hesitant to adapt Internet or eCommerce technologies. According to PricewaterhouseCoopers, 82 percent of paper companies have an Internet presence. The sites are primarily informational rather than transactional. Only 6 percent of the companies have product availability data online, and only 3 percent offer order status information through their Web pages (pponline.com (b), 2000; Cubine and Smith, 2001). In another survey by PricewaterhouseCoopers, of the Websites of the top 100 global forest industry companies, only 5 websites were considered to be “best in class” when judged on functionality, overall strategy, and visual impact. Thirty-seven companies received scores less than 50 out of 100 possible points (Cambell, 2001).

Companies trying to sell Internet solutions to pulp and paper companies face a major challenge. “The pulp and paper industry is part of the ‘old economy’ and slow to change. It is a very conservative industry. Internet maturity is also lower in pulp and paper companies because of the high average age of managers, which may slow down the process change. (Colclough, 2000).” PricewaterhouseCoopers has concluded that the five most serious challenges to pulp and paper industry companies implementing eBusiness are:

- Integrating legacy systems.

- Managing change in business culture to allow partnering with suppliers and customers.
- Hiring and retaining quality employees.
- Establishing business processes and industry standards.
- Having a well-developed eBusiness strategy emphasizing that eBusiness is business strategy, not a technology play (Cubine and Smith, 2001; pponline.com (b), 2000).

According to a survey Vlosky (2001), 92 percent of U.S. pulp and paper industry companies used the Internet to conduct business in 1998. This figure includes using e-mail. Of these, 82 percent of respondents had implemented their Internet capabilities in the past 3 years. As many as 76 percent of respondents had spent less than \$1 million on Internet-based eCommerce technologies. Nearly 71 percent of respondents stated that they were not where they wanted to be in implementing Internet capabilities. The general concerns about conducting eBusiness are security, lack of capable personnel, and the need to change established business procedures. The U.S. forest products industry indicated it expects benefits from eCommerce in timeliness of information exchange, greater exposure and access to customers, and enhanced corporate image (Vlosky, 2001).

In a survey conducted in 2001 by Vlosky (Vlosky and Kallioranta, 2003), 67 percent of the surveyed North American pulp and paper companies stated that they are currently using Internet-based technologies to conduct business. Of those who hadn't yet implemented Internet business application tools, 73 percent planned to do so during 2002. The most popular Internet business applications were websites and Internet EDI. Internet EDI had also the greatest planned implementation rate for the year 2002. Of the surveyed companies, 30 percent were planning to implement EDI in the following year. Approximately 60 percent of respondents handled customer contacts via Internet, but only 37 percent sold products to customers on-line. Thirteen percent of the respondents stated

they would never sell products via Internet. Order status, inventory management, shipping notices, and logistics were transacted via Internet in only about 20 percent of the paper industry companies. The strongest reasons for implementing Internet capabilities were implementation of corporate strategy, increased accuracy of data, and retention of customers. Paper industry companies hoped to gain increased shareholder value, retain and attract new customers, and achieve a competitive advantage from using Internet technologies (Vlosky and Kallioranta, 2003).

The paper and forest industry has been slower than other bulk producers in developing Internet-based electronic trading platforms or other types of eIntermediaries. Paper and forest industries utilize the Internet, even commerce sites, primarily to find specific information rather than to execute transactions. Maybe this is because this business sector has traditionally managed customer relationships on a more traditional face-to-face-basis. However, eBusiness in this sector will move beyond simply matching buyers with sellers. Many forest companies follow market development intensively. Some have announced their intention to participate, and some already have actively participated in some aspect of Internet development (Raisanen, 2001). This is so despite the projections that eCommerce could reduce costs between 15-20 percent in the industry, which is the second highest percent among 17 industries studied. eCommerce is also expected to boost the pulp and paper industry's productivity by \$1.5 billion over the next few years (Fazio, 2000).

According to PriceWaterhouseCoopers' global Forest & Paper Practice estimates in 2001, 25 percent of U.S. forest products industry revenue generating transactions could be conducted over the Internet, and 12 percent in eMarketplace sales by 2004 (ForestExpress, 2001). B2B exchanges have been unable to achieve the kind of success that was expected because of the difficulty in attaining liquidity. Although the hyped eBusiness revolution



didn't happen overnight, the evolution of a new economy is strengthening, even though it is creating short-term instability and numerous business failures.

## **2.5. eIntermediary Marketspace in the Paper Industry**

The downturn in the economy and the failure of many dot.com ventures greatly harmed business-to-business (B2B) exchanges. This boom area is now facing its share of harsh criticism. Online exchanges and eMarketplaces rode the hype of revolutionizing the way in which industries conduct business, citing the cost savings achieved by expanded market reach, operational efficiencies, aggregated purchasing, and finding the least expensive suppliers (Moore, 2001).

Paper industry vertical B2B exchanges were established to help the industry players decrease inefficiencies in their supply chains and better tackle cyclicalities through better visibility. According to PriceWaterhouseCoopers' global Forest & Paper Practice estimates in 2001, 25 percent of U.S. forest products industry revenues could be conducted over the Internet and 12 percent in eMarketplace sales by 2004. B2B exchanges have been unable to achieve the kind of success that was expected because of the difficulty in attaining liquidity (ForestExpress, 2001).

Before we can take a look at what caused the demise of eMarketplaces in general and in the paper industry, we need to get deeper into what they are, do, and promise. B2B Exchange or eMarketplace is a platform for exchanging business process information between business partners. B2B exchanges can be described based on their exchange model. **Vertical industry exchanges** provide the specific operating environment needed in most efficiently automating business processes in a specific vertical industry setting. **Trading hubs** are exchanges in which buyers and suppliers converge to electronically transact goods, services, business documents, and information (Acly, 2000). Trading hubs provide eCommerce solutions that streamline and automate routine supply chain

transactions between customers and suppliers. By leveraging a single connection, industry participants can transact business messages, collect accurate and real-time information, and enhance customer relationships with all other participants connected to the network (Expresso, 2002; ForestExpress, 2002). **Supply chain collaboration platforms** create collaboration between business partners to share information and optimize product or process lifecycle (Acly, 2000). **Auction sites** were the earliest form of eIntermediaries in the industry. Auctions are used merely for spot buying and surplus. On some eCommerce sites, the buyer and seller remain anonymous until a commitment to buy, and on others the identity of both parties is known from the beginning of the auction (Fazio, 2000).

However, most of the eCommerce sites are a combination of auction house, industry information hub, and eMarketplace, where buyers and sellers meet to transact business.

The nature of a B2B eMarketplace is further determined by its ownership.

**Independent eMarketplaces** are funded by venture capital or private investors. For example, PaperExchange.com and PaperX.com were independent marketplaces in the paper vertical. PaperExchange was launched in 1998. It died in the second quarter of 2001. It received \$35 million of venture capital. PaperX spent \$10 million of venture capital to develop the “EC in a box” solution for the paper industry before it ended up closing its operations in the first quarter of 2001 (pponline (c), 2000).

**Industry sponsored eMarketplaces** rely on industry consortia or equity-share ownership arrangements. The North American paper industry companies sponsor ForestExpress, which operates in the North American forest industry market. Expresso is sponsored by European paper industry consortium and it is concentrated on European fine and publication papers market. An example of a running industry-owned equity share exchange is Paper2Print, which is owned by Fraser Papers. The now deceased Paperhub was owned by Appleton Paper, but it spent its money in developing an XML-based

markup language called Markup Language for Paper and Printing (PML), which was overridden by the industry-sponsored papiNet XML-standard.

**Private eMarketplaces** are owned by one buyer or supplier. An example of an operating private paper eMarketplace is Domtar's e-Paper solution. Nextier is an example of a collaboration application, which is a wholly owned subsidiary of International Paper. Nextier provides industry participants a common platform to provide collaboration through industry-specific web-applications between members of the supply chain (Nextier, 2002).

### 2.5.1. eIntermediaries' Value Proposition and the Paper Industry

There is widespread consensus among market participants of the immense benefits B2B eIntermediaries may offer. The list of benefits is long and impressive and is available on every eCommerce or supply chain application provider's web page. The benefits of B2B exchanges can be divided into two categories on the fundamental level: **increasing revenue** and **lowering cost**. B2B exchanges can increase revenue by:

- Expanding market reach: new markets, greater market penetration, and better supplier-buyer match.
- Increasing market velocity: shorter order cycle due to visibility.
- Improving customer service.

B2B exchanges can decrease costs by:

- Operational efficiencies: reduced sales cost, reduced inventory, lower-cost alternative to EDI, collaboration, and visibility.
- Scale and spend aggregation: economies of scale, increased leverage in negotiations.
- Transaction automation: reduced order-processing costs.
- Disintermediation: lower prices and obtaining power in the supply chain.

### **2.5.2. eMarketplace Evolution**

The first wave of eMarketplaces was boosted by public independently owned exchanges that promised exciting benefits that brick-and-mortar companies could gain by joining (Acly, 2000). Independent marketplaces struggled in gaining adoption and market trust; thus, we have witnessed the demise of such dot.coms as PaperExchange, PaperX, Paperlink, Clickpaper, FobPaper, and Fibermarket after the first wave of enthusiasm. The Director of Information Systems for Boise and Cascade was anticipating the demise of independent eMarketplaces already on the rise of the second wave of eMarketplace evolution, “With the largest industry players starting their own exchanges, it will be interesting to see whether third-party exchanges will still be feasible or not,” he said (Swanson, 2001).

The next wave was consortium eMarketplaces. Brick-and-mortar companies reacted to the competitive threat from the first wave of dot.coms and began to announce their participation in industry consortiums (Acly, 2000). North American forest industry companies -Boise Cascade, Georgia-Pacific, International Paper, Mead Westvaco, and Weyerhaeuser- gathered around the same table and established ForestExpress (ForestExpress, 2002). In the meantime, European paper manufacturers -International Paper Europe, Lecta Group, M-Real, UPM-Kymmene, Sappi Europe, Soprocel, and StoraEnso- and merchants Antalis, Buhrman, and Map established Espresso for the European fine and publication markets (Espresso, 2003). This second wave sent out a message that brick-and-mortar companies wanted to take “the e-evolution” into their own hands and were ready to invest resources into the exchange movement. Consortiums have a clear advantage in driving adoption compared to independent exchanges, but the antitrust issue prevails.

Some analysts see signs in the market of the third wave, where businesses are reacting to the limitations imposed by the second wave. They foresee that businesses will start taking over control with their own private exchanges, where they are free of the worry of competitive or antitrust limitations. Private exchanges are all about control: control over who gets in, who receives and what sort of information, and control over the technology platform (Acly, 2001). Building and maintaining a private exchange is very expensive and resource consuming. According to eMarketer (2002), the three-year total cost of building and operating a private EDI value-added network-based exchange is estimated to range from \$62 million to \$185 million depending upon the size and revenue of the company. The development and operating costs for an Internet-based private exchange would range from \$6.8 million to \$52.9 million (eMarketer, 2002). Besides, buyers' willingness to go through several separate interfaces while doing purchase decisions can be argued, which may contribute to a long-lasting second wave with the consortia model.

### **2.5.3. eIntermediary Challenges and Reasons for Numerous Business Failures**

The greatest challenge B2B exchanges face is to achieve sufficient market **liquidity**. Gaining adoption has proven to be a hard task for many eIntermediaries to overcome. Even industry-owned consortia exchanges have had to put real effort into driving adoption. All the promises of increased revenue and cost reduction haven't been enough to convince companies to actively transact in the B2B exchanges. The problem here is that a great many of the promised benefits become available for the participants only after the market is up and running at full capacity, having a sufficient number of participants, and handling a large number of transactions. Improvements in order processing, inventory reduction, increased market velocity, and increase in market share will happen only when the exchange has become a central place for doing business (Zoellick, 2000).

It is clear that buyers can benefit from the increased commercial leverage from aggregated demand, lower material costs, and lower transaction costs by streamlining the Request for Quote (RFQ) and negotiation process. But in all eMarketplace models, it is not always sure that the **suppliers benefit** from participation. From the supplier's perspective, eMarketplaces are redefining the supplier's role from primarily source of paper to virtual industry hubs that offer everything from auctions to surplus to market research to industry information to pricing information to integration services (Fazio, 2000). In cases where the supplier market is highly competitive, an eMarketplace does nothing more than transfer margins from the selling to the buying organization. This trend was seen among the early independent marketplaces operating in the paper business. As we have witnessed, such eMarketplaces were not sustainable in the long run due to their inability to create a win-win situation (Chung, et al., 2001).

The full scope of eCommerce benefits can't be achieved without end-to-end automation by **business-to-business integration**. One-sided integration offering, like integrating supplier's back-office system to an eMarketplace application, does not leverage the full eCommerce potential, while manual processes continue on the buyer's side. In order to develop a comprehensive eCommerce strategy, business applications have to work together seamlessly. B2B integration in the world, which is just developing standards, and ruled by diverse business information systems, is extremely challenging.

For a start-up B2B exchange, achieving liquidity is falsely understood to mean getting agreements signed with enough buyers so that the exchange could anticipate potential transaction volume (Zoellick, 2000; Vlosky et al., 2003). Exchanges were trying to get such agreements even before the market was up and running. This kind of "vapor liquidity" led to **stagnated market** situations in which nobody was yet making or saving

money. Staying in this kind of stagnated situation led marketplaces to lose momentum, and participants and investors started backing out (Zoellick, 2000).

The eMarketplace stagnation grew from the initial requirement to have goods on the shelves before opening the doors. eMarketplaces spent substantial sums in creating supplier **catalog content** and search capabilities required to start the transactions. But a young marketplace needs more buyers than suppliers. The difficulty and challenge in creating supplier catalogs, unfortunately, typically resulted in supplier focus giving less attention to on-boarding buyers. The buyer recruiting process often consisted of little more than a registration process. Putting effort on supplier catalog content creation is essential, but it can't absorb the focus from the buyer on-boarding. Creating online catalogs, containing information on suppliers' product offerings, is as crucial in eCommerce as product information in the brick-and-mortar world. But unfortunately, making supplier catalogs available through a B2B exchange can be an enormously complex, time-consuming, and expensive task. All product information must be collected, cleansed, normalized, rationalized, categorized, and possibly enriched before publishing in order to achieve successful search results by search engines. Creating catalog content involves several problems, such as the fact that different suppliers organize catalog content differently. The same term can mean different things among suppliers, and product differentiations are handled differently by different suppliers. Sometimes the only reliable reference point is a paper catalog (Zoellick, 2000).

Many of the paper vertical B2B startups were chasing market share at the expense of profitability. Establishing a feasible **pricing strategy** has been a point of difficulty for all of the deceased as well as surviving companies. Should the pricing strategy be subscription based, commission based, license fee, professional services fee, flat or dynamic transaction fee, premium content fee, or a combination of all the above? (Vlosky et al., 2003).

Furthermore the question, “How much can we ask versus how much we need to ask to survive?” has been difficult to manage for many. This dilemma underlies the importance of knowing the company’s own cost structure and measuring the value the solution creates for the customer. Some exchanges were experiencing uncertainty in deciding who should be charged for the transactions; the buyer or the seller. Many exchanges are still struggling in building a visible and easy-to-grasp pricing structure (Vlosky et al., 2003). Lack of best practices in the area contributed to problems in the eMarketplace pricing strategy.

eMarketplaces’ desire to focus on volume can be understood by their prominent need to gain revenue, which is typically boosted by a transaction-fee-based pricing strategy. This is still a dangerous strategy because such an approach does not make anybody else happy, either than the eMarketplace itself. Suppliers dislike the arrangement because from their point of view the eMarketplace is eliminating higher margins, which were possible when pricing was less transparent. Furthermore, paper manufacturers are afraid of loosing their long and hard built special product strategy and being again regarded as a commodity while trading via an exchange. Buyers aren’t completely happy either; researchers have found that cheaper prices alone aren’t a sufficient reason for eMarketplace participation. Buyers value more improved process efficiency and better access to strategic business information and reports (Zoellick, 2000).

What further emptied the treasure chests of the startups was that some companies just couldn’t find their **balance in technology development** and marketing. Some companies started with a technology innovation and were unable to strip down time-consuming and expensive in-house development and increase sales efforts, whereas executing a technology re-branding strategy and managing a third-party vendor portfolio proved to be too difficult for some. An example of a failed technology development strategy is the failed Paperhub. It spent its money in developing an XML-based markup language PML



(Markup Language for Paper and Printing), which got overridden by the industry-sponsored papiNet XML-standard. Also PaperX spent \$10 million of venture capital to develop the “EC in a box” solution before it closed its operations in the first quarter of 2001 (pponline (c), 2000).

#### 2.5.3.1. Examples of Deceased eIntermediaries

The general dot.com demise has materialized also in the forest products vertical. Over the past two years, we have seen the failure of a number of marketplaces serving the paper industry, whereas others have had difficulty in getting more than just a small foothold in the market they hoped to revolutionize. Three years ago there were 75 providers in the paper industry worldwide eCommerce space trying to take their slice of the \$750 billion annual cake (Greenbaum, 2000). It was evident that the markets couldn’t support them all.

Following is a partial list of failed pulp and paper industry-vertical marketplaces.

PaperExchange: Launched in 1998; Died in the second quarter of 2001; Received \$35 million of venture capital; Declared to have more than 7000 members consisting mainly of paper buyers; “All in one paper marketplace”.

PaperX: Died in the first quarter of 2001; spent \$10 million to develop the “EC in a box” solution for the paper industry.

Paperhub: Died in the second quarter of 2001; Owned by Appleton Paper; Spent its money in developing the XML-based markup language PML, which got overridden by the industry sponsored papiNet XML-standard.

ClickPaper: 100 percent owned by Enron; Bankrupted with Enron in the fourth quarter of 2001; Offer included financial risk management tools, such as swaps.

Fibermarket: Died in the first quarter of 2001; Sales and procurement platform for recovered paper transactions.

Fobpaper: Launched in March 2000 and died in the third quarter of 2000; focused on paper buyers.

PrintBid: Died in the first quarter of 2001; eCommerce marketplace for print buyers, commercial printers, and suppliers to printing industry.

Eazyprint: Died in the first quarter of 2001.

(Google Web Directory, 2003; Whattheythink.com, 2003; pponline (c), 2000; Moore, 2000; InternetNews.com, 1999)

#### **2.5.4. Role of eIntermediaries in the Paper Business**

While opportunities in B2B eCommerce are great both for the B2B eCommerce providers and users, it was obvious that building a viable eMarketplace is not an easy task. A clear outcome of the dot.com crash is that the over opportunism that characterized the first wave of eCommerce is now behind us. Both investors and customers are more rigorous in their assessment of potential eBusiness models. Economic performance, value-based strategy, and focused execution have reasserted their value in success (Chung, et al., 2001). The B2B exchange's fundamental business structure, customer focus, and solution business value determine the survivors, not slick business plans and venture capital. It is tough to tell which of the surviving exchanges will be around for the long haul, but some trends have emerged.

**Industry-sponsored B2B exchanges** are poised to exist for a while. Their founders have sufficient capital to support them, whereas independent exchanges have lost investors and venture capital. Also, the backers of business-to-business marketplaces have a stronger level of commitment and the power to drive adoption than do the independent exchanges (Moore, 2001).

Coming up only with a good business idea is no longer enough to capture value. An exchange with a goal to succeed needs deep **industry expertise**, both in eCommerce and in the industry where it is offering its services. Industry verticals, independent or consortia owned, have an advantage compared to exchanges with no vertical strategy both in managing business process and technology. Paper industry vertical exchanges have better business knowledge and understanding of the challenges paper mills, merchants, retailers, printers, and publishers are facing while entering the eCommerce space than a horizontal eMarketplace provider. Vertical B2B exchanges know industry-specific business processes

and customer needs, and they are able to fulfill the needs with industry-tailored solutions. Technologically, paper industry verticals are more capable of handling continuous range and discrete quality parameters, typical for customer-defined and multidimensional paper products. Secondly they are specialized in the back office, ERP, and legacy systems typical and specific to the paper industry, and their integration requirements. Thirdly, they are equipped to support industry-specific messaging standards, such as papiNet. Finally, they are the most efficient and experienced partners in creating catalog content with industry-specific features (Chung, et al., 2001).

Good **relationships** with market participants are essential in the B2B market environment. Business buyers do not want to do business with people they do not know and trust. This is also very true in the paper industry, which is greatly based on long-term business relationships. Trusting to somebody unknown in the e-space can be even more hazardous (Chung, et al., 2001). After ensuring funding, and attracting initial participants, exchanges need to ensure ongoing liquidity by moving from order matching to value creation, identifying the right pricing strategy, maintaining market neutrality, and actively pursuing partnering opportunities (Chung, et al, 2001; Zoellick, 2000). eMarketplaces have been creating **value-added features** into their business offerings. Financial services, risk management tools, financial instruments, online credit services, credit information on potential buyers, export/import services, and other information services formed a part of many eCommerce providers' business plans (Biros, 2001).

The **pricing strategy** should reflect both the actual and perceived value. It should be inviting for potential participants and erect exit barriers. Although most eMarketplaces started by charging transaction fees, many have changed to a subscription or commission-based model. Ultimately, the fee structure should approximate the internal cost savings

achieved by participants as a result of exchange efficiencies such as reduced headcount, improved productivity, and reduced inventory (Chung, et al., 2001).

Market **neutrality** is achieved by ensuring confidentiality of market information and creating true win-win situations, where both suppliers and buyers benefit. According to a Forrester research report, both suppliers and buyers view market neutrality as the number one condition that must be met in order for an eMarketplace to succeed. The failure of an eMarketplace to be viewed as trusted, secure, and impartial would result in reduced level of participation and threaten long-term viability. eMarketplace participants do not want their competitors to access their client list, pricing information, customer satisfaction levels, and purchasing trends and habits. The paper industry hasn't been known for openness and collaboration in its history. Industry-sponsored exchanges have the strongest need to demonstrate their neutrality. Consortia-backed exchanges are trying to tackle the concerns in the marketplace, for example by giving employees antitrust training and obtaining a statement from an independent assurance firm to assure their neutral business practices and procedures (KPMG, 2001).

Capturing positive cash flow is far from ensured, given the high fixed costs in developing the technology, brand, and operational capabilities and policies to run an exchange. In order to get an attractive and valuable offering up and running fast, exchanges need to leverage **partnerships**. These can include technology partners, such as integration or catalog content providers, consulting partners, and news content providers, as well as interoperability with other marketplaces. A great example of executing a viable partnership strategy in the paper industry vertical comes from ForestExpress. Forest Express' business strategy is based on "Best-of-Breed" partnerships. ForestExpress has been able to create a recognized technology partner portfolio including weMethods, Sterling Commerce, and Sun, which enable a complete integration offering. Besides, ForestExpress has integrated

news content on its web site from PaperLoop, and is furthermore engaging interoperability with other hubs (ForestExpress, 2002). Other yet not seen but at least worthy of considering interoperability possibilities for paper marketplaces might include partnering with exchanges that operate in industries that represent the highest shares of the paper industry's cost structure, such as energy, chemicals, and indirect procurement (Chung, et al., 2001).

After the exchange is up and running, ease of use and first class *customer support* must be guaranteed. Otherwise, the application will end up without users. If a buyer needs to pick up the phone to call eMarketplace customer support, it is likely that he would rather dial directly the number of the supplier (Vlosky et al., 2003). Also, it is essential that the eMarketplace maintain a profile for each user's computer sophistication in order to offer as painless as possible customer support. It is very important that integration solutions fulfill the promise of reducing costs without creating more problems in people's workdays and in the IT department (Zoellick, 2000).

