THE ECONOMICS OF GOING PAPERLESS: THE CASE OF CONTAINER FREIGHT COMPANY

by

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ABSTRACT

Over the last few years there have been many changes to the container export industry. There are a variety of reasons for these changes including exchange rate fluctuations, fuel and energy price fluctuations and their effects on bulk freight rates. The pressure to enhance and remain competitive has also increased amid these rapid changes. An effective strategy is for companies to focus attentions on costs they can control. In the container freight industry, one of these costs is reducing the "paper" aspects of operations and increasing its "electronic" aspects. This thesis focuses specifically on evaluating FileBound®, document management software, for the purpose of going "paperless" in a Container Freight, Non-Vessel Operating Common Carrier (NVOCC) and freight forwarding company.

Going paperless has many advantages: increased efficiency, paper and printing cost savings, time savings, storage cost savings, environmental benefits, efficient file retrieval, and enhanced customer service. By adopting the FileBound® technology, the case study company hopes to achieve most of these benefits, allowing it to reduce overall costs, and especially, reduce the number of employees managing physical documents and move people into sales and marketing.

The critical assumption of the study was that the electronic processes contributed to time savings and it is from these time savings that most of the other benefits emanated. Therefore, a time study was conducted to determine the time savings resulting from using FileBound® in comparison to the current method in the file completion process. The data

collected was analyzed using regression analysis to determine the factors that influenced time savings, if any, and their statistical significance.

There are three specific activities involved with the process of completing a transaction in the container freight business: booking, instruction and bill of lading. The analysis was conducted for each of these steps in the process. The results show that the different methods, FileBound® or manual, were not statistically significant on determining the time it took to complete the file. That being said, this thesis recommends that a mixture of both the FileBound® and manual method be used to take advantage of the potential cost savings.

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CHAPTER I: INTRODUCTION

Over the past several years, we have seen many changes in the container export market due to a variety of reasons: devaluation of the US dollar, increasing fuel prices, drops in bulk vessel prices and political issues, to name a few. Bulk rates rose from $40 per metric ton in 2006 to around $140 per metric ton in June 2008. At this point bulk rates drastically dropped to again being $40 per metric ton by the end of 2008, explaining the growth in the container trade industry. As seen in Figure 1.1, world-wide container trade rose from a little over 50 million TEUs (Twenty-foot Equivalent Units) in 2000 to approximately 125 million TEUs in 2008. In 2008, the world container trade growth rate was 4.3 percent. Currently, though, the growth rate for 2009 is forecasted to be -1.0%. This low growth rate can be attributed to the decreases in bulk rates and the strengthening of the US dollar.

Figure 1.1: World-Wide Container Trade Million (TEUs)
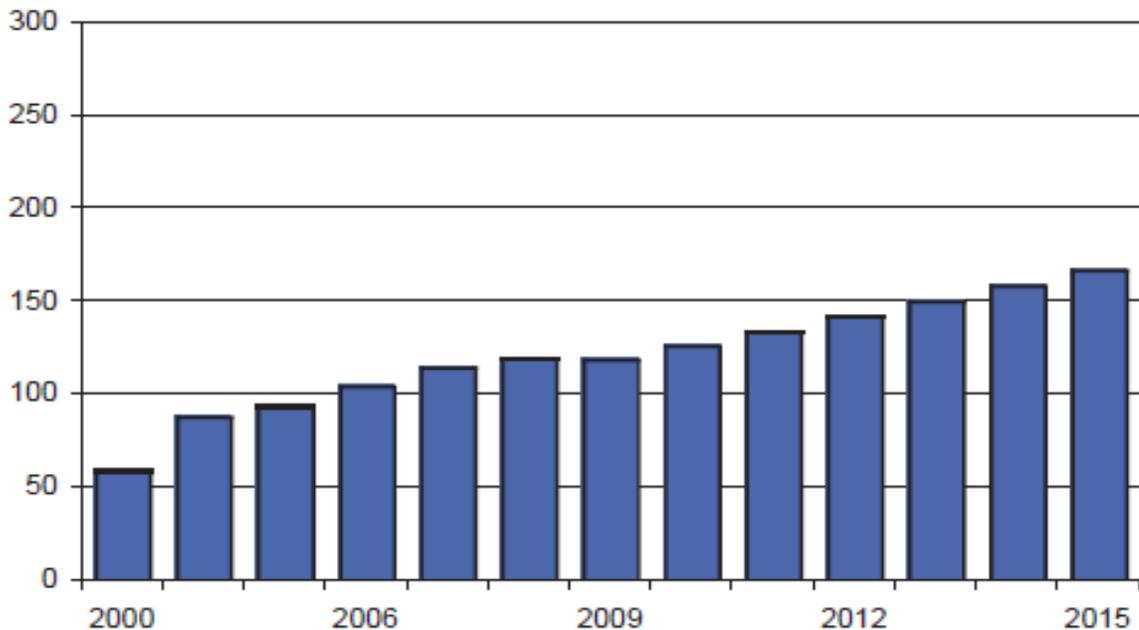
There is a lot of competition in the container export industry. Not only are there numerous

NVOCCs (non-vessel operating common carriers) competing for the same customers, the

steamship lines and bulk carriers are also competing for these same customers. Since the

majority of the products being shipped in containers are agriculture related, more often than

not, they can be shipped on bulk vessels. In 2008, the percentage of container tons of the

total sea trade was 13%, compared to 39% for bulk vessels, 43% for tankers and 5% for

general cargo (Figure 1.2).

