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Electronic Commerce and the Communication of Information

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**ELECTRONIC COMMERCE AND THE
COMMUNICATION OF INFORMATION**

Donna Carroll Bigelow

BA Communications



**Abstract Presented to the Faculty of the Graduate
School of Lindenwood College in Partial
Fulfillment of the Requirements for the
Degree of Master of Science in Corporate Communications**

1996

Electronic Commerce and The Communication Of Information

Abstract

Electronic Commerce is a relatively new phenomenon in today's market place. Commerce or the buying and selling of goods and services can take many forms. In the early years of computerization, commercial activities revolved around the exchange of financial data between businesses and banks (Electronic Funds Transfer). Then businesses began exploring the transfer of data in an electronic format between individual businesses in the form of Electronic Data Interchange (EDI). Over time much broader types of business transactions began occurring. Data exchange included inventory items, marketing, sales materials, product design. Items which were sent via mail took on an electronic format speeding the exchange of data from one business to another. As data began moving electronically a network or series of communication lines developed. The development of internal network lines expanded the use of forms of electronic communication to include E-mail, EDI, EFT, file transfers of text, graphics and sound. Internal business and external network applications grew. Most internal networks allowed for the increasing productivity of internal workers in sharing ideas and completing projects. The use of the computer attached to an internal network made workers more productive. Likewise the external network which was used primarily for research by the military and universities called the Internet

also grew in popularity. The shift of business transactions moving from an internal application to an external application on the Internet led the way for the development of Electronic Commerce. Electronic Commerce is currently one of the newest, hottest technological achievements of our time. Businesses are rapidly developing applications in which to buy, sell or trade services using the Internet. This paper explores some of the challenges faced by electronic commerce and the communication of information. Reviewing past and current technical writer's works in the field of computer technology, an overview demonstrates how computers are changing the way humans are adapting this new technology. Electronic commerce changes many processes currently used in business transactions and produces a new form of commercial activity. As future developments progress in this type of technology people will see many adaptations of electronic commerce in daily life.

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BA Communications

**A Culminating Project Presented to the Faculty of the Graduate
School of Lindenwood College in Partial
Fulfillment of the Requirements for the
Degree of Master of Science in Corporate Communications**

1996

COMMITTEE IN CHARGE OF CANDIDACY:

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This Thesis is dedicated to the memory of my father and brother who left our family behind for the comforts of a heavenly place.

Fred Wilson Carroll

1933-1995

"Work hard, live the good life and be happy..."

&

Matthew Scott Carroll

1961-1995

*You gave me the strength to face the unexpected with courage
and the desire to climb higher to reach my dreams.*

*I miss you both dearly... Love,
Donna*

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Electronic Commerce And The Communication Of Information

Preface

In the 1995 motion picture The Net, actress Sandra Bullock's solitary home office life as a computer consultant is suddenly shattered by the discovery of an unusual computer virus by one of her cyberspace companions. The tension building chain of events that follow leave Bullock in one of the worst nightmares that a human working with computers could imagine. Computers with the aid of evil humans had totally changed her life and identity electronically. Everything that made up her human profile, credit ratings, police records, education records, home address, date of birth, signature and even her physical image had been changed or altered in order to keep her from uncovering a master plot. The plot was to infect major computer systems around the world with a security breaching virus that would allow cyber villains to break into major computers systems for almost any purpose. Although some may say, "*it could only happen in the movies,*" the reality is that computers are rapidly collecting more and more data about our lifestyles, personal habits, and financial status daily.

Briefly looking at the story line of this film, it is easy to recognize the impact that computers had on Bullock's ability to maintain a normal life. In contrast computers also were able to destroy Bullock's normal existence and even strip her of her human identity. Data became the common thread which governed Bullock's ability or inability to function in the normal world. Some of these threads of data are more easily recognized than others. Daily interactions with bank Automated Teller Machines, (ATM), brief interactions with databases at our places of business, or even simple retail purchases at the local supermarket, all record electronic data about our activities and habits. The more information that is captured, the more detailed the electronic profile is sketched of who we are in this age of "information."

So why is this information important, and who is using it? What are the benefits of capturing all of this data? Will the average human find intellectual growth, or will we all end up in some horrible nightmare like Bullock found herself in, unable to convince the local police or neighbors of her true identity? The answers may not be easy. One emerging area of technology which is rapidly expanding and using this wealth of data is Electronic Commerce.

What then defines Electronic Commerce? Scott Cook, chairman, and one of the founders of the California based software company Intuit Inc., views Electronic Commerce as the changing of, "finding customers, servicing customers, and selling customers" from a physical interaction to an electronic

means. This new type of interaction done via electronic means may remove some of the human interaction we have known in the past.

The transformation from human to electronic means reduces these human functions, freeing people to move into "higher value- added functions" reducing cost (101).

How would this apply to Bullock in The Net? The once office bound worker now becomes a telecommuter or home office employee. She competently works at her computer all day in an environment which she controls. She can answer the phone electronically, record messages, open mail, read the local paper, watch TV on her computer monitor all electronically, or even access a local fast food pizza delivery chain electronically, completing a request for pizza delivery without any human interaction. Bullock has unknowingly created Electronic Commerce transactions as part of her normal daily activities. It all seems so simple, so natural. Will we all adapt to this new type of behavior in the future?

Cook sees Electronic Commerce as a whole picture, "successfully selling" customers electronically, which in turn gets them to "buy electronically"(101). What was once in the past viewed as primarily a payment option, such as a transaction recorded on a credit card when a customer purchased an item at a local store, can now be transformed into a virtual shopping spree electronically. The store becomes a form of electronic media and is presented to the consumer via a computer. This is a significant

change in the market place, and yes, it will have major impact on consumers as the technology continues to develop to support this view.

The pace at which the technology in this area is developing is astounding! It has actually been quite difficult to choose resources which represent the most current progress, as new information becomes available almost daily.

This paper deals with some of the recent changes in the areas of electronic commerce. A broad overview is offered of the uses of EDI (Electronic Data Interchange), retail transactions, Internet applications and how these applications are fast becoming the mainstream of electronic commerce. Briefs from various writers in technical journals give current and future applications which are being explored by business leaders in finding new applications offering alternatives to traditional methods of banking, shopping and performing business transactions electronically. Several issues in the area of data security and global challenges which businesses might need to consider, prior to marketing for new clients electronically are addressed. The paper concludes with a personal view of how electronic commerce is rapidly changing at a major competitor in the air express industry, Federal Express. Federal Express is shifting from a package transportation company to an information logistics company and has been rapidly expanding its use of electronic commerce and other related

technologies in order to reduce transaction costs and improve new financial growth opportunities.

Electronic Commerce And The Communication Of Information

Chapter 1: Introduction

“Merchants have no country. The mere spot they stand on does not constitute so strong an attachment as that from which they draw their gains” -Thomas Jefferson

Thomas Jefferson’s words seem to have been written just yesterday. “Merchants have no country,” their attachment comes from where they draw their “gains.” Business merchants are learning that these words apply to them even today in terms of a meaning which Jefferson may never have envisioned: ***Electronic Commerce.***

No longer is there a need for a manual process of ordering goods months in advance of anticipated needs. No longer is there a need to spend a lunch hour standing in a line at the bank to make a simple deposit. No longer is there a need for walking to the corner mailbox to mail a letter. No longer is

there a need for a worker to be in the office to complete a business transaction. No longer is there a need to face the elements of weather, traffic jams, daylight work hour limitations, or boundaries of a country. And in many cases, a handwritten signature is no longer needed in order to complete a business transaction.

Conducting business is not limited to time and space. Using the technology of computers, business can be handled in a much more efficient manner. This new sweep in business called, Electronic Commerce, allows us to act as "merchants" and allows us to complete business transactions from virtually anywhere we can draw our "gains." Jefferson was and is still on target.

A Brief Look Back

Electronic Commerce has its roots in the beginning of all computer technology. The evolution of information in a digital format came into being during World War II with the development of ENIAC (Electronic Numerical Integrator and Calculator). How ENIAC worked was simple. Digital signals flowed through circuits representing numbers. Numbers equal letters in the alphabet or a simple instruction that the computer would carry out. Because simple instructions could be carried out by machine rather than humans, ENIAC was considered the first modern computer. Built during 1944-1946, ENIAC was enormous in comparison to modern computers today. ENIAC took up more space than an 18 wheeler tractor trailer. ENIAC weighed more than 17 Chevrolet Camaros and consumed more than 140,000 watts of electricity to function. Even though vast in size, ENIAC would only execute 5,000 basic arithmetic operations per second (Pritchett 24). From ENIAC came the development of binary code. The code was the system of digits being counted as on or off, i.e.: 1= On, 0= Off. The term "binary digit"

became an accepted mode of understanding for this information. Putting information in a digit format allowed for quicker calculations to be completed. Government agencies began using this method of data exchange when communicating vital information about defense and security. As large corporations involved with the defense or security applications realized the benefits of data communication they too began to incorporate computers in reducing manual hours needed to complete routine mathematical tasks.

According to authors Ian Morrison and Greg Schmid, "development of the integrated circuit (invented in the late 1950's) has permitted an ever increasing amount of information to be processed or stored on a small micro chip" (Pritchett 36). Early adapters of this computer technology saw "data" as a way to improve the effectiveness of their business. Incorporating data transactions or the information gained from the data helped to make business more productive and less labor intensive. Manual jobs began to see a change. The first practical industrial robot was introduced during the 1960's. Machines in factories with the addition of computers would provide management data output for information analysis.

During the late 1970's and early 1980's, electronic transactions of information started growing. As businesses were beginning to realize the benefits of computer use they began to capture inventory, billing, revenue receipts and sales transactions. Computers were used for market analysis, forecast analysis and to determine what products to market.

During the late 1980's and early 1990's data exchange and its various forms had its inception. For example in the transportation industry international shipments on container ships departing or returning from the Ports of Seattle and Tacoma began using the exchange of data (EDI) to allow trading partners to have knowledge of business data. Items such as invoices, arrival notices, manifests and payments were shared between business partners electronically. The computer to computer exchange of information allowed both the buyer and seller to be more efficient in business transactions. Computers also allowed both parties to adapt a "just in time" inventory process, reducing inventory costs and increasing competitiveness.

Financial transactions which once moved via paper began moving electronically. Banks could keep accurate transaction records for debits and credits to business accounts electronically. Not all banks used the same computer formats, however, the principal was similar. Computers allowed banks to move what was once a manual process to an electronic process and increase human productivity. Banks saw the benefits in reducing the possibility of human error and let the computers control the data.

The field of medicine started adopting record keeping measures electronically. Prescriptions, patient records and vital diagnostic information libraries helped improve physician productivity. Physicians, pharmacists and other health care professionals would view electronic records relating to their patients and provide status updates to these electronic records as needed.

----- Grocery stores began gathering information through scanning technologies. Products were given bar-codes which included product information stored in a number format and placed on a product label. The bar-code contained information that would record inventory management and supply a method for tracking supply and demand needs. As marketing departments started viewing inventory management records they began to match bar-code information with the buyer's credit card or check number, thus creating a database for market analysis of buying habits and consumer trends.

Today most data or information is put in a digital format. The benefit is that all digital information can be sent over data lines or a standard voice phone line. Some examples of items which now are traveling in a digital format are feature films, libraries, newspapers, On-line magazines and signals from wireless applications like cellular phones. The digital data can travel with great speed. The speed or ability to transmit the data is what is helping to foster the newest environment of technology for the 21st century: Electronic Commerce and the communication of information.

----- According to the International Data Corporation, the worldwide Electronic Commerce service market represented \$1.5 billion in revenues during 1995. The areas that were reviewed and classified as Electronic Commerce included E-mail or *Electronic Messaging*, EDI or *Electronic Data Interchange*, and enhanced Fax services. The highest percentage of the service market was the use of E-mail services-50%. The major players were AT&T,

for E-mail service, SPRINT for enhanced Fax services, and GEIS (General Electric Information Systems) for EDI services. Amie Shapiro, an analyst working for International Data Corporation, states that "U. S. based providers through distributor relationships, mergers, and acquisitions are beginning to generate a greater portion of their revenues overseas." In the next five years the anticipated growth outside of the U.S. will grow from 12 % to 40%. The speed in growth areas is primarily due to the increased use of the Internet (Freedman).