#### 2.5.4.1. Examples of Surviving eIntermediaries

Examples of surviving eIntermediaries are the North American industry consortium ForestExpress and the European industry consortium Expresso. Apart from common dot.com marketplaces, they are not built for "trading" in the usual marketplace manner, but rather accelerating the electronic transactions and supply chain efficiency among the paper industry and its established customers. ForestExpress and Expresso use papiNet standard in messaging, thus supporting industry's own transaction document standard. They provide eBusiness solutions that streamline and automate routine supply chain transactions between customers and suppliers. By leveraging a single connection to ForestExpress or Expresso, industry participants can transact business messages, collect accurate and real-time information, and enhance customer relationship with all other participants connected

to the network. Both of these hubs offer B2B integration (end-to-end connectivity between back office systems), catalog content, industry-specific applications for streamlining supply chain activities, and professional services (Expresso, 2002; ForestExpress, 2002).

Paper2Print and Nextier are Internet-based supply chain collaboration applications for the paper and printing industry. They provide industry participants a common platform to provide collaboration through industry-specific web-applications between members of the supply chain (Nextier, 2002; Paper2Print, 2002). Surviving supplier-side eMarketplaces include eFibre, Forest2Market, and WorlbidPaper. Also, industry information provider Paperloop has partnered with ForestExpress and stayed in the market. Printing industry-concentrated ePrinting Exchange, Noosh, PrintCafe, ImageX, and Httpaper have also avoided bankruptcy and are doing paper trade with printer concentration (Google Web Directory, 2003; Whattheythink.com, 2002).

#### **2.5.5. Future Prospects**

Now that the biggest hype around the dot.com boom has faded, both the brick-and-mortars and the IT industry are in a “digestive stage” with a new set of technologies and business processes that came along to enable collaboration, integration, and automation in order to do business more efficiently than ever. For all the failures that dot.coms brought to the business world, they also created some outstanding technological innovations and great changes in business models.

Historically, only large industry players could afford direct electronic connections, such as EDI, with their partners. Now, Internet technologies, web-based applications, xml, and EDI over the Internet, have enabled small and medium-sized companies to participate in electronic networking. After the first wave of attracting big industry players to engage in eCommerce, it is now a natural step for B2B eCommerce providers to approach segment of the small and medium-sized companies. The best way for small and medium-sized

companies (in the paper industry scale) to compete with big players is to know their process capabilities, markets, and customers. This knowledge, combined with the integration of production and business process information systems and customers, can provide the manufacturing flexibility, market agility, and customer service needed to compete with the large companies (McDermott, 2000).

B2B exchanges underestimated the complexity of what they were trying to do at the same time when they were overestimating companies' ability to adopt eCommerce (Vlosky et al., 2003). First of all, companies have technical constraints in deploying eCommerce technologies. Additionally, the pressure for fundamental changes in existing business processes has created change resistance in organizations. People are scared of finding themselves redundant or unable to manage the technology and changed business processes. Gaining adoption and confidence remains one of the top challenges for B2B exchanges to overcome in the future. Exchanges need to seek support both from the highest organizational level, the CEO level, as well as from the lower ranks of the organization, which is represented by the actual users of eCommerce applications. Organizational changes, changes in business processes, development of industry standards, and improvements in integration technology systems are all needed to capture benefits from B2B exchanges (CyberAtlas, 2002).

There will certainly be a continued short-term hesitancy and uncertainty to adopt eCommerce solutions because of the challenge to choose a viable and long-lasting eCommerce provider. But waiting for the smoke to clear away around the dot.com crash era may not be a good idea. The companies that haven't yet taken their first steps on the road to eEconomy are likely to find themselves behind the competition and customer expectations very soon.

### **3. RESEARCH MATERIALS AND METHODS**

The research was conducted by using the facilities of the LSU College of Agriculture, School of Renewable Natural Resources. The study used the following data collection methods:

- Literature review in order to set the background and knowledge for the study.
- Secondary data from previous research.
- Primary data collected from the North American paper suppliers and buyers in order to describe the B2B exchange relationship in the paper supply chain.

#### **3.1. Sample Characteristics**

Sample frames for the study consisted of a random sample of North American paper suppliers and a random sample of North American paper buyers. Product categories included market pulp, fluff pulp, printing paper, office paper, specialty paper, and packaging products. SIC codes, industry directories, government directories, purchased mailing lists, and trade associations were used in developing the targeted population list for the study. The final sample of 445 top paper supplier and 481 top paper buyers, based on the number of employees, was purchased from Best Mailing Lists. The purchased list included company contact information.

#### **3.2. Survey Development**

Based on the literature and past research, an extensive list of topics and questions was generated. The purpose of the questionnaire was to transform research objectives into questions which can be aggregated in measurable form. The questions were designed to be brief, clear, non-biased, and addressing only one issue at the time. Likert-type scale questions were used extensively. The questions, anchored by 1= strongly disagree to 5= strongly agree or by 1=very unimportant to 5=very important, were used to measure respondents' expectations, perceptions, experience, and attitudes with regard to



eIntermediaries. Before the survey was sent out, the questionnaire was tested on a selected sample of faculty members and industry experts. The feedback information was employed in adjusting the questionnaire's design.

In order to increase the response rate the following issues were addressed in the survey:

- The pre-notification letter was sent one week prior to the first mailing to inform the recipients of the survey.
- The first mailing included the questionnaire, accompanied by a personally signed cover letter promising free summary results of the study if the questionnaire is completed and returned, and a postage-paid, pre-addressed envelope.
- The follow-up letter was sent to non-respondents one week after sending the questionnaire.
- The second survey mailing was sent to companies that did not respond to the first mailing.

### **3.3. Data Analysis**

Questionnaire quantitative data was coded and entered into the Statistical Package for the Social Sciences (SPSS) for data analysis and interpretation. Data entry was closely supervised to ensure accuracy. The statistical analysis techniques used include descriptive statistics, frequencies, and t-tests. Qualitative information gathered from open-ended questions was entered in Word for Windows as text files. The information was then analyzed for common themes or concepts. In addition, extensive use of graphical representations of the data, including tables, charts and other figures, was included.

## 4. RESULTS AND DISCUSSION

### 4.1. Response Rates

Of the 445 surveys mailed to paper suppliers, 23 were either undeliverable or the receiver indicated that their company was out of the study scope. Thus, the adjusted sample size was 422 paper suppliers. Of the adjusted sample size, 60 suppliers returned the survey resulting in an adjusted response rate of 14 percent. Of the 481 surveys mailed to the paper buyers, 30 were either undeliverable or the receiver indicated that the survey was inappropriate for their company. Of the adjusted sample size of 451, 21 surveys were returned. The adjusted response rate for paper buyers is 9 percent. All the respondents were surveyed at the business unit level. Given that typical response rates for industrial studies range from 15-30% (Vlosky and Fontenot, 1997), the buyer respondent rate was low. Table 4 summarizes the respondent rates.

**Table 4. Response Rate**

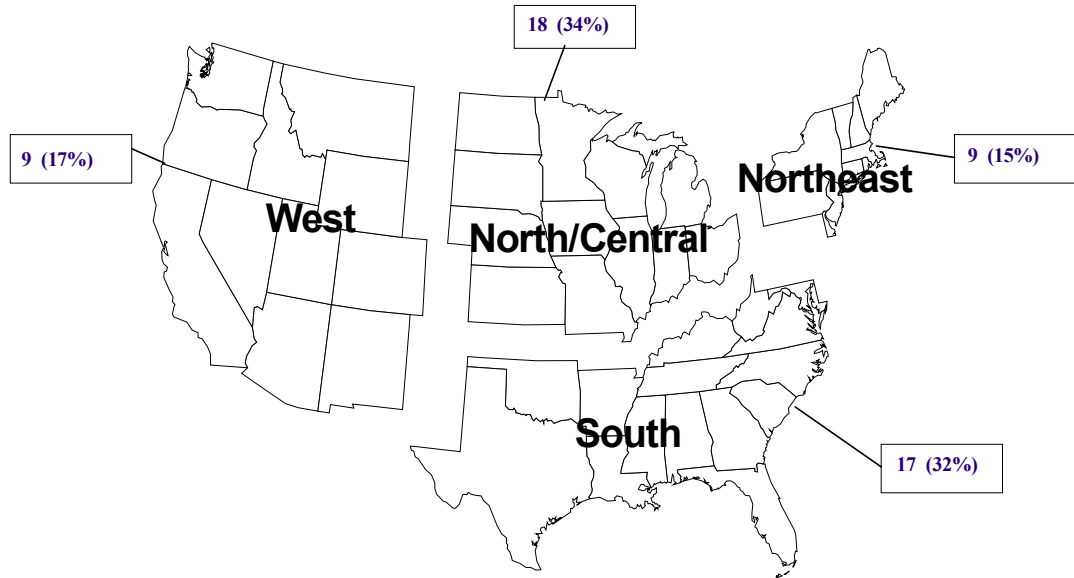
	Initial Sample Size	Adjusted Sample Size*	Number of Total Respondent Companies	Adjusted Response Rate
Paper Suppliers	445	422	60	14%
Paper Buyers	481	451	21	5%
Total	926	873	81	9%

### 4.2. Paper Supplier Respondent Demographics

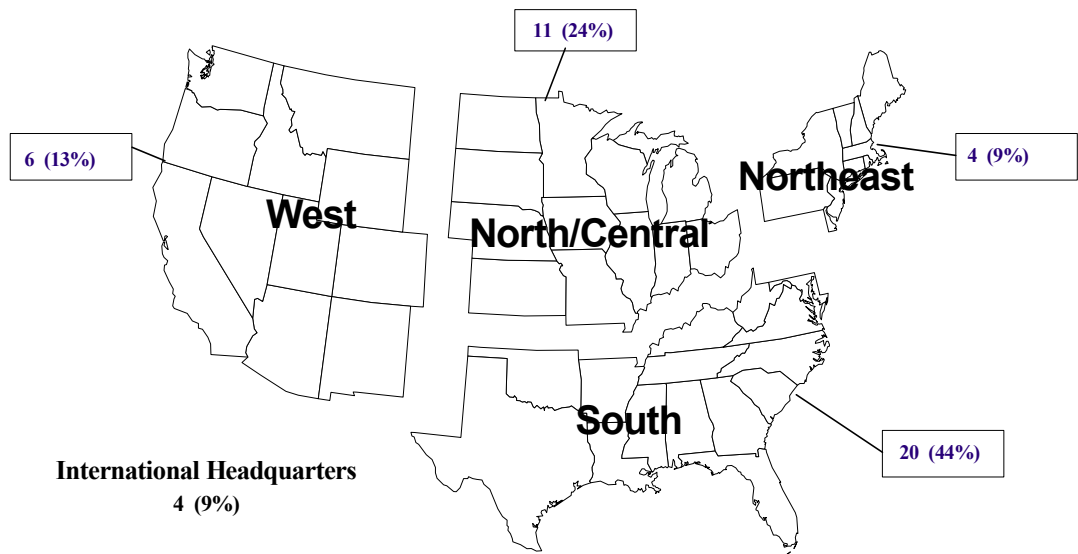
#### 4.2.1. Geographic Distribution

Figure 3 shows the supplier respondents' geographic business unit distribution. Most of the respondents are located on the north/central and the southern states of the United States., which correlates with the nation's paper production facility distribution. The distribution of the suppliers' headquarters is most concentrated in the southern states

(Figure 4). Four respondents indicated international headquarter locations; three of the headquarters were located in Canada and one headquarter was located in Japan.



**Figure 3. Respondents Geographic Regions: Suppliers Business Unit Locations (n=53 Respondents)**



**Figure 4. Respondents Headquarter Geographic Region: Suppliers Headquarter Locations (n=45 Respondents)**

#### 4.2.2. Products Produced

The majority (58.3 percent) of suppliers indicated that they produce packaging materials (Table 5). The respondents' product distribution is strongly concentrated on papers with greater basis weight (12 points or more): specialty papers, containerboard, packaging products, paperboard, and folding carton. Only 23.4 percent of respondents produced printing paper or office/commercial paper. One business unit can have several different types of paper machines, thus multiple responses were possible. Other products produced included paper cups, disposable adult incontinence products, receipt products, and printed wallcovering.

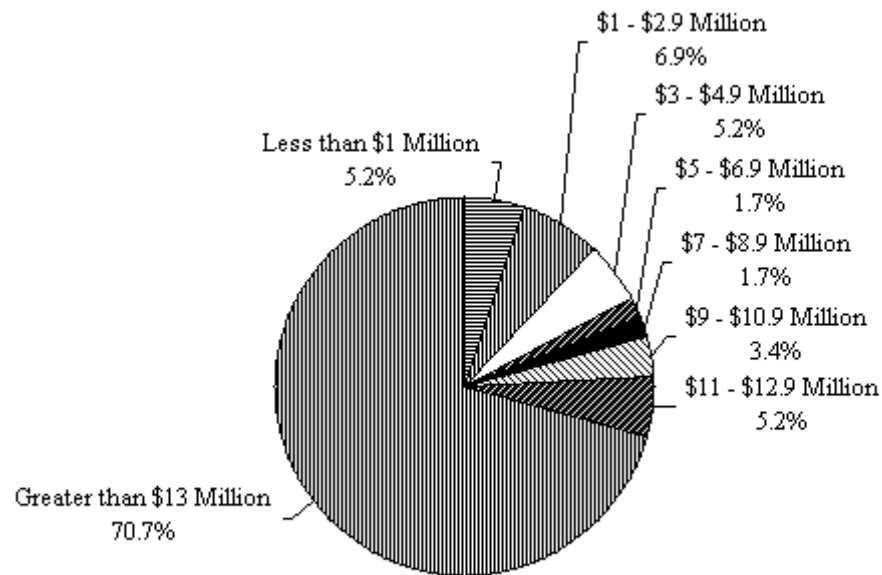
**Table 5. Products Produced  
(Multiple responses possible)  
(n=60)**

<b>Product Produced</b>	<b>Number of Respondents</b>	<b>Percentage of Respondents</b>
Packaging Products	35	58.3%
Specialty Paper	9	15.0%
Containerboard	8	13.3%
Printing Paper	7	11.7%
Office/Commercial Paper	7	11.7%
Paperboard	6	10.0%
Folding Carton	4	6.7%
Market Pulp	1	1.7%
Other	7	11.7%

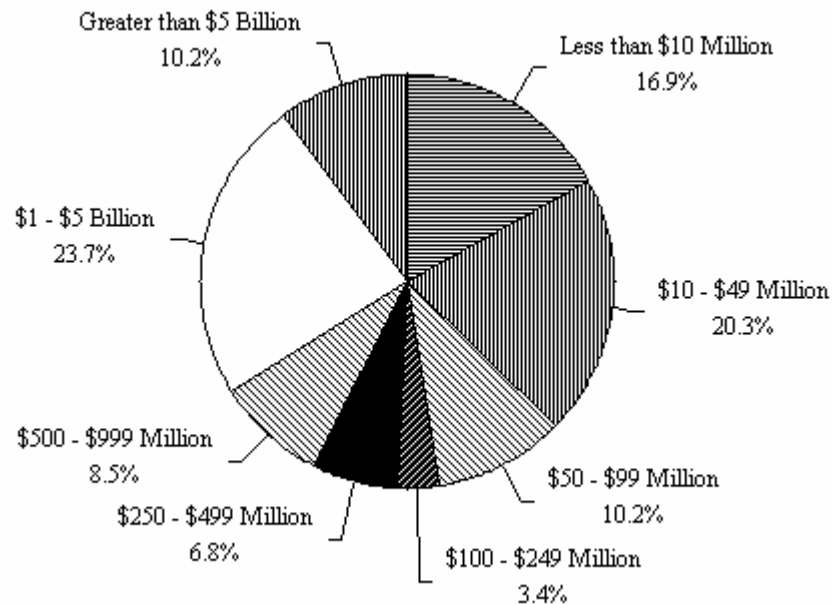
#### 4.2.3. Revenue

The majority of respondents (70.7 percent) indicated that their business unit revenue was more than \$13 Million in 2002 (Figure 5). As seen in Figure 6, 10.2 percent of

respondents have corporate-wide revenue of more than \$5 billion. Globalization, mergers and consolidation in the paper industry have led to significant company sizes.



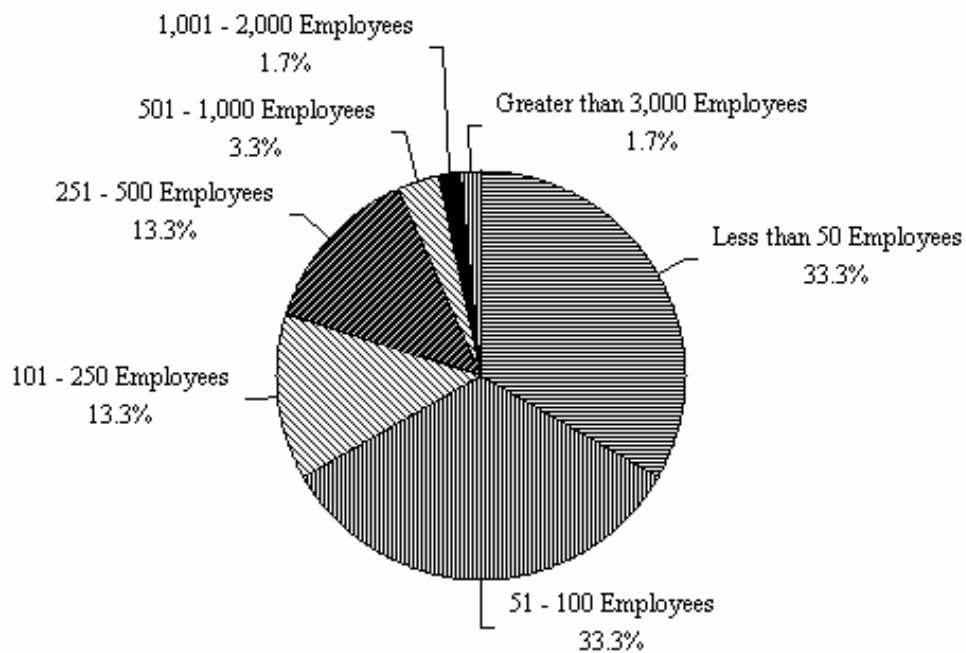
**Figure 5. Suppliers: Business Unit Revenue**  
**Number of Companies**  
**(n=58 Respondents)**



**Figure 6. Suppliers: Corporate Revenue**  
**Number of Companies**  
**(n=59 Respondents)**

#### 4.2.4. Number of Employees

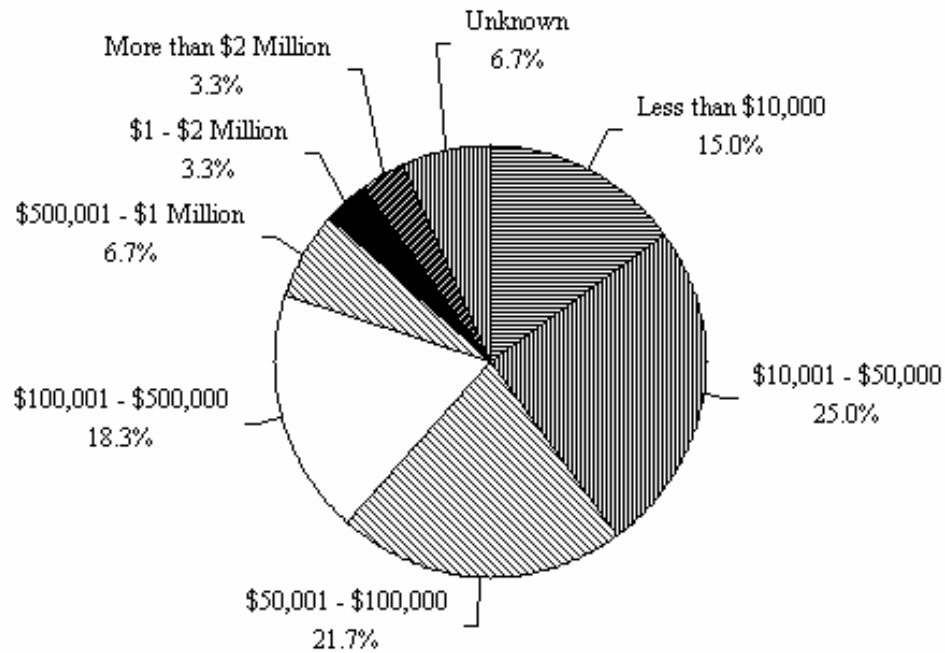
Figure 7 shows that two-thirds of supplier respondents have less than 100 employees at their business unit level. Printing, office and commercial papers are produced in larger mills with great production capacities; whereas packaging materials and other heavy basis weight paper grades are usually produced in smaller-scale production plants. But, great production capacity does not necessarily mean great number of employees. Rather low employee number is an indicator that the paper production is an investment intensive production process with great capital investment in machinery.



**Figure 7. Suppliers: Employees by Business Unit  
Number of Companies  
(n=60 Respondents)**

#### 4.2.5. Information Technology Spending

In the year 2002, 80 percent of respondents had information technology (IT) spending at their business unit of less than \$500,000 (Figure 8). Only 6.6 percent of respondents spent more than \$1 Million for information technology investments.

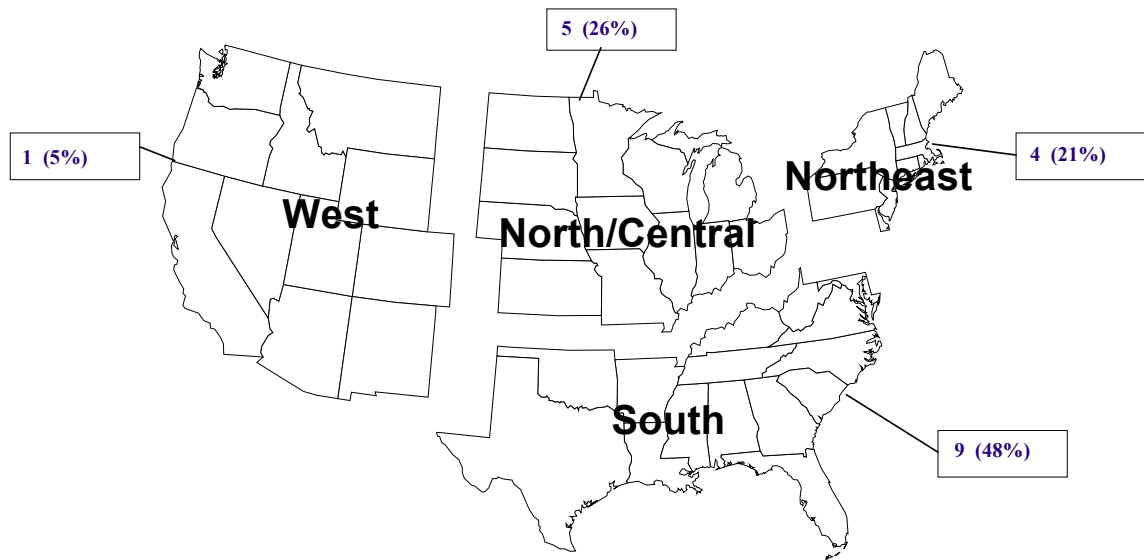


**Figure 8. Suppliers: Business Unit IT Spending (2002)**  
**Number of Companies**  
**(n=60 Respondents)**

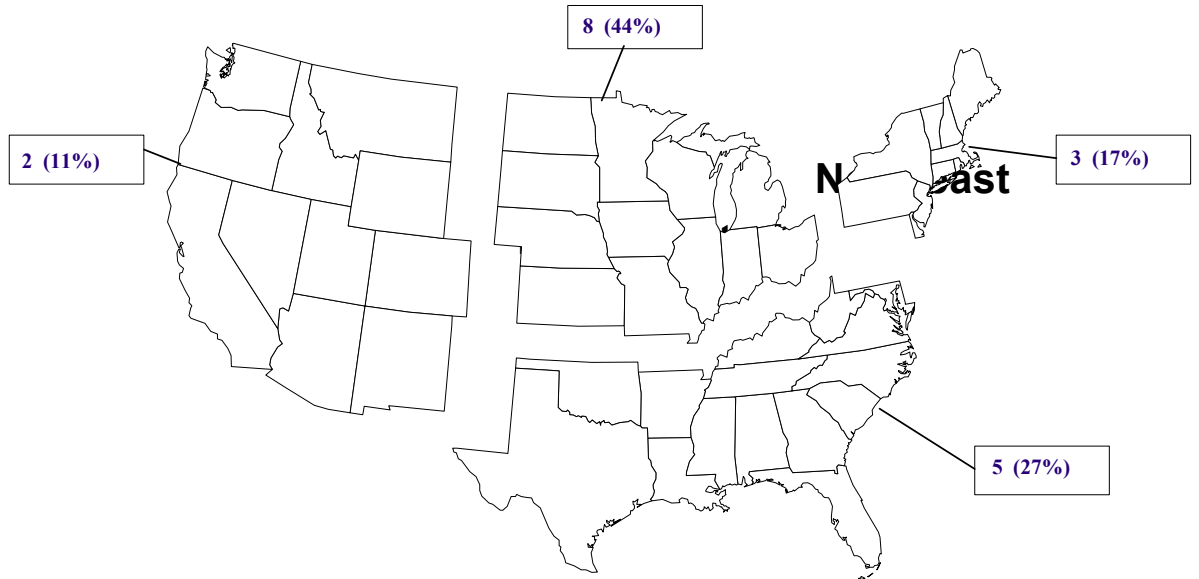
### 4.3. Paper Buyer Respondent Demographics

#### 4.3.1. Geographic Distribution

The paper buyer respondent distribution is concentrated in the southern states of the United States (Figure 9), although the printing industry in general is evenly dispersed throughout the country. The high number of respondents from the southern states might be explained that the survey was conducted by a Louisiana State University Graduate Student. The respondents' headquarter distribution is more in line with the nationwide general printing industry distribution. As shown in Figure 10, 44 percent of the respondents have their headquarters in the North/Central region, around the Great Lakes, where the paper and printing industry has a strong presence and significance for the economy.