Figure 1.2: Sea Trade Distribution, 2008

Container Tons
13%

General Cargo
5%

Dry Bulk
39%

Tanker
43%

■ Dry Bulk □ Tanker ■ General Cargo ■ Container Tons
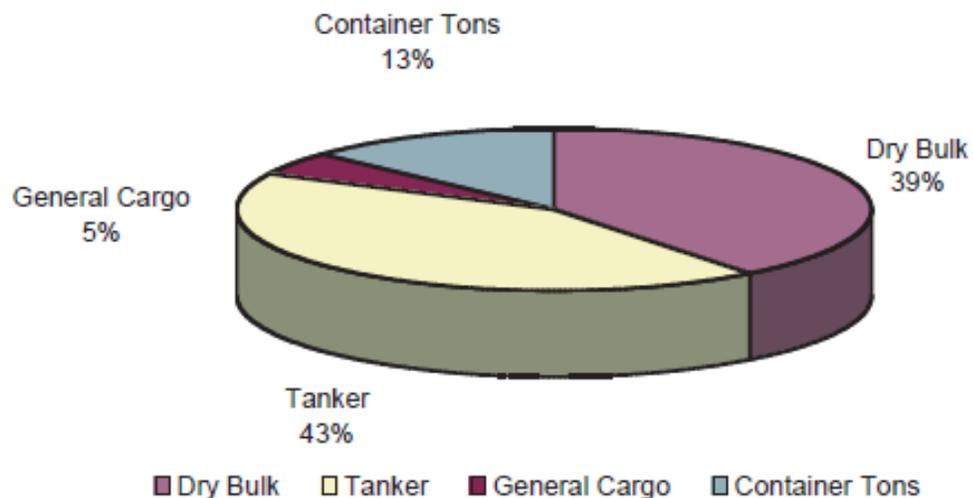
Of the different components of sea trade, containers are growing the fastest and are

projected to have a growth rate of 5.4% for 2010-2015. With clients having their own

contracts with the steamship lines and other NVOCCs constantly undercutting another's

prices, it is important be able to stay competitive, especially since the container export

industry is constantly changing. Rates are changing every month, based on demand and

fuel prices. Service lanes are constantly changing as well, especially when high traffic

transshipment ports, such as Singapore and Kaohsiung, become congested. An example of

which can be seen in Figure 1.3. Many times the steamship lines will put different shippers

or NVOCCs on an allocation due to container shortages. This is especially relevant today,

in places such as Chicago and Minneapolis, which are inland ramps that must have empty

containers railed to them. By using paperless software to help save time and money, during

the slow periods, NVOCCs can still find a way to stay competitive and not resort to

employee layoffs (an ever present threat in today's economy).

Figure 1.3: Singapore Port Congestion

The foregoing changes in the international container trade arena have direct implications

for the competitiveness of organizations such as Container Freight, an NVOCC and freight

forwarder. Container Freight, founded in 1999, is a business unit of The Company, a 115

year old company that specializes in the buying, selling, storing, handling and transporting

of agricultural products. The headquarters of both are in Omaha, Nebraska. Container

Freight has 41 employees in its four offices in Kansas, Illinois, South Carolina and

Minnesota. Container Freight is a provider of worldwide container logistics, specifically

exports from the United States. Through contracts negotiated with over 30 different

steamships lines, Container Freight is able to offer competitive rates and flexibility for all

of its customers' needs.

Container Freight was originally created to offer services specifically to the agricultural

industry, but has expanded these services to include a wide range of businesses. Container

Freight has been a fast growing NVOCC. In 2004 the Illinois office and bulk business

were added. In 2005 the Kansas office was created and, at this time, the client list grew to

over 1,000 companies and focus was placed on increasing exports from the United States to

Asia. In 2007, when container availability was scarce, Container Freight handled over

65,000 TEUs. Recently, in 2008, the South Carolina office was added.

1.1 Research Problem

Each Container Freight office has sales managers and documentation specialists. Sales

managers are responsible for negotiating the various shipping lane rates with the steamship

lines, or carriers, and offering these rates to different clients, or shippers. Once the cargo is

sold, the documentation specialists take over (see Figure 1.1 for processes). The

documentation specialists will call the carrier and book the cargo. Once the booking

confirmation from the carrier is received a file will be started and the booking confirmation

is inputted in the export module (IES), which creates all the documents. A booking

confirmation will be sent to the shipper. At this time, depending on how the cargo was

sold, a work order may be sent as well, if Container Freight is handling the trucking and

loading of the container. Once this is complete, the file is then given to the appropriate

personnel to make sure that the Tariff Line Item (TLI) is appropriately filed with the Federal Maritime Commission (FMC). After this is done, the file is filed in the correct workflow stage in the file cabinet. Following the loading of the containers, document instructions will be received by Container Freight from the shipper. At this point, the House Bill of Lading (HBL) is created, which shows Container Freights' client as the shipper and their customer overseas as the consignee. Shipping instructions are then sent to the carrier. The carrier uses these instructions to create a Master Bill of Lading (MBL), which shows Container Freight as the shipper and the consignee as our appropriate agent overseas. The file is then again filed in the correct workflow stage to wait for sailing confirmation. After sailing confirmation has been received, a proof HBL is sent to the shipper. Upon approval, original HBLs are sent via overnight courier. If HBLs are Express Release/Sea Waybills (originals not needed), the documents are sent via email. Once the MBL is received from the carrier, the freight is paid to the carrier and a Pre-Alert is sent to Container Freight's agent overseas. A Pre-Alert includes a pre-advisement of shipment arrival document, a copy of an HBL and a copy of the MBL. This way, the agent overseas knows which carrier to contact for cargo and who to deliver the goods to. Once this is done, the file is appropriately filed away and kept for 3 years.

Since a file is created for every separate booking that a shipper makes, files quickly stack up. It is common for a document specialist to have anywhere from one to 20 sailings a day. Once sailings have been confirmed, the file is given to the appropriate documentation specialist and is placed in their workflow staging on their desk. If a customer calls on a working file, it is very easy to access it, as it is on the document specialist's desk. But if is not a current working file or has not sailed, then it is necessary to retrieve it from the

appropriate filing cabinet or storage location. Within each file, there are numerous

documents from the carrier, the shipper and Container Freight. All correspondence is

printed and kept within the file, in case a problem arises. When a client calls about a

specific item, it can be cumbersome to pull the file and go through all the documents

within.