The Internet is a network of computers which have over the years been linked together for the exchange of intellectual ideas and information. First used by defense organizations, users grew in numbers to include universities, research institutions and most recently the general public. Today the Internet is seeing growth by the addition of businesses and individuals linking their computers into the Internet. Data which was once transferred internally via networks like stand alone products such as E-mail, or EDI are now moving data via the Internet in a global environment which creates new electronic business opportunities. New electronic business opportunities allow merchants to draw themselves toward new resources for profits or gains. The gains may come in a variety of new forms. Electronic commerce will move forward from E-mail, Fax, and EDI services to something greater. The growth of electronic commerce will be dependent on how businesses adapt electronic commerce applications. For some, gains will be experienced through the sale

of products electronically. For others gains may be realized via the selling of "transaction" space on networks. While yet other businesses may find gains in the continued reduction of labor costs associated in the replacement of manual activities to automation. There is, however, considerable evidence that electronic commerce and related computer transactions will change lives and the way business transactions are completed in the 21st century.

Chapter II: Literature Review

Major Thinkers In The Area Of Electronic Commerce

The Information Society

There are many written works dealing with computer technologies and the forecasting of where technology is headed for the future. To understand where we are today, it is important to review some of the early works written about computers.

One early pioneer to such writings was Yoneji Masuda. Yoneji Masuda was the founder and President of the Institute for the Information Society, Professor at Aomori University, Executive Director of the Japan Creativity Society and the former Executive Director of the Japan Computer Usage Development Institute. Masuda wrote an interesting book called, *The Information Society As a Post Industrial Society*.

In his work Masuda looks at the transformations of an industrial society, going from a physical producing society to one which is self sustained by "informational productivity." Masuda describes the growth of

computerization in four stages. Each stage will help us understand the progression of computer development over the past 50 years. These same four stages will clarify our understanding of why our economy is moving toward the evolution of electronic commerce.

According to Masuda, the first stage is the development of computerization from 1945 and 1970. During this time frame computers were used primarily for national scale projects such as defense or space exploration. The United States took the primary lead in this area and developed SAGE(Semi-Automatic Ground Environment System) which protected the United States from Soviet missile attacks. The United States was also viewed as the leader in scientific research and the use of computers to perform calculation trajectories for the Apollo space program. Common people had very little interface with computers on a regular basis unless they worked with one of the leading companies involved in this type of scientific technology (36).

The second stage of computerization moved from science based applications to management based efficiencies from 1955- 1980. In this stage big business started using technology to manage information and reduce the number of workers needed to complete simple tasks. Masuda again feels that the United States led the way in interweaving government and business administration together. An example of this combined technology was the development of the SABRE system,(Semi-automatic Business Research

Environment, computerized reservation network American Airlines) for passenger reservations in air travel. This period also saw military use of computers for global applications of inventory management. More computer use in business environments meant that workers were beginning to feel the impacts of computer technology with respect to their jobs. Routine tasks and assignments underwent changes as computers were used to complete tasks resulting in the downsizing of the work force. Routine items which could be automated became automated, leaving workers struggling to acquire new skills. The development of computer skills required training. Failure to learn new skills left some workers seeking employment away from environments which were embracing the new computer technologies (37).

The third stage of computerization is now. Although Masuda views society as being in the third stage at the time of the writing of his book in 1980, he views society quickly moving toward the fourth stage. The third stage began in the 1970's and changed computer technologies from a management based technology to one which was "society based." Masuda thinks that computers during this stage will be used to solve "social needs." The transition will be realized as the welfare of individuals within a society is improved. Masuda feels that the use of computers would provide for many advancements in the medical and social health care fields. Physicians in remote areas would have the ability to perform patient exams remotely using

computer technologies to transfer information about a patient back to his or her office for diagnosis (38).

Masuda also writes about new "knowledge networks." He felt these networks would be created and would become the basis for new types of education processes in schools. Further developments in industry would be the basis for computer technology to constantly refine patterns of physical work. Masuda also thought that computers would help society deal with common problems. One example would be the use of computers to improve the quality of the air we breath. The manufacturing plant which had first used computers to automate a manual process would now use the computer to check the output of toxic gases in waste materials.

Masuda sees the fourth stage of computerization as "individual based." We are beginning to enjoy the productivity of this stage as more individuals begin to acquire their own personnel computer (39). By using personal computers we are able to resolve problems, carry on dialog with other computers, or determine applications which best fit our needs. Some of us may simply use the computer for home finances. Others may keep quite extensive compositions of music, entire home business inventories, or libraries of material for the enhancement of our children's education.

Masuda writes a vision statement which he felt represented his ideals for the computer growth in the country of Japan. Although specifically

written to help guide the Japanese toward their development of computer technologies, it also would apply to almost every nation.

Masuda's Vision :

"The realization of a society that brings about the general flourishing state of human intellectual creativity instead of affluent material consumption" (3).

Masuda's vision suggests that we move away from the mass consumption of products or human labor and move toward a society which is far more intellectual in nature. Electronic Commerce may be one answer which will allow us as a society to experience that "general flourishing state." Using human intellect and computers together, humans will be able to replace many work functions, while creating new opportunities for employment.

In Masuda's plan which was written for Japan, he writes that computers should be used to improve the quality of life. Masuda feels that the success of using computers in a variety of ways would be the beginning of the "information based society." Some examples of fields in which Masuda saw possible implementations are, banking, government offices, school systems, transportation, medical, food distribution chains, pollution prevention programs, re-development of human potential, (labor training applications run

by computers) and even a portion of technology dedicated solely for the preservation of peace. Today we see many of these improvements in all of the above areas and in human productivity as we allow the computers to perform the work.

Masuda writes of an idea for a "Living Visual Information System." This system would assist individuals in performing two way communications between their homes and community services. The individual would be able to access computer generated images of items of interest from a computer linking device. The level of interest of any particular topic would dictate how much data would be transmitted to the recipient and from what sources. The data might be in text, video or sound formats depending on the need of the individual requesting the information. In many ways the Internet acts as a Living Visual Information System. Perhaps Masuda envisioned the beginnings of the Internet, Electronic Commerce and the exchange of information.

Computopia

Masuda also writes about a state of "Computopia," where computers are contrasted with the good or evil in society. "Computopia," Masuda says, is the most logical path of choice versus an automated state where everything is controlled by computers. He feels that total automation of everything which

humans do would alienate humans and social decadence would become a reality.

Masuda views “ the computer as innovation technology” or as an “ultimate science” (153). He cautions that just as science could be used to bring “immeasurable benefits to humanity if wisely used,” they could also lead to destruction if used improperly. A good example of destruction and disorder by computers occurs in the motion picture The Net. The movie portrays a web of computer data which is woven into our lives effortlessly without our knowledge. The main character, played by Sandra Bullock, learned very quickly how much computers were involved in her life when she was suddenly without access to many of the systems she used regularly. Some interdependence is good, but too much can be disastrous. When Bullock realizes the impact of a computer virus she has found on major computer systems around the world, she is also confronted with the possibility of the destruction of every day “order.” The virus she detected was breaching security barriers in certain computer programs and causing chaos for main computer systems. The virus altered airline schedules causing flight delays and plane crashes. Transactions to and from banking institutions were altered by the virus causing massive billing errors and missing revenues. The virus also tampered with government documents resulting in the interference of law enforcement agencies to accurately perform suspect or criminal checks. Even Bullock’s passport application and identity were electronically altered leaving

her without a sense of reality. The computers in essence had destroyed her life as she knew it and created something new.

It is easy to see how quickly computers would endanger society if used for destructive purposes. In contrast, however, using computers for the creation of knowledge and the sharing of that knowledge will make society more productive. Collection of data about our lives in an electronic format can improve our health care, reduce pollution, simplify our tax filing, or even reduce the cost to increase one's educational resources by allowing the access to libraries of information found half way around the world. Masuda leaves us with the hope of a knowledge based society where humans and machine will exist together in harmony.

Open The Gates!

Bill Gates is another writer in the area of computer technologies. Gates, the CEO of Microsoft, writes in his book, *The Road Ahead*, that as people collaborate and communicate via computers, "our lives will become richer and less tied to location" (135). Gates writes that "new technologies will offer people a new means with which to express themselves"(134).

Our generation and the generations to come will be able to access information on an information highway which is being built now. This information highway will connect all businesses and individuals for the increased productivity and enjoyment of all. Gates, like Masuda, sees society using computers to proceed forward as an "information society."

Gates as a business founder has already begun to develop the tools needed for businesses to use the information highway as a means for completing business transactions. Gates, along with Scott Cook, CEO of Intuit, are pursuing their business strategies in the development of banking technologies as part of a new era of Electronic Commerce. There are great advantages for banks as well as other types of businesses to increase electronic

transactions while reducing human transactions to improve productivity and profits. New forms of business transactions are being completed not in person, but with a new type of consumer: the *electronic customer*. Banking as an electronic customer will also fuel new applications in the area of electronic commerce. As banks start switching from paper transactions to electronic transactions they will need to form relationships with this new type of banking customer. The electronic customer may be a single individual or a large corporation with basically the same modes of communicating information: a computer. The common goal is to create a transaction, exchange either financial or informational materials, and have equal satisfaction about the process.

The banking industry in December of 1995 reported an estimated "800,000 customers banking by computer, barely 1% of the entire United States banking customer base" according to Bruce Leueke, VP of Banc Ohio in Columbus, Ohio. The projections are that by 1997, 6% of all banking will be completed electronically. This increase will help banks to reduce the costs for doing business with their customers, and in some cases these savings will be passed on to consumers via lower service charges (Caldwell 14). To improve their business strategy both Microsoft and Intuit are offering Home Banking software to allow consumers the PC interfaces they need to be able to communicate with area banks. Software companies benefit from the purchase of their software. Banks benefit from reduced overhead in having tellers

handle transactions and the consumer benefits by the reduction in cost for access fees. The growth in the banking area of electronic commerce is expected to continue as the PC banking fees will continue to lower as more and more banks and consumers adopt this new way banking.

Gates predicts that over the next decade all business transactions will be "transformed." The software product offerings of his company are already helping businesses begin this transformation. Many documents which were once on paper are being converted to the electronic media. Microsoft Office products organize text materials, and support Fax, as well as On-Line transmissions of data. Users of data are given access to information via networks. Information sharing benefits the whole organization. For example, a business may set up a computer network to allow multiple parties to access "draft" documents. The reviewing parties have the ability to alter, update, or add input to the documents. The contributing parties may not be in the same office location, perhaps not even in the same country. Now all that is needed is a pathway to get these documents from the originator to the reviewing destination. The pathway components might be the interoffice network, an external Fax, or the Internet which allow the contributing parties access to the living data. Once the documents have all input added, the project is complete (Gates 141). Performing business transactions electronically moves the documents or information at a much higher rate of speed than previously

experienced. The business is able to react and respond to its customers much more efficiently which will make the business more competitive.

Using some sort of network whether internally or externally will require an application of electronic commerce. Fees for services will be charged as the documents travel across boundaries which were once controlled by space and time. Each one of these transactions could be viewed as a potential revenue generating point at any crossroads along the way for increasing profits. The revenue or profits realized come from the time saved in the speed at which this piece of work is completed. There is also reduction in costs for paper handling, rewrites of drafts, mailing and even the results produced by examining the contents of the document which may suggest that some new business direction or product is needed to meet or beat the competition to a sale (141).

Electronic commerce builds its strengths on being able to take information and make use of that data in new forms to improve or enhance human productivity. The business of transferring data will allow for greater creativity among the users of this information. Although banking seems to be the first area where we see electronic commerce being used widely, it will not be the only area in which data taking on a life of its own.

Another area in which electronic commerce and data transactions are viewed as moving from stationary points to live environment would be in a manufacturing process. For instance in an automotive manufacturing plant the

total number of cars produced is controlled by buyer demand. Instead of traditional show rooms, the buyer is able to pull up on a computer screen the exact make and model of the car he or she is interested in purchasing. The computer performs a live search for the vehicle to see if one exists in a remote inventory distribution. If a vehicle is found, the purchase is completed using the help of a salesperson, and credit or loan officer at the dealership. If no vehicle can be located, then either the consumer or the dealership salesperson uses a computer to design a unique order or transaction. The details for the vehicle desired can be quite exact and specify unique needs for the vehicle to meet the buyer's demands. Dealerships will no longer fill showrooms with vehicles which may never sell, but instead use a computer to enter data into a database about buyer specifications, transmit that data to a manufacturing site, and the vehicle will be built. Eventually the dealerships themselves will not be needed, as the consumer may complete the whole researching, selecting, and purchasing of the vehicle via an electronic commerce transaction via their personal computer. Although seemingly far fetched, the first of these applications is beginning to surface on the Internet today. Gates then sees computers helping humans to enhance their ability to grow as a information society. Much like Masuda, Gates believes that society will use computers to transform daily life. Gates believes that business applications will lead the way for many other new developments in electronic commerce and the communication of information.