**Figure 9. Respondent Geographic Regions: Buyers Business Unit Locations  
(n=19 Respondents)**



**Figure 10. Respondent Geographic Regions: Buyers Headquarter Locations  
(n=18 Respondents)**



#### 4.3.2. Products Purchased

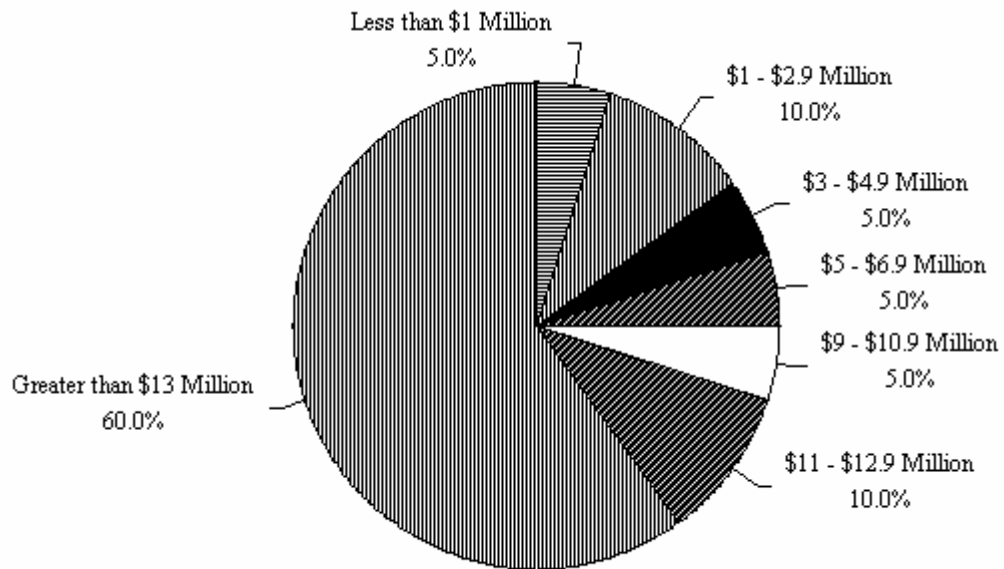
The majority of paper buyer respondents are from the two largest printing industry segments: commercial printing and newsprint. Printing paper is purchased by 71.4 percent (Table 6) of the respondents, office and commercial paper by 57.1 percent, and newsprint by 23.8 percent. Also, heavier basis weight papers; such as specialty papers (25.8 percent) and packaging materials (23.8 percent), are purchased by the respondents.

**Table 6. Products Purchased  
Multiple Responses Possible  
(n=21)**

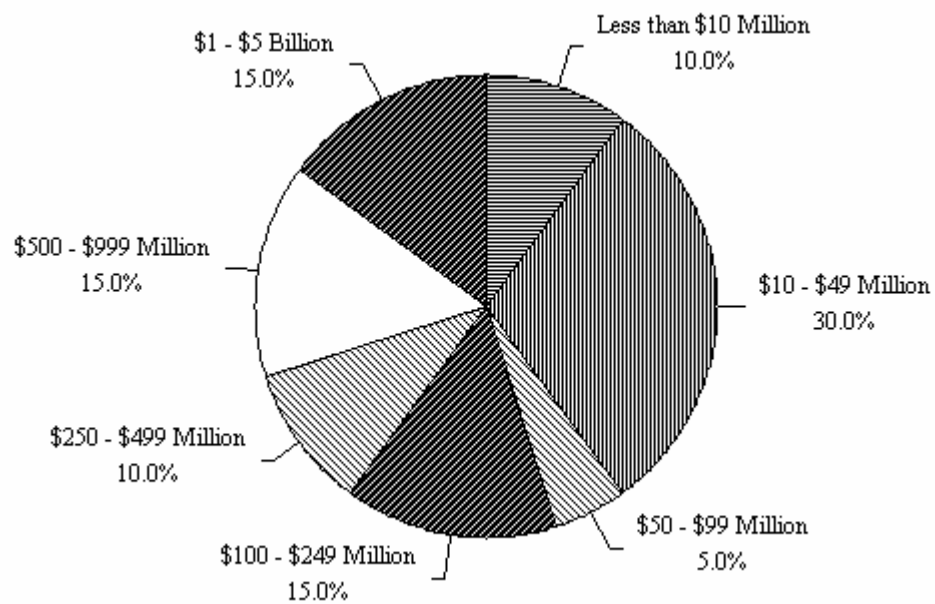
<b>Product Produced</b>	<b>Number of Respondents</b>	<b>Percentage of Respondents</b>
Printing Paper	15	71.4%
Office/Commercial Paper	12	57.1%
Newsprint	5	23.8%
Specialty Paper	5	23.8%
Packaging Products	5	23.8%
Containerboard	1	4.8%
Market Pulp	1	4.8%

#### 4.3.3. Revenue

Paper buyer respondents' business unit revenue is shown in Figure 11 and corporate level revenue in Figure 12. Seventy percent of respondents had business unit revenue more than \$11 million in 2002. Forty percent of respondents had corporate-wide revenue less than \$49 million. This is consistent with the fact that the printing industry is formed by numerous small size printing facilities. However, large printing and publishing industry members with more than \$1 billion in corporate revenue are represented in the study.



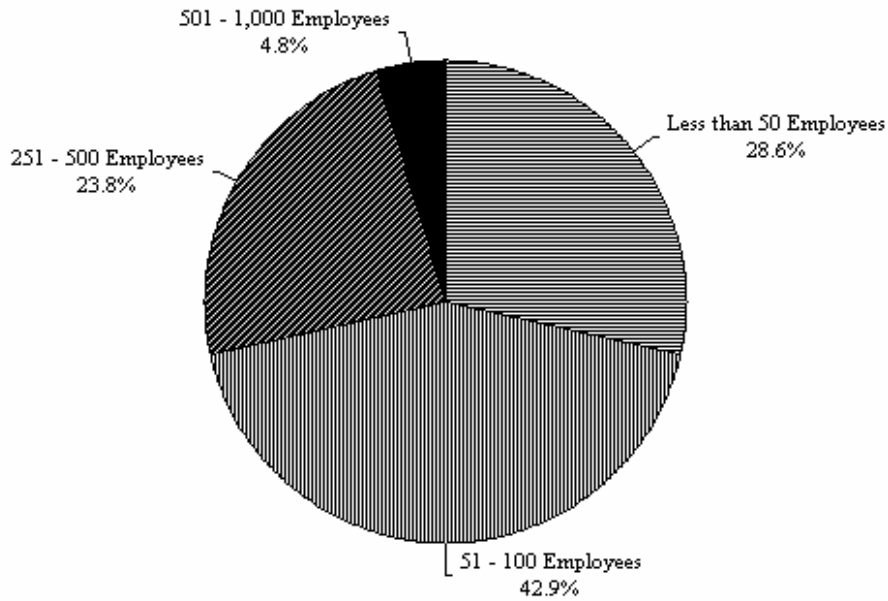
**Figure 11. Buyers: Business Unit Revenue**  
**Number of Companies**  
**(n=20 Respondents)**



**Figure 12. Buyers: Corporate Revenue**  
**Number of Companies**  
**(n=20 Respondents)**

#### 4.3.4. Number of Employees

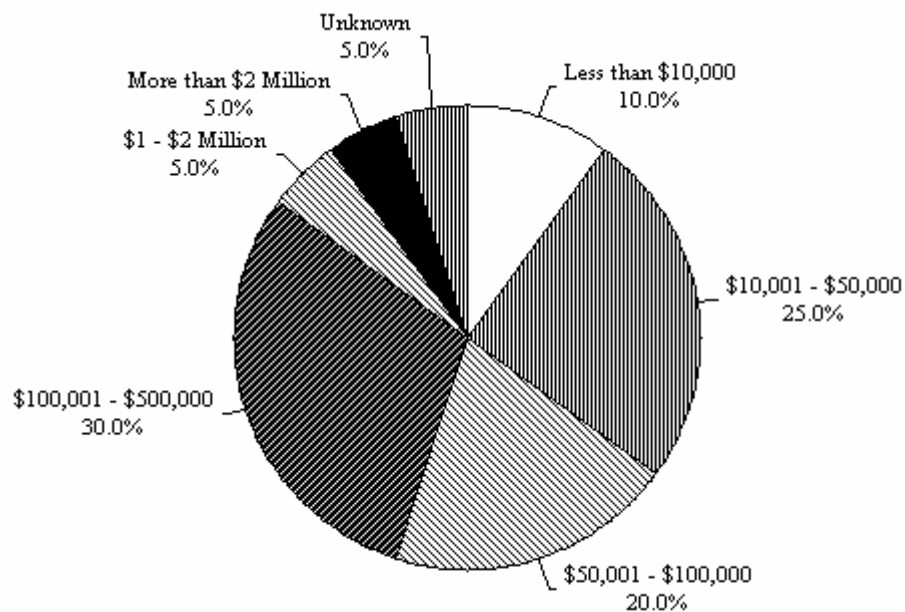
Almost two-thirds of the paper buyer respondents employed 100 or less employees (Figure 13). Nearly 5 percent of respondents had more than 500 employees.



**Figure 13. Buyers: Employees by Business Unit  
Number of Companies  
(n=21 Respondents)**

#### 4.3.5. Information Technology Spending

Eighty-five percent of paper buyer respondents had 2002 information technology (IT) spending less or equal to \$500,000 (Figure 14). Ten percent of respondents spent more than \$1 million on IT.



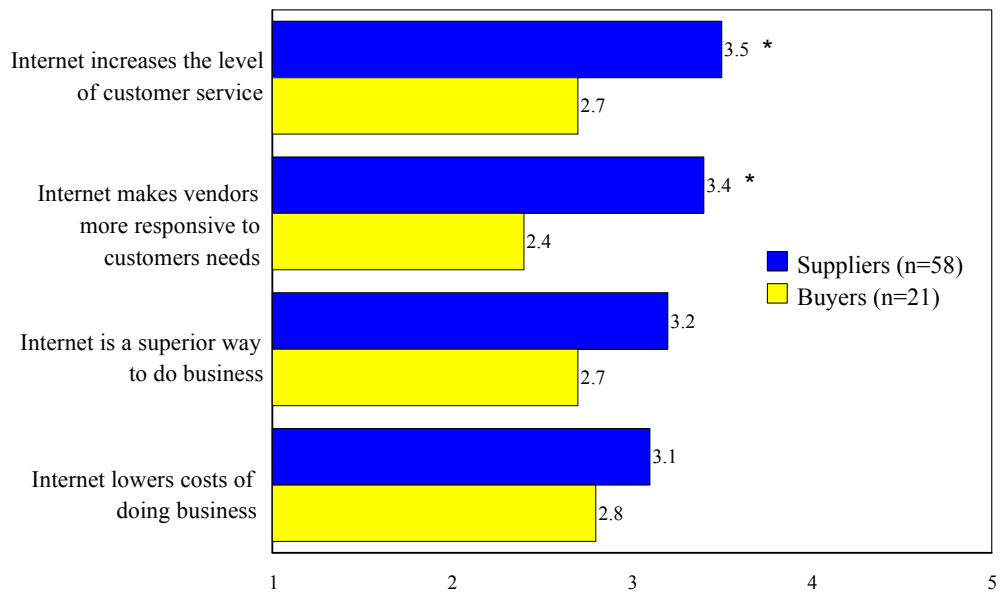
**Figure 14. Buyers: Business Unit IT Spending (2002)  
Number of Companies  
(n=20 Respondents)**

#### **4.4. Respondents Perceptions of Internet Technologies**

After gathering information on respondents' demographics, the survey investigated the perceptions of using the Internet as a business tool and how the Internet is used in the paper supply chain

Differences in the suppliers' and the buyers' perceptions of internet technologies can be seen in Figure 15. The scale used throughout the study to measure agreement on the given statements is from 1= strongly disagree to 5= strongly agree, where 3= neither agree nor disagree. Suppliers generally believe that using internet technologies will increase their level of customer service (with a mean response of 3.5) and make them more responsive to customer needs (3.4). Buyers have statistically different view on the statements of Internet's capability of improving customer service (2.7) or improving vendors' responsiveness to their needs (2.4). Paper buyers do not appear to believe that the Internet is a way to improve customer service. Suppliers also slightly agree on Internet's capability of lowering costs of doing business (3.1) and offering a superior way to do business (3.2), whereas buyers' mean scores for the statements are on the disagreement side of the agreement scale. The t-test results for the supplier-buyer comparison can be seen in Table 7. Even though paper suppliers are not overly enthusiastic or confident on benefits achieved via Internet technologies, in general they hold a more positive perception on Internet technologies than buyers.

Suppliers have stronger belief in the Internet's capability to offer a competitive advantage (Figure 16). Statements in Figure 16 were omitted from the questionnaire sent to the paper buyers, because they deal with vendor-side concepts, thus paired t-tests were not conducted.



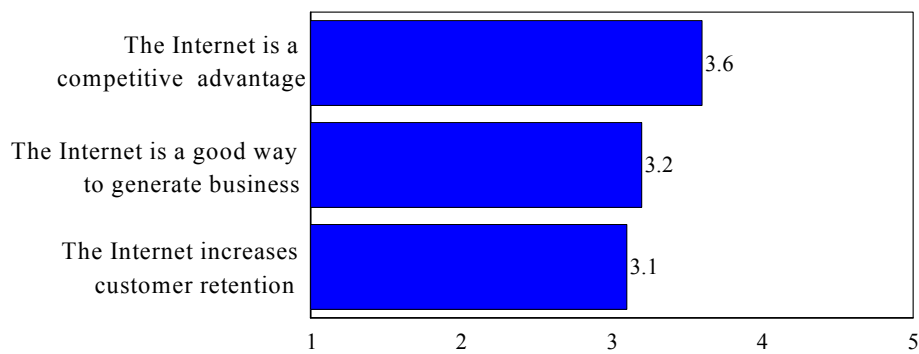
Scale: 1=Strongly Disagree 3= neither Disagree or Agree 5=Strongly Agree

\* Significant at 0.05 level

**Figure 15. Perception of Internet Technologies: Comparison of Suppliers and Buyers**

**Table 7. t-Tests on Buyers Versus Suppliers Perceptions on Internet Technologies**

Reaching customers via the internet...	Group	N	Mean	Std. Deviation	Std. Error Mean	t	df	sig.	Mean difference
is a superior way to do business.	Buyer	21	2,67	1,07	0,23	-1,806	77	0,750	-0,54
	Supplier	58	3,21	1,21	0,16				
increase the level of customer service.	Buyer	21	2,67	1,20	0,26	-0,271	75	0,008	-0,83
	Supplier	56	3,50	1,21	0,16				
makes vendors more responsive to customers.	Buyer	21	2,43	1,03	0,22	-3,032	77	0,003	-0,93
	Supplier	58	3,36	1,27	0,17				
lowers cost of doing business.	Buyer	21	2,81	0,93	0,20	-0,927	77	0,357	-0,26
	Supplier	58	3,07	1,15	0,15				



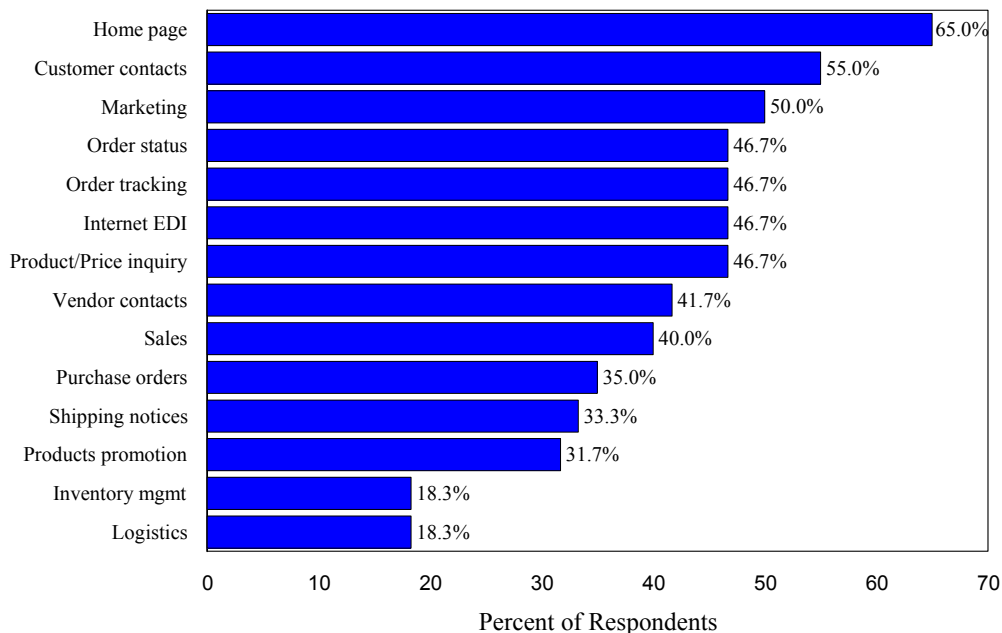
Scale: 1=Strongly Disagree 3= neither Disagree or Agree 5=Strongly Agree

**Figure 16. Suppliers: Perception on Benefits of Using the Internet (n=59 Respondents)**

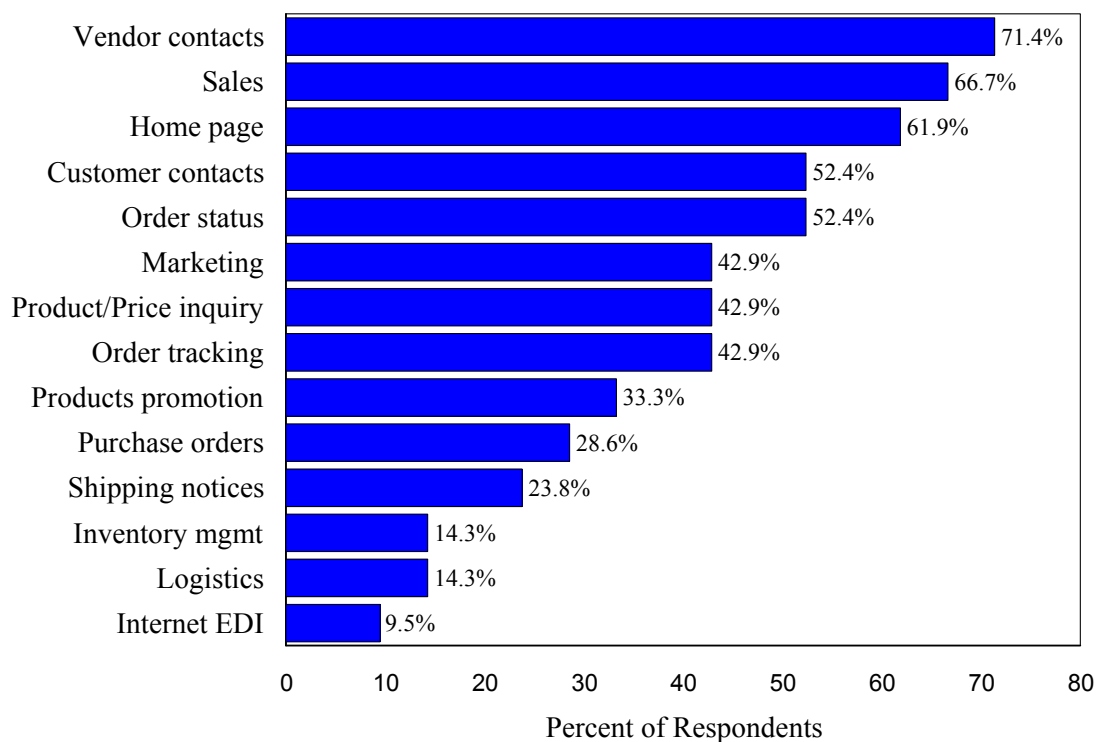
#### 4.4.1. Business Applications on the Internet

Website/home pages and supplier/buyer contacts (Figure 17 and Figure 18) are currently the primary Internet business applications used by both paper supplier and buyer respondents. Considerably more paper buyers indicated that they sell their products on the Internet (66.7 percent) than their vendors sell paper on the Internet (40.0 percent). Marketing, order status and order tracking are also widely used by both groups. The greatest difference between suppliers and buyers is in usage of Internet EDI; 45.7 percent of the suppliers indicated that they use Internet EDI, where as only 9.5 percent of the suppliers responded to use Internet EDI.

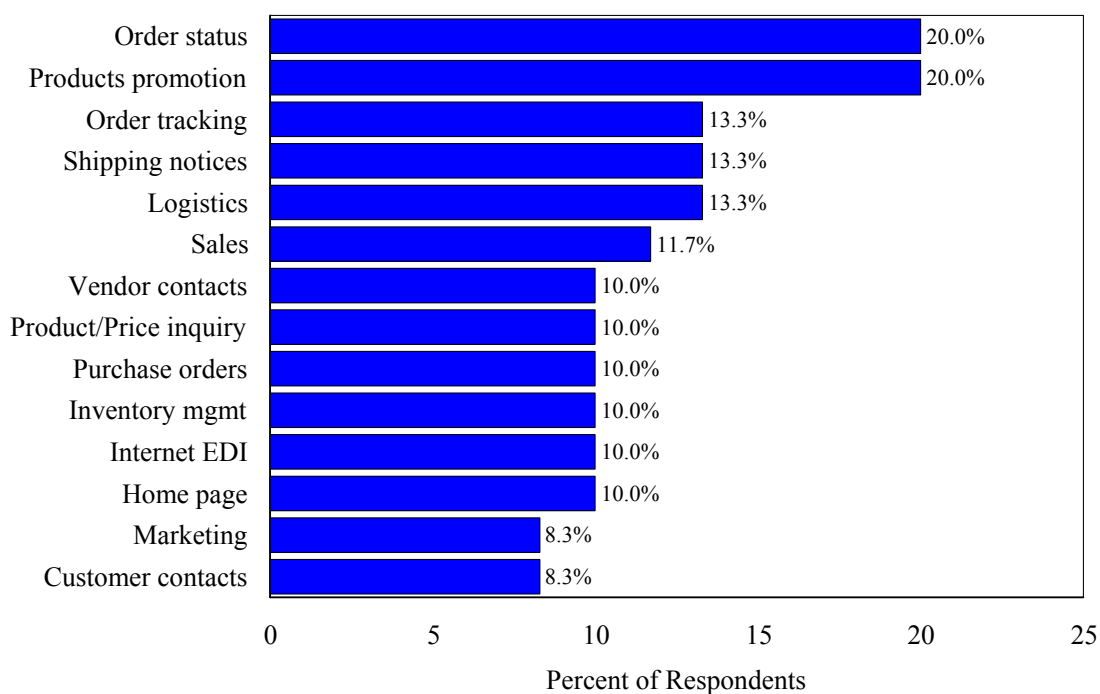
Twenty-eight paper supplier companies (46.7 percent) indicated that they plan to increase Internet business application usage in the next year (Figure 19). Order status and product promotion are the most likely applications to gain popularity within the next year by supplier respondents. Only 3 paper buyer companies (14.9 percent) indicated that they will extend their usage of internet business applications.