With the economy currently being in a state of recession and the numerous companies

laying off people in order to stay afloat, it is important to find a way to stay competitive.

Many companies are looking at different document-management software to do this. By

going "paperless", companies are hoping to decrease their costs and increase their internal

efficiency, which, sequentially, could improve their customer service. It is important,

especially in this economy, to not only create customer satisfaction, but to create customer

loyalty. Therefore, the research problem is seeking to streamline documentation processes

and operations, to facilitate quick retrieval, and improve overall customer service.

1.2 Research Question

There are many different possibilities for streamlining documentation processes and

operations, but going "paperless" seems the most advantageous. FileBound®, a web-based

Content Management Solution, has been selected by senior management, of The Company,

as the software to help increase efficiency and improve customer service. Some of the

main reasons for choosing FileBound® over its competitors were the flexibility to expand

without additional costs, the ability to add as many users as needed without additional

costs, and its previous application experience within in the agricultural industry. Currently,

The Company leases the software at a rate of $700 per month. As more storage is needed,

the rate increases per gigabyte of storage. Currently, 130-150 employees are using the software for various applications within The Company.

Given the changes that are confronting the US container export market and the increasing competition within the NVOCC industry, FileBound® should be able to help Container Freight increase internal efficiency by allowing files to be created and accessed electronically. All files will be stored on the web, with any documentation specialist, or sales manager, having the ability to instantly pull them at any time. This thesis focuses on testing the economic feasibility of FileBound® as a possible tool to increase Container Freights's internal efficiency and save money.

1.3 Objectives

The primary objective of this thesis is to compare the potential differences emanating from adopting an electronic transaction system with a traditional paper-based system. While the potential benefits from a paperless strategy can be diverse and extensive (see Chapter 2), the thesis focuses on time savings, assuming that those savings can be extrapolated into other savings throughout the transaction processes associated with the services provided by an NVOCC and freight forwarder in the container freight industry. Specifically, the thesis seeks to address the following objectives:

1. Conduct a literature review that focuses on other companies' experiences when implementing "paperless" practices with the view to understand the challenges and opportunities.

2. Develop a model to compare the time savings resulting from an electronic transaction process system using specific commercial software (FileBound®) and the traditional manual process with the view to assess if there are statistically significant differences between the two processes that could support a strategic move to a paperless operation.

3. Develop some insights into how paperless technologies may affect the competitiveness of container freight firms in the NVOCC industry.

1.4 Methods

In order to achieve the foregoing objectives, we used three principal methods or approaches:

- Literature review and review of business publications. The reviewed literature encompasses academic literature that looks at the issues of competitiveness and strategy of businesses implementing "paperless" practices.

- Statistical Analysis of the primary time study data collected from document specialists in the Kansas office.

- Financial analysis and comparison of the time study data to evaluate the economic feasibility of FileBound®.

1.5 Outline of the Thesis

This chapter introduced the background to the study and defined the research problem that was determined. In the next chapter, the literature review is presented and Chapter 3

provides an overview of the data collection process and the data that were collected.

Chapter 4 presents and discusses the results of the econometric analysis and the summary

and conclusions of the study are presented in the final chapter.

Figure 1.4: Flowchart of Container Freight (CF) Processes

```
[Customer initiates request     [CF          [CF receives carrier       [CF enters booking
for booking of equipment   →    contacts  →   booking details via   →    details into IES and
via email, phone or fax]        carrier       email or fax]              sends details to
                                for                                      shipper]
                                booking]
```

```
                                                                              ↓
[Documents  received  from            No      <Does CF              Yes    [Create Work Order and
shipper, usually via fax or email.  ←─────    provide door    ─────→        send    to    established
Original documents may come                   delivery?>                    trucking firm for loading
via mail/UPS.]                                                              via fax or email]
```

```
        ↓
                              [File Shipper's Export
                    Yes        Declaration (SED),
<Does CF file     ─────→       AES]
SED for
Shipper?>          No                                              [Send BL Instructions
                 ─────────────────────────────────────────→        to carrier]
```

```
                                                                          ↓
                                              Yes    <Is a CF HBL
[Shipper needs CF  ←──  [CF Sends proof copy  ←────   prepared?>
HBL revised]            HBL to Shipper, once
                        vessel sailed]                          No
                                                                ↓
        ↓               ↓
              [Receive approved CF                   <Are additional
              Proof Copy HBL          ←───────────    documents
              from Shipper, via                       required by the
              email or fax]                           shipper?>
```

```
                                                          No              Yes
[Send carrier                                             ↓                ↓
revised BL                                          [Send CF        [Prepare international
instructions]                                        HBL to          documentation in Freight
                                                      shipper]        Forwarder capacity]
        ↑               No
        ↑
  <Is carrier Proof  →  [Receive carrier  ←─────  [Send
   MBL                   Proof MBL]                 documentation and
   acceptable?>                                     HBL to Shipper or
                                                    other  party  per
        Yes                                         instructions]
        ↓
[Approve         [Send Pre-Alert      [Pay
proof copy BL  →  to CF           →    carrier
with carrier]     overseas agent]      and close
                                       file]
```

LEGEND

☐ (blue)	Can be FileBound action
▱ (red)	Cannot be FileBound action
◇	Questions/Situations

CHAPTER II: LITERATURE REVIEW

There are a variety of possible benefits for companies deciding to make their offices "paperless." An obvious benefit is potential cost reduction. Other benefits that can be achieved include becoming more "green" or environmentally friendly and increasing efficiency. When combined together, all of these lead toward an overall benefit of improving customer service. By doing this, companies may continue to keep their current customers happy and make new customers become long-standing loyal ones, as well. But what exactly does it mean to go "paperless?" Will it be possible to get rid of all paper? Per Wiktionary, a free online dictionary, paperless is defined as: "1. Describing an absence of paper, 2. Relating to keeping of records and communicating without paper, probably electronically." Though a grand idea, in reality, an office with "an absence of paper" is hardly feasible, and this is why the paperless office is often described as: "the mythical office where computers and software have made paper unnecessary."