Living At Light Speed

"The truth however is that most of the news these days is not about the information super highway's effect on our lives, but about how companies are aligning with each other, buying each other, selling each other and spending big bucks on the pavement that will become the highway" ----Danny Goodman

Danny Goodman, an award winning technology writer, in his book, *Living at Light Speed*, views the "information highway" as a metaphor. He contrasts what is occurring in today's marketplace with the highway construction of the 1950's. Early in the development of America's construction of major roadways, there was only one main route to getting somewhere. Like the origins of Route 66 (an early American roadway), individuals were left with some concrete roads and only a few dirt roads to aid them in their journeys from one destination to another. Connecting one human with another required hours of travel by car. Such trips were infrequent

for the average American and required a great deal of forethought and planning. When Americans did travel, they began to consume products along the way. Gas stations, hamburger stands, hotels and other new types of commerce developed.

In the information age we are beginning to connect more and more people together by a new means. Goodman says the connections or roads are "electronic." The electronic roads do not limit the traveler to one road, such as the Route 66, but provide multiple paths in which to arrive at a desired destination (2). Traveling these "electronic roads" is just like traveling a highway. There are many sights to see and places to stop off the highway to browse and enjoy a moment of interest. New entrepreneurs are starting to line the highway. These entrepreneurs will be the pioneers of electronic commerce. Just as the Mom and Pop country stores and restaurants were first to develop commerce on our national highway system, small business will lead the way for much larger growth on the information highway. The small business transactions have been happening for years as universities, government agencies, and medical fields have been exchanging information already. For the general public however, there must be a greater lure to get more people on the information highway.

Goodman sees three lures for the average consumer in using the information highway: messaging, information, and entertainment (20).

He also sees the financiers in terms of who will support the cost to build and expand the roads to the information highway as : 1.) the users of the data that flows on the highway, and 2.) advertisers who reach the users by sponsoring data that arrives to the users at no or low cost (56).

Goodman acts as a "foreman" presenting some interesting challenges which will need to be overcome before everyone will feel comfortable on the new information highway. Some of the same challenges will likely be felt by those who are developing electronic commerce activities on this new road.

The first challenge is that, *information on the highway needs to be able to link all nations and peoples together* (63). The standards by which information is placed onto the roads of the highway need to have some sort of consistency. This issue arises when trying to establish protocol types for financial transactions in the banking industry. Universal protocols for world banking via electronic means are currently inconsistent making business transactions difficult to perform.

Goodman sees these standards being established by large data enterprises such as regional phone companies, cable companies, or On-line service providers. In principal, one would assume that Big Business would be the first to dominate the electronic commerce market. Those corporations having the capital resources and development staff will be first to develop corporate interfaces which will support interacting in an electronic fashion. Placing a business transaction On-line will have as many new challenges as

did the first food chains on Route 66. Those who will be able to overcome obstacles simply by having the funds to put resources where needed, will most likely break the success barrier first. In contrast, smaller businesses will not have the same resources and will remain as the Mom and Pop country stores along the highway. The country store or small business will struggle to build the interfaces needed to play in the electronic market and may easily be passed by when competing with larger merchants or business owners who go On-line.

The second challenge Goodman presents is that *individuals and small companies may be able to use some of the new electronic sites, however they will need to have a computer* (69). Just as the new concrete highways required a vehicle for travel, individuals and businesses who want to participate in electronic commerce will need to have the ability to access these new electronic businesses. Banks, pizza delivery services, even Federal Express, all have current physical address locations that do not require a computer to access provided services. If these services are totally replaced with electronic means, then each individual desiring to use these services will need to have some form of access to these electronic services. Development of access channels would need to be developed for all members of society not only in the United States but in other countries as well. This may be difficult due to physical limitations, hardware protocols, phone line access, language barriers and cost.

The third challenge presented is *staying unique in the vastness of the Internet*. Goodman states, "If Internet special interest communities get too popular, the feel of community in those 'places' will diminish, just as a small town that grows into a city loses its original flavor and charm" (92). It may be years before electronic commerce will lose its charm just as it may take some time for it to become the norm of our society. Creating a unique place to market a product may be difficult for the average entrepreneur. The electronic market-place for products and services will most likely be dominated by brand name recognition rather than small companies not easily recognized by their names.

The fourth challenge is that *On-line services have their own distinct community or special interest group*. Goodman says that each On-line service has its own distinct community. Some communities are viewed as well informed, while others are not. Individuals who frequent the information highway have certain bias against certain On-Line providers. This bias may prevent two great minds from ever getting together because they belong to two different network providers (95).

This brings up an interesting challenge for the electronic business. How would a business market to all of the potential profiles which make up any individual special interest group? It could perhaps target one, but that style of marketing may alienate another valuable niche. A good example of this dilemma would be newspapers which currently sell their service of news

to the public in an electronic format. The newspaper must market for On-line subscribers and provide services which are demanded by their readership. Sourcing for readers willing to pay for an On-line newspaper needs to be done on a national level which may be quite costly. Brand name recognition may help the consumer to select a well known newspaper they wish to have sent to them electronically. However the challenge becomes how to embed the smaller unknown local newspaper among all of the major ones and gain a share of the market of available readers.

The fifth challenge is *how to compete, or develop and complete a sale or transaction*. Goodman refers to this as “*interactive media and completing the sale*.” Goodman seems impressed with the abilities of the information highway providing information but is less impressed with the ability of most “sites” to complete a transaction from start to finish. This is truly a major key for successful electronic commerce (98).

Several retail companies, L. L. Bean, Nature Company, Williams Sonoma, are using computer technology to show a potential customer an electronic view of products, store layout, or models wearing garments. As the shopping and selection process for products or services goes On-line, retailers will need to migrate toward the completion of the entire sales transaction On-line. This means not having to pick up the phone (a second line in the home, if the first one is being used by the computer while viewing the catalog offerings) but simply pointing and clicking on wanted items, quantity, color

and authorizing the price charged to a credit card. Then the computer must be able to calculate the charges, display billing options, shipment options, and notify the consumer of any warranties or exchange privileges for the products purchased. Once each electronic "site" is able to complete the entire sales cycle, then and only then will true electronic commerce have taken place.

Any interaction with a human breaches this concept (102).

The sixth challenge is that "*only the 'halves' will be able to afford the tolls on the information super highway.*" Goodman's thinking here is that the cost associated with owning a personal computer, network access, fancy cabling charges and On-line charges/fees will result in only certain classes of society having access to information. The old "information is power" or "power is in the hands of a few" might apply here (103).

When the telephone was first introduced the price to own one was not affordable to the average consumer. The same may be said about access routes to the information highway or the ability to equally use electronic commerce types of transactions. In reviewing Goodman's view of the lures to the information highway, messaging, information and entertainment, those who cannot afford the setup costs will also not have access to the benefits. There will be the "have's" and "have not's." Poor communities as well as under developed nations will not reap benefits of improved productivity or services that the highway would provide. Information which may help these individuals the most, save them consumer costs, and enrich their lives would

not be available. Cultures, such as those found China, may experience a waiting period of two years to receive the privilege of a phone line, and would not be able to access the world community. Likewise only small amounts of transactions involving business in an electronic format would be able to take place due to limited availability of phone lines. For some the ability to access electronic avenues for banking, retail purchases, and general information will be a choice between a want and a need.

Small children learn to struggle with the idea of "wants" and "needs" at an early age. A young girl who appeared to be about six, asked her mother while strolling down the toy aisle at a local store. "Mommy, I'm just not sure. I really want this new doll, but I don't really need it, do I?" Shocked, the mother listened to the child just a little longer. "Mommy a need is something you can't live without, like food, clothes, shelter, or love, but wants are the stuff you can get by without." The mother still in shock, was for the first time, able to leave the toy aisle without purchasing a new toy. The child truly understood that her wants were not critical to her survival and therefore could be delayed without significant harm to her existence for that day.

For a number of children growing up in the 21st century, computers and computer technologies as they continue to develop may very quickly become a need. These children may need to make some tough choices about purchasing these technologies. The decision to purchase a computer will someday become just as significant as that of their great grandparents'

generation when faced with determining whether or not to purchase their first phone. What was once considered a want turned into a great need in order to stay in touch with family and friends and to provide a sense of security.

There is the issue of literacy, both in the ability to operate a computer and in language. The ability to operate a computer may be limited by one's physical well being, health, or handicapped status. Only those who at the present time can read have the ability to benefit from the forms of information found on the information highway. As electronic commerce develops, providers will need to consider providing resources for a variety of users who may have different types of handicaps. This area alone may exclude many potential users of electronic commerce, simply because developers of electronic commerce failed to take into consideration the degree of "have's" each individual may possess with regard to computers and their ability to use them.

The last challenge Goodman writes about is the myth in thinking *the information highway will never affect me*. The reality is, in many ways it already has. Goodman discusses the effects in the workplace. Companies are either subscribing to information from the highway or becoming contributors to the highway (109). Many workers are beginning to access work computers from home in home based offices linking themselves via networks. Those who have access ability via any of the many On-Line services are much better equipped to stay in contact with electronic information. The ability to reduce

travel time to and from the office has a direct impact on worker productivity and helps improve the quality of time with family and friends. Wireless applications such as a beeper or cellular phone can transmit data via a network and keep the worker informed.

Children are using computers in school and at times are accessing the Internet for learning opportunities and cultural exchange of information and ideas. Tax returns can be filed electronically, and cable boxes on television sets can have electronic signals sent to them to determine channel access. The information highway has already begun to touch many lives, even when the source is transparent to the individual consumer.

Goodman states, "Individuals best prepared to succeed are those who can learn, modify and grow, regardless of age, experience and ego" (215). To understand how information technologies will progress, Goodman refers to some basic marketing principals and defines target consumer markets or user groups that will embrace the new electronic technology. Various target consumers will help reduce the cost of the technology developments over a long period of time. These target group definitions fit well when applying them to the area of electronic commerce.

The first group Goodman calls the *innovators*. They are the individuals who jump right into what ever the market will offer in technology. They see change and updates as something which is "cool" and a must have, to keep them one step competitively ahead in both their business and social

life. As users of technology they have an above average income and can afford On-line services, hardware, or the latest software. They have more leisure time to invest in gaining new knowledge or using the knowledge the technology provides. The companies and individuals in this target market are ripe for electronic commerce. This is because they see the value of reducing transaction costs associated with a manual or paper process. For an innovative company, risk is normal, and they are willing to spend money on development of software and hardware or applications which have not been marketed to the general public (114).

The second target group Goodman describes are the *early adapters*. Early adapters tend to purchase technological products even when they are not supported by their work. This group would be the individuals who explore the newly formed technologies to satisfy their personal needs of curiosity. This group is also very satisfied with the long term vision of technology(114). In the area of electronic commerce, these are the people who have already tried banking via their computers. Some may be experimenting with making purchases for products via the Internet. Many are communicating daily with friends on E-mail systems via On-line services, even though this mode of communication may not be available to them in the workplace. These are the individuals who bought cellular phones when they cost \$800, or paid \$1800 for a video camera the first year they were on the market.

The third target group is called the *early majority*. The early majority makes up those individuals or companies which purchase the products after they have started to become less price prohibited (115). An example reflective of this group would be the average household migrating from eight track tapes to cassette tapes, then replacing cassettes with compact disks. This target group moves to the next generation of products quickly as the price begins to fall.

In the area of electronic commerce, this group represents individuals who have access to computer hardware freely, both in the work place and at home. This target group will access all forms of electronic commerce eagerly. They will be users of E-mail, EDI, Internet, and will provide the greatest amount of feedback for product refinement. This group will be the resource point for gathering information needed for future enhancements of a product. Some of the ideas which early majority members suggest will be incorporated quickly into developing technology. Other ideas may hold a stiff price, because this group can be creative and demanding. The early adapters always reach for the next generation of products: The CD player with a (3) disk holder (price \$150) versus the CD player with a (6) disk holder costing upwards of \$500, with speaker, remote programming, and various other updated options.