**Figure 17. Suppliers: Internet Business Applications Currently Used (2002)**  
**Multiple Responses Possible**  
**(n=60)**



**Figure 18. Buyers: Internet Application Currently Used (2002)**  
**Multiple Responses Possible**  
**(n=21)**



**Figure 19. Suppliers: Internet Business Applications Planned in the Next (2003) Year**  
**Multiple Responses Possible**  
**(n=60)**

#### **4.5. Use of eIntermediaries**

After briefly exploring usage and perception of Internet technologies by the respondents within their companies, the study focused on investigating the usage, image, expectations, experience, and concerns related to eIntermediaries.

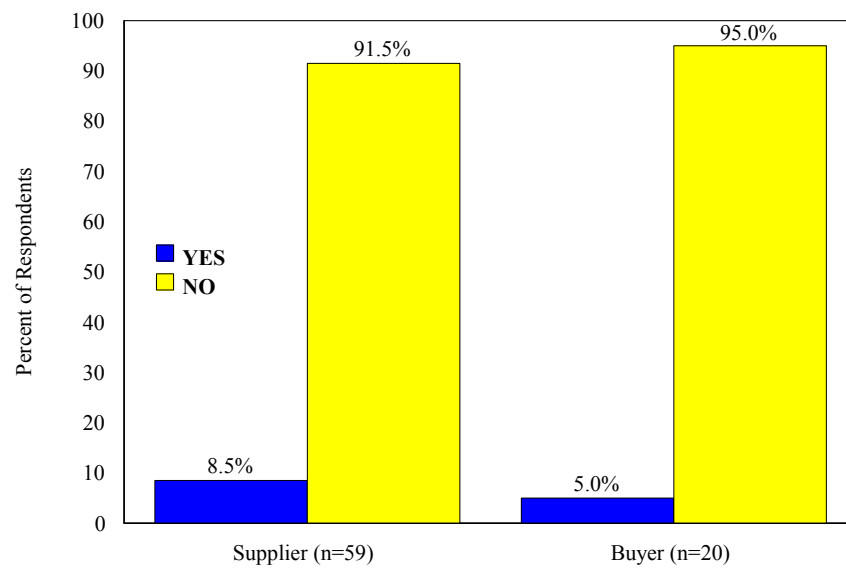
Only five (8.5 percent) of the paper supplier respondents and one (5.0 percent) of the paper buyers said they use eIntermediaries in their business unit (Figure 20 and Figure 21). The suppliers who indicated eIntermediary participation had a mean business unit revenue of \$7-8.9 million, employed 251-500 employees, and spent \$100,000-500,000 on IT in 2002. The buyer who indicated eIntermediary participation uses printing papers and specialty papers in its production process, has a \$9-10.9 million revenue at the business unit level, employs less than 50 employees, and had IT spending of \$100,00-500,000 in 2002. Due to the low response rate, t-tests could not be performed in this section (4.5) as well as the two following sections (4.6; 4.7) of the data analysis.

On a corporate level, 10 (17.9 percent) suppliers and 2 (10.5 percent) buyers indicated that they use eIntermediaries in their company (Figure 21).

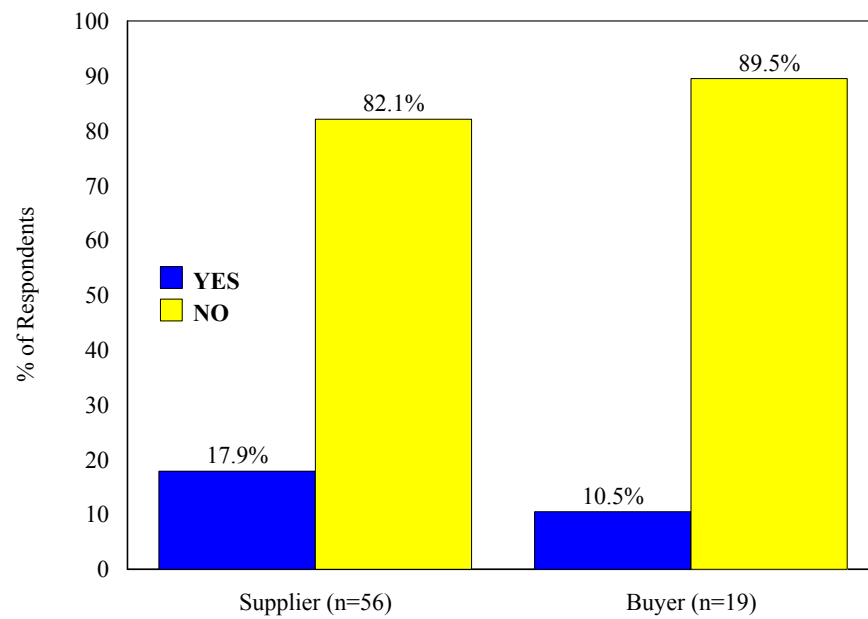
As seen from Table 8, more than half (51.1 percent) of the suppliers indicated that they implemented eIntermediary participation in 1999, when the dot.com hype was on its highest. There were 75 startups in the paper industry vertical trying to take their slice of the \$750 billion annual industry revenue (Greenbaum, 2000).

Table 9 lists the eIntermediaries used by paper supplier respondents. Of the listed eIntermediaries only three are still in business. ForesExpress continues to operate, Paperloop has cut eMarketplaces out of its business plan and concentrates on providing premium industry information, and PaperLink is still trying to engage the paper industry in eCommerce. Enron's ClickPaper deceased with the fall of its mother company, whereas PaperX and PaperExchange lost their venture capital funding in 2001.





**Figure 20. Business Unit Level Usage of eIntermediaries**



**Figure 21. Corporate Level Usage of eIntermediaries**

**Table 8. Suppliers: Year of eIntermediary Implementation  
(n=7)**

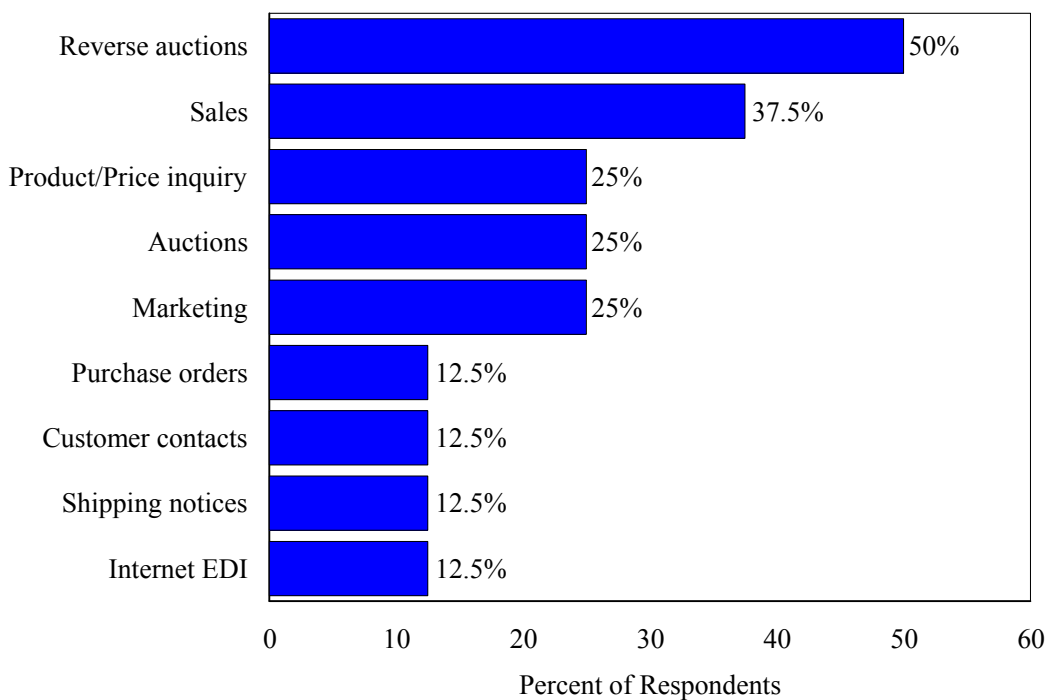
	<b>Number of Respondents</b>	<b>Percentage of Respondents</b>
2002	1	14.3%
2000	1	14.3%
	4	57.1%
Before 1998	1	14.3%

**Table 9. Suppliers eIntermediaries Used  
(n=7)**

<b>eIntermediary</b>	<b>Number of Respondents</b>
ForestExpress	1
PaperLoop	1
ClickPaper	1
PaperLink	2
PaperX	1
PaperExchange	1

#### 4.5.1. Business Applications via eIntermediaries

The most used eIntermediary business application is the reverse auction<sup>1</sup> (Figure 22). Four respondents indicated that they have participated in reverse auctions and three have been selling paper on-line. Electronic reverse auctions were one of the first new business applications eIntermediaries developed in an attempt to revolutionize the way the industry buys and sells paper. Electronic reverse auctions created a lot of concern on the supplier side because reverse auctions empower the buyer to find the best price available. Seller's concern in reverse on-line auctions is that the price becomes the most important product attribute. Despite the concerns and unfavorable selling situations, suppliers were forced to participate in on-line reverse auctions when their customers were experimenting the new business application.

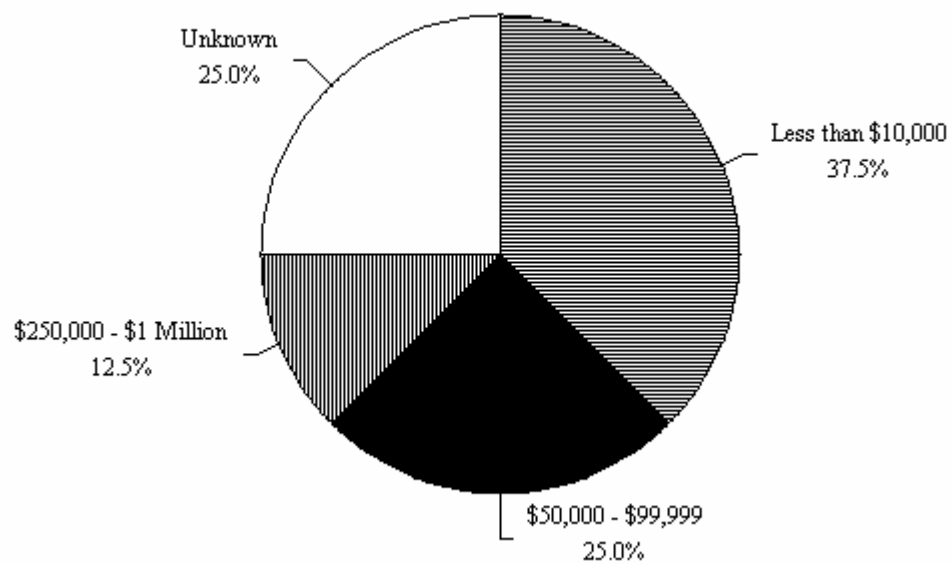


**Figure 22. Suppliers: Business Applications via eIntermediaries  
(Multiple Responses Possible)  
(n=8)**

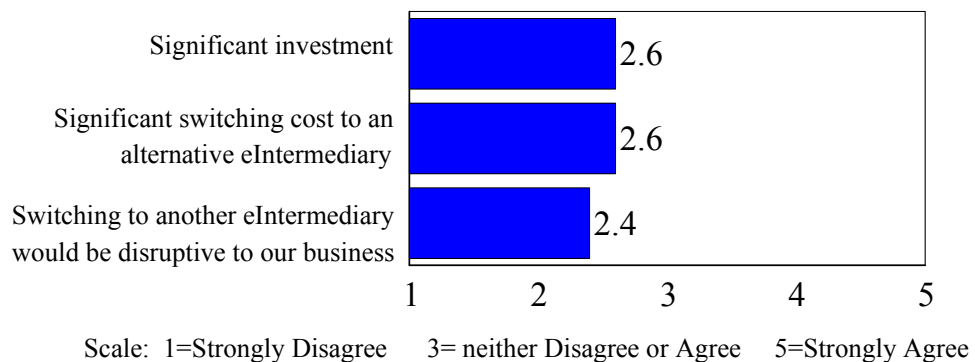
<sup>1</sup> Reverse auction (a.k.a buyer's auction): an online auction in which sellers bid against each other to win a buyer's business.

#### 4.5.2. eIntermediary Implementation Investment

Three (37.5 percent) paper supplier respondents who have used or are using eIntermediaries have spent less than \$10,000 on eIntermediary implementation (Figure 23), with one respondent investing \$250,000 - \$1 million. Suppliers do not consider their investment for eIntermediaries significant (Figure 24), nor do they regard the possibility of switching to an alternative eIntermediary expensive or disruptive to their business.



**Figure 23. Suppliers Total Investment Made for eIntermediary Implementation (n=8)**

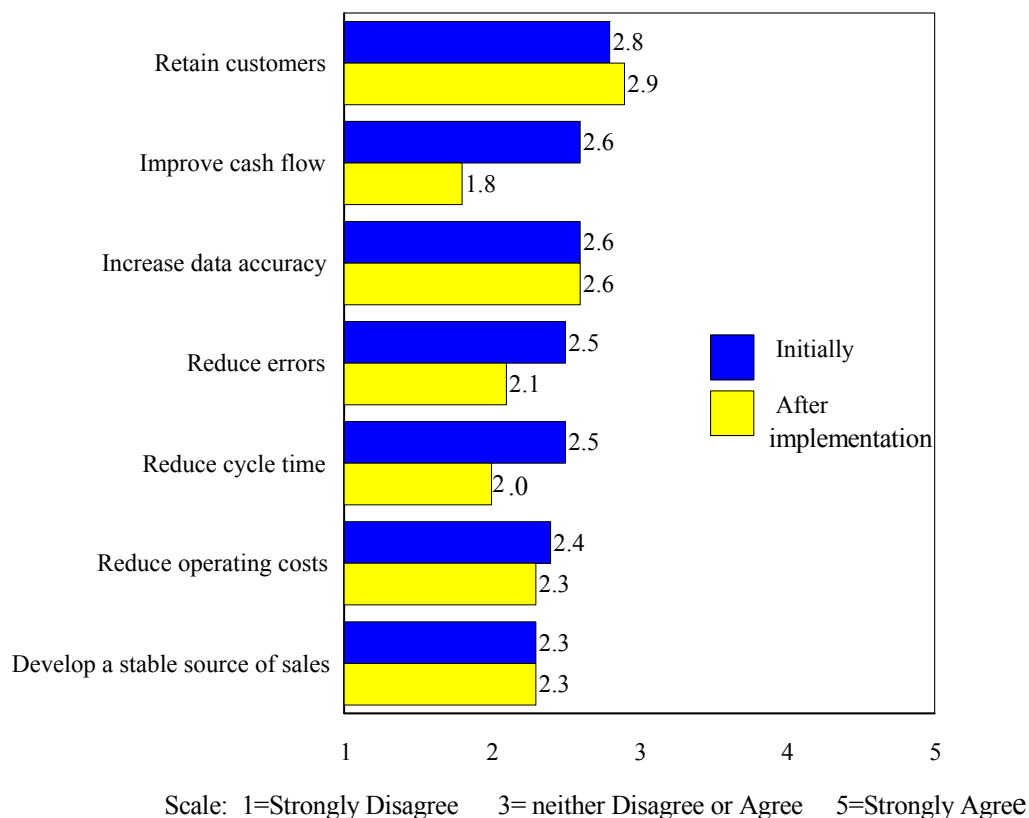


**Figure 24. Suppliers Significance of Investments Made in eIntermediary Implementation (n=7 Respondents)**

#### 4.6. Expectations and Experiences with eIntermediary Implementation

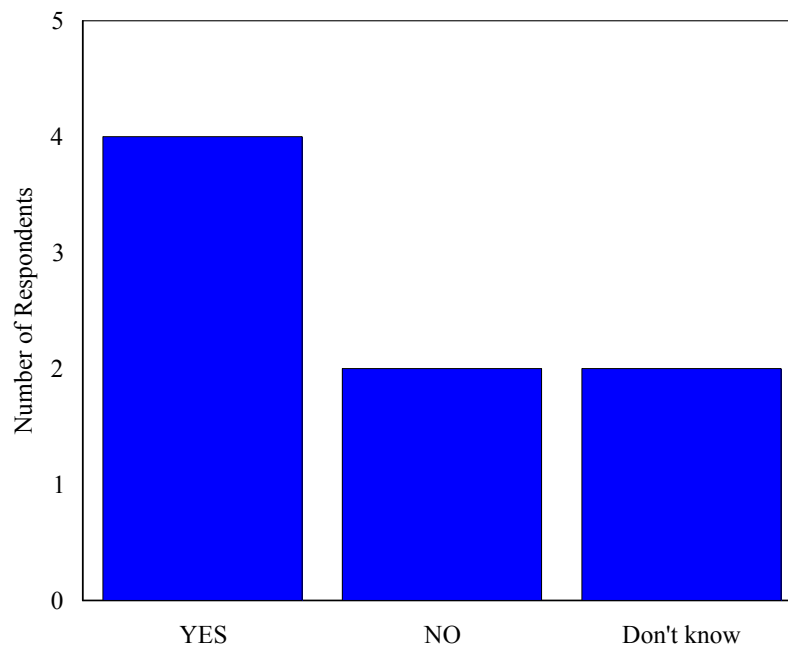
The following section investigates the initial expectations of eIntermediary implementation relative to achieved benefits after the implementation. In other words; the goal is to explore if paper suppliers achieved the expected benefits from eIntermediary implementation.

As seen from Figure 25, the initial expectations on eIntermediary implementation were neutral or low (means range from 2.8 – 2.3). Despite the low initial expectations, eIntermediaries failed to fulfill expectations regarding improving cash flow (initial expectations 2.6 versus experience 1.8), reducing cycle time (initial expectations 2.5 versus experience 2.0), and reducing errors (initial expectations 2.5 versus 2.0 experience).



**Figure 25. Initial Expectations Versus Experience with eIntermediaries (n=8 Respondents)**

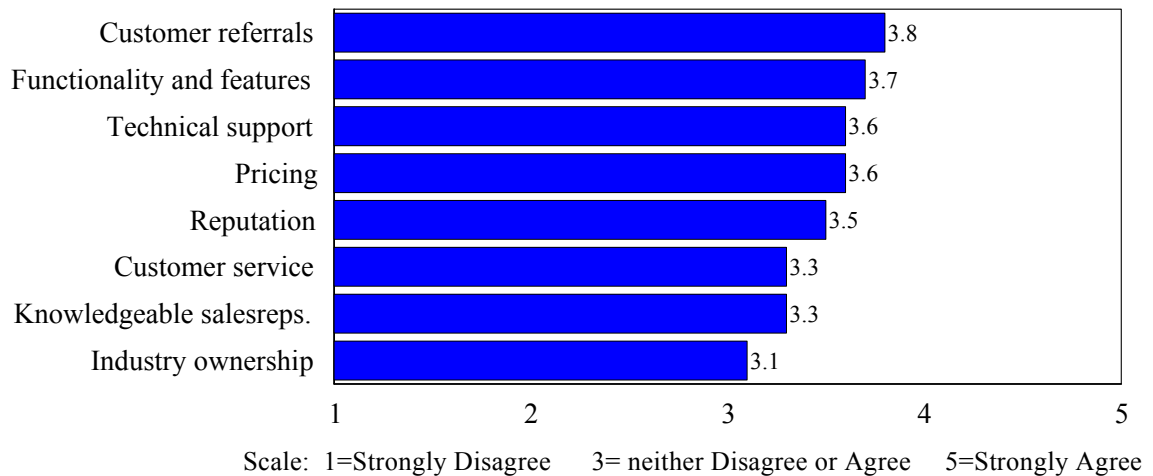
All of the eight paper suppliers who responded to use eIntermediaries indicated that they did not achieve the expected benefits from the eIntermediary implementation. Four of the eight respondents indicated that they would change their initial approach for eIntermediary implementation if they were given the chance to go back and do so (Figure 26). One respondent wrote on an open-ended question on how would they change their approach that “they would spend more time investigating the technology, ease of integration, stability, and financial backing of the provider.” The two other respondents criticized reverse auctions. “Try to avoid Internet reverse auctions wherever possible! Worst thing that ever happened to business in U.S.”, one of the respondents wrote.



**Figure 26. "Would Your Company Change the Initial Approach for eIntermediary Usage If It Would Be Possible?"  
(n=8 Respondents)**

#### **4.6.1. eIntermediary Selection Criteria**

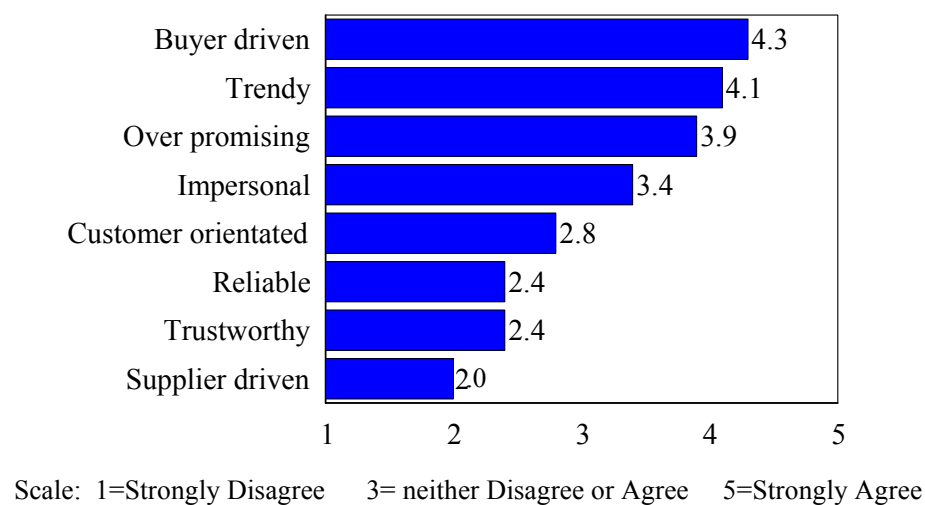
Customer referrals, functionality and features provided by the eIntermediary are the most important criteria in selecting an eIntermediary (Figure 27). Also, technical support, pricing, and reputation have an effect on provider selection. Industry ownership had the least importance in eIntermediary selection.



**Figure 27. eIntermediary Selection Criteria  
(n=8 Respondents)**

#### 4.7. Characteristics of an eIntermediary

The next section describes the image and relationship eIntermediaries have with paper supplier respondents. Paper suppliers characterize (Figure 28) eIntermediaries as buyer driven (4.3), trendy (4.1), over promising (3.9), and impersonal (3.4). On the other end of the spectrum, paper suppliers do not view eIntermediaries as customer oriented (2.8), reliable (2.4), nor trustworthy (2.4). The greatest disagreement among respondents is the statement that eIntermediaries are supplier driven (2.0).