It should be noted that there will still be paper in the office, though, to a large degree, there will be much less of it (Freidman, 2005). Indeed, the researchers at the University of Washington's Information School found that people are twice as likely to keep track of electronic information as paper documents (Jones, 2007). But the other studies indicate that going "paperless," is a pipe dream because of people's need to hold, write on and tear up paper (Jones et al., 2008). Therefore, it is prudent for businesses to realize that they should strive for an office with "less paper."

Going paperless, to any extent – from just email to a near complete elimination of paper from the workplace – presents some interesting benefits to organizations. Bleicher (2004)

observes that the quest for a paperless office started with the automation of office processes

that began with the invention of the electric typewriter invented by IBM. The idea of a

paperless office emanated from the futurist, Alvin Toffler, who noted in 1970 that "making

paper copies of anything is a primitive use of machines and violates their human spirit" (in

Shaer, 2004). The paperless office, where all documents are electronic, took off from this

perspective as a means of improving the human spirit and becoming more civilized (Krebs,

2008). In the next few sections, the benefits of going paperless are presented and discussed

within the context of the literature.

2.1 Cost Savings

One of the main benefits that we hope to see is a cost savings. By moving away from

printing to storing information electronically, the idea of going paperless engenders cost

savings expectations. In the next subsections, some of these cost savings areas are present

and discussed.

2.1.1 Printing Supplies

Some businesses, who have adopted "paperless" strategies, have seen a significant decrease

in their printing supplies costs. Doctor's Walk-in Clinics, an urgent care chain serving the

Tampa Bay, FL region, was able to save around $6,000 to $7,500 per year on reduced

faxing and other paper related costs (Thompson, 2008). Impact Satellite, a firm that sells

and installs equipment for Dish Network, was able to reduce printing overhead and

supplies (such as toner) and saving in the process approximately $3,400 per year (Ryan,

2008). Firms can also save money on their actual printing hardware. The majority of

companies usually either own or lease their printers, fax machines and copiers. If they can

reduce the number of these machines they need and, possibly, replace them less often, a real cost saving can occur (Davis, 2005). Though this might not seem very substantial, replacing a printer every five years as opposed to every three years can certainly save money. Within Container Freight, it should be possible to see a reduction in paper use, though paper will be needed to create originals bills of lading. Therefore, the cost savings on printing supplies should be seen, but may not be significant.

2.1.2 Storage and Office Space

Another cost savings area is storage. Doctor's Walk-in Clinics was able to save $1,750 per month because they no longer needed to pay for medical record storage (Thompson, 2008). Impact Satellite was able to clear out a 250 square-foot room after adopting "paperless" software. This enabled them to save approximately $40,000, which they were spending on additional staff to maintain and process their records (Ryan, 2008). Another way to possibly reduce costs would be with office space. If everything is able to be accessed electronically, it may allow more employees to work remotely. If more employees chose to work this way, then the need for office space could be drastically reduced. This could mean direct savings by reducing the rent costs or building overhead. There could possibly be some initial moving expenses, but the savings may, indeed, be more than that cost. However, it is important to note that research shows not all workers are supportive of telecommuting because of a potential loss of identify and distinction (Wagner, 2004). Since Container Freight is required to keep files for 3 years, potential for storage savings is significant. By storing files electronically, on-site storage would no longer be needed. This would free up the current storage room for other uses, such as an office or conference room, if needed.

2.2 Environmental Benefits

There are many concerns in today's world about the state of the environment. With more and more people supporting going green and supporting companies that do so, how can it look bad to be saving paper, which in turn saves trees and the environment? The Natural Resources Defense Council has found that "offices throw out about 350 pounds of paper per employee every year," (Ryan, 2008). This can really add up, especially for large companies with numerous employees across the country. How does this specifically impact the environment? Per Dan Shapley (2007), writer for The Daily Green, on online newsletter geared toward the green revolution, paper accounts for a quarter of landfill waste and one third of municipal landfill waste. One third of human-related methane emissions come from municipal landfills. This is significant considering that methane is 23-times more potent a greenhouse gas than is carbon dioxide. By cutting office paper use by just 10%, the United States would prevent the emission of 1.6 million tons of greenhouse gases. This would be similar to removing 280,000 cars from the road. In turn, besides the above benefits, the company will have the reputation of being environmentally friendly. This could, in turn, make current customers happy and, possibly, help win new customers who value this quality. Because changes in the market can happen at any time, it's very important for Container Freight to keep existing customers and win new customers anyway that is possible.

2.3 Improved Efficiency

There are several different ways that having a "paperless" office will improve efficiency. A few of these benefits are improved documentation, faster document access, and decreased personnel costs.

2.3.1 Increased Document Transfer

One way to see improved efficiency is in the transfer of documentation between different offices. A prime example of this would be medical offices using "paperless" software. Now one office can electronically send the chart of a patient to another office with the simple click of a button. Prior to this kind of software, Doctor's Walk-in Clinics would have had to manually send documentation between offices, either by fax or by foot. "Employees spent hours chasing and faxing paper charts from clinic to clinic. It was inefficient at best. At worst, it was a tremendous waste of time and resources when staff had to call other locations to track down charts," stated Jason Dickey, vice president of marketing and business development. By using "paperless" software to eliminate faxes and other paper-related costs, Doctor's Walk-in Clinics were able to save approximately 12 hours per week (Thompson, 2008). This can be useful to Container Freight when information needs to be sent from office to office. This may be necessary when claims or accounts receivable/payable needs extra documentation on a file handled in a different office.