Then arrives the *late majority*. Goodman claims that this target group will not spend much more than about \$400 for a technology purchase. The

lower the purchase price, the more likely members of this group will buy. These users will buy from second hand stores, work with older applications, and find reasonable value in the products available on the after or resale market (115). This target niche may use electronic commerce, E-mail, EDI, and the Internet only when they are forced to. One example might be an elderly couple who may never have owned a credit card. Now as retirees they are free to travel. Quickly the couple learns that car rental agencies, hotels, retail services and others will only provide service if they present a credit card to pre- authorize payment for a service. In the past, cash transactions were normal and using a credit card was viewed as frivolous. Finding the courage to use a credit card for transactions leaves the couple with an uncomfortable feeling, but they know it is necessary in order to conduct what is considered normal business transactions relating to their travel. Regretfully, this couple will acquire a credit card and perhaps an ATM (Automated Teller Machine) card and learn to function with these new basic tools within a technological society.

The last target group Goodman refers to are the *Low Income or Luddites*. Goodman describes this group as having very low income and showing very little interest in technologies. For electronic commerce to become a part of this target group's lives, the methods currently used will need to be altered to service this group. From a social point of view electronic commerce may benefit this group the most. For example, rather than mailing

welfare checks, funds might be direct deposited into a special individual account which could only be accessed via a debit/credit card. The debit and credit card would only allow the user access to money in his or her account , but limit the ability for over drafts. Financial records for purchases of food, housing, or utilities could be maintained on the individual, with no need for income tax filing. Dollar limits could be set to control the purchase of health hazard items, such as alcohol or tobacco, perhaps improving the health and well being of the individual. If given public access of the Internet, this group might benefit from emotional support groups, financial consulting, employment resources, shelter and clothing bargains available in a global market. Tragically though, it may be a long time before an organization or governments are willing to use funds for development or support of applications which would greatly benefit the individuals who make up this target group.

Goodman has provided interesting reflections on the challenges of technology and some of the target users of the emerging technology. However to continue the study, we must look at the digital economy and how electronic commerce and the digital customer is continuing to develop.

The New Economy

To understand where electronic commerce is headed, it is important to understand the world economy and how society will identify changes which are beginning to effect individual lives. Understanding these changes will allow us as consumers and business professionals to become more productive and financially secure. Don Tapscott, author of a new book, *The Digital Economy*, refers to twelve themes of this new economy. Like Goodman, Tapscott identifies the realities that each consumer of technology must begin to accept.

The first reality is the fact that the new economy is based on "knowledge." Tapscott refers to information as being "smart." Items which have "smarts" are those which contain coded information about the product or services to gather information and provide some form of intelligence. Many of these products are easily found in daily life. Others are a bit more transparent to the users or are not as easily identifiable as having some form of computer technology incorporated within. Some examples Tapscott gives are on the following page.

Examples of Knowledge Based Items In Society Today

1. Smart Clothes: Contain chips that tell manufacturing details, store inventory location, purchase price, who ultimately purchases the item.
2. Smart Cards: Single plastic cards with micro chips that contain every significant piece of information needed, previously contained in credit cards, health cards, and even driver's licenses.
3. Smart Houses: Houses that manage inventory and maintenance items for the owners. Room temperature, lighting, burglar alarms, phone systems all managed by computers.
4. Smart Roads: Devices embedded into roads which monitor traffic, road conditions and reckless drivers.
5. Smart Cars: Intelligent cars with driver aides, maps, vehicle service records, driver performance evaluations and preset preference settings depending on who is at the wheel.
6. Smart Tires: Air pressure adjustments made automatically, depending on weather and road conditions.
7. Smart Pucks: Computer chips used in sports equipment, such as a hockey puck, which allows information and video images to be sent to networks for entertainment or competitive knowledge building against the opponent.
8. Smart Radios/TV: Built in personal preference choices about buying habits, viewing choices, music, information access.
9. Smart Telephones: Built in answering machines, caller ID, video images and faxes (44-46).

The second reality in identifying this new economy is the fact that it is "*digital*." The old economy was more physical requiring human intervention in various transactions like banking, answering the phone or physically walking to a mailbox to receive and open the mail. Today, however, by using digital information, the speed of physical work and productivity has increased. Tapscott's thinking is similar to Masuda's in that he feels that what was once done by humans would be replaced by machine. The physical action is replaced with computer power allowing humans to tap into greater levels of intelligence. The "digital economy" allows for society to increase the ability to share, modify, or store information electronically (49).

The third reality of a digital economy is "*virtualization*." "As information shifts from analog to digital, physical things become virtual-changing the metabolism of the economy, the types of institutions and relationships possible, and the nature of economic activity itself" (50). Everything that can be put in a digitized format now becomes virtual. In a virtual economy, there are basically no limits of time and space. Individuals move data to control an event. Business transactions occur electronically without having to move people from one physical location to another. Tapscott cites some common examples in use today: virtual ballot boxes, bulletin boards, business parks, congress hearings, corporations, coupons,

government agencies, jobs, malls, markets, sex, reality, stockyards , and villages (50-51).

The fourth reality of a digital economy is : "*Molecularization.*" "The new economy is a molecular economy. The old corporation is being disaggregated, replaced by dynamic molecules and clusters of individuals and entities that form the basis of economy activity. The organization does not necessarily disappear, but is transformed. *Mass* becomes *molecular* in all aspects of economic and social life" (51). Tapscott describes an economy which acts like a molecule, the molecule being the "smallest particle into which a substance can be divided and still have a chemical identity" (53). In terms of a digital economy, individuals can cluster together to perform as a team of molecules creating a "mass" effect or more independently like a "gas molecule" only attracting other molecules when the form needs to change. In essence perhaps it (the molecule) creates a corporation for as long as it is needed to accomplish a certain task or goal, then disbands. Each singular piece (molecule) then is attracted to something new, which results in continuous changing dynamics of the economy.

The fifth reality in a digital economy is "*Integration and Internetworking.*" Tapscott refers to the integration and internetworking as the breakdown of large corporations into smaller clusters or molecules which work much easier together. When the same users of information existed as part of a major corporation, they were limited in their ability to become highly

productive because of internal bureaucracy. Now that the users are becoming networked together in smaller groups, information can be shared and everyone can contribute to the completion of tasks in a timely fashion. Tapscott states that the overall economy will act in the same fashion. Suppliers, competitors, health care, and learning institutions will all use the abilities of integration and internetworking to increase wealth and prosperity.

The sixth reality in a digital economy is "*Disintermediation*." "Middleman functions between producers and consumers are being eliminated through digital networks. Middle businesses, functions and people need to move up the food chain to create new "value," or they face being disintermediated" (56). Tapscott describes the process of eliminating the middleman in transactions. This could be a wholesaler, broker, travel agent or any person who separates the buyer from the product or service desired. These middleman functions will not be seen as adding "value" to the sales process. Reduction of these positions will once again reduce labor costs and manual labor and reduce the time it takes to execute a transaction. Digital technology brings buyers and sellers of homes together. Levi can market custom fit jeans directly to the purchaser. Airline tickets can be purchased on line without the aid of a travel agent. Or companies can purchase required items directly from the manufacturers without having to go through retail establishments. Each unique transaction is performed in a digitized fashion, eliminating the need for the intermediary (56).

The seventh reality in a digital economy is "*Convergence*." "In the new economy, the dominant economic sector is being created by three converging industries that in turn provide the infrastructure for wealth creation by all sectors" (58). The industries which Tapscott is referring to are all in the area of media and how media concerns will be used in computing, communications and content industries. This is very similar to Goodman's prediction of messaging, information, and entertainment.

Tapscott believes that the convergence of these technologies are already changing how we view our work, play and individualize our lives (59). One example clearly showing a convergence of digital technology would be the use of a laptop computer to access a business mainframe or server. On the server resides information databases about a particular client. A salesperson, using a laptop computer, makes a request from the mainframe or server, to retrieve historical account data, a corporate video clip on a product or perhaps his current unread E-mail. The information is transmitted or converged back into his laptop via a telephone line. Now the salesperson is able to process the data using text, video or sound formats to present a living proposal to prospective buyer of his product or service. The convergence of data and media together created a new standard for buying and selling. The salesperson's skills are changed by using new technological applications. Other corporations who rely on paper and the time it takes to process information on paper are now at a disadvantage and not as competitive as the

corporation which can quickly adjust its sales focus to customer demand. Those sales professionals without access to this type of technology may be viewed, as providing out dated or irrelevant information to their prospective customers. Behind the scene, what has taken place is the telephone, software, video production department and computer server or mainframe, working together playing key roles in the "convergence" of the data output to the sales professional.

The eighth reality in a digital economy is "*Innovation.*" Innovation is the ability to create something new or improved from nothing. Without innovation Orville and Wilber Wright would have remained bicycle salesmen. Without innovation Thomas Edison would not have proudly stood at the opening of the 1904 World's Fair and smiled as thousand of lights, illuminated for the first time, produced a brilliance and beauty never before imagined. Innovation in a digital economy is the constant renewing of products and services to stay competitive and provide value to the marketplace. Using digital technology, old thoughts and ways of performing functions are being transformed to new ways (60). Creativity is the basis for the change. The Wrights created first in their minds, then on paper new ideas for wing structures. Now that same creativity can be captured in a digital format allowing companies to try new ideas without spending hours in actually producing models. New ideas, creative approaches and problem

resolution will be considered one of the strengths in a successful company thriving in the digital economy.

The ninth reality in a digital economy is "*Prosumption*." Tapscott's belief is that in the new digital economy the "gap between consumers and producers blurs" (62). Information which may have been provided about a product or service by a marketing agency will now be provided directly by the manufacturer of that product. The purchaser can specify to view certain aspects of a product, perhaps change colors or view detailed information banks which hold data about the technical assembly of an item. Tapscott sees this already happening in the marketing use of "infomercials" on television, in car dealerships, and in products displayed on the Internet. The consumer is able to make choices about specific areas of interest and bypass redundant information which may hold no special interest. A retail example of "Prosumption" might be a swim wear designer who electronically takes a picture of the purchaser's body type. Using the body type, size measurements, height and weight, the computer compiles a series of swim wear which might best suit the buyer. The computer assists the buyer in fabric selection, color selection and any special features. The result of this computer transaction, "prosumption." The buyer is willing to purchase a product which did not previously exist.

The tenth reality in a digital economy is "*Immediacy*." "In an economy based on bits, immediacy becomes a key driver and variable in

economic activity and business success" (63). Tapscott writes briefly about the "*real time enterprise*." This is an enterprise where competitive success depends upon the speed at which a product is delivered. A good example of an existing "real time" enterprise is the services provided by a local FTD florist. The local florist also represents a nationwide chain of florists. Consumers are able to purchase flowers remotely with the same level of comfort that they would in their local florist shop. In a digital environment the consumer phones in a flower order or may electronically transmit a request via the Internet. The order is then processed by a central computer which in turn sorts and routes the floral request to the nearest florist in the recipient's delivery area. The local florist has been provided all of the needed details about the transaction, credit card billing, address for delivery and any special requirements desired by the purchaser. The flower arrangement is designed, created and delivered all with the same high quality standards viewed by the purchaser at either the local florist shop or from an On-line catalog. Billing has taken place "real time" in that the purchaser's credit card is immediately billed. The use of computers controlled many of the portions of this simple transaction in a "real time" or electronic fashion.

The eleventh reality of the digital economy is "*Globalization*." Using "digital" information the world is at anyone's finger tips. Those companies which embark on a strategy of using "digital" technologies will increase the economic strength of their own businesses and perhaps the economics of their

own countries. Despite the claim from Goodman that language barriers will exist, some of these concerns will be overcome as companies employ multilingual employees. Computers will be programmed to interpret written text. World wide communications will enhance a company's ability to expand into new markets, both as a consumer and seller of goods and services. Tapscott states new opportunities in global financial markets will require the need for new infrastructures and this will encourage the building of "transnational enterprises, answer networks, boundaryless firms, global organizations, and international enterprises" (66).