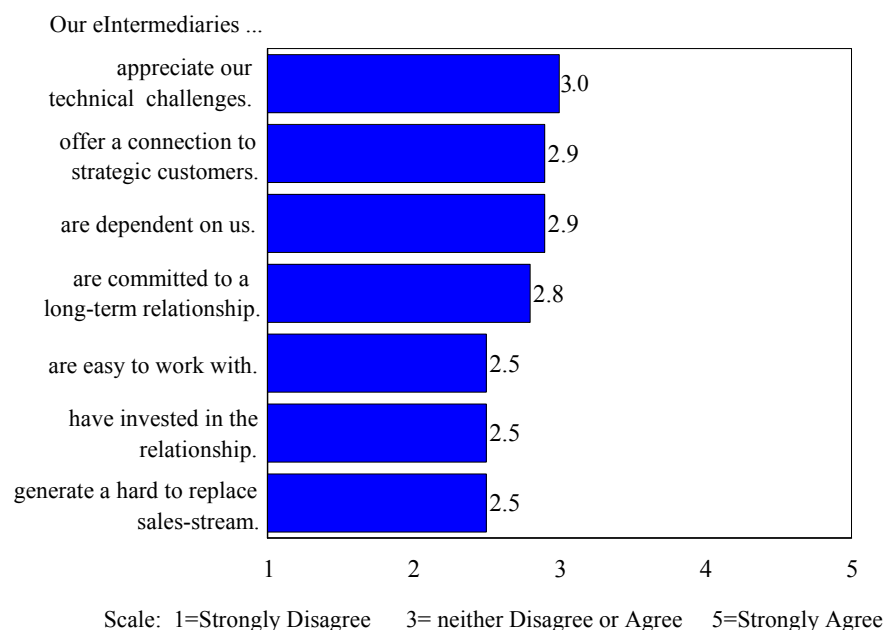


**Figure 281. Characteristics of eIntermediaries  
(n=8 Respondents)**

#### 4.7.1. eIntermediary Relationships

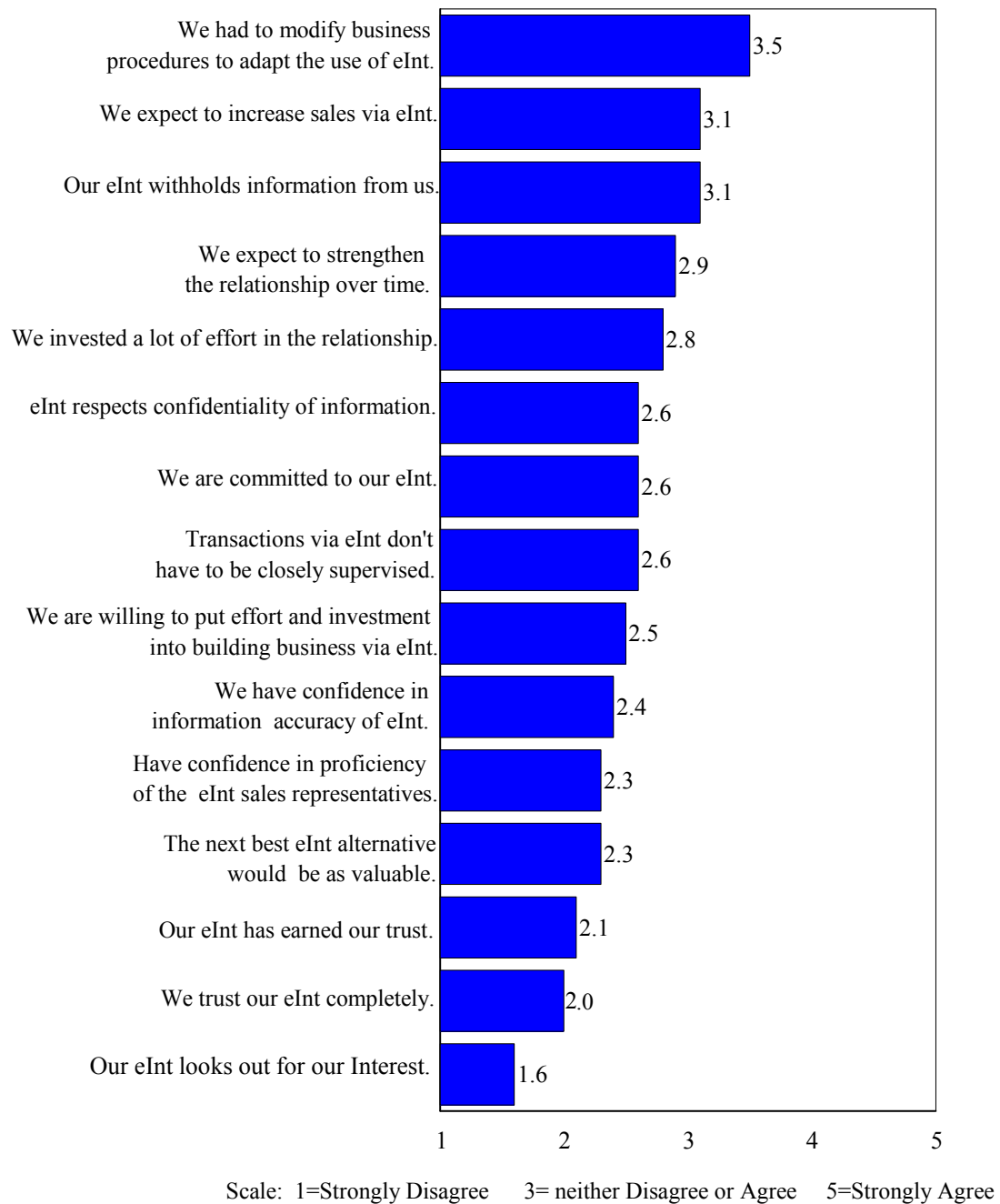
As seen in Figure 29, paper supplier respondents do not agree that their eIntermediaries are easy to work with (2.5), have truly invested in their customer relationship (2.5), or generate hard to replace sales-stream (2.5). Considering that all statements scored 3.0 or less, it can be concluded that eIntermediaries need to improve their customer relationships to keep their customer accounts active.

A number of paper suppliers indicated that they had to modify their business processes to adapt to the use of eIntermediaries (3.5) (Figure 30). Trust is a major concern in the paper supplier-eIntermediary relationship. Paper suppliers do not feel that eIntermediaries have earned their trust. Respondents feel that eIntermediaries do not look out for their interest (1.6). Furthermore, respondents do not either have great confidence in information accuracy (2.4), sales representative proficiency (2.3) or confidentiality of information received from eIntermediaries (2.6). Overall, paper supplier respondents sense a lack commitment and trust for their eIntermediaries. This is a major concern because no business relationship can be successful without trust.



**Figure 29. eIntermediary Relationship  
(n=8 Respondents)**





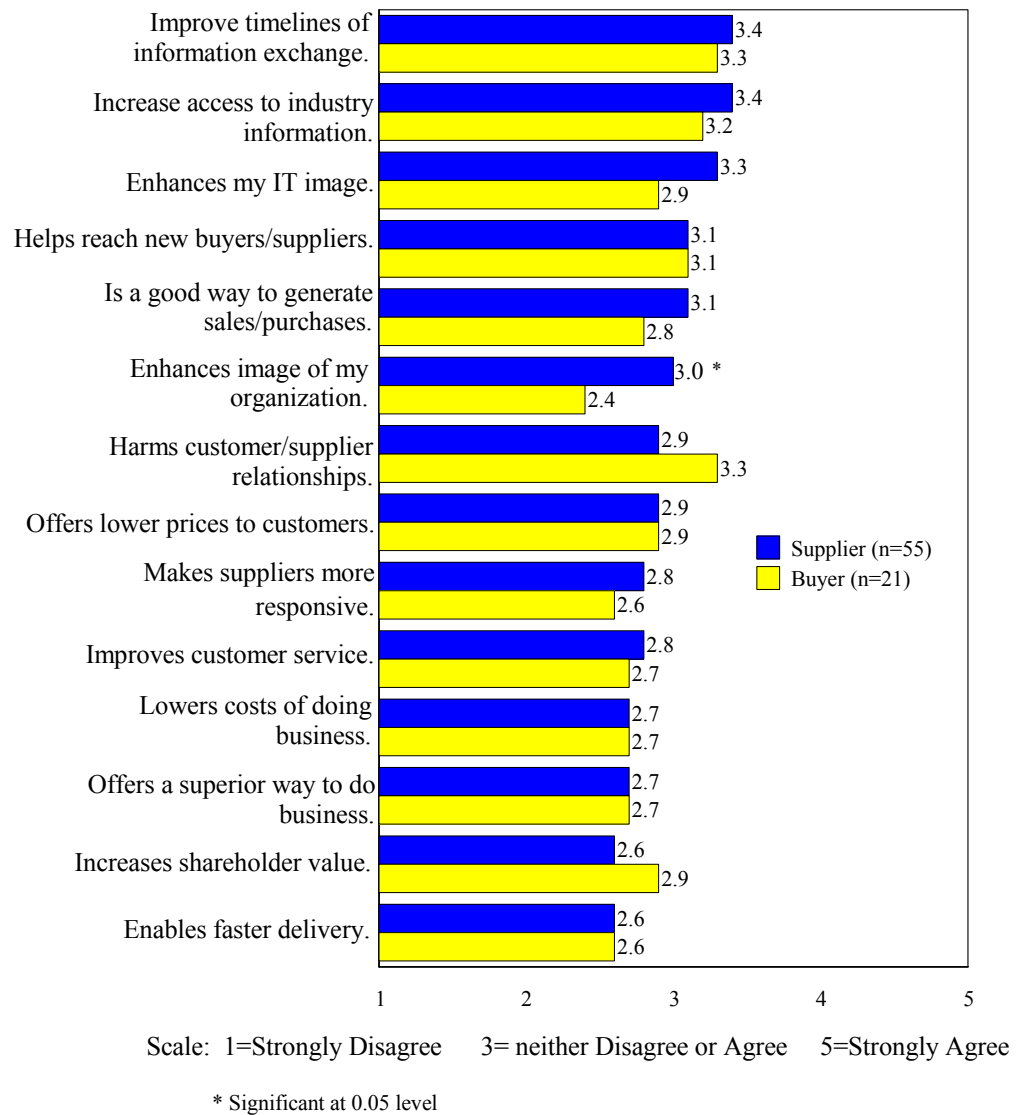
**Figure 30. Trust and Commitment to eIntermediaries (n=8 Respondents)**

#### **4.8. General Perceptions on eIntermediaries**

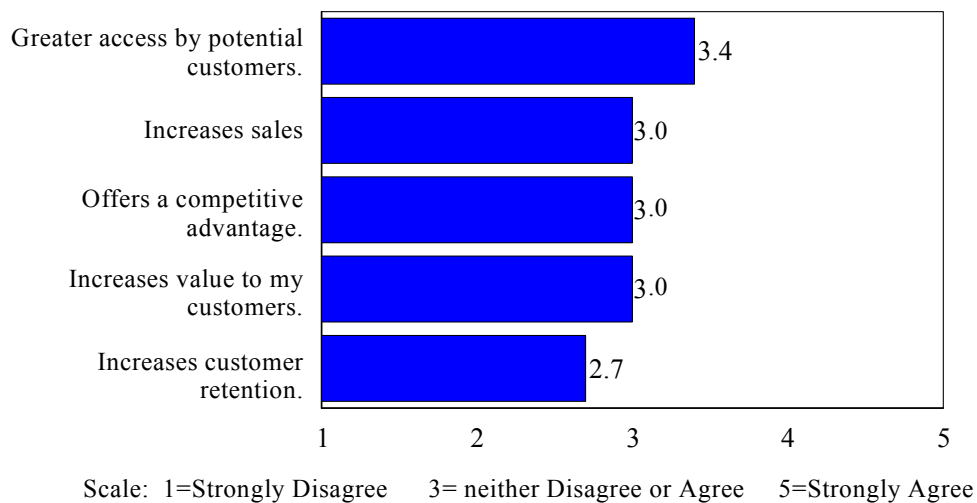
The last section of the study examines supplier versus buyer perceptions, and concerns of eIntermediary implementation. When suppliers were asked to estimate the percentage of their customers that use eIntermediaries, 84 percent of the 49 respondents estimated that only 0-10 percent of their customers use eIntermediaries. Eight percent of suppliers believed that 11 –20 percent of their customers use eIntermediaries, and eight percent believed that 21-30 percent of their customers use eIntermediaries. For paper buyers, 76.5 percent of 17 respondents estimated that 0-10 percent of their paper vendors use eIntermediaries to sell paper. The rest of the paper buyers estimated the vendor usage figure to be 11-20 percent.

Figure 31 explores paper suppliers and buyers attitudes on eIntermediary usage. Both suppliers and buyers agree that using eIntermediaries would improve timeliness of information exchange (suppliers 3.4; buyers 3.3), and increase access to industry information (suppliers 3.4; buyers 3.2). In addition, suppliers believe that eIntermediaries offer greater access for them by potential customers (3.4) (Figure 32). Statements in Figure 32 were omitted from the paper buyer questionnaire because they are vendor specific statements. Both suppliers and buyers disagreed that using eIntermediaries would enable faster delivery (2.6). Suppliers had a higher level of disagreement (2.6) with the statement that eIntermediary implementation would increase shareholder value. Buyers do not agree that eIntermediaries could make vendors more responsive to their needs. Also buyers believe that eIntermediary usage would harm their customer/supplier relationship (3.3).

The only statistically significant difference between suppliers and buyers attitudes was the statement regarding the image their organization gains from using eIntermediaries. Paper buyers do not believe that using eIntermediaries would improve the image of their organization, whereas buyers neither agree nor disagree with this statement.



**Figure 31. Attitudes on eIntermediary Usage**



**Figure 32. Suppliers Perception on eIntermediaries (n=55 Respondents)**

#### 4.8.1. Hypothesis Testing: Paper Buyers Versus Suppliers Attitudes on eIntermediaries

$H_{null1}$ : There is no difference between buyer and supplier attitudes on eIntermediaries.

$H_{alternative2}$ : There are differences between buyer and supplier attitudes on eIntermediaries.

Results from t-test comparing buyer and supplier attitudes on eIntermediaries (Table 11) indicate a non-rejection of the null-hypothesis at  $\alpha = 0.05$  in all statements except the statement “eIntermediary usage enhances the image of my organization”. Results indicate that paper buyer and supplier attitudes and expectations on eIntermediaries do not differ.

**Table 10. t-Tests: Paper Buyers Versus Suppliers Attitudes on eIntermediaries**

eIntermediaries...	Group	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference
1. offer a superior way to do business.	Buyer	21	2.67	0.86	0.19	0.05	74	0.964	0.01
	Supplier	55	2.65	1.09	0.15				
2. offer a good way to generate sales/purchases.	Buyer	21	2.76	1.00	0.22	-1.25	74	0.215	-0.31
	Supplier	55	3.07	0.96	0.13				
3. increase the level of customer service.	Buyer	21	2.67	0.73	0.16	-0.36	74	0.718	-0.10
	Supplier	55	2.76	1.14	0.15				
4. make vendors more responsive to customers.	Buyer	21	2.57	0.81	0.18	-0.84	74	0.405	-0.23
	Supplier	55	2.80	1.15	0.15				
5. lower cost of doing business.	Buyer	21	2.71	1.06	0.23	0.09	74	0.930	0.02
	Supplier	55	2.69	1.03	0.14				
6. increase shareholder value.	Buyer	21	2.90	0.94	0.21	1.09	74	0.280	0.27
	Supplier	55	2.64	0.97	0.13				
7. attract new customers.	Buyer	21	3.10	0.89	0.19	-0.12	74	0.905	-0.03
	Supplier	55	3.13	1.09	0.15				
8. enhance the image of my organization.	Buyer	21	2.43	0.75	0.16	-2.45	74	0.017	-0.61
	Supplier	55	3.04	1.04	0.14				
9. increase access to industry information.	Buyer	21	3.19	0.87	0.19	-0.68	74	0.496	-0.15
	Supplier	55	3.35	0.89	0.12				
10. offer timeliness of information.	Buyer	21	3.29	0.64	0.14	-0.57	74	0.573	-0.13
	Supplier	55	3.42	0.99	0.13				
11. offer lower prices to on-line customers.	Buyer	20	2.90	0.91	0.20	0.11	73	0.915	0.03
	Supplier	55	2.87	1.00	0.13				
12. enable faster delivery.	Buyer	21	2.57	0.81	0.18	-0.26	73	0.793	-0.06
	Supplier	54	2.63	0.88	0.12				
13. harm customer relationship.	Buyer	21	3.29	0.90	0.20	1.40	74	0.166	0.36
	Supplier	55	2.93	1.03	0.14				
14. is on the cutting edge of technology.	Buyer	21	2.90	0.44	0.10	-1.62	74	0.109	-0.35
	Supplier	55	3.25	0.95	0.13				

#### 4.8.2. Perceptions on Internet Technologies Versus eIntermediaries

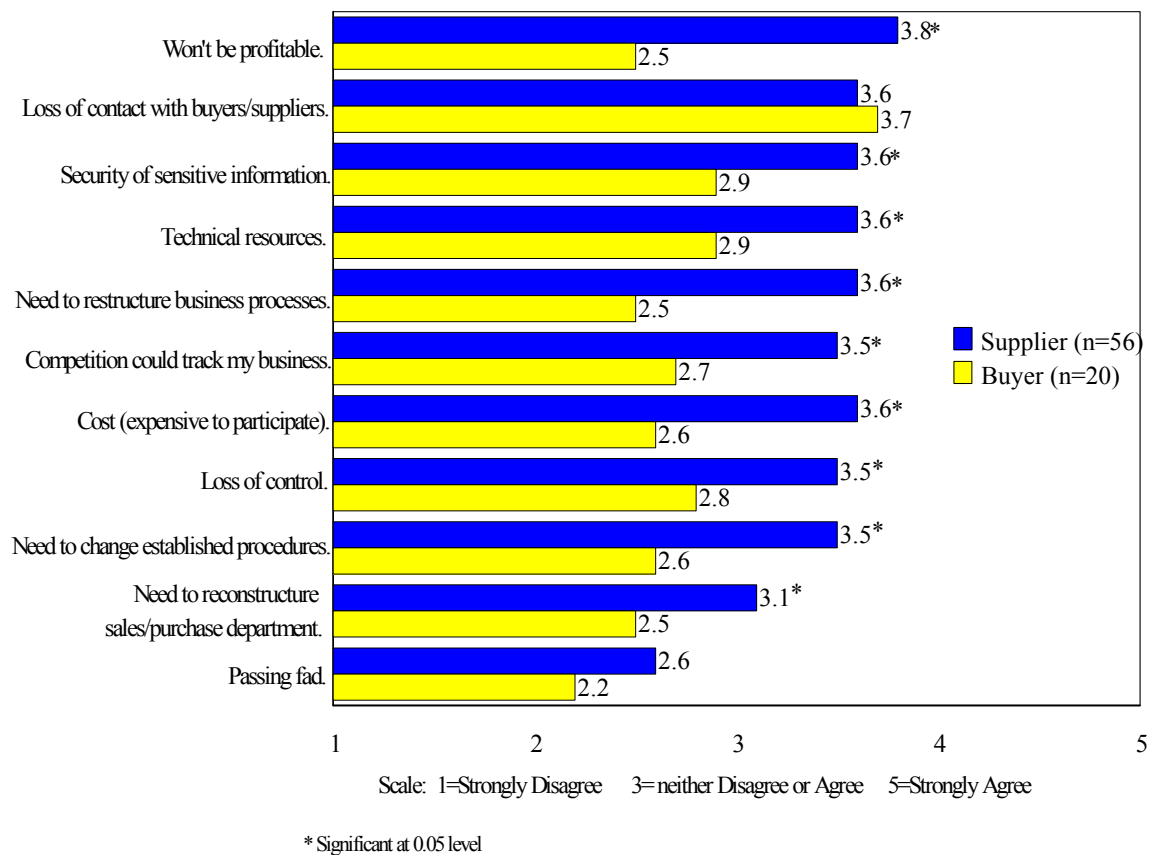
When compared perceptions paper buyers and suppliers have for Internet technologies in general (Figure 15) versus using eIntermediaries, perceptions on benefits of eIntermediary usage are lower than perceptions on benefits of Internet technologies in general (Figure 32). t-Tests comparing perceptions between internet technologies and eIntermediaries can be seen in Table 11.

**Table 11. t-Tests on Attitudes on Internet Technologies Versus eIntermediaries**

	Group	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig.	Mean difference
Internet vs. eIntermediary offers a superior way to do business.	Internet	76	3.0	1.18	0.14	2.748	75	0.008	0.38
	eIntermediary	76	2.7	1.03	0.12				
Internet vs. eIntermediary makes vendors more responsive to customers.	Internet	76	3.1	1.29	0.15	2.174	76	0.033	0.34
	eIntermediary	76	2.8	1.06	0.12				
Internet vs. eIntermediary lowers cost of doing business.	Internet	76	3.0	1.10	0.13	2.259	75	0.027	0.29
	eIntermediary	76	2.7	1.03	0.12				

#### 4.9. Concerns About Using eIntermediaries

Both suppliers and buyers are concerned that using eIntermediaries would lead to loss of contact with buyers/suppliers (Figure 33). On the other hand, generally neither group believes that eIntermediaries are a passing fad. Except for loss of contact with buyers/suppliers and the question of eIntermediaries being a passing fad, on all posed concerns suppliers and buyers have significantly different response. In all cases, suppliers have greater concerns about eIntermediary implementation than buyers. The greatest concern that suppliers have on is the questions of profitability (3.8), security of sensitive information (3.6), availability of technical resources (3.6), costs (3.6), and the need to restructure their established business processes (3.6). Paper buyers are less concerned about these changes in business processes and procedures.



**Figure 33. Concerns About Using eIntermediaries**

#### 4.9.1. Hypothesis Testing: Paper Buyers Versus Suppliers Concerns About eIntermediary Implementation

$H_{null1}$ : There is no difference between paper buyer and supplier concerns about eIntermediary implementation.