2.3.2 Faster Document Access

Another way that going "paperless" increases efficiency is by allowing documents to be accessed much faster because they are stored electronically (Davis, 2005). When a customer calls to ask about a specific file, the employee will be able to look it up on the computer in a matter of seconds, compared to the minutes it could take to physically find the file in storage. This efficiency, or time savings, is a direct benefit to customers. No longer will they need to have long waiting periods while their information is processed. They will get their answers quicker, which, in turn, will allow them to perform their tasks

more quickly. The billing department of Doctor's Walk-in Clinics saw signs of increased efficiency and productivity. "Our billers can now easily read, review and audit charts online instead of sorting and struggling to read paper charts," says Dickey. "They perform their jobs much more quickly and efficiently than before," (Thompson, 2008). Another example of this kind of benefit is the electronic services of FedEx. Customers experience the daily benefits of their digitized systems for finding and sending packages (Champy, 2006). Consider online package tracing. If FedEx did not have fully integrated "paperless" software, this type of procedure would not be possible. Customers would have to call in and get their tracking information would could take minutes/hours instead of tracing online in a matter of seconds. Container Freight employees should be able to access files at the touch of a button. Any employee should be able to pull a file and answer the customer's question, even if this is not their customer.

2.3.3 Personnel Savings

Because the internal efficiency is expected to increase, this, should in turn, relate to a cost savings in the personnel department. As employees are able to increase their workload, due to the increased efficiency, Container Freight will not need to hire as often. This will save the money that would have been spent on recruiting and salary of new employees.

2.4 Customer Benefits

Developing electronic solutions allow customers to access their information on company computers more easily without the intervention of the company's staff. We have already seen these in the banking and insurance industries, where customers have immediate access to their bank statements and can file insurance claims and receive almost immediate

responses. Thus, "going paperless" can generate significant customer service effects, offering nearly 24/7 access to information.

Thus, the paperless idea does not only benefit the company in the cost savings areas discussed above but could have direct benefits to the company's customers. Furthermore, when a company reduces its operating costs in the above discussed areas; it could effectively pass some of these benefits onto their customers by reducing rates, offering more incentives, etc. A company that is more efficient and well organized is going to be able to better serve their customer by having relevant data at their fingertips. A company that is internally efficient will be able to be efficient with the customer as well. For Doctor's Walk-in Clinics, their "paperless" software is "enabling physicians and staff to immediately discuss treatment plans and charges when patients call. This enhanced customer service should result in additional referrals and repeat patient visits, augmenting future revenue sources." (Thompson, 2008). And, in today's economy, it is imperative, for Container Freight (and any company), to create loyal customers who willingly give out referrals.

It is important in any industry to remain competitive. Companies can maintain their competitiveness by reducing costs and keeping customers happy. By adopting paperless operations, companies can reduce direct operating costs and equipment costs. Environmental benefits, 24/7 document access and better customer service are all aspects of paperless operations that are realized by the customer. The benefits of going paperless discussed above, and shown in Figure 2.1, will allow companies to maintain or increase their competitive edge.

Figure 2.1: Summary of Potential Benefits from a Paperless Strategy

Direct Operating Costs

Better Customer Service

Environmental Benefits

Paperless Operations

Increase Telecommuting Opportunities

24/7 Document Access

Equipment Purchases/Lease Savings

CHAPTER III: DATA COLLECTION, HYPOTHESIS AND METHODS

Recall that the overall objective of this thesis was to assess the size and significance of differences in time savings between an electronic transaction system with the traditional system of doing business at a NVOCC/freight forwarding company. The thesis sought to o answer the following questions:

1) Are there any statistical difference between manual or traditional transaction approach that the company has been using for many years and an electronic transaction system in which all information involved with the transaction are captured electronically?

2) Given the nature of the transactions, which types of transactions yielded significant differences between the two processes?

3) What is the likelihood that type of data capture format - (manual or FileBound®) will be affected by time?

3.1 Nature of the Transactions and the Data Collection Process

There are three distinct activities in completing a transaction involved with a NVOCC activity in the case company: booking, instruction, and bill of lading. The booking activity consists of the customer/shipper booking freight with Container Freight. Then a booking is made with the steamship line and a confirmation is sent to the customer/shipper. Once containers are loaded, the next process begins. Instructions are received from the shipper by Container Freight and then sent to the steamship line. It is important to receive complete documentation so that there are not any delays at the origin and destination ports.

The bill of lading activity includes sending proof documents to the shipper, printing of the bill of ladings and sending the pre-alert overseas. The original bill of lading is required for the customer overseas to receive their cargo. Without this document, Container Freight's agent overseas will not release cargo.

The data for the study were collected in a time study conducted at the Overland Park office of the case company. The study involved recruiting six employees to track their normal work involving the three steps involved with the transaction and measure the time it took them to complete each step. The same employees were asked to measure their completing time for each transaction using the traditional "paper" approaches as well as using the electronic approach using the software FileBound®. The experiment was conducted from June 16 to August 8, 2008, with the support of the company's management. The manual process experiment was conducted between June 16 and June 27, 2008 and the electronic experiment was conducted between July 14 and August 8, 2008. In between the two periods, the electronic documentation software, Filebound®, was installed and the participants in the experiments trained to use it. The experiment was designed and conducted by the author and all participants were given specific instructions on how to record the required information. Stop watches were provided to all participants so that time may be captured to the hundredth of seconds. This also allowed participants to stop the time when the processes were interrupted by urgent and other events, such as customer phone calls.