The last reality Tapscott discusses in the digital economy is "*Discordance*." "Unprecedented social issues are beginning to arise, potentially causing massive trauma and conflict" (66). Like Goodman, Tapscott sees a growing division between highly paid workers who either use technologies on their own as a private business entrepreneur or upper salaried technical information workers within the private business sector. As the new economy emerges, educational standards, work environments and even social responsibilities will at some time be challenged with discordance. The users of "information" in the new economy will determine the rate at which this discordance may occur or not occur. Tapscott's realities of the digital economy seem realistic in terms of many of the current challenges facing electronic commerce development.

In The Age Of the Smart Machine

As the new economy becomes more digital, old standards of job responsibilities will change. Shoshanna Zuboff, Associate Professor of Harvard Business School, writes in her book, *In The Age of The Smart Machine*, that “if and when an organization chooses to exploit the technology’s information power, it will have to ensure the conditions for competence as well as for performance” (185).

Zuboff took several years to compile interviews and research in the area of workers who were taken from a non-automated state to one which was highly automated using computers to complete their job functions. A common concern which she found in all of the settings she has researched was the ability of employees to learn new intellectual skills to maintain their positions in the work environment. The replacement of manual skills by machines forces these employees to use their ability to “think” through data versus seeing the actual event occurring. “The fundamental quality of this technological transformation, as it is experienced by workers and observed by their managers, involves a reorientation of the means by which one can have a

palpable effect upon the world. Immediate physical responses must be replaced by an abstract thought process in which options are considered, and choices are made and then translated into the terms of the information system” (71). An example would be replacing a physical job function with an automated process: performing surgery with a laser rather than a scalpel. The surgeon who once depended upon his own hands and eyes now relies on a series of computer calculations to assist him in his performance. Another example might be a paint worker who at one time visually added hue pigment to tint gallons of paint, now relies on a computer to dispense accurate hue pigment drops to complete the same task. In both cases the computer becomes replaces to work of the employee.

The employee must be able to comprehend what the data is reflecting. He must trust that the data is correct and will produce consistent results. Previously, employees were dependent on action centered skills to perform various tasks. The process of using intellectual skills rather than action centered skills will leave some individuals with a feeling of insecurity about their positions. Changing job responsibilities cause tension as the worker is forced to relearn his job responsibilities. There is great fear of technological change. Managing employees who feel this fear is not an easy task. The employee who feels resentment at seeing his or her former position replaced with a computer or automation may resist learning the new job function. The employee who is not provided adequate training will become

demoralized, less productive and at greater risk of making errors in completing his or her known job responsibilities. Employers will need to adapt processes which will allow the employees a chance to learn new technology prior to having that technology implemented. Employee education will be a critical factor in the success of a corporation which is constantly embracing new electronic technologies. Mastering the electronic text or data which helps the employee perform a new job function will also require adequate training for interpretation skills. Some positions may also require a new understanding in work flow and new processes. Zuboff cites an example in the banking industry where clerks were given computer terminals and told about their new responsibilities. Being told was a simple "Just do it!" Imagine the employee's surprise. One described his feelings this way, "it was like riding with blinders on, in a car that someone else is driving" (209). The employee felt like he was taking all of the risk, his own job security, but was not the one driving the car. Poor training and human resource development resulted in poor performance on the job, creating a demoralizing environments for the employee.

Although average individuals may not admit to it, they may have faced a similar type of fear at the enticement of banking using an ATM card. Did the bank take the time to fully explain the use of the ATM card? Or were the consumers handed a pamphlets and sent on their way to explore the machine's capabilities on their own? Did the consumers feel some sense of

resentment or distrust in placing their deposits in that ATM machine? Did consumers feel a bit demoralized by pressing buttons rather than speaking to friendly tellers?

In order for Electronic Commerce activities to become successful, employers must play a vital role in helping employees learn the internal functions of the technology in the workplace and how to overcome issues while developing new levels of competence. As the general public becomes more computer literate, electronic commerce activities will also build upon the skills learned in the workplace. It really doesn't matter whether the user is performing an E-mail function, EDI transfer of files, or shopping via the Internet; the employee is also a consumer of electronic commerce and must be able to trust that the transactions are live, valid, and accurate.

The more society interfaces with electronic commerce and computer technologies, the greater the need for training and building confidence among users of this technology. If training is not going to be provided, then those businesses who profits must find a way to entice employees and consumers to use their services some other way.

Chapter III : Selective Review and Evaluation Research

Approaches In Detail

There are several primary challenges which need to be understood as electronic commerce continues to evolve and change our lives. The challenges are the following:

1. Changing the "path" or way transactions in business occur.
2. The growth of the Internet and new applications.
3. Security issues in banking and for the consumer.
4. Legal issues and liabilities both domestic and international.
5. The digital signature.

The first challenge is to understand the "path" that a business transaction takes, from the production to the distribution point. The business transaction in the past began on paper. Everything from the design, order, invoice, to shipping documents moved via paper. Replacing the paper with an electronic format had been most successful with the applications of EDI, or

electronic data interchange. EDI is the electronic transfer of raw data which previously moved from business to business in a paper format. This data could be financial records, invoice information, billing documents or even funds transfer from one banking institution to another. Rapid growth in EDI will continue to help businesses become more productive and profitable.

In a 1991 article for *Industry Week*, Lee Teschler describes EDI as "the computer to computer exchange of business documents, invoices, purchase orders, letters of credit, solicitations, and proposals, using standard formats" (3). The estimated number of United States corporations using some form of EDI in 1991, was 12,000. Over 50% of the Fortune 1000 firms were represented in this number as users of EDI. The primary reasons were reduction of costs and increasing efficiency in reducing administrative tasks.

In September of 1993 *Traffic Management* Senior Editor Toby Gooley writes "Electronic Data interchange cuts international documentation and improves service" (46). Gooley reports on a German company, Huls America Inc., in Piscataway, New Jersey, that had adapted EDI in exchanging information on export and import shipments with its custom broker, BDP International Inc., a freight forwarder based in Philadelphia. Huls America took major keying data and reduced duplicate key entries by placing all import and export information into one EDI system. The process of EDI would allow Huls America to streamline its administration of export order, tracking and notification of shipment to and from its customers. The EDI system also

allowed for the shipping charges to be transmitted back to Huls America's accounts receivable departments for billing of freight, handling and any export charges. This business process was previously done in a manual fashion and required many hours of paper shuffling in order to complete. The benefits to both Huls and its customers: better reporting, better invoicing, less transaction error and faster customs clearance of freight. Richard Bolte Jr., chief operating officer of BDP states, "the more documentation we can create off a single EDI transaction, the better off we all will be"(50).

The life and death of a business may depend on the ability of that business to maintain financial accuracy. For example a Conrail train passes through a railroad crossing in February of 1995. The train passing through the railroad crossing triggers crossing arms to go up and down. Each time the gates are used, there is an electrical cost associated with the protection they provide to the trains. The crossing arms also provide protection to vehicles and pedestrians who may attempt to cross the path of an oncoming train. The electrical costs to have these crossing arms function is billed back to the railroads whose trains run on the tracks which pass different sets of communities along a route. The problem is that Conrail's payments are delinquent to the local Electric and Gas Company which have provided the electricity to move the crossing arms. The fix occurs with the implementation of EDI. A partnership is developed between Conrail and Core States Financial Corporation to work on taking 7,500 invoices from more than 540

utilities in 14 states and speed the rate of processing these invoices for payment. EDI allows the billing transactions to pass from the provider to the user electronically. After payment verification for electrical consumption is confirmed, payment for those services is released electronically (Electronic Funds Transfer EFT) from the users bank to the provider. There is no paper, no mailing of invoices, no past due notices, no delays in payment. With very little human energy or labor cost associated with the transaction, computer processing has replaced manual functions. The following jobs and associated costs have been reduced: mail room clerks, invoice clerks, accounts payable clerks, accounting clerks (Mastrull B4+).

The 1995 EDI Effectiveness Survey compiled by the Electronics Industry Data Exchange Association (EDIX) found that 80% of the respondents of the survey experienced benefits in company finance, order processing, sales, purchasing, legal and engineering areas by the use of EDI. Director of the Electronic Information Group, (EIG) Patti Rusher says, " This survey shows that EDI technology is coming into its own. Cost savings across the board make EDI an effective, sensible way of doing business-- one that all businesses will have to implement in the future" ("EDI Effectiveness").

According to Gartner Group a research firm in Stamford, Connecticut, smaller companies are looking for applications to help them quickly implement EDI transactions. The estimated number of EDI users was 80,000 companies as of March 6, 1996. One firm trying to fill the EDI need for

smaller companies is RVS. RVS, according to Vice President of Systems Development Steve Worthly, is launching a new product called "Performance EDI" which will allow users a "plug and play" application and immediate access to value added networks after installation. RVS also provides other software, installation, training, consulting services and other electronic commerce capabilities besides the EDI program. The software is targeted for small to medium sized companies who need to quickly implement EDI applications without the hassle of development. The software costs \$1,495, and will run on a DOS or Windows environment machine ("EDI Effectiveness").

Federal Express, in June 1996, will launch its newest EDI product: FedEx EDI. This Windows based software will be given free to customers who are willing to support the applications for electronic transmissions of FedEx invoices generated from domestic and international airwaybills, or Powership Shipping Systems. The strategy is to reduce costs associated with paper transactions, increase the accuracy of billing information, increase the speed at which revenue is collected, and promote the ease of completing shipping transactions via FedEx when compared to other Air Express companies. FedEx will become the first Air Express company to simplify the process of doing financial transactions and sharing related business information electronically. Cynthia Spangler, Vice President of Corporate Headquarters Systems describes the FedEx automation processes including

FedEx EDI as "extending the power of information from internal information systems at FedEx and placing it back in the hands of our clients." Spangler continues, "The strategy is to bring internal and external customers more useful information to make timely decisions. We are in the business of saving customers time and hopefully money if we can make them more efficient. We are no longer the critical path, we are the path" (Tapscott 136).

There is no doubt that EDI is good in terms of information exchange among businesses. Tapscott refers to EDI as a "powerful if badly misunderstood example of how the I-Way is creating information immediacy" (63). He goes on to describe EDI as a "tidal wave of electronic commerce that will shift the metabolism of business to real time and in so doing forever will change the relationship between companies" (64). EDI can link electronically suppliers and retailers for the purpose of sharing inventory movement from production to distribution points. WalMart, using an EDI application, links more than 4,000 suppliers with its distribution system in Bentonville, Arkansas, so that it can reduce the time it takes to replenish stock which has been purchased off of the sales floor. Information of the product sold at a local WalMart store travels electronically via a satellite system to distributors who replenish the stock at a much faster rate of speed than normal retailers. This is one reason that WalMart has been so successful; it only stocks inventory based on usage and need. Electronic data interchange is the electronic commerce application that allows WalMart to transfer inventory

information, store location, and payment for products via electronic means. Having the electronic process allows WalMart the ability to offer the lowest price "Always," due the cost saving used within its own businesses processes.

The second challenge for growth in electronic commerce will be the pace at which the Internet expands. The Internet, which has been around for more than 25 years, is only recently beginning to see dramatic changes in the use of electronic commerce. The first users of the Internet were defense organizations which set up information exchange points to protect national security. The second major users were universities who used the Internet to share information and improve research techniques and knowledge exchange. As the year 2000 quickly approaches many new Internet applications will be developed using this world wide communication medium. Business partners are putting their creative minds together to explore placing business applications on the Internet. Businesses are looking for new clients, and the Internet is viewed as having the potential for bringing in new sources of revenue.

Jerrold M. Grochow, chief technology officer at American Management Systems Inc., provides the following viewpoint to help consumers monitor trends and anticipated changes that will occur with the Internet during 1996:

- * Extensive use of Web Technology to deliver internal business applications.

- * Widespread connections between externally accessible Web sites and internal systems.
- * Acceptance of security software sufficient to allow many financial transactions.

(Grochow 57).

Tapscott would agree. He sees the Internet as being used for "every kind of communication, information business, learning entertainment and social development application we can imagine- and millions more" (14).

Tapscott gives the following statistics to help support this point of view:

In 1993, 21 Million households had a PC.

1994, 30 Million households had a PC (43% increase)

1995, 45 Million households will have a PC (anticipated)

By 1998, most home based PC's will have a modem which will allow for the connection to an On-line service and access to the Internet (14). Tapscott references the New Paradigm Learning Corporation's prediction that by the year 2000, one hundred million hosts will deliver information and services to users via the Internet (16). If Tapscott is correct, then it is easy to see why businesses would want to make efforts in reaching more than one hundred million prospective clients and provide a service or sell a product. Remember Jefferson's words, "Merchants have no country....the mere spot they stand on

does not constitute so strong an attachment as that from which they draw their gains..."