$H_{alternative2}$ : There are differences between paper buyer and supplier concerns about eIntermediary implementation

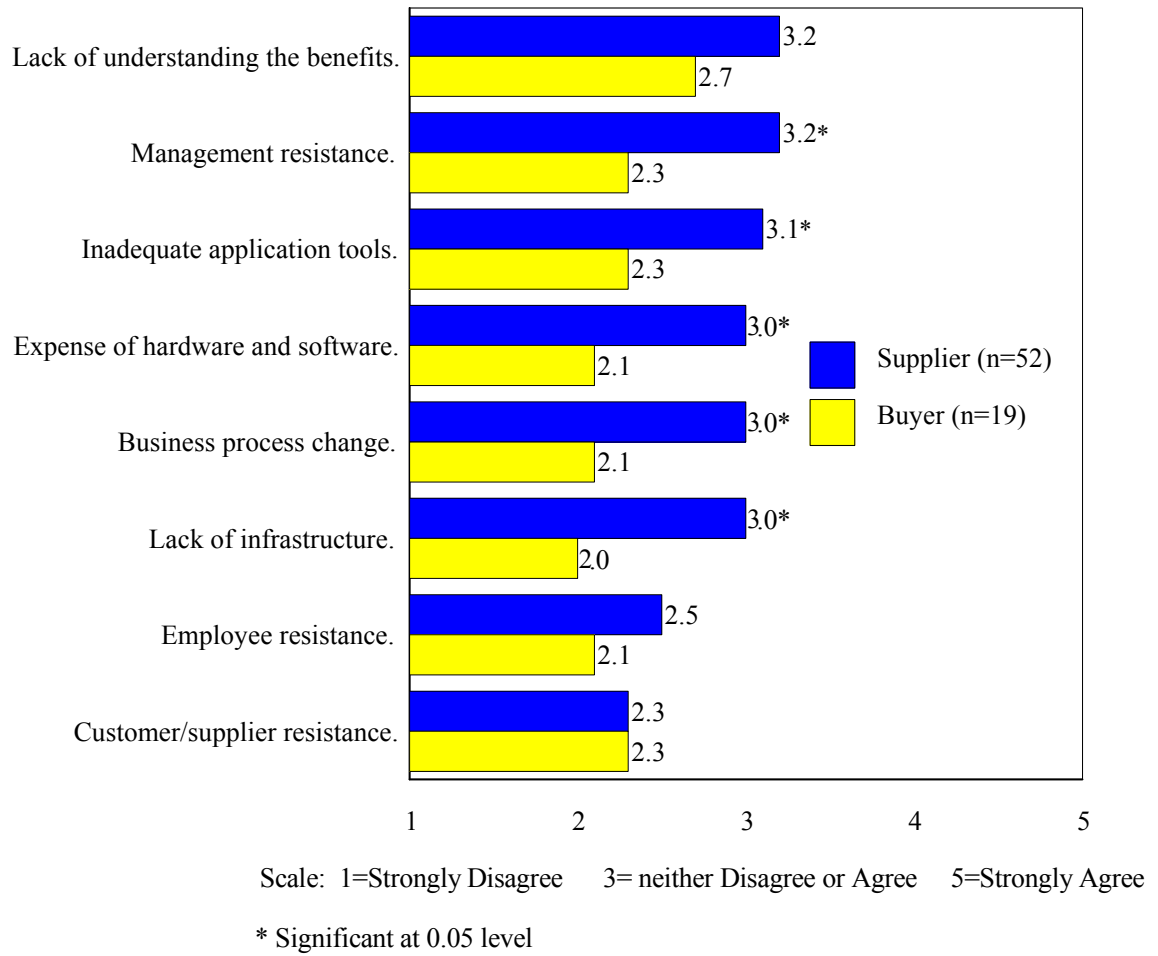
Results indicate a significant difference between buyer and supplier concerns about eIntermediary implementation (Table 12). All statements except “eIntermediaries are a passing fad” and “eIntermediary usage leads to loss of control” indicate a rejection of the null hypothesis  $\alpha = 0.05$ . Results were supported by t-tests. Overall, suppliers were more concerned about eIntermediary implementation than the buyers.

**Table 12. t-Tests on Paper Buyers Versus Suppliers Concerns About eIntermediary Implementation**

	Group	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference
1. Security of sensitive information.	Buyer	20	2.90	1.52	0.34	-2.337	72	0.022	-0.73
	Supplier	54	3.63	1.05	0.14				
2. Need to restructure business processes.	Buyer	20	2.50	1.10	0.25	-3.960	73	0.000	-1.05
	Supplier	55	3.55	0.98	0.13				
3. Availability of technical resources.	Buyer	20	2.85	1.18	0.26	-2.650	73	0.010	-0.75
	Supplier	55	3.60	1.05	0.14				
4. Cost.	Buyer	20	2.60	1.27	0.29	-3.338	72	0.001	-0.96
	Supplier	54	3.56	1.02	0.14				
5. Need to change established procedures.	Buyer	20	2.55	0.83	0.19	-3.618	72	0.001	-0.95
	Supplier	54	3.50	1.06	0.14				
6. Competition can track our business.	Buyer	20	2.70	1.46	0.33	-2.606	73	0.011	-0.83
	Supplier	55	3.53	1.12	0.15				
7. It is a passing fad.	Buyer	20	2.15	1.23	0.27	-1.592	74	0.116	-0.46
	Supplier	56	2.61	1.06	0.14				
8. It won't be profitable.	Buyer	20	2.50	1.10	0.25	-4.654	73	0.000	-1.26
	Supplier	55	3.76	1.02	0.14				
9. Loss of control.	Buyer	20	2.75	1.21	0.27	-2.707	74	0.008	-0.77
	Supplier	56	3.52	1.04	0.14				
10. Loss of contact with customers.	Buyer	20	3.65	1.27	0.28	0.082	74	0.935	0.02
	Supplier	56	3.63	1.14	0.15				
11. Need to restructure sales/purchases department.	Buyer	20	2.45	0.95	0.21	-2.349	73	0.022	-0.66
	Supplier	55	3.11	1.12	0.15				

#### 4.10. Factors That Impeded eIntermediary Implementation

Eventhough paper buyer respondent eIntermediary adoption is low, buyers did not indicate that any of the factors in Figure 34 impeded their eIntermediary implementation. Suppliers stated that lack of understanding the benefits of eIntermediary implementation (3.2), management resistant (3.2), and inadequate application tools (3.1) have impeded their eIntermediary implementation, although none of these were far from 3.0, the neutral point. Buyers also have more confidence in their information technology infrastructure than do suppliers. Customer/vendor or employee resistance has not impeded either supplier or buyer eIntermediary implementation.



**Figure 34. Factors That Have Impeded eIntermediary Implementation**



#### 4.10.1. Hypothesis Testing: Factors Impeding Paper Buyers Versus Factors Impeding Suppliers eIntermediary Implementation

$H_{null1}$ : There is no difference in factors impeding eIntermediary implementation between paper buyers and suppliers.

$H_{alternative2}$ : There are differences in factors impeding eIntermediary implementation between paper buyers and suppliers

Results indicate a rejection of the null hypothesis in statements number 2, 4, 5, 6, and 8 at  $\alpha = 0.05$  (Table 13). This concludes that there are differences between buyers and suppliers perceived factors that impede eIntermediary implementation. The t-values supported the rejection. On the other hand, results indicated a non-rejection of the null hypothesis in statements 1, 3, and 7 at  $\alpha = 0.05$ .

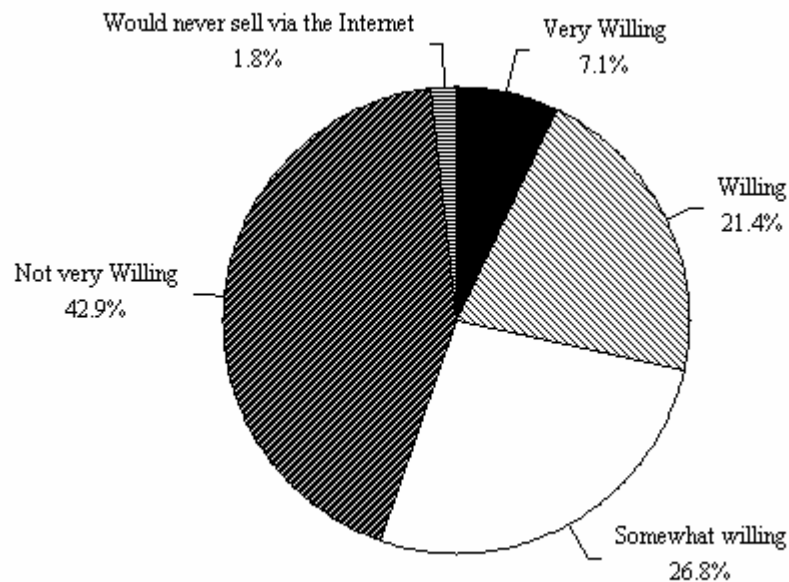
**Table 13. t-Tests on Factors Impeding Paper Buyers Versus Factors Impeding Suppliers eIntermediary Implementation**

	Group	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference
1. Customer Resistance	Buyer	19	2.32	1.34	0.31	0.046	70	0.964	0.01
	Supplier	53	2.30	1.07	0.15				
2. Expense of hardware and software	Buyer	19	2.11	1.29	0.30	-2.667	69	0.010	-0.91
	Supplier	52	3.02	1.28	0.18				
3. Lack of understanding of the benefits to my company.	Buyer	19	2.74	1.37	0.31	-1.454	70	0.150	-0.49
	Supplier	53	3.23	1.22	0.17				
4. Inadequate application tools	Buyer	18	2.28	1.23	0.29	-2.468	68	0.016	-0.80
	Supplier	52	3.08	1.17	0.16				
5. Lack of infrastructure.	Buyer	19	1.95	1.31	0.30	-3.154	69	0.002	-1.05
	Supplier	52	3.00	1.22	0.17				
6. Management resistance.	Buyer	19	2.32	1.29	0.30	-2.387	68	0.020	-0.84
	Supplier	51	3.16	1.32	0.18				
7. Employee resistance.	Buyer	19	2.11	1.24	0.29	-1.184	69	0.241	-0.39
	Supplier	52	2.50	1.24	0.17				
8. Business process change.	Buyer	19	2.11	1.15	0.26	-2.896	69	0.005	-0.93
	Supplier	52	3.04	1.22	0.17				

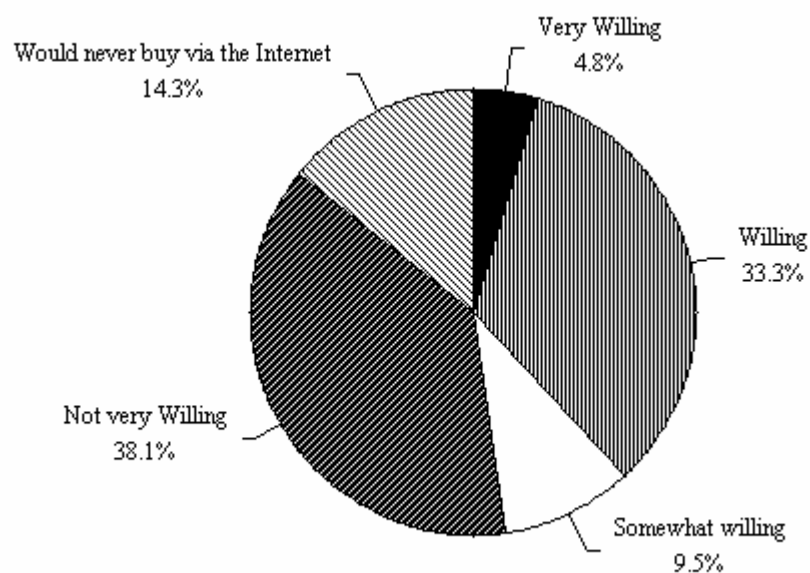
#### 4.11. Willingness to Use eIntermediaries

Over half (55.3 percent) of supplier respondents stated that they are “very willing”, “willing” or “somewhat willing” to sell products via eIntermediaries (Figure 35). Nearly 45 percent (44.7) indicated that they are “not very willing” or “would never sell via

eIntermediaries.” Over half (52.4 percent) of paper buyers responded that they would “never” or are “not very willing” to buy paper on the Internet (Figure 36). T-test did not result in statistical difference between suppliers and buyers willingness to sell/buy paper via eIntermediaries.



**Figure 35. Suppliers Willingness to Sell Paper Using eIntermediaries (n=56 Respondents)**



**Figure 36. Buyers Willingness To Buy Paper Using eIntermediaries (n=21 Respondents)**

#### 4.11.1. Hypothesis Testing: Paper Buyers Versus Suppliers Willingness to Use eIntermediaries

$H_{null1}$ : There is no difference in willingness to use eIntermediaries between paper buyers and suppliers.

$H_{alternative2}$ : There are differences in willingness to use eIntermediaries between paper buyers and suppliers.

Results indicate a non-rejection of the null hypothesis and it is concluded that, there is no difference between paper buyers and suppliers willingness to buy or sell paper via eIntermediaries at  $\alpha = 0.05$ . This was supported with the t-value of 1.598 with 75 degrees of freedom (Table 14).

**Table 14. t-Test on Paper Buyers Versus Suppliers Willingness to Use eIntermediaries**

	Group	N	Mean	Std. Dev.	Std. Error Mean	t	df	Sig.	Mean diff.
Willingness to use eIntermediaries	Buyers	21	3.48	1.03	0.23	1.598	75	0.114	0.42
	Suppliers	56	3.05	1.03	0.14				

## 5. SUMMARY AND CONCLUSION

The paper industry is characterized by high inventories and variable lead times, which often lead to inefficiencies in the paper supply chain. Inefficiencies have been exacerbated by manual transaction processing and inefficient use of information. In an attempt to streamline the paper supply chain, paper industry vertical business-to-business eMarketplaces were established to help industry players to decrease inefficiencies in their supply chains, to minimize negative effects of economic cyclicalities, and to achieve better visibility (ForestExpress, 2001). Online exchanges and eMarketplaces rode the hype of revolutionizing the way in which industries conduct business, citing the cost savings achieved by expanded market reach, operational efficiencies, aggregated purchasing, and finding the least expensive suppliers (Moore, 2001). Industry adoption of eIntermediaries, operating in the paper industry vertical has been low. Many of the paper vertical start-ups established in the dot.com boom of the late 1990s failed when the economy softened and the dot.com bubble burst.

Paper suppliers and buyers are the target groups with whom paper vertical eIntermediaries want to engage in business. These target groups have different sets of business needs and wants. The goal of this study was to explore those differences.

More than half of the suppliers indicated that the first time they participated in eIntermediaries was in year 1999, when the dot.com hype was at its peak. Customer referrals, functionality, and features provided by the eIntermediary were the most important criteria in selecting eIntermediary partner. According to supplier respondents, paper suppliers have not made significant investments in eIntermediary implementation.

The most used eIntermediary business application was reverse auctions. Electronic reverse auctions created a lot of concern on the supplier-side. Despite concerns and an

unfavorable selling situation, suppliers participated on-line reverse auctions while their customers wanted to experiment them.

eIntermediaries failed to fulfill respondent expectations regarding key promises, such as improving cash flow, reducing cycle time, and reducing errors. None of the paper suppliers achieved the expected benefits from the eIntermediary implementation, and half of them would change their initial approach to eIntermediary implementation if it would be possible. They would spend more time investigating the technology, ease of integration, stability, and financial backing of the provider.

Paper suppliers characterize eIntermediaries as buyer driven, trendy, over promising, and impersonal. Overall paper suppliers lack commitment and trust for their eIntermediaries. This is a major concern because business relationships can not be satisfying without trust and commitment to the other party. Paper buyer and supplier attitudes and expectations on eIntermediaries do not differ significantly. Implications of the study results are that eIntermediaries face the same challenges, both with paper buyers and supplier, engaging the paper supply chain in eIntermediary participation. None of the groups is more or less favorable for eIntermediary implementation, neither hold a more negative or positive image of eIntermediaries.

Buyer and supplier respondents feel that the benefits of eIntermediary usage are lower than their perceptions on benefits of Internet technologies in general. Both suppliers and buyers are concerned that using eIntermediaries would lead to loss of contact with exchange partners, but paper suppliers have a greater level of concern. Suppliers are most concerned with profitability, security of sensitive information, technical resources, costs, and need to restructure established business processes in the context of using eIntermediaries. Differences found between buyer and supplier concerns on eIntermediary implementation and factors impeding eIntermediary implementation imply that

eIntermediaries should plan a target-group-specific marketing communication in their attempts to assure paper buyers and suppliers that eIntermediary participation is a viable, successful and low risk business decision

Over half of the suppliers stated that they are “very willing”, “willing” or “somewhat willing” to sell products via eIntermediaries, while the rest indicated that they are “not very willing” or “would never sell via eIntermediaries.” Over half of the paper buyers responded that they would “never” or are “not very willing” to buy paper on the Internet. The implications of the results are that neither paper buyers nor suppliers are pushing the other group to eIntermediary adoption on the paper industry. Paper buyers do not force paper suppliers to implement eIntermediaries, or the other way around. This is a good thing for the supply chain because the supply chain participants (buyers and suppliers) can build their steps to full utilization of eCommerce together and at the same pace, and most importantly on a sustainable way, without rush, hype and “have-to-do-it” mentality. It might even be concluded, that the eIntermediaries have been trying the most to drive the paper supply chain into eIntermediary participation.

B2B exchanges seem to have underestimated the complexity of the paper industry and overestimated companies’ ability to adopt eCommerce. Organizational changes, changes in business processes, development of industry standards, and improvements in integration technology systems are all needed to capture benefits from B2B exchanges. The pressure for fundamental changes in existing business processes has created change resistance in organizations (CyberAtlas, 2002).

## LITERATURE CITED

- Acly, Ed. 2000. Business Exchange Automation: Reengineering the rules of eBusiness. NextSet Software Inc. White Paper. August, 2002. Retrieved August, 2002. <[http://b2b.ebizq.net/ebiz\\_integration/acly\\_1a.html](http://b2b.ebizq.net/ebiz_integration/acly_1a.html)>
- AF&PA. 2003. American Forest & Paper Association web-page. Washington, DC. Retrieved February, 2003. <[www.afandpa.org/Content/NavigationMenu/Pulp\\_and\\_Paper/Glossary/Glossary.htm](http://www.afandpa.org/Content/NavigationMenu/Pulp_and_Paper/Glossary/Glossary.htm)>
- AF&PA. 1998. 1998 Statistics – Data Through 1997. American Forest & Paper Association. Washington, DC. Retrieved: February 2003. <[www.eia.doe.gov/emeu/mecs/iab/forest\\_products/page6.html](http://www.eia.doe.gov/emeu/mecs/iab/forest_products/page6.html)>
- B2B Outlook 2002. 2002. B2B Community. July, 2002. <B2B Outlook 2002, 2002. B2B Community. Retrieved July, 2002. <<http://www.communityb2b.com/news/article.cfm?oid=788E9B69-1C60-476E-A2B52E9D70FAF54C>>
- Biros, Dave. 2001. eBusiness and the Pulp & Paper Industry. PaperAge. O'Brien Publications, Inc. Issue: February, 2001. Retrieved December ,2002. <[http://www.paperage.com/02\\_2001ebusiness.html](http://www.paperage.com/02_2001ebusiness.html)>
- Cambell, Craig. 2001. E-business and competitive advantage. Pulp and Paper. (75)1: 82.
- CEPI. 2000. European Paper Industry to Create Common E-Commerce IT Standards. The Confederation of European Paper Industries. Brussels. May 10, 2000. Retrieved December, 2002. <[http://www.cepi.org/htdocs/prelease/prelease\\_0015.html](http://www.cepi.org/htdocs/prelease/prelease_0015.html)>
- Chung, Anne et al. 2001. The eMarketplace Revolution: Creating and capturing the value in B2B e-Commerce. Booz-Allen & Hamilton Inc. 2001. Retrieved February, 2003. <[http://www.bah.de/content/downloads/viewpoints/5K\\_B2B\\_emarket.pdf](http://www.bah.de/content/downloads/viewpoints/5K_B2B_emarket.pdf)>
- Colclough, Neil. 2000. E-day approaches for B2B dot.coms. Pulp and Paper Industry. (42) 9: 45-51. Electronic version: <<http://www.asiapapermarkets.com/apm/common/press4.jsp>>
- Conservatree. 2003. Conservatree web-page. San Francisco, CA. Retrieved February, 2003. <[www.conservatree.com](http://www.conservatree.com)>
- Cover Pages. 2000. PML: Markup Language for Paper and Printing. October 12, 2000. Retrieved December, 2002. <<http://xml.coverpages.org/pml-paperPrint.html>>
- Cubine, Mark and Kenneth Smith. 2001. Lack of communication standards builds barriers to paper e-commerce. Pulp and Paper. (75) 2:32-35. Electronic version: <[http://www.paperloop.com/db\\_area/archive/p\\_p\\_mag/2001/0002/barrier.htm](http://www.paperloop.com/db_area/archive/p_p_mag/2001/0002/barrier.htm)>
- Cyber Atlas, 2002. B2B E-Commerce Headed for Trillions. Cyber Atlas Internet. March 6, 2002. Retrieved July, 2002. <[http://cyberatlas.internet.com/markets/b2b/print0,10091\\_986661,00.html](http://cyberatlas.internet.com/markets/b2b/print0,10091_986661,00.html)>

Dipoli Media. 2001. Yritykset tarvitsevat tietoa ja valineita sähköisen liiketoiminnan kehittämiseen. November 24, 2001. Retrieved December, 2001. <<http://www.dipoli.hut.fi/media/ebusiness.htm>>

DOC. 1996. 1996 Annual Survey of Manufacturers. U.S. Department of Commerce. Retrieved February, 2003. <[www.eia.doe.gov/emeu/mecs/iab/forest\\_products/page6.html](http://www.eia.doe.gov/emeu/mecs/iab/forest_products/page6.html)>

Dotprint. 2003. A brief history of printing. Retrieved February, 2003. <[www.dotprint.com/industry/printing\\_2001/history/001.shtml](http://www.dotprint.com/industry/printing_2001/history/001.shtml)>

Dupuy, Christopher and Vlosky, Richard 2000. Electronic Data Interchange and buyer-supplier relationships. Louisiana Forest Products Laboratory, Louisiana State University Agricultural Center. Baton Rouge, LA. Working paper #40. January 5, 2000.

Emarketer. 2003(a). IT Spending: Comparative Forecasts and Trends in Technology Spending. Retrieved January, 2003. <[http://www.emarketer.com/products/report.php?it\\_spending\\_jan03](http://www.emarketer.com/products/report.php?it_spending_jan03)>

Emarketer. 2003 (b). Comparative estimates of the worldwide B2B eCommerce. Retrieved February, 2003. <[http://www.emarketer.com/products/report.php?ecommerce\\_trade](http://www.emarketer.com/products/report.php?ecommerce_trade)>

Emarketer. 2002. The E-Commerce Trade and B2B Exchanges Report. Executive summary. Retrieved June, 2002. <[http://www.emarketer.com/products/report.php?ecommerce\\_trade](http://www.emarketer.com/products/report.php?ecommerce_trade)>

Emarketer. 2001. The eCommerce: B2B Report -Executive Summary. Retrieved February, 2003. <[http://www.line56.com/research/download/emarketer\\_b2b\\_report.exec\\_sum.pdf](http://www.line56.com/research/download/emarketer_b2b_report.exec_sum.pdf)>

Expresso. 2002. Expresso Solutions homepage. Retrieved July, 2002. <[www.expressosolutions.com](http://www.expressosolutions.com)>

Fazio, Tim. 2000. The Role of E-Business in the Pulp and Paper Industry. Tappi Journal, vol. 83 no. 8.

ForestExpress. 2002. ForestExpress homepage. Retrieved July, 2002. <[www.forestexpress.com](http://www.forestexpress.com)>

ForestExpress. 2001. ForestExpress chosen by Forbes Magazine as best of the web. Press release. September 17, 2001. Retrieved February, 2003. <<http://www.forestexpress.com/press/091701.jsp>>

Google. 2002. Directory Search. [http://directory.google.com/Top/Business/E-Commerce/Marketplaces/Paper\\_Products/](http://directory.google.com/Top/Business/E-Commerce/Marketplaces/Paper_Products/)>

Greenbaum, Perry. 2000. Finding dance partners. Pulp&Paper Canada. ISSN 0316-4004 (101) 11

Hayhurst, Douglas P. 2001. Paper companies crawl into 21st century. Pulp and Paper Industry. (43) 2:11-13



Hirsh, Lou. 2002. How big is eCommerce? E-Commerce Times. June 27, 2002. Retrieved February, 2003. <<http://www.ecommercetimes.com/perl/story/18403.html>>

Hoover's. 2003. Hoover's Online. Publishing & Printing Snapshot. Retrieved February 2003. <[www.hoovers.com/industry/snapshot/0,2204,34,00.html](http://www.hoovers.com/industry/snapshot/0,2204,34,00.html)>

InternetNews. 1999. Paper Industry E-Commerce Site Launches. InternetNews. August 31, 1999. Retrieved November, 2002. <<http://www.internetnews.com/ec-news/article.php/192731>>

Internet Society. 2001. What is the Internet? October, 2001. Retrieved December, 2001. <<http://www.isoc.org/internet/>>

Juslin, Heikki and Eric Hansen. 2002. Strategic Marketing in the Global Forest Industries. Authors academic Press, 2002. Corvallis, OR. ISBN 0-9703333-4-X. 597 pp.