For both studies, the data was broken down into the three transaction sections: Bookings, Instructions and Bill of Ladings. The following data was collected for the Booking section:

controller, number of containers, time, and if a work order was necessary. For the Instructions section, the following data were collected: controller, number of containers, time, if it was required for the shipper's export declaration to be filed to the Automated Export System (AES), master bill of lading (MBL) instructions format (fax, electronic data interchange (EDI), email) and shipper's letter of instructions format (fax, email, mail). In the Bill of Ladings section there are three different times collected: proof time – the time it takes to create the proof house bill of lading (HBL) to send to customer, original HBL time – the time it takes to print and prepare the original HBL to send to customer, and pre-alert time – the time it takes to create and collect pre-alert documents (pre-alert page, copy of HBL, and copy of unrated MBL) to send to agent overseas. Along with these times, the following data were collected: controller, number of containers, proof format (how proof was sent to customer, email or fax) and approval format. It should be noted that Controller 6 was only responsible for Pre-Alerts.

The limitations to the time study should also be noted. Given the busy nature of the industry it was prudent to conduct the time study when employees' workload was at a decreased level, normally during the summer months. Given this time constraint, employees were asked to begin the FileBound® portion of the time study after only two weeks of training on how to use the software. This short window of training could be the motive behind employee critics that will be discussed later, in Chapter 5. It should also be noted that this is a work environment and not a laboratory experiment. Employees were asked to participate, providing that they would report their results in good faith. Container Freight and The Company had neither the time nor money to use an outside source to capture the relevant study's time data.

3.2 Analytical Methods

The data collected were analyzed using both statistical and regression analysis techniques to help answer the questions motivating this research. The statistical analysis focused on providing a description of the data based on central measures and dispersions measures, i.e.: mean, standard deviation, and range. This allowed for an appreciation of the nature of the data and allowed for comparisons with information on certain activities outside the experiment period with view of determining if the experiment period was uniquely different from other periods in the company.

Regression analysis allows for the analysis of the causal relationship between an endogenous variable and one or more explanatory or exogenous variables. The construction of the model for estimation is defined by the theoretical expectations of the relationships. However, regardless of the structure of the model, it is important that the data behaves in a particular way for the estimates resulting from the estimation of the regression model to be valid, consistent, unbiased, and efficient. The regression method assumes a linear or linearized relationship between the endogenous variable and the exogenous variables, as follows:

$$y = \alpha + \sum_{i=1}^{k} \beta_i x_i + \varepsilon \tag{0}$$

where y is the dependent variable of interest, x is the independent variables, for i numbered from 1 to k; β_i is the estimate associated with each independent variable x_i, α is the intercept term and ε is the error term of the regression. The error term is assumed to have a zero mean and a constant variance as well as being independent of each other and

independent of all x_i. When these assumptions about the error term hold, it can be shown that the estimates emanating from the regression estimation are unbiased.

Given the focus of the study, it was argued that the time it takes to complete the transaction at any stage (Booking, Instruction, Bill of lading (but bill of lading is divided into three activities: proof, OBL and pre-alerts)) is defined by the following variables:

CONTR1 = Controller 1, Sales Manager

CONTR2 = Controller 2, Sales Manager

CONTR3 = Controller 3, Documentation Specialist with least experience

CONTR4 = Controller 4, Documentation Specialist

CONTR5 = Controller 5, Documentation Specialist with most experience

CONTR6 = Controller 6, Operations Support

CT(X) = Containers per file, where X representative of the process. BKG for Booking, INS for Instructions and BL for Bill of Lading

BOOKTYPE(X) = the type of booking method, where 0 = Manual and 1 = FileBound® electronic booking system. X is again representative of process as stated above.

WORKORDERBKG = work order is a binary variable, where 0 = No and 1 = Yes.

AESFILINGINS = AES, the filing of the shipper's export declaration, is a binary variable, where 0 = No and 1 = Yes.

MBLINS = MBL Instructions format, a categorical variable where 0 = Fax, 1 = electronic

data interchange (EDI) and 2 = email.

SHIPPINGINS = shipping instructions, a categorical variable where 0 = Fax, 1 = email, 2 =

mail and 3 = not available.

PROOFFORMAT = Proof format (the form in which the proof HBL was sent to customer),

a categorical variable where 0 = no format information, and 1 = email.

APPROVAL FORMAT = Approval format (the form in which Container Freight received

approval on the proof HBL from the customer), a categorical variable where 0 = no format

information, and 1 = email.

The models for each of the three transactions are as follows:

$T_{BKG} = f(CONTR1, CONTR2, CONTR3, CONTR4, CTBKG, BOOKTYPEBKG,$
$WORKORDERBKG, \varepsilon_{BKG})$

$T_{INS} = f(CONTR3, CONTR4, CONTR5, CTINS, BOOKTYPEINS, AESFILINGINS,$
$MBLINS, SHIPPINGINS, \varepsilon_{INS})$

$T_{BLPROOF} = f(CONTR3, CONTR4, CONTR5, CTBL, BOOKTYPEBL, PROOFFORMAT,$
$APPROVALFORMAT, \varepsilon_{BLPROOF})$

$T_{BLOBL} = f(CONTR3, CONTR4, CONTR5, CTBL, BOOKTYPEBL, PROOFFORMAT,$
$APPROVALFORMAT, \varepsilon_{BLOBL})$

$T_{BLPRE-ALERT} = f(CONTR3, CONTR6, CTBL, BOOKTYPEBL, \varepsilon_{BLPRE-ALERT})$

The challenge confronting researchers is that the structure of these models is hardly ever

known with any certainty. Therefore, it is often discovered through experimentation, by

estimating alternative structures and selecting the "best" model based on theoretical,

technical and econometric expectations. In this case, three specific model forms were fitted

to the data: linear, double log and semi-log. In the linear model, the number of containers was also tested as a logarithmic format because it is plausible to assume that the quantity effect of the number of containers booked on time will be increasing but at a decreasing rate.