James Ho, professor at the University of Illinois, Chicago, gives some interesting thoughts on how the Internet can provide value to the average consumer. His first idea is to use interactive applications to help consumers figure out prices of things. There should be the creation of Web pages which would allow for individuals or business to "analyze what I am paying for." (72). This analysis could include anything from a bulk purchase of chocolate candy bars and the price per pound with shipping and handling included, to figuring out the interest rates on loans for cars, boats and homes. Ho sees the Internet as a more practical way for consumers to select services from almost every source. Instead of a consumer receiving junk mail, viewing television ads, or receiving junk faxes, the consumer would be able to use the Internet to explore areas of interest, or research products from information provided directly from the suppliers (72).

Tapscott would agree with Ho and describes retailers as being able to use electronic information to "shake up the game" of business. One example Tapscott shares is Levi Strauss placing a Home Page on the Net. Although the consumer thinks he or she is purchasing a pair of custom fit jeans directly from Levi, in reality the order has been transmitted directly to a new company called Custom Clothing Technology. Custom Clothing will produce the jeans with no store front or physical domicile location; they are in effect a "virtual"

store (25). Tapscott believes that retailers will reduce the number of physical stores and move purchasing power to On-line catalog selections.

Nordstrom's, a major retailer, operations and business development manager Pat Adkisson states, "being where the customers want to be, whether that is in stores, in a catalog, hi-glossy brochures, talking to an 800 number, personal shopper, or on the road ordering through a dial up on their laptop, or in a home," that is what will be the secret to Nordstrom's future (25).

Another recent product application for the Internet and its savvy users comes from a company called Network Connections. Based in Atlanta, Georgia, Network Connections is developing a product called InterView. InterView is not an interviewing package for managers who need to learn the art and skill of hiring employees but an Internet application that will allow airline passengers the ability to access the Internet while flying. The company already uses computer technologies to allow for customers to access music, films, faxing, and E-mail from the seat backs of passenger jets. Tapscott would view InterView as a "convergence" technology. The idea of bringing the Fax, phone, movies, radios, or other forms of music selections all together in the passengers seat back "converges" many technologies together at a single point. The only difference is that the user is truly flying.

To assist businesses in the Internet applications companies are beginning to hire Internet staff or provide inside training for those employees who will manage Internet applications. These new positions will assist

companies in growing the applications and support functions created by the new Internet business opportunities. Christian & Timbers, an executive recruiting and consulting firm in Beachwood, Ohio, is seeing a much higher demand in "Internet Manager" and "Chief Information Officer" positions during 1996 (McGee 72).

The third challenge that electronic commerce faces is in the area of security. Bob Violino, in his article "Your Worst Nightmare," shared that over half of 250 information- security chiefs polled by the National Computer Security Association had experienced some Net related security breach during 1995. This will be a problem for those companies who are using the Internet to conduct business transactions. The lack of Net security may also prevent some businesses from entering the economic commerce markets. VP of Business Information & Operations Services for Risk Enterprise Management Ltd., Joe Campbell states, "We think the Net has a lot of potential. But today's security technology doesn't offer a level of protection that I'm comfortable with. People still find ways around it"(Violino 34).

Campbell is correct according to government agencies which are also seeing attempts to breach security from outside forces. Large corporations, like Rockwell International are also concerned with hackers who are using the Internet to make a path to their research labs and trying to copy or remove valuable research data. "We spend billions in research and development that foreign companies want so they can leapfrog into current technology. We're

also concerned about United States competitors," states one of Rockwell's telecommunications security managers Roy Alzua. (Violino 34).

According to *Information Week* and a survey completed by Ernst and Young, 70% of companies protect themselves with firewalls, 60% with virus detection or passwords, 15% with encryption software measures. Still Internet hackers have literally a "world" of resource material to access and to assist them in trying to break past these defenses (Violino 35).

The FBI and Federal law enforcement agencies are seeing an increase in computer related crimes. "We're aware that this is a serious problem for any industry using the Internet. The ultimate solution will be through better technology such as encryption, but we will investigate any crimes in which a computer is used as an instrument of intrusion for fraud," states Jim Freeman, special agent (Violino 36).

The relationship between security and financial transactions poses the most interesting dilemma for electronic commerce. Banks which would like to begin using the Internet for banking transactions are cautiously holding back on entering the electronic arena because of *Article 4A of the Uniform Commercial Code (UCC)* which addresses the liability of electronic funds transfers. The UCC directs banks and financial institutions to provide their customers with a "form of commercially- reasonable security." If a bank fails to provide this service, it may be liable for the losses of the funds. Many banks are turning to the use of encryption software. In fact, according to Jill

Leukhardt, Senior Vice President of Information Resources Engineering (IRE), seven of the ten largest banks in the United States are use the same security products for encryption which are used by the U.S. Security Agency, FBI and the U.S. Department of the Treasury. "These (IRE products) meet the existing banking standards for security, the advanced emerging public key management standards and provide industrial strength security for wholesale banking and government applications on the Internet" ("Hardware Security Cards"). Even so Citibank earlier this year had a wire transfer which resulted in hackers getting access to \$400,000 before being detected . That proves that all security software measures are still not 100% effective.

In the banking industry the following security measures are suggested to improve On-line efforts, especially when dealing in electronic commerce for both the banker and the consumer. Failure to use caution in these areas may put both the consumer and banker at risk.

1. Don't apply for a credit card on the Internet.
2. Make sure applications for loans can be downloaded quickly to prevent transferring of confidential financial data.
3. Don't display anything without attorney approval. Banks are at risk of violating new laws, and new electronic business practices as they are developing.
("Hardware Security Cards")

Even without using the Internet, banks are faced with a remote chance that some computer hacker may break into internal transactions within their

computer networks. This issue is far more likely, however, when the banking transactions are outside of the bank's protective environment and transactions are moving in cyberspace.

As with almost any business, electronic commerce is not without many legal challenges which will need to be resolved as the market continues to grow. For those companies who are using the Internet, there have been quite a few discussions on the company liability of transactions performed on the Internet. Gartner Group Inc., an information technology advisory firm in Stamford, Connecticut, began advising corporate clients in 1995 about some of the legal liabilities of using the Internet. The following are some of the suggestions that they gave for companies to consider prior to setting up a Web site:

- * Have attorneys review the Web content.
- * Issue written policy guidelines for employee use of the Internet
- * Don't use copyrighted or trademarked material without permission.
- * Post disclaimers concerning content, such as sample code, that your company does not support.
- * Post disclaimers of responsibility concerning content of On-Line forums and chat sessions.
- * Make sure your Web content and activity comply with the laws in other countries, such as those governing contests.
- * Appoint someone to monitor Internet legal and liability issues.

(Maddox and Wilder)

Companies will be continually challenged by their own employees who have access to the company's Internet files. For example, Kmart Corporation needed to establish corporate guidelines for employee use of the Internet after one of its own employees started using the Kmart Internet link to distribute sexually explicit material. Kmart had not established company guidelines prior to the offense, which left Kmart in a difficult position when trying to defend the position of censorship at the corporate level. The employee had not been given guidelines for Internet usage which left Kmart trying to protect itself from liabilities surrounding the offensive materials. Questions regarding responsibilities and liabilities need to be clearly established prior to allowing corporate access to the Internet.

Ralph Losey, an attorney who publishes On-line resource material for legal developments in cyberspace called the "Information Law Web," says "The law makes a distinction between publishers and distributors of information. You couldn't sue a bookstore owner or a magazine distributor but you can sue the publisher" (Maddox and Wilder). The question becomes who is the publisher of information placed on a corporation's Internet Web site?

Another challenge companies face when using the Internet to conduct business is the ability of information traveling outside the United States to be viewed as a product for consumers of other countries. The ability to place electronic transactions along with catalogs of purchase items to reach global

consumers is enticing. However, with these new consumers may come commodity restrictions imposed by foreign governments for products, reading materials, or unknowns, that would prohibit a business transaction from ever taking place legally. Silicon Graphics Inc., represented by Ken Kwartler a trademark and commercial counselor, asked the question, "Does the mere fact that users have come to you from a certain place mean that that place can exercise jurisdiction over you? That's unresolved and troublesome to many attorneys." (Maddox and Wilder). Silicon Graphics faced this issue because it offered a contest on the Internet where the prize offered to the winner was over the value restrictions for some countries. In Australia and Canada, contestants had to be given questions which could be answered based on skills to be eligible to win a prize. One can imagine the impact this would have on a company when trying to please all nations around the globe.

Legal security for many individuals also includes the security of their personal signature. As electronic commerce continues to develop, there is a trend toward moving away from the handwritten signature to one which is electronically reproduced. Many businesses already accept a Fax signature as an original. Some key executives regularly delegate the use of a rubber stamp or preprinted signature to improve the distribution speed of internal documents. New software programs on the market can translate a person's own handwriting into a digital font format, then reproduce that font for

documents to be produced by the computer which represent the original handwritten signature or text.

During 1995 many state legislatures began drafting legislation on "digital signatures." The issues brought to the table include whether or not a digital signature holds the same value as a handwritten signature. Utah passed a "Digital Signature Act" in February of 1995 which gave the digital signature the same authority as the handwritten one. Utah plans to work with the American Bar Association in developing guidelines for the use of the electronic signature in the electronic commerce filing of legal documents, contracts, and financial transactions (Knowles 39).

Like the merchants in Thomas Jefferson's day, these challenges will need to be resolved prior to the masses incorporating electronic commerce into their daily lives.

Chapter IV: Results

Implications and Impacts to Our Society

So exactly what will be the impact of electronic commerce on our society? Electronic commerce changes many aspects of how business transactions will occur in the years to come. For example, the Internet once only used by a few, is now being accessed by millions of individuals world wide. The types of information which can be accessed can enhance and expand human knowledge. The use of the Internet has progressed from the military to commercial to a personal adaptation. There is a strong emerging trend for businesses to go On-line in order to reduce transaction costs and reach new markets globally. Work environments are changing, including greater amounts of computer analysis and the need for employee competence or literacy in using computers. Improving security issues around using electronic commerce, increased integrity of data, authentication, identification, and privacy are helping to expand the acceptance of this new form of business. Electronic commerce providers are attempting to explore and overcome many

new challenges in order to develop electronic applications for the general public.

For electronic commerce technologies and integrated applications linking enterprises to succeed, businesses will need to consider many of the ideas presented by Masuda, Zuboff, Goodman, Gates and Tapscott. How we as consumers adapt to these new business processes and the speed at which we adapt, will vary, dependent on our exposure to computers. Masuda, Zuboff, Gates, Goodman, and Tapscott all express in their writings the emerging importance of computer technology in daily businesses functions. Over time, depending on our consumer profile, we will all migrate toward the use of On-line services, and enticed with completing business transaction or applications on the Internet.

According to Victor S. Wheatman, research director, Gartner Group, during the next five years electronic commerce technologies and problems associated with business relationships will be controlled by industry and cultural factors (4). Recognizing the differences in consumer demands and business approaches that can be used to fill those demands will determine the rate of success for electronic commerce. In the past, electronic commerce revolved around business transactions such as EDI or E-mail which helped in the reduction of transaction costs and human intervention. The new focus according to Wheatman, will be to set up electronic markets and increase sales by "providing electronic channels through which to receive orders and

inquires from customers and to provide information that facilitates buying decisions" (5). Evidence of this statement is already being appreciated as consumers are beginning to experience new forms of electronic transactions. Several early examples of this new focus on electronic commerce in our daily lives include, custom ordering of clothing, receiving music and films electronically, and the ordering of special services such as flowers via computers.

To become successful using electronic commerce, the business must accept the fact that the role of the entrepreneur is moving from a stationary environment to one which is mobile. "Virtualizing" transactions as Tapscott described allows for new business relationships to develop. These new relationships allow consumers a wide resource of opportunities to resolve issues or concerns. Clearly the impacts of virtualization of business transactions is being reflected in many fields today.