Kapferer, J. 1998. Strategic Brand Management: creating and sustaining brand equity long term. 2nd ed. Kogan Page, London. ISBN 0-7494-2069-3. 443 pp.

Kivinen, Jukka. 2001. Director of eBusiness, UPM-Kymmene. Interview: July 2001, Helsinki, Finland.

Kotler, Philip and Gary Armstrong. 2001. Principles of Marketing. 9<sup>th</sup> ed. Prentice-Hall, Inc., Upper Saddle River, New Jersey. ISBN 0-13-026312-5. 785 pp.

Kotler, Philip. 2000. Marketing Management the Millennium Edition. 5th ed. Prentice-Hall, Inc., Upper Saddle River, New Jersey. ISBN 0-13-015684-1. 718 pp.

KPMG LLP. 2001. Is neutrality key to establishing and maintaining eMarketplace trust? KPMG LLP Information Risk Management. White Paper. February 2001.

McDermott, Ted. 2000. Keeping pace with the evolution of eCommerce. PIMA's Papermaker. Retrieved November, 2000 <[www.pimaweb.com](http://www.pimaweb.com)>

Moore, John. 2001. What's next for B2B? Business 2.0. September 18, 2001. Retrieved August, 2002. <<http://www.business2.com/articles/web/0,1653,17177,FF.html>>

Moore, William. 200. Recovered Paper Industry Dots the Internet. Waste Age. September 1, 2000. Retrieved February, 2003. <<http://www.business2.com/articles/web/0,1653,17177,FF.html>>

Nextier. 2002. Nextier Solutions homepage. Retrieved July, 2002. <[www.nextiersolutions.com](http://www.nextiersolutions.com)>

Paper2print. 2002. Paper2Print homepage. Retrieved July, 2002. <[www.paper2print.com](http://www.paper2print.com)>

PapiNet. 2003. papiNet homepage. Retrieved February, 2003. <[www.papinet.org](http://www.papinet.org)>

Paperloop. 2003. Paperloop web-page. San Francisco, CA. Retrieved February, 2003.  
<[www.paperloop.com](http://www.paperloop.com)>

Pponline.com. 2000 (a). Kirk Lowery Says eBusiness Is About Cutting Costs. Pulp and Paper Online. June 12, 2000. Retrieved December 2002.  
<<http://www.pulpandpaperonline.com/content/misc/about.asp>>

Pponline.com. 2000 (b). Panelists: Paper Companies Can't Ignore Potential of eBusiness. Pulp and Paper Online. June 12, 2000. Retrieved December, 2002.  
<<http://www.pulpandpaperonline.com/content/misc/about.asp>>

Pponline.com. 2000 (c). Pulp and Paper Dot.Coms Outline Business Strategy. Pulp and Paper Online. June 13, 2000. Retrieved December, 2002.  
<<http://www.pulpandpaperonline.com/content/misc/about.asp>>

Pulp and Paper North American Fact Book 1998 – 1999. 1998. Pulp and Paper North American Fact Book 1998 – 1999. Miller Freeman. San Francisco, CA. Retrieved February 2003. <[www.eia.doe.gov/emeu/mecs/iab/forest\\_products/page6.html](http://www.eia.doe.gov/emeu/mecs/iab/forest_products/page6.html)>

Pulp and Paper North American Fact Book 2001. 2001. Pulp and Paper North American Fact Book 1998 – 1999. Miller Freeman. San Francisco, CA.

Raisanen, Anne. 2001. E-business strategies for enhancing long-term customer relationships in the Finnish fine paper industry. Master Thesis. Department of forest economics. University of Helsinki.

Robinson, Teri. 2002. Survey: Why companies are still bullish on E-biz. E-Commerce Times. Retrieved February, 2003. <<http://www.newsfactor.com/perl/story/18922.html>>

Senn, James A. 1998. Expanding the Reach of Electronic Commerce: The Internet EDI Alternative. IS Handbook. (Carol Brown and Heiki Topi, eds). Auerbach Publishers, 1999. pp. 635-648.

Swanson, Sandra. 2000. Standing Out on the Web. Informationweek 500. September 11, 2000. Retrieved November 2002. <<http://www.informationweek.com/803/metals.htm>>

Thompson, James R. 2001. E-Commerce panacea or placebo? Tappi Journal. July 2001. 84 (7): 34-36

Timmers, Paul. 1998. Business Models for Electronic Markets. Electronic Markets, 8(2): 3-8

Turban, Efraim et al. 2002. Electronic Commerce. 2nd edition. Pearson Education. Upper Saddle River, New Jersey. ISBN 0-13-065301-2. 914 pp.

UPM-Kymmene. 2001. UPM-Kymmene Expands Electronic Trading. April 25, 2001. Retrieved December, 2001. <<http://www.paper.upm-kymmene.com/pho/internet/phorroom.nsf/AllByDocID/6BFA9D1020D88AABC2256A390035A91C?OpenDocument>>

U.S. Department of Labor. 2003. Career Guide to Industries: Printing and Publishing. U.S. Department of Labor, Bureau of Labor Statistics. Electronic version retrieved February, 2003. <[www.bls.gov/oco/cg/cgs013.htm](http://www.bls.gov/oco/cg/cgs013.htm)>

Vlosky, Richard and Sanna Kallioranta. 2003. eBusiness in the North American Pulp and Paper Sector. Working Group 5.13, Logistics. International Conference on Forest Products, "Forest Products Research - providing for sustainable choices" by IUFRO Division 5. 11th - 15th March 2003. Roturua, new Zealand. Presenter Dr. Richard Vlosky. Co-Author Sanna Kallioranta.

Vlosky, Richard et al. 2003. Why did forest dot.coms fail? Research Paper. School of renewable Natural Resources, Louisiana State University Agricultural Center. Baton Rouge, LA. Submitted for publication.

Vlosky, Richard. 2002. Corporate culture the main obstacle to forest products eCommerce. The Engineered Wood Journal. APA-The Engineered Wood Association. Madison Publications LLC. April 2, 2002. Electronic version <[http://www.agctr.lsu.edu/Inst/Extension/Departments/Extension\\_Forestry/Forestry/documents/ebusiness.pdf](http://www.agctr.lsu.edu/Inst/Extension/Departments/Extension_Forestry/Forestry/documents/ebusiness.pdf)>

Vlosky, Richard P. 2001. eBusiness in the United States forest Products Industry in the year 2000. Research report. Louisiana Forest Products Laboratory, Louisiana State University. Baton Rouge, LA. Working Paper #52. August 22, 2001. Electronic version: <<http://www.rnr.lsu.edu/lfpl/publication/papers/wp52.pdf>>

Vlosky, Richard. 2000. eBusiness in the pulp & paper industry: A comparison of the United States & Canada. Louisiana Forest Products Laboratory, Louisiana State University Agricultural Center. Baton Rouge, LA. Working paper #42. June 8, 2000. Electronic version: <<http://www.rnr.lsu.edu/lfpl/publication/papers/eBizPulp&PaperLFPLWorkingPaper42.pdf>>

Vlosky, Richard P., Renee Fontenot and Lydia Blalock. 2000. Extranets: impact on business practices and relationships. Journal of Business & Industrial Marketing. 15(6): 438-456

Vlosky, Richard P. and Renee Fontenot. 1997. The Internet and the Forest Products Industry: Current Status and Projected Trends. Forest Products Journal. 47(11/12):33-40

What is.com. 2001 (a). Retrieved October, 2001.<[http://whatis.techtarget.com/definition/0,289893,sid9\\_gci212370,00.html](http://whatis.techtarget.com/definition/0,289893,sid9_gci212370,00.html)>

What is. com. 2001 (b). Retrieved October, 2001.  
<[http://searchsecurity.techtarget.com/sDefinition/0,,sid14\\_gci212089,00.html](http://searchsecurity.techtarget.com/sDefinition/0,,sid14_gci212089,00.html)>

Wigand, Rolf T. 1997. A Transaction Cost Perspective of the MAP project. EDI Forum. (10) 1:60-62

Wong, Janet. 2003. Gift to university will stimulate innovation in pulp, paper industry. News@UofT, University of Toronto. Retrieved February, 2003.  
<[www.newsandevents.utoronto.ca/bin2/020121a.asp](http://www.newsandevents.utoronto.ca/bin2/020121a.asp)>

Zoellick, Bill. 2000. eMarkets: Fixing what is broken. Fastwater LLP. White Paper. November 6, 2000. Retrieved February 2003. < <http://www.fastwater.com/Library/B2BEconomy/eMarkets/eMarkets.php3>>

## APPENDIX A: SURVEY COVER LETTER

### **Role And Expectations Of eIntermediaries In The Paper Supply Chain**

This survey is designed to collect information about current and projected use of eIntermediaries in the paper supply chain. By completing this survey, you will receive key competitive information about the new Internet technologies.

The survey is **completely anonymous and confidential** and only summary information will be reported in study results. The number at the top of this survey is an **identifier only** that allows us to track when we receive your completed survey, ensuring that you do not receive subsequent surveys or phone calls.

A **complimentary copy of the survey results** will be sent to you as a token of our appreciation for completing the survey.

When you have completed the survey, please put it in the postage paid envelope and return to us.

Thank you.

Sanna Kallioranta  
Graduate Research Assistant  
Forest Products Marketing  
Louisiana Forest Products Laboratory  
Louisiana State University

## APPENDIX B: PAPER SUPPLIER QUESTIONNAIRE

### I. COMPANY INFORMATION

1. Please indicate the State in which your BUSINESS UNIT AND HEADQUARTERS are located.

Business Unit: \_\_\_\_\_ Headquarters: \_\_\_\_\_

2. Please estimate your CORPORATE WIDE 2002 sales revenue in \$US. (Circle the number next to the appropriate range.)

- |                                  |                                  |
|----------------------------------|----------------------------------|
| 1. LESS THAN \$10 MILLION        | 5. \$250 MILLION - \$499 MILLION |
| 2. \$10 MILLION - \$49 MILLION   | 6. \$500 MILLION - \$999 MILLION |
| 3. \$50 MILLION - \$99 MILLION   | 7. \$1 BILLION - \$5 BILLION     |
| 4. \$100 MILLION - \$249 MILLION | 8. GREATER THAN \$5 BILLION      |

3. Please estimate your BUSINESS UNIT'S (e.g. mill, sales company, distribution center) 2002 sales revenue in \$US. (Circle the number next to the appropriate range.)

- |                                |                                  |
|--------------------------------|----------------------------------|
| 1. LESS THAN \$1 MILLION       | 5. \$7 MILLION - \$8.9 MILLION   |
| 2. \$1 MILLION - \$2.9 MILLION | 6. \$9 MILLION - \$10.9 MILLION  |
| 3. \$3 MILLION - \$4.9 MILLION | 7. \$11 MILLION - \$12.9 MILLION |
| 4. \$5 MILLION - \$6.9 MILLION | 8. GREATER THAN \$13 MILLION     |

4. Please indicate the total number of people that are currently employed in your BUSINESS UNIT (mill, sales company, distribution center). (Circle the number next to the appropriate range.)

- |                           |                            |
|---------------------------|----------------------------|
| 1. LESS THAN 50 EMPLOYEES | 5. 501 - 1,000 EMPLOYEES   |
| 2. 51 - 100 EMPLOYEES     | 6. 1,001 - 2,000 EMPLOYEES |
| 3. 101 - 250 EMPLOYEES    | 7. 2,001 - 3,000 EMPLOYEES |
| 4. 251 - 500 EMPLOYEES    | 8. OVER 3,000 EMPLOYEES    |

5. Please estimate your BUSINESS UNIT'S (e.g. mill, sales company, distribution center) 2002 Information Technology (IT) spending. (Circle the number next to the appropriate range.)

- |                          |                              |
|--------------------------|------------------------------|
| 1. LESS THAN \$10,000    | 5. \$500,001 - \$1 MILLION   |
| 2. \$10,001 - \$50,000   | 6. \$1 MILLION - \$2 MILLION |
| 3. \$50,001 - \$100,000  | 7. More than \$2 MILLION     |
| 4. \$100,001 - \$500,000 | 8. Unknown                   |

6. What major product does your BUSINESS UNIT (e.g. mill, sales company, distribution center) sell? Please check all products that apply.

**Pulp/Paper Products:** \_\_\_\_\_

___ Market Pulp	___ Fluff Pulp	___ Printing Paper
___ Specialty Paper	___ Office/Commercial Paper	___ Containerboard
___ Packaging Products	___ Other _____	

## II. PERCEPTIONS AND USE OF INTERNET TECHNOLOGIES

(eMarketplaces, Hubs, Extranets, Intranets, EDI, IntEDI)

1. Do you believe that reaching customers via the Internet ...

	<b>strongly disagree</b>		<b>neither disagree nor agree</b>		<b>strongly agree</b>
is a competitive advantage.	1	2	3	4	5
is a superior way to do business.	1	2	3	4	5
is a good way to generate business.	1	2	3	4	5
increases the level of customer service.	1	2	3	4	5
will increase customer retention.	1	2	3	4	5
will make your company more responsive to your customers.	1	2	3	4	5
will lower cost of doing business.	1	2	3	4	5

2. In which of the following ways do you currently use or anticipate to use the Internet? **(Please mark all that apply).**

### CURRENTLY

☐ Sales to Customers    ☐ Customer Contacts  
☐ Vendor contacts    ☐ Product/Price Inquiry  
☐ Shipping Notices    ☐ Purchase Orders  
☐ Order Status    ☐ Inventory Mgmt.  
☐ Order Tracking    ☐ Logistics  
☐ Internet EDI    ☐ Product Promotion  
☐ Marketing    ☐ Home page  
 Other Online services: \_\_\_\_\_

### IF NOT CURRENTLY, IN THE NEXT YEAR?

☐ Sales to Customers    ☐ Customer Contacts  
☐ Vendor Contacts    ☐ Product/Price Inquiry  
☐ Shipping Notices    ☐ Purchase Orders  
☐ Order Status    ☐ Inventory Mgmt.  
☐ Order Tracking    ☐ Logistics  
☐ Internet EDI    ☐ Product Promotion  
☐ Marketing    ☐ Home page  
 Other Online Services: \_\_\_\_\_

3. Does your BUSINESS UNIT (e.g. mill, sales company, distribution center) currently use eINTERMEDIARIES (e.g. eMarketplaces, hubs) to sell pulp, paper or packaging materials? (Please circle correct response)

1. YES                      2. NO

4. Does ANY BUSINESS UNITS IN YOUR COMPANY use eIntermediaries to sell pulp, paper or packaging materials? (Please circle correct response)

1. YES                      2. NO

---

**IF YOUR COMPANY DOES NOT USE eINTERMEDIARIES, PLEASE GO TO  
SECTION IV ON PAGE 7**

**IF YOUR COMPANY USES eINTERMEDIARIES, PLEASE CONTINUE WITH THE  
NEXT QUESTION ON PAGE 3**

---

### III. USE OF eINTERMEDIARIES

1. When did your company first participate in eIntermediaries? (Please circle correct response)

- |            |         |                |
|------------|---------|----------------|
| 1. IN 2002 | 3. 2000 | 5. 1998        |
| 2. 2001    | 4. 1999 | 6. BEFORE 1998 |

2. Please circle the following eIntermediaries with whom your company has/had a business relationship? (Please circle all that apply)

- |                   |                        |                  |
|-------------------|------------------------|------------------|
| 1. ForestExpress  | 11. PaperHub           | 21. Transora     |
| 2. Espresso       | 12. Forest2Market      | 22. Packtion     |
| 3. Worldbid Paper | 13. eFibre             | 23. Webpkg       |
| 4. Nextier        | 14. FibreMarket        | 24. Empriva      |
| 5. Paper2Print    | 15. PrintCafe          | 25. Paxonix      |
| 6. Paperloop      | 16. ePrinting Exchange | 26. PrintMarket  |
| 7. ClickPaper     | 17. HttPrint           | 27. P&PExchange  |
| 8. Paper Link     | 18. Noosh              | 28. PaperForSale |
| 9. PaperX         | 19. ImageX             | 29. PaperBuyer   |
| 10. PaperExchange | 20. EazyPrint          | 30. WorldOFpaper |

3. Of your total 2002 sales revenue, please estimate the percentage of revenue that was transacted via eIntermediaries. \_\_\_\_\_

4. In which of the following ways do you use eIntermediaries? **(Please mark all that apply).**

#### CURRENTLY

_____ Sales to Customers	_____ Customer Contacts
_____ Product/Price Inquiry	_____ Shipping Notices
_____ Purchase Orders	_____ Order Status
_____ Inventory Mgmt.	_____ Order Tracking
_____ Logistics	_____ Internet EDI
_____ Product Promotion	_____ Marketing
_____ Auctions	_____ Reverse Auctions
Other Online services: _____	

#### IF NOT CURRENTLY, IN THE NEXT YEAR?

_____ Sales to Customers	_____ Customer Contacts
_____ Product/Price Inquiry	_____ Shipping Notices
_____ Purchase Orders	_____ Order Status
_____ Inventory Mgmt.	_____ Order Tracking
_____ Logistics	_____ Internet EDI
_____ Product Promotion	_____ Marketing
_____ Auctions	_____ Reverse Auctions
Other Online Services: _____	

#### **This Section Deals With Investments Your Company Has Made In eIntermediaries.**

1. For the statements below, please indicate your level of agreement or disagreement with the following statements by circling the single most appropriate number after each statement.

	strongly disagree		neither disagree nor agree		strongly agree
The investment we have made to implement eIntermediaries is significant.	1	2	3	4	5
Our total cost of switching to an alternative eIntermediary would be very large.	1	2	3	4	5
It would be disruptive to my company's operations to end the business relationship with eIntermediaries	1	2	3	4	5



2. Please indicate the level of investment your company has made to date to eIntermediary participation.  
(Circle the number next to the appropriate range.)

- |                          |                                |
|--------------------------|--------------------------------|
| 1. LESS THAN \$10,000    | 5. \$250,000 - \$1 MILLION     |
| 2. \$10,000 - \$49,999   | 6. \$1 MILLION - \$2.5 MILLION |
| 3. \$50,000 - \$99,999   | 7. OVER \$2.5 MILLION          |
| 4. \$100,000 - \$249,999 | 8. UNKNOWN                     |

### **This Section Deals With Your Expectations And Experience Of Using eIntermediaries**

1. For the statements below, please indicate your level of agreement or disagreement with the following statements by circling the single most appropriate number after each statement.

When our company INITIALLY decided to participate in eIntermediaries, we expected to ...

	<b>strongly disagree</b>		<b>neither disagree nor agree</b>		<b>strongly agree</b>
reduce cycle time	1	2	3	4	5
reduce operating costs	1	2	3	4	5
reduce errors	1	2	3	4	5
develop a stable source of sales	1	2	3	4	5
improve cash flow	1	2	3	4	5
increase accuracy of data	1	2	3	4	5
retain customers	1	2	3	4	5
implement corporate strategy	1	2	3	4	5
honor customer request	1	2	3	4	5

AFTER implementing eIntermediary participation, we achieved...

	<b>strongly disagree</b>		<b>neither disagree nor agree</b>		<b>strongly agree</b>
reduced cycle time	1	2	3	4	5
reduce operating costs	1	2	3	4	5
reduce errors	1	2	3	4	5
a stable source of sales	1	2	3	4	5
improved cash flow	1	2	3	4	5
increased accuracy of data	1	2	3	4	5
retention of customers	1	2	3	4	5

2. Please indicate your level of agreement for the following characteristics of a eIntermediary.

**An eIntermediary is ...**

	<b>strongly disagree</b>		<b>neither disagree nor agree</b>		<b>strongly agree</b>
reliable	1	2	3	4	5
trustworthy	1	2	3	4	5
over promising	1	2	3	4	5
trendy	1	2	3	4	5
customer oriented	1	2	3	4	5
impersonal	1	2	3	4	5
supplier driven	1	2	3	4	5
buyer driven	1	2	3	4	5

3. Have the overall desired benefits been achieved with eIntermediaries?

1. YES      2. NO

4. Please indicate the level of importance for each of the following criteria used in your company's selection of eIntermediary participation by circling the single most appropriate number.

	<b>very unimportant</b>		<b>neither important nor unimportant</b>		<b>very important</b>
Reputation	1	2	3	4	5
Price of participation	1	2	3	4	5
Technical support	1	2	3	4	5
Referred by customers	1	2	3	4	5
Superior application features and functions	1	2	3	4	5
Knowledgeable sales people	1	2	3	4	5
Industry Ownership	1	2	3	4	5
High level of overall customer service	1	2	3	4	5

5. If you had the chance to go back to the beginning, would your company have approached use of eIntermediaries differently?

1. Yes      2. No      3. I don't know

If YES, how would you have done things differently?

**This Section Deals With Trust And Commitment Between Your Company and Your eIntermediary.**

1. Please indicate your level of agreement or disagreement for each of the following statements **regarding your company's relationship with eIntermediaries** by circling the single most appropriate number.

	<b>strongly disagree</b>		<b>neither disagree nor agree</b>		<b>strongly agree</b>
Our eIntermediaries withholds important information from us.	1	2	3	4	5
We trust our eIntermediaries completely.	1	2	3	4	5
eIntermediaries have earned our trust.	1	2	3	4	5
We have full confidence in the accuracy of information provided to us by our eIntermediaries.	1	2	3	4	5
We expect our relationship with our eIntermediaries to strengthen over time.	1	2	3	4	5
We expect to increase our purchases/sales in the future via eIntermmmediaries.	1	2	3	4	5
We are willing to put considerable effort and investment into building business via eIntermediaries.	1	2	3	4	5
We have invested a lot of effort in the relationship with our eIntermediaries.	1	2	3	4	5
We are committed to our eIntermediaries.	1	2	3	4	5
The next best eIntermediary alternative would be just as valuable to my company.	1	2	3	4	5
We feel eIntermediaries look out for our interests.	1	2	3	4	5
We have confidence in the proficiency of the people representing our eIntermediaries.	1	2	3	4	5
We had to modify our business procedures to adapt the use of eIntermediaries.	1	2	3	4	5
Transactions with eIntermediaries do not have to be closely supervised.	1	2	3	4	5
We are convinced that eIntermediaries respect the confidentiality of information they receive from us.	1	2	3	4	5

2. Please indicate your level of agreement or disagreement for each of the following statements **regarding your eIntermediaries' relationship with your company** by circling the single most appropriate number.

**Our eIntermediaries ...**

	<b>strongly disagree</b>		<b>neither disagree nor agree</b>		<b>strongly agree</b>
are dependent on us.	1	2	3	4	5
are easy to work with in solving our business problems.	1	2	3	4	5
have invested considerable time and expense in developing relationships with my company.	1	2	3	4	5
appreciates our technical challenges	1	2	3	4	5
are committed to a long-term relationship with my company.	1	2	3	4	5
offer a connection to our strategically important customers.	1	2	3	4	5
generate a hard to replace stream of sales.	1	2	3	4	5

**\*\* IV. GENERAL PERCEPTIONS ON eINTERMEDIARIES \*\***

**\*\* Please Respond To The Questions In This Section Even Though Your Company Doesn't Participate In eIntermediaries.**

1. Do you believe that reaching customers via eIntermediaries could .....

	<b>strongly disagree</b>		<b>neither disagree nor agree</b>		<b>strongly agree</b>
offer a competitive advantage.	1	2	3	4	5
offer a superior way to do business.	1	2	3	4	5
offer a good way to generate sales.	1	2	3	4	5
increase customer retention.	1	2	3	4	5
increase the level of customer service.	1	2	3	4	5
make your company more responsive to your customers.	1	2	3	4	5
lower costs of doing business.	1	2	3	4	5
increase shareholder value.	1	2	3	4	5
attract new customers.	1	2	3	4	5
increase sales for my company.	1	2	3	4	5

Continued on next page ...