3.3 Hypothesis

The expected outcome from the adoption of the electronic option is lower transaction time. Therefore, it is expected that the sign on the coefficient of the booking type will be negative. Since BOOKTYPE(X) is a binary variable, it means that the intercept on the y-axis will be lower for the electronic approach compared to the manual approach. This is expected to be true for all types of transactions in the process.

For the booking model, Controllers 1 and 2 are the sales managers, while Controllers 3 and 4 are document specialists. Since Controller 3 and 4 are document specialists, we hypothesize that they would have faster times than Controller 1. Therefore, it is expected that there will be no difference between Controllers 1 and 2 but there will be a difference between Controllers 3 and 4, on the one hand and Controller 1.Thus, we expect to accept the hypothesis that the regression coefficient on Controller 2 is not different from the reference Controller 1 and reject the hypotheses that regression coefficients of Controller 3 and Controller 4 are the same as that of Controller 1.

For the instructions model, Controller 5, who has been with the company the longest as a document specialist, is assumed to be more experienced and thus expected to complete transactions faster than Controllers 3 and 4.

Number of containers is an indicator of the size of the company involved in the transaction. However, it takes the same effort to complete a transaction for a container as it takes for a 100 containers, it is believed. The inclusion of work order and AES filing in the transaction increase the number of activities within each transaction and are, therefore, expected to increase time.

The formats of MBL instructions, shipping instruction, proof and approval may be fax, electronic data interchange (EDI), email or snail mail. As expected, the selected format for the customer affects the time it takes to complete the transaction. It is expected that electronic formats will be faster, leading to lower time spent on the transaction.

Finally, the bill of lading model encompasses three time indicators: proof time, OBL time, and Pre-Alert time. These are each defined to be determined by different variables, which include number of containers, booking type, proof format and approval format. For this hypothesis we are testing the results of Controllers 3, 4, and 5, all of who are document specialists. We hypothesize that filing AES will take longer because it is an extra step in the instructions process and is not required by every customer. As the number of containers increases, we expect time to increase as well, as each individual container must be entered into the system. There are three different formats for MBL Instructions (fax=0, EDI =1, and email=2). We expect that EDI and email will be faster than fax, since they can be done from the computer without getting up to use the fax machine, therefore the coefficient is negative. Instructions are received from the shipper in variety of different formats: email, fax, and mail. We expect that format shouldn't really have any effect on the time.

3.4 Summary

To summarize, we expect, for all transactions, that the FileBound® process will be quicker than the manual process. It is expected that Controllers' 1 and 2 will have longer times than Controllers 3, 4, and 5 as the former are sales managers and latter are document specialists. Controller 5 is the senior most document specialist, followed by Controller 4 then Controller 3; therefore, it is expected that Controller 5 will have quicker times in all processes than Controllers 4 and 3, and that Controller 4 will have quicker times in all processes than Controller 3. Controller 6 is expected to have faster times in the pre-alert transaction process, than any of the other Controllers, as this is Controller 6's primary function. The analysis run in the subsequent chapters will show whether or not above hypotheses are true or not.

<center>**CHAPTER IV: DATA ANALYSIS AND RESULTS**</center>

The subsequent chapter discusses the analysis of the data collected during the two time studies: the manual process experiment, conducted between June 16 and June 27, 2008 and the electronic process experiment, conducted between July 14 and August 8, 2008. A summary of the data collected will be presented discussing the mean time and number of containers along with the standard deviation, median and number of observations. Following that, the regression analysis results will be discussed regarding the different transaction processes: booking, instructions and bill of lading.

4.1 Summary of the Data

For both the manual and FileBound® methods, Controller 3 had the least average number of containers when compared to the other controllers, as seen in Table 4.1. Controller 3 also had the largest mean times and standard deviations. Both the sales representatives (Controllers 1 and 2) had mean times that were less than the document specialists (Controllers 3 and 4). The most likely cause for this is Controllers 3 and 4 were being more thorough when entering the bookings by creating a new entry every time instead of copying a previous one.

Table 4.1: Booking Summary

Statistic	MANUAL					FILEBOUND		
	Overall	**1**	**2**	**3**	**4**	**Overall**	**3**	**4**
Time Mean	373.60	163.77	240.05	645.31	257.43	385.07	530.57	297.78
Time (SD)	267.17	26.72	339.40	188.12	84.76	180.35	198.59	94.06
Median	284.55	168.62	60.00	591.49	275.36	369.73	459.77	280.81
Mean Containers	7.40	8.58	27.20	2.00	4.70	8.03	1.33	12.05
# of Observations	43.00	12.00	5.00	16.00	10.00	32.00	12.00	20.00

Table 4.2 describes the summary statistics for the instructions portion of the data.

Controller 5 only participated in the manual data collection. Controller 5 had a longer

mean time and larger standard deviation than both Controllers 3 and 4. Controller 4 had

files that, on average, had more containers than both Controllers 3 and 5.

Table 4.2: Instructions Summary

Statistic	MANUAL				FILEBOUND		
	Overall	**3**	**4**	**5**	**Overall**	**3**	**4**
Mean Time	1132.92	1017.20	942.49	1623.64	898.39	1091.90	791.96
Time (SD)	490.08	251.76	269.94	792.46	287.83	246.72	255.28
Median	1009.60	977.35	993.20	1611.41	802.50	1096.31	754.85
Mean Containers	4.50	3.56	7.88	4.11	4.61	3.82	5.05
# of Observations	42.00	25.00	8.00	9.00	31.00	11.00	20.00

Table 4.3 summarizes the statistics for the bill of lading proof section of the data. For the

manual method, the average time for completing the transaction for Controller 4 was lower

than the average time for both Controllers 3 and 5. However, for the FileBound® method,

the average time for completing the transaction for Controller 3 was lower than for

Controller 4, although the latter had booked a higher number of containers.