The use of computers in a "virtual" form collection and sharing data with other computers is helping doctors in making better diagnostic exams of ill persons in the medical fields. Feedback of "real time" information and data from various types of diagnostic equipment about a patient's condition have assisted doctors in making critical decisions for treatment success. "Real time" data on disease research can be accessed around the world, providing the most up to date treatment information, not only to the doctor but to the patient as well. The Internet can be viewed as a powerful tool to improve one's own

decision making process for accepting or denying treatment alternatives. The Internet is being used to coordinate medical efforts during natural disasters such as earthquakes, flooding or large wild fires. Agencies are working together via a common link, the Internet, charging fees for services or at times offering services free of charge for the common good of humanity. These temporary agencies are created as "real time enterprises" as Tapscott describes, fulfilling an immediate need, then disbanding when the project is complete (63).

A growing trend in electronic commerce applications takes place when Bill Berko, an average consumer, goes shopping via the Internet for a new car. He uses the Internet to research car makes, models, and price. Berko becomes empowered to make his own buying decisions and selection of which data about the car is most important to him by accessing car information via a special interest site on the Internet pertaining to automobile purchasing. When Berko is ready to purchase his vehicle of choice, he goes back to the Internet to complete the transaction. Placing the car order via the Internet saved him almost \$1500 when compared to the local dealerships in his hometown. Gates describes the transformation of the business transaction from a physical to an On-line purchase via the Internet as the "ultimate go between, the universal middleman" helping the consumer to make informed choices for products and services (158).

Mark Thimming, managing associate for Cooper Lybrand, supports Gates' view by stating that, "dissatisfaction with the automotive buying process has accelerated the consumer appetite for electronic access" (Eisenstein 10). Thimming further states that "car makers and dealers see cyberspace as a tremendous marketing tool that could help them rise above the clutter of conventional advertising"(10). The information highway also becomes the "buy way" creating the newest path to new forms of commerce.

On the global scene, German automakers are also using the Internet to sell cars. Because the Internet access can be reached by millions of individuals, the market for a vehicle expands outside of print or media ads, and can be more directly focused to a special interest group of potential buyers. There are people who already meet a specific profile for a more expensive German cars. Goodman claims that the "innovator target group" are most likely have higher incomes and a desire to try new products. This group is and most likely to use computer technologies to gain information about making a car purchase. One example showing how the automaker is trying to reach this potential buyer is by placing a Web site on the Internet containing a virtual ad for a BMW-Z3 model vehicle. The Web site allows a potential buyer to download a virtual reality file containing a mini program. The program takes the buyer through a series of marketing briefs about the vehicle, then allows the buyer to take a virtual test ride. The buyer feels as if

he is in the driver's seat of the vehicle. He can view the dashboard controls and experience the handling features of the car from his own computer (12).

This example of the "path" between the supplier and the buyer supports the rapid change described by Tapscott in moving toward a "digital economy" (58). The car manufacturer using the Internet and Web pages to digitalize key vehicle information was able to overcome the obstacle of a buyer trying to access product knowledge. Brand name recognition for BMW was key in ensuring that potential buyers would access the Web site which contained the unique virtual application for selling the BMW-Z3 model.

Goodman's reference to the "innovator" applies also to the behind-the-scenes applications which support the Internet approach to marketing a car electronically. Development of electronic print media, video graphics design, and even the Web page on the Internet may have changed job responsibilities for many workers. Both the supplier and the purchaser "jumped" into the electronic commerce market and related activities available on the Internet anticipating positive results and staying "one step competitively" ahead (114).

Tapscott's theme of "disintermediation" fits this example in that there is an elimination of middle men who would naturally have been part of the buying and selling process. The buyer used the Internet to gather all facts needed to purchase the vehicle. In doing so the need for many middlemen was eliminated. Dealer show rooms, credit agencies, sales persons, and possibly mechanics labor is reduced, because the transaction has become more personal

to the needs of the buyer. Multiply this single transaction a thousand times a day and it is easy to see the impact on the reduction of workforce over a period of time. This single type of electronic commerce activity touches many job classifications and may revolutionize the way all car purchases are made in the future. The electronic purchase of a car has also fulfilled all three lures of Goodman's claim, as the car manufacturer of provides the consumer with "messaging, information and entertainment" (20). The consumer has the ability to "order" the vehicle (creating an electronic *message* which goes back to the manufacturer), obtain product details prior to purchase (using resource *information* provided by the manufacturer), and perform test drive via his computer(participating in virtual *entertainment*). The successful car businesses of the future will not ignore the financial impact this type of buyer will have on sales as more individuals move toward purchasing a vehicle electronically.

Car manufacturers are not the only ones who have begun to see gains in electronic commerce. Forrester Research of Cambridge, Massachusetts, estimates that in the next five years the market for electronic commerce services should be worth about \$30 billion in the United States alone ("Canada Servicer Enters"). Growth expectations in electronic commerce globally are affecting other types of retail transactions. One example is Mpack Immedia, a Montreal, Canada, based company which specializes in providing electronic data interchange services via a new service called BuyWay. BuyWay is designed to let consumers shop On-line over the Internet, cable

television and through free standing Kiosks (small public access facilities often found near shopping malls, similar to an ATM machine). The buyers can exchange information directly with the merchant. The merchant can reduce the number of store fronts and provide daily updates on product availability. The unique difference here is the adaptation of Kiosks. The general public now is able to access these merchants without the need for computers in their homes. This Kiosk application gives one example of how a business is trying to overcome Goodman's fifth challenge of completing a "sale or transaction" and his second challenge of the need for computer access by the buying public.

Companies who are already addressing these challenges are seeing positive results and new business opportunities. Clinton Wilder, in his article "The Money Machine," releases survey results taken from 183 Information Systems managers. These managers were asked to respond to questions pertaining to their 1996 fiscal year budgets and the spending dollars which were being allocated in the area of technology. Some interesting statistics from the survey support the idea that companies are moving more and more toward Internet technologies. Nearly 75% of the respondents say that they will use the World Wide Web, or Internet and On-line services during 1996. "A lot of companies are finding there are a lot of different uses of the Internet within the information systems umbrella of responsibilities," states Mark McManus, a senior financial analyst at Computer Economics (Wilder 34).

Anyone according to Wilder who thinks the Internet is primarily the “providence of hackers and Generation X Web surfers should think again. The cost effectiveness of the Internet’s World Wide Web as an internal vehicle gives it a prominent place in the purchasing plans of thousands of information technology departments” (34).

Based upon the writings of the authors reviewed and the examples above, common themes appear which will ensure a business is successful in the area of electronic commerce. The first theme is accepting the fact that electronic commerce is real. Business decision makers need to accept the fact that there are applications in electronic commerce such as electronic data interchange which they can begin adapting today. By doing so these applications will make their businesses more productive and competitively sound. Banking electronically, sharing data base files, or sharing design elements for a new product with other designers both internally or externally via an electronic format is much more effective than traditional methods of idea exchange on paper. In order to complete these processes, leaders within an organization must be willing to spend capital dollars on new hardware, software and employee training. New hardware which includes faster processing chips is needed to support the faster modems and most new Internet software interface platforms. Likewise new software should be considered in order to stay in sync with advancements in accounting applications, word processing, and video applications on the Internet. Older

software simply does not have the ease of use needed to insure employees are up and running at a quick pace. Employee training is needed on a regular basis to insure full function understanding of applications desired by the employer. Starting first in house will require some job positions to be eliminated or re-tooled to meet the new demands of electronic commerce. Internally a business may encourage active participation in computer user groups, reading of trade journals, job sharing and peer training to bring the level of a worker's competence with these new technologies to a higher level of understanding. By doing so an employer will help reduce the trauma, Tapscott describes as "discordance," employees may be feeling when beginning to work with new electronic commerce applications (66).

The second theme which a business must accept in order to enter the electronic commerce market is the fact that not all of the playing pieces of this new game have been defined. There are still many issues surrounding the security of data on the Internet. Business leaders again must make educated decisions on which security firm's software they will need to best protect their interests. Security can mean anything from a "firewall" (a protective wall between the business and the consumer to prevent direct access to main computer functions) to ensuring that a customer can rely completely on using his or her credit card to make a purchase On-line. Encryption of data and the ability to unscramble or protect data from hackers will continue to be an issue as long as more and more individuals have access to sharing known ways to

breach computer security. Law enforcement agencies such as the FBI will need to hire the best and brightest employees who think well beyond what a hacker might do to unsecured data. Security standards may need to be unique among certain types of users. Access to various levels of security must be defined within an organization to protect confidential records. A security plan should be established. This plan will consider the likelihood of a successful attack, the cost of an attack, and the cost of preventing an attack. Acceptable policies must be in place so that all internal business applications are protected against outside intruders should they attempt to cross the security barriers established. This is a critical factor because of the global reach and accessibility of information. If a breach occurs it may be impossible to determine from where the break in occurred and even more difficult to prosecute if the invader is from another country. The selection of a security method must take into consideration both technological and sociological components.

The third theme that businesses entering into electronic commerce must consider is the need to determine what part of the business transaction they are trying to approach? Is the business simply placing messaging capabilities for its employees on an electronic service, or are they looking for a more detailed approach to interacting with their customers electronically? If communication is going to be successful the audience must be considered. Global reach may require the business to think in terms far beyond the

corporation's domestic standards and business ethics. Development of interactive commerce activities should not be offensive to other nations while being considerate to the standards set forth by domestic and foreign governments. Marketing of a product as currently understood in product life cycles may disappear. Customers will move closer to an organization and define what value is needed from more direct interactions with the organization. The example of the car purchase, the custom designed clothing, even the On-line purchase of a pizza are examples of the consumer moving in direct contact with an organization eliminating the need for a middleman. Changing traditional ways of marketing will occur as customers require more specific details or information about products. New facts about products, changing prices, and diverse channels of product distribution will determine the value of a product.

The fourth theme a business entering the electronic commerce must consider is the impact of computer and human interfaces representing the way users will interact with electronic commerce. Zubboff cited an example where a banking employee was told "Just do it!" (209). However telling potential customers to "just do electronic commerce" will not necessarily get them to purchase a product electronically. There must be some interesting graphical or character based interfaces which entice the consumer to use the electronic process. These interfaces can take the form of a Web page or software application for transferring data files from one company to another.

Businesses who adapt internal business applications will also need to consider crossing internal applications over to external applications with the same level of simplicity. Without simplicity, employees and potential consumers will not purchase or interact electronically. For electronic commerce to experience rapid growth, Goodman's *early adapters* will need to use their curiosity to add feedback to the developers.

The fifth theme to consider as a business enters the electronic commerce market is integration of enterprises together in order to improve the social well being of the organization. Masuda described new knowledge networks improving education in schools, industry improvements and the reduction of human labor. Moving toward the integration of enterprises will be accomplished through virtual offices, businesses, and interactive transactions. The costs associated with electronic commerce activities will contribute to the financial health of an organization. New electronic commerce uses of computers adapting information will provide new financial gains and new market opportunities. Totally electronic businesses will be taking into consideration the growth of human potential replacing labor intensive positions with more intellectual workers. The ability to access data remotely changes the need for employees to work in a traditional office environment. Consumer consumption of goods and services is limited to demand. Cottage offices and businesses can be set up on a temporary basis to meet personal needs and changing market demands for products. Products can be designed

using the resources of talent both internally and externally of a formal corporation without regard to physical boundaries.

Electronic commerce is still in the first stages of infancy. Much will be discovered over the next few years with regard to increasing applications in our daily lives. What is known for sure, is that electronic commerce is growing rapidly and is making an impact by expanding potential business opportunities. New business objectives, using computer technologies or the Internet are reducing market limitations which were once controlled geographically. Great strides in internal applications of electronic commerce such as EDI, EFT, E-mail, and other applications are making businesses more competitive and reducing the need for large scale labor consumption.

Future growth of electronic commerce will depend on the ease of bringing together those individuals and businesses who wish to interact and create transactions together. Future growth will also be dependent on full utilization of changing computer technologies and securing electronic data.

Chapter V: Discussion

Partnerships with Products, Distribution Chains, Revenue Retrieval

Federal Express

As a highly respected company in the area of computer technologies, Federal Express should naturally develop applications of electronic commerce. Federal Express first approached the development of On-line applications with a home page on the Internet which allowed customers to become more knowledgeable about FedEx features of service. After establishing this link with the Internet community FedEx quickly began to incorporate automation in the development of On-line applications for its customers. One example is an entire line of electronic commerce products called Powersource to meet the changing demands of the businesses who are beginning to work with electronic products.