1. (continued) Do you believe that reaching customers via eIntermediaries could .....

	strongly disagree		neither disagree nor agree		strongly agree
offer greater access to my company by potential customers.	1	2	3	4	5
increase value to my customers.	1	2	3	4	5
enhance the image of my organization.	1	2	3	4	5
increase access to industry information.	1	2	3	4	5
offer timeliness of information exchange.	1	2	3	4	5
offer lower prices to on-line customers.	1	2	3	4	5
enable faster delivery.	1	2	3	4	5
harm our relationship with customers.	1	2	3	4	5
offer perceptions that my company. is on the cutting edge of technology.	1	2	3	4	5

4. Approximately what percent of your customers do paper/pulp/packaging purchases via eIntermediaries?

1. 0-10%	3. 21-30%	5. 41-50%	7. 61-70%	9. 81-90%
2. 11-20%	4. 31-40%	6. 51-60%	8. 71-80%	10. 91-100%

### This Section Deals With General Concerns And Concerns Impeding eIntermediary Implementation

1. What are your primary concerns about using the eIntermediaries? (Please circle all that apply).

	not a concern				is a major concern
Security of sensitive information.	1	2	3	4	5
Need to restructure business processes.	1	2	3	4	5
Availability of technical resources.	1	2	3	4	5
Cost (expensive to participate).	1	2	3	4	5
Need to restructure delivery channel.	1	2	3	4	5
Need to change established procedures.	1	2	3	4	5

Competition can too easily track our business.	1	2	3	4	5
--	---	---	---	---	---

It is a passing fad.	1	2	3	4	5
----------------------	---	---	---	---	---

**Continued on next page.**

**1. (continued)** What are your primary concerns about using the eIntermediaries? (Please circle all that apply).

It won't be profitable.	1	2	3	4	5
-------------------------	---	---	---	---	---

Loss of control.	1	2	3	4	5
------------------	---	---	---	---	---

Loss of contact with customers.	1	2	3	4	5
---------------------------------	---	---	---	---	---

Need to restructure the sales department .	1	2	3	4	5
--	---	---	---	---	---

2. Please indicate the extent to which the following have impeded your organization's implementation of use of eIntermediaries.

	1	2	3	4	5
	did not impede implementation		somewhat impeded implementation		strongly impeded
Customer resistance.	1	2	3	4	5
Expense of hardware and software.	1	2	3	4	5
Lack of understanding of the benefits to my company.	1	2	3	4	5
Inadequate application tools.	1	2	3	4	5
Lack of infrastructure (TCP/IP, Networks, firewalls, security).	1	2	3	4	5
Management resistance.	1	2	3	4	5
Employee resistance.	1	2	3	4	5
Business process change.	1	2	3	4	5

### Level Of Willingness To Use eIntermediaries

1. As a SUPPLIER, overall what is your willingness to SELL PRODUCTS via eIntermediaries?

- |                 |                     |                             |
|-----------------|---------------------|-----------------------------|
| 1. Very willing | 3. Somewhat willing | 5. Would never sell via the |
| 2. Willing      | 4. Not very willing |                             |

## APPENDIX C: PAPER BUYER QUESTIONNAIRE

### I. COMPANY INFORMATION

1. Please indicate the State in which your BUSINESS UNIT AND HEADQUARTERS are located.

Business Unit: \_\_\_\_\_ Headquarters: \_\_\_\_\_

2. Please estimate your CORPORATE WIDE 2002 sales revenue in \$US. (Circle the number next to the appropriate range.)

- |                                  |                                  |
|----------------------------------|----------------------------------|
| 5. LESS THAN \$10 MILLION        | 5. \$250 MILLION - \$499 MILLION |
| 6. \$10 MILLION - \$49 MILLION   | 6. \$500 MILLION - \$999 MILLION |
| 7. \$50 MILLION - \$99 MILLION   | 7. \$1 BILLION - \$5 BILLION     |
| 8. \$100 MILLION - \$249 MILLION | 8. GREATER THAN \$5 BILLION      |

3. Please estimate your BUSINESS UNIT'S (e.g. printing facility, distribution center) 2002 sales revenue in \$US. (Circle the number next to the appropriate range.)

- |                                |                                  |
|--------------------------------|----------------------------------|
| 5. LESS THAN \$1 MILLION       | 5. \$7 MILLION - \$8.9 MILLION   |
| 6. \$1 MILLION - \$2.9 MILLION | 6. \$9 MILLION - \$10.9 MILLION  |
| 7. \$3 MILLION - \$4.9 MILLION | 7. \$11 MILLION - \$12.9 MILLION |
| 8. \$5 MILLION - \$6.9 MILLION | 8. GREATER THAN \$13 MILLION     |

4. Please indicate the total number of people that are currently employed in your BUSINESS UNIT (e.g. printing facility, distribution center). (Circle the number next to the appropriate range.)

- |                           |                            |
|---------------------------|----------------------------|
| 1. LESS THAN 50 EMPLOYEES | 5. 501 - 1,000 EMPLOYEES   |
| 2. 51 - 100 EMPLOYEES     | 6. 1,001 - 2,000 EMPLOYEES |
| 3. 101 - 250 EMPLOYEES    | 7. 2,001 - 3,000 EMPLOYEES |
| 4. 251 - 500 EMPLOYEES    | 8. OVER 3,000 EMPLOYEES    |

5. Please estimate your BUSINESS UNIT'S (e.g. printing facility, distribution center) 2002 Information Technology (IT) spending. (Circle the number next to the appropriate range.)

- |                          |                              |
|--------------------------|------------------------------|
| 1. LESS THAN \$10,000    | 5. \$500,001 - \$1 MILLION   |
| 2. \$10,001 - \$50,000   | 6. \$1 MILLION - \$2 MILLION |
| 3. \$50,001 - \$100,000  | 7. More than \$2 MILLION     |
| 4. \$100,001 - \$500,000 | 8. Unknown                   |

6. What major pulp/paper/packaging material product does your BUSINESS UNIT (printing facility, distribution center) buy? Please check all products that apply.

**Pulp/Paper Products:** \_\_\_\_\_

___ Market Pulp	___ Fluff Pulp	___ Printing Paper
___ Specialty Paper	___ Office/Commercial Paper	___ Containerboard
___ Packaging Products	___ Other _____	

## II. PERCEPTIONS AND USE OF INTERNET TECHNOLOGIES

(eMarketplaces, Hubs, Extranets, Intranets, EDI, IntEDI)

1. Do you believe that reaching paper vendors via the Internet ...

	<b>strongly disagree</b>		<b>neither disagree nor agree</b>		<b>strongly agree</b>
is a superior way to do business.	1	2	3	4	5
is a good way to do paper purchases.	1	2	3	4	5
increases the level of customer service. you receive.	1	2	3	4	5
will make your vendor more responsive to your needs.	1	2	3	4	5
will lower cost of doing business.	1	2	3	4	5

2. In which of the following ways do you currently use or anticipate to use the Internet? **(Please mark all that apply).**

### CURRENTLY

☐ Sales to Customers    ☐ Customer Contacts  
☐ Vendor contacts    ☐ Product/Price Inquiry  
☐ Shipping Notices    ☐ Purchase Orders  
☐ Order Status    ☐ Inventory Mgmt.  
☐ Order Tracking    ☐ Logistics  
☐ Internet EDI    ☐ Product Promotion  
☐ Marketing    ☐ Home page  
 Other Online services: \_\_\_\_\_

### IF NOT CURRENTLY, IN THE NEXT YEAR?

☐ Sales to Customers    ☐ Customer Contacts  
☐ Vendor Contacts    ☐ Product/Price Inquiry  
☐ Shipping Notices    ☐ Purchase Orders  
☐ Order Status    ☐ Inventory Mgmt.  
☐ Order Tracking    ☐ Logistics  
☐ Internet EDI    ☐ Product Promotion  
☐ Marketing    ☐ Home page  
 Other Online Services: \_\_\_\_\_

3. Does your BUSINESS UNIT (e.g. printing facility, distribution center) currently use eINTERMEDIARIES (e.g. eMarketplaces, hubs) for paper purchases? (Please circle correct response)

1. YES      2. NO

4. Does ANY BUSINESS UNITS IN YOUR COMPANY use eIntermediaries for paper purchases? (Please circle correct response)

1. YES      2. NO

**IF YOUR COMPANY DOES NOT USE eINTERMEDIARIES, PLEASE GO TO  
SECTION IV ON PAGE 7**

**IF YOUR COMPANY USES eINTERMEDIARIES, PLEASE CONTINUE WITH THE  
NEXT QUESTION ON PAGE 3**



### III. USE OF eINTERMEDIARIES

1. When did your company first participate in paper supply chain eIntermediaries? (Please circle correct response)

- |            |         |                |
|------------|---------|----------------|
| 3. IN 2002 | 3. 2000 | 5. 1998        |
| 4. 2001    | 4. 1999 | 6. BEFORE 1998 |

2. Please circle the following eIntermediaries with whom your company has/had a business relationship? (Please circle all that apply)

- |                    |                        |                  |
|--------------------|------------------------|------------------|
| 11. ForestExpress  | 11. PaperHub           | 21. Transora     |
| 12. Espresso       | 12. Forest2Market      | 22. Packtion     |
| 13. Worldbid Paper | 13. eFibre             | 23. Webpkg       |
| 14. Nextier        | 14. FibreMarket        | 24. Empriva      |
| 15. Paper2Print    | 15. PrintCafe          | 25. Paxonix      |
| 16. Paperloop      | 16. ePrinting Exchange | 26. PrintMarket  |
| 17. ClickPaper     | 17. HttPrint           | 27. P&PExchange  |
| 18. Paper Link     | 18. Noosh              | 28. PaperForSale |
| 19. PaperX         | 19. ImageX             | 29. PaperBuyer   |
| 20. PaperExchange  | 20. EazyPrint          | 30. WorldOFpaper |

3. Of your total 2002 paper purchases, please estimate the percentage (by value) that was transacted via eIntermediaries. \_\_\_\_\_

4. In which of the following ways do you use eIntermediaries? **(Please mark all that apply).**

CURRENTLY

- |                              |                        |
|------------------------------|------------------------|
| _____ Vendor Contacts        | _____ Reverse Auctions |
| _____ Product/Price Inquiry  | _____ Shipping Notices |
| _____ Purchase Orders        | _____ Order Status     |
| _____ Inventory Mgmt.        | _____ Order Tracking   |
| _____ Logistics              | _____ Internet EDI     |
| _____ Auctions               | _____ Marketing        |
| Other Online services: _____ |                        |

IF NOT CURRENTLY, IN THE NEXT YEAR?

- |                              |                        |
|------------------------------|------------------------|
| _____ Vendor Contacts        | _____ Reverse Auctions |
| _____ Product/Price Inquiry  | _____ Shipping Notices |
| _____ Purchase Orders        | _____ Order Status     |
| _____ Inventory Mgmt.        | _____ Order Tracking   |
| _____ Logistics              | _____ Internet EDI     |
| _____ Auctions               | _____ Marketing        |
| Other Online Services: _____ |                        |

#### **This Section Deals With Investments Your Company Has Made In eIntermediaries.**

1. For the statements below, please indicate your level of agreement or disagreement with the following statements by circling the single most appropriate number after each statement.

	strongly disagree	1	2	neither disagree nor agree	3	4	strongly agree	5
The investment we have made to implement eIntermediaries in the paper supply chain is significant.		1	2	3	4	5		
Our total cost of switching to an alternative eIntermediary would be very large.		1	2	3	4	5		
It would be disruptive to my company's operations to end the business relationship with paper eIntermediaries.		1	2	3	4	5		

2. Please indicate the level of investment your company has made to date to paper eIntermediary participation.  
(Circle the number next to the appropriate range.)

- |                          |                                |
|--------------------------|--------------------------------|
| 5. LESS THAN \$10,000    | 5. \$250,000 - \$1 MILLION     |
| 6. \$10,000 - \$49,999   | 6. \$1 MILLION - \$2.5 MILLION |
| 7. \$50,000 - \$99,999   | 7. OVER \$2.5 MILLION          |
| 8. \$100,000 - \$249,999 | 8. UNKNOWN                     |

### **This Section Deals With Your Expectations And Experience Of Using Paper eIntermediaries**

1. For the statements below, please indicate your level of agreement or disagreement with the following statements by circling the single most appropriate number after each statement.

When our company INITIALLY decided to participate in eIntermediaries, we expected to ...

	<b>strongly disagree</b>		<b>neither disagree nor agree</b>		<b>strongly agree</b>
reduce cycle time.	1	2	3	4	5
reduce operating costs.	1	2	3	4	5
reduce errors.	1	2	3	4	5
develop a stable source of supply.	1	2	3	4	5
improve cash flow.	1	2	3	4	5
increase accuracy of data.	1	2	3	4	5
implement corporate strategy.	1	2	3	4	5
honor paper vendor request.	1	2	3	4	5

AFTER implementing eIntermediary participation, we achieved...

	<b>strongly disagree</b>		<b>neither disagree nor agree</b>		<b>strongly agree</b>
reduced cycle time.	1	2	3	4	5
reduce operating costs.	1	2	3	4	5
reduce errors.	1	2	3	4	5
a stable source of supply.	1	2	3	4	5
improved cash flow.	1	2	3	4	5
increased accuracy of data.	1	2	3	4	5

2. Please indicate your level of agreement for the following characteristics of an paper eIntermediary.

**An eIntermediary is ...**

	<b>strongly disagree</b>		<b>neither disagree nor agree</b>		<b>strongly agree</b>
reliable.	1	2	3	4	5
trustworthy.	1	2	3	4	5
over promising.	1	2	3	4	5
trendy.	1	2	3	4	5
customer oriented.	1	2	3	4	5
impersonal.	1	2	3	4	5
supplier driven.	1	2	3	4	5
buyer driven.	1	2	3	4	5

3. Have the overall desired benefits been achieved with paper eIntermediaries?

1. YES      2. NO

4. Please indicate the level of importance for each of the following criteria used in your company's selection of paper eIntermediary participation by circling the single most appropriate number.

	<b>very unimportant</b>		<b>neither important nor unimportant</b>		<b>very important</b>
Reputation	1	2	3	4	5
Price of participation	1	2	3	4	5
Technical support	1	2	3	4	5
Referred by customers	1	2	3	4	5
Superior application features and functions	1	2	3	4	5
Knowledgeable sales people	1	2	3	4	5
Industry Ownership	1	2	3	4	5
High level of overall customer service	1	2	3	4	5

5. If you had the chance to go back to the beginning, would your company have approached use of paper eIntermediaries differently?

2. Yes      2. No      3. I don't know

If YES, how would you have done things differently?

**This Section Deals With Trust And Commitment Between Your Company and Your Paper eIntermediary.**

1. Please indicate your level of agreement or disagreement for each of the following statements **regarding your company's relationship with eIntermediaries** by circling the single most appropriate number.

	<b>strongly disagree</b>		<b>neither disagree nor agree</b>		<b>strongly agree</b>
Our eIntermediaries withholds important information from us.	1	2	3	4	5
We trust our eIntermediaries completely	1	2	3	4	5
eIntermediaries have earned our trust.	1	2	3	4	5
We have full confidence in the accuracy of information provided to us by our eIntermediaries.	1	2	3	4	5
We expect our relationship with our eIntermediaries to strengthen over time.	1	2	3	4	5
We expect to increase our purchases/sales in the future via eIntermediaries.	1	2	3	4	5
We are willing to put considerable effort and investment into building business via eIntermediaries.	1	2	3	4	5
We have invested a lot of effort in the relationship with our eIntermediaries.	1	2	3	4	5
We are committed to our eIntermediaries.	1	2	3	4	5
The next best eIntermediary alternative would be just as valuable to my company.	1	2	3	4	5
We feel eIntermediaries look out for our interests	1	2	3	4	5
We have confidence in the proficiency of the people representing our eIntermediaries.	1	2	3	4	5
We had to modify our business procedures to adapt the use of eIntermediaries.	1	2	3	4	5
Transactions with eIntermediaries do not have to be closely supervised.	1	2	3	4	5
We are convinced that eIntermediaries respect the confidentiality of information they receive from us.	1	2	3	4	5

2. Please indicate your level of agreement or disagreement for each of the following statements **regarding your paper eIntermediaries' relationship with your company** by circling the single most appropriate number.

**Our paper eIntermediaries ...**

	<b>strongly disagree</b>		<b>neither disagree nor agree</b>		<b>strongly agree</b>
are dependent on us.	1	2	3	4	5
are easy to work with in solving our business problems.	1	2	3	4	5
have invested considerable time and expense in developing relationships with my company.	1	2	3	4	5
appreciates our technical challenges.	1	2	3	4	5
are committed to a long-term relationship with my company.	1	2	3	4	5
offer a connection to our strategically important vendors.	1	2	3	4	5
generate a hard to replace stream of paper purchases.	1	2	3	4	5

**\*\* IV. GENERAL PERCEPTIONS ON eINTERMEDIARIES \*\***

**\* Please Respond To The Questions In This Section Even Though Your Company Doesn't Participate In Paper eIntermediaries.**

1. Do you believe that reaching paper purchases via eIntermediaries could .....

	<b>strongly disagree</b>		<b>neither disagree nor agree</b>		<b>strongly agree</b>
offer a superior way to do business.	1	2	3	4	5
offer a good way to do paper purchases.	1	2	3	4	5
increase the level of customer service provided to us.	1	2	3	4	5
make your vendor more responsive to your needs.	1	2	3	4	5
lower costs of doing business.	1	2	3	4	5
increase shareholder value.	1	2	3	4	5
reach new paper suppliers.	1	2	3	4	5

**Continued on next page ...**

1. (continued). Do you believe that making paper purchases via eIntermediaries could .....

	strongly disagree		neither disagree nor agree		strongly agree
enhance the image of my organization.	1	2	3	4	5
increase access to industry information.	1	2	3	4	5
offer timeliness of information exchange.	1	2	3	4	5
offer lower prices.	1	2	3	4	5
enable faster delivery.	1	2	3	4	5
harm our vendor relationships.	1	2	3	4	5
offer perceptions that my company is on the cutting edge of technology.	1	2	3	4	5

4. Approximately what percent of your paper vendors sell paper via 3<sup>rd</sup> party eIntermediaries?

- |           |           |           |           |             |
|-----------|-----------|-----------|-----------|-------------|
| 1. 0-10%  | 3. 21-30% | 5. 41-50% | 7. 61-70% | 9. 81-90%   |
| 2. 11-20% | 4. 31-40% | 6. 51-60% | 8. 71-80% | 10. 91-100% |

### This Section Deals With General Concerns And Concerns Impeding eIntermediary Implementation

1. What are your primary concerns about using the eIntermediaries? (Please circle all that apply).

	not a concern				is a major concern
Security of sensitive information.	1	2	3	4	5
Need to restructure business processes.	1	2	3	4	5
Availability of technical resources.	1	2	3	4	5
Cost (expensive to participate).	1	2	3	4	5
Need to change established procedures.	1	2	3	4	5
Competition can too easily track our business.	1	2	3	4	5
It is a passing fad.	1	2	3	4	5
It won't be profitable.	1	2	3	4	5
Loss of control.	1	2	3	4	5
Loss of contact with vendors.	1	2	3	4	5
Need to restructure the purchasing department.	1	2	3	4	5

2. Please indicate the extent to which the following have impeded your organization's implementation of use of eIntermediaries.

	<b>did not impede implementation</b>		<b>somewhat impeded implementation</b>		<b>strongly impeded implementation</b>
Vendor resistance.	1	2	3	4	5
Expense of hardware and software.	1	2	3	4	5
Lack of understanding of the benefits to my company.	1	2	3	4	5
Inadequate application tools.	1	2	3	4	5
Lack of infrastructure (TCP/IP, Networks, firewalls, security).	1	2	3	4	5
Management resistance.	1	2	3	4	5
Employee resistance.	1	2	3	4	5
Business process change.	1	2	3	4	5

### **Level Of Willingness To Use eIntermediaries**

1. As a paper BUYER, overall what is your willingness to BUY PAPER via eIntermediaries?

3. Very willing  
4. Willing

3. Somewhat willing  
4. Not very willing

5. Would never buy via the Internet

## APPENDIX D: PAPER GLOSSARY

**Containerboard:** Solid fiber or corrugated and combined board used in the manufacture of shipping containers and related products.

**Grade:** (1) A class or level of quality of a paper or pulp which is ranked, or distinguished from other papers or pulps, on the basis of its use, appearance, quality, manufacturing history, raw materials, or a combination of these factors. Some grades have been officially identified and described; others are commonly recognized but lack official definition. (2) With reference to one particular quality, one item (q.v.) differing from another only in size, weight, or grain; e.g., an offset book paper cut grain long is not the same grade as the same paper cut grain short.

**Newsprint:** A lightweight paper, made mainly from mechanical wood pulp, engineered to be bright and opaque for the good print contrast needed by newspapers. Newsprint also contains special tensile strength for repeated folding. It does not include printing papers of types generally used for purposes other than newspapers such as groundwood printing papers for catalogs, directories, etc.

**Packaging papers:** These papers are used to wrap or package consumer and industrial products such as grocer's bags and sacks, shopping and merchandise bags, and multiwall shipping sacks used for shipping such products as cement, flour, sugar, chemicals and animal food. "Specialty" packaging papers are used for cookies, potato chips, ice cream, and similar products.

**Paper:** The name for all kinds of matted or felted sheets of fiber (usually vegetable, but sometimes mineral, animal or synthetic) formed on a fine screen from a water suspension. Paper derives its name from papyrus, a sheet made by pasting together thin sections of an Egyptian reed (*Cyperus papyrus*) and used in ancient times as a writing material. Paper and paperboard are the two broad categories of paper. Paper is usually lighter in basis weight, thinner, and more flexible than paperboard. Its largest uses are for printing, writing, wrapping, and sanitary purposes, although it is employed for a wide variety of other uses.

**Paperboard:** One of the two subdivisions of paper. The distinction is not great, but paperboard is heavier in basis weight, thicker, and more rigid than paper. All sheets 12 points (0.012 inch) or more in thickness are classified as paperboard. There are exceptions. For example, blotting papers, felts, and drawing paper in excess of 12 points are classified as paper, while corrugating medium, chipboard, and linerboard less than 12 points are classified as paperboard.

**Printing-Writing:** Any paper suitable for printing, such as book paper, bristols, newsprint, writing paper, etc.

**Pulp:** Fibrous material prepared from wood, cotton, grasses, etc., by chemical or mechanical processes for use in making paper or cellulose products.

**Fluff pulp:** A chemical, mechanical or combination chemical/mechanical pulp, usually bleached, used as an absorbent medium in disposable diapers, bedpads and hygienic personal products. Also known as "fluffing" or "comminution" pulp.



**Market pulp:** Wood, cotton, or other pulp produced for, and sold on, the open market, as opposed to that which is produced for internal consumption by an integrated paper mill or affiliated mill.

**Specialty:** Grades of paper and/or paperboard made with specific characteristics and properties to adapt them to particular uses. Also refers to grades made in a given mill that are not the primary products of that mill.

**Tissue:** A general term indicating a class of papers which are characteristically gauzy in texture and, in some cases, fairly transparent. They may be glazed, unglazed, or creped, and are used for a variety of purposes. Examples of different types of tissue papers include sanitary grades such as toilet, facial, napkin, towels, wipes, and special sanitary papers. Desirable characteristics in these types of tissue papers are softness, strength, and freedom from lint. Other examples of tissue papers are decorative and laminated tissue papers and crepe papers, often used in gift wrapping and to decorate. Desirable characteristics here are appearance, strength, and durability. Tissue papers are divided into three major categories: At-Home (or Consumer), Away-from-Home (or Commercial & Industrial), and Specialty.

Source: AF&PA, 2003, [www.afandpa.org](http://www.afandpa.org)

## **VITA**

Sanna Maria Kallioranta was born in 1978 in Tampere, Finland. She received her Bachelor of Science degree in forest economics and marketing from the University of Helsinki, Finland, on May 2001. She has several internship experiences from the paper industry and eBusiness, both from Finland and United States.

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