The Powersource family of products includes On-line Package Tracking, Shipper Reference Number Tracking, International Service Quotation System, Express Tag, and Bulk Track. All of these products are designed to keep FedEx customers informed about a package status while it is

traveling via the delivery network. Each Powersource product also provides a variety of data for the customer to use in an electronic format. Customers are given indirect access to FedEx mainframe applications via a third party network called Advantis, which is supplied by IBM. The purpose for using the Advantis network is twofold: security for the customer's data and security for FedEx mainframe applications. Having secure transactions is one of the critical keys to successful electronic communications. Using the Advantis network allows for the needed channel for information exchange in a private domain instead of the Internet which is a public domain network, with limited security and unlimited access of users. Those companies which pay a fee for the IBM Advantis network are assigned a mailbox and an ID (identification number) which allows them the privilege to communicate with other companies who are also using the network.

Another product FedEx has released to its customers is On-line Tracking. Originally designed for customers who were already using some form of FedEx Powership (a stand alone computer shipping system), this application was developed further to place on the Internet. The On-line application can also be placed separate from the shipping processing area, most likely in a customer service area where there may be a large number of inbound customer calls regarding products shipped. Instead of the customer service agent writing down large amounts of information regarding customers and the orders they placed, the agent can access a FedEx tracking screen,

inquire about the package status while entertaining his or her customer with casual conversation or pleasant distractions. The computers talk to each other behind the scene, finding information and relaying that information to the customer service agent's screen. Pleasantly, the customer service agent is able to comment on the location of the package and move on to other issues which the customer may inquire about. Previous to the development of this function, many customer service agents needed to call to the shipping area to have packages tracked. Some areas also relied heavily on manual reports which had to be flipped through, or stacks of purchase orders with airbill numbers attached. Once a customer service agent had located the tracking number, a call would still need to be placed to FedEx, who would then track the package. After receiving the necessary information from FedEx, the customer service agent would need to call back his or her customer back to update them on the package status. All of these very human interventions are eliminated with the On-line Tracking application implementation. The information about the package had become "digital" as Tapscott described, and by becoming digital, information about the package could be shared electronically.

To further enhance the On-line Track feature, FedEx responded to customer needs by adding a Track By Reference feature. What this means is that the customer could now take a shipper reference number and track solely by the number. This again saves valuable customer service time by reducing the amount of time needed to resolve a customer issue over the phone. The

customer using this feature, selects the shipper reference number, and uses that reference number to identify the package they wish to track. Many times a shipper reference number is a caller's last name and first four digits of a home or business zip code. The speed in retrieving information is perceived as the difference between great or poor customer service. Once again FedEx has shared information electronically for the mutual benefit of both its own customers and their extended customers.

Another feature software in the Tracking applications family is Bulk Track. Bulk Track was designed for the heavy shipper. Instead of the computers acquiring tracking information at the single package level, a file is created including all of the shipping transactions for a day's shipping activity. This file is then sent via the Advantis network for "bulk tracking" of all shipments. The details pertaining to these shipments are then sent back to the customer and incorporated into the customer's other history files pertaining to their business transactions. Customer service departments see the first benefits to this application; however, long term record keeping of delivery information has also proved beneficial to claims, legal, and personnel departments, who may need to verify receipt of package delivery many months after the initial order shipped. Tapscott would describe this type of application as "integrating and internetworking" (54). Not only is the FedEx customer able to share information internally in their business, but there is a

bond between FedEx and the customer and the networking applications they share equally.

The International Service Quotation System is another example of "integration and internetworking." The ISQ system allows FedEx customers information about international shipping commitments, rating, and documentation requirements for express and freight shipments. The benefits of the ISQ system revolve around the ability for a large international shipper to access the most up to date shipping documentation that a particular country may require. As commodities change, so do many of the limits for transportation. International pricing may be especially unique due to customs values, duties and taxes. The shipper must be able to monitor these costs prior to shipping or he or she may be quite surprised at the freight bill. Delivery times are also verified, which is important when dealing in products which have shelf life, or may need temperature control. Tapscott would refer to this usage as "Globalization" and having the ability to have digital information at one's fingertips (64).

Express Tag is another product FedEx uses which will assist in increasing the number of electronic transactions while reducing the number of airwaybill transactions. Express Tag is designed for business to business customers in a variety of industries. The most common users will be those who deal in repair and return products. Industries such as computer manufacturers, sellers of electronic parts, medical equipment, and catalog

businesses who need to retrieve products will use Express Tag. The concept is simple. An example would be a customer sends a package for outbound shipping to a hospital which has a broken x-ray machine. At the same time the outbound shipping transaction is completed, a record is created for the pick up and return of the broken x-ray equipment. The customer lets the computers perform the work once done by humans. The total return process is controlled, and the new package to be picked up with the broken part is given a special courier generated label rather than a traditional paper airwaybill. The customer spends no time in making phone calls to FedEx to pick up the package. The package is automatically assigned a pick-up schedule. The customer can have customized reference information coded on the label generated by the pick up courier for easy return processing, and the customer does not have to be physically present for the courier to pick up the package.

The benefits of Express Tag include reduction of re-keying electronic address information. Express Tag saves courier pick up time because the customer has informed his or her customer of the pick up process which will take place for return of the merchandise. The result, better inventory control of the merchandise, which is scheduled to arrive back via FedEx the next day.

The customer must maintain current revenue with FedEx and not become past due on payments to maintain the service agreement for this service. Since the return of equipment is controlled, the customer's ability invoice for their product or service is quicker. This may allow the customer to

reduce the time they wait for funds to be paid for services rendered. Billing for service or product in a quicker time frame improves cash flow for a corporation. The whole process can be tracked. Competitors in the air express industry cannot provide this level of detail to their customers. Any type of package can be scheduled for an Express Tag pickup, which means that the customer may chose to have a broken part picked up prior to sending a replacement part, for inventory control or security reasons. Tapscott would view this application as an example of "convergence" of data from multiple points, the customer, the call center, and the courier in order to complete the business transaction (58).

Each of these products is helping FedEx to establish business bonds with its customers. These business bonds will result in the incremental growth of package volumes and the generation of business revenues.

Electronic Data Interchange and Revenue Retrieval

The transferring of funds or payments is perhaps the most critical element in maintaining a healthy business. For FedEx, the use of electronic funds transfers and electronic data interchange are viewed as critical business imperatives that must constantly be explored and developed. The current applications used in EDI allow for electronic invoicing, remitting and bulk tracking of shipments. (This feature is important to customers because FedEx

offers a money back guarantee for delivery of shipments by commitment times.) Depending on the type of EDI application the customer wishes to implement and the availability of the customer to programming resources, the standard setup time may take a few hours to several months. As industry formats have become standardized, implementation time tables have shortened. FedEx also has developed its own Windows based software to deploy to customers, reducing the amount of programming time to fully develop an application on the customer's mainframe. The benefits to the customer who uses this new software FedEx EDI, are:

- 1.) The elimination of programming.
- 2.) Virtually eliminates the need for hi- tech understanding of the users of EDI. (It's user friendly).
- 3.) Fast cycling the process of EDI for FedEx and customer, which allows data and revenue to begin transferring quicker, rather than spending customer funds on development.
- 4.) Reduction of the number of Business Invoices which would normally be transmitted to a customer in a paper format. The electronic invoices are the accumulations of many invoices
- 5.) Better financial management and data management, which means reduced human errors in re-keying data in multiple systems on both the customer and FedEx payable departments.

- 6.) The new EDI software has an open system architecture which will allow for future Electronic Commerce expansion and the capturing of revenues which will be billed for these types of transactions.
- 7.) FedEx can add applications to add the Windows environment which may support other features the customer may wish to see prior to authorizing payments. (Example: Perhaps the duties and taxes assessed on a shipment are in question. The payable clerk would click on a window which would pull up an electronically scanned copy of the Customs Documents from the receiving country showing the entries of charges. Once this is verified, the clerk would continue processing invoice for payment, feeling much more confident of the charges than if he or she were unable to see documents or had to provide a written request to FedEx for clarification.)
- 8.) Customers are able to have billing information from many satellite operations all condensed into a central billing file for better charge back and discount analysis.
- 9.) Detailed reports can be built using software, or files can be exported to other software packages to support customer needs.
- 10.) Electronic funds transfers can be released when incorporated into the needs of the customer.

Internet Commerce and Consumer Identity

During November of 1994, Federal Express placed a Home Page on the Internet. The Home Page contained information about FedEx features of service, various company statistics and related interest items for the average consumer. Then a new feature was added, the ability to actively interact with FedEx using the Home Page tracking feature. The tracking feature would allow the Internet user to enter a FedEx airwaybill number into the window provided, and the information would be transmitted over the Internet to a FedEx mainframe server to access the required tracking information. Once that information is located, a transaction is sent back to the requester via the Internet to update the individual of the exact status of his or her package. This process is quite revolutionary for its time, and FedEx received high praises from the technology world as to the interactive business use that this application afforded to the Internet user.

As a continuation of this trend, FedEx began to actively pursue the ability to create a shipping transaction via the Internet. If a single tracking

transaction could travel via the Internet, then perhaps a shipping transaction and related billing information could also travel electronically via this new business approach.

Again the world of technology was impressed as Federal Express launched its initial version of FedEx interNetShip on February 29, 1996. Dennis Jones, Senior Vice President and Chief Information Officer explains the Web application process. "Fed Ex's leadership in deploying useful, interactive Web applications for business users has been widely recognized. FedEx interNetShip further advances that position by placing the company's core competencies- express transportation and information systems-- on the world's most powerful network" ("Federal Express Launches"). The idea is to place shipping functions on the Internet so that users world wide, using their own hardware, may complete shipping transactions. Customers will access the shipping process via formatted Web pages which will contain the required fields to complete a package transaction. The customer will then produce a plain paper, bar coded label with a standard laser printer, which will be placed on the package to be tendered to FedEx. Currently FedEx has a shipping software called FedEx Ship that allows its customers the same type of shipping features; however, these are performed using the software package while loaded directly onto a personal computer. The net application will not require the customer to load software on a PC, but simply access the software on the Web site to perform the necessary transactions to complete a shipment.

The original interactive package tracking feature has sky rocketed in its use by consumers on the Internet. During January of 1996, an estimated 270,000 packages were tracked using the FedEx Web site feature. This is a significant savings to FedEx when compared to the cost of customers calling a call center and requesting the same information via human operator.

Electronic Commerce at Federal Express

Although FedEx has been involved in various forms of EDI and electronic transferring of information via its Powership products for almost 15 years, the company is beginning a new turn toward strengthening its place in electronic commerce determined to add value for its customers. Although, FedEx formally created an Electronics Commerce Marketing group in June of 1995, the most significant announcement came on February 20, 1996, when FedEx, RTC Direct, and Magnet Interactive Communications created a partnership to develop, explore, design and implement innovative ways to add customer value to FedEx's presence on the World Wide Web. "Advanced interactive multimedia technology is changing the marketing paradigm and offering us exciting new ways to deliver our client's strategic messages and meet their marketing goals," said Michael Graham, Managing Partner of RTCDirect. "Critical to harnessing the full potential of the digital marketplace is a solid strategic infrastructure on which to build a multimedia

delivery system. This alliance demonstrates that FedEx understands the importance of combining strategic focus with technical expertise ("Strategic Partnership Appointed"). This may be FedEx's boldest step yet, developing complete multimedia interactive electronic commerce applications with trading partners. If the partnership is successful, then FedEx will achieve many new technological advances relating to digital transactions.

As a Customer Automation manager for FedEx I may not always understand the technical applications the corporation is exploring, but I do see the need for continued development of automation applications to support changing business needs. The team of individuals whom I supervise are questioned daily about new technologies in the computer field and how FedEx will respond to market demands. In order to remain a competitor in a highly technical industry, exploration and development of electronic commerce is viewed as a critical strategy. What I learned from this study is that FedEx is certainly not the first company to explore emerging technologies in electronic commerce. However, FedEx will definitely have a major impact on electronic commerce due to the nature of air freight in providing transportation services for consumer products. Likewise, as FedEx develops its own Express Network, customers will be able to create new forms of logistic bonds with FedEx which will be transparent to the end consumer. Electronic commerce and the communication of information will take on many new forms as this hot new technology continues to grow. :)

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