Table 4.3: Bill of Lading Summary - Proof

Statistic	MANUAL				FILEBOUND		
	Overall	**3**	**4**	**5**	**Overall**	**3**	**4**
Mean Time	346.00	397.73	295.24	380.28	470.42	443.58	564.35
Time (SD)	128.03	60.73	157.49	0.00	143.14	66.71	274.09
Median	365.82	390.31	226.18	380.28	432.29	432.29	516.48
Mean Containers	4.83	1.88	7.33	10.00	4.56	2.95	9.67
# of Observations	36.00	17.00	18.00	1.00	27.00	21.00	6.00

The same thing can be seen occurring during the OBL transaction (Table 4.4). The average

time for completing the transaction for Controller 4 was lower than the average time for

both Controllers 3 and 5 for the manual method and lower than Controller 3 for the

FileBound® method. It should be noted that this is true despite Controller 4 having more

containers than either Controllers 3 and 5. It would be expected that Controller 5 would

post the lower times since that employee was the most experienced, but that is not the case

in this scenario. The longer time could be attributed to inaccurate time capture or

distractions during transaction processes.

Table 4.4: Bill of Lading Summary – OBL

Statistic	MANUAL				FILEBOUND		
	Overall	3	4	5	Overall	3	4
Mean Time	389.25	321.77	244.39	1048.11	455.86	462.83	442.78
Time (SD)	389.78	43.83	96.24	762.26	97.52	71.51	139.14
Median	292.01	339.94	196.44	1081.09	427.69	453.22	412.47
Mean Containers	6.21	1.80	11.21	1.00	4.39	1.87	9.13
# of Observations	27.00	9.00	14.00	4.00	23.00	15.00	8.00

Controller 6, being the primary person responsible for pre-alerts, exhibited her prowess by

posting the fastest mean transaction completion time using the manual method, as seen in

Table 4.5. There was no controller comparison with the FileBound® option because

Controller 6 was the only one responsible, posting an average transaction completion time

of 679 seconds with an average of almost seven containers.

Table 4.5: Bill of Lading Summary – Pre-Alert

Statistic	MANUAL			FILEBOUND
	Overall	**3**	**6**	**Overall/6**
Mean Time	339.30	892.96	315.91	679.79
Time (SD)	120.46	0.00	37.94	127.14
Median	319.68	892.96	27.38	663.00
Mean Containers	5.11	10.00	4.90	6.95
# of Observations	74.00	3.00	71.00	59.00

4.2 Regression and Significance Testing, Time Models

The generic models presented were estimated in the linear, double log and semi-log versions for all five models: one each for booking and instructions and three for bill of lading encompassing proof time, OBL time and pre-alert time. The best equation format for all of them was the linear, with a log format for the number of containers booked CT(X). The results are now presented and discussed.

4.2.1 Booking Model

The results for the Booking Model are presented in Table 4.6. They show an F-value of 18.77, found to be statistically significant at the 1 percent level. This implies that overall model is a significant good fit in explaining the variability in time take to complete the booking stage of a transaction. The R-squared for the model was 62.36 percent and the adjusted R-square was 59.04 percent. Thus, about 60 percent of the variability in time is explained by the model after adjusting for the number of explanatory variables in the model.

Table 4.6: Booking Model Results

	β	t	P>t		N	75
CONTR2	120.915	1.480	0.145		F(6, 68)	18.77
CONTR3	437.084	7.170***	0.000		Prob > F	0
CONTR4	156.271	2.690***	0.009		R-squared	0.6236
CTBKG	-10.290	-0.580	0.566		Adj R-squared	0.5904
booktypebkg	-45.948	-1.120	0.265			
workorderbkg	138.756	3.250***	0.002			
constant	147.799	2.710***	0.009			

Statistically significant at the: * 10% level, ** 5% level, * 1% level**

Controller 2, who took approximately 121 seconds longer than Controller 1, was not

statistically significant from Controller 1. This implies that there is no statistical difference

between Controller 1 and Controller 2 in the completion of the booking transactions. This

was hypothesized to be the case since it was argued that both of these controllers were sales

managers without much experience in document handling and hence no difference was

expected in their performance. It was, however, hypothesized that the document specialists

(Controllers 3 and 4) would complete their transactions faster than Controller 1, yet the

results indicate that is, in fact, not true. The results show that Controller 3 and Controller 4

spent about 437 seconds and 156 seconds longer, respectively, than Controller 1 to

complete a booking transaction. These estimates were statistically significant at the 1

percent level. Again, this can be explained by the document specialists, perhaps, being

more thorough in their booking processes and creating a new entry for every booking

opposed to copying a previous entry. The number of containers and the booking type

(whether manual or FileBound®) were not statistically significant in explaining the time

spent on completing a booking, though it could be noted that it did take about 46 seconds

less to complete a booking using the FileBound® method. However, work order is

significant (p < 0.002). When a work order was generated (WORKORDERBKG = 1), the time spent on transactions increased by about 139 seconds.

4.2.2 Instructions Model

The results for Model 2 (Instructions) are presented in Table 4.7. The table shows that the F-value for this model was 5.53, significant at the 1 percent level. The R-squared value was lower than in the booking model, approximately 37 percent, while the adjusted R-squared value is approximately 31 percent. Therefore, this model explains only about 31 percent of the variability in time after adjusting for the number of explanatory variables in the model.

Table 4.7: Instructions Model Results

	β	t	P>t			
CONTR4	-430.165	-3.91***	0	**N**		73
CONTR5	-154.151	-0.88	0.383	**F(7, 65)**		5.53
CTINS	131.0901	2.92***	0.005	**Prob > F**		0.0001
booktypebkg	-100.382	-1.05	0.298	**R-squared**		0.3732
aesfilingins	415.1338	4.43***	0	**Adj R-squared**		0.3057
mblins	10.62956	0.15	0.885			
shippingins	34.20157	0.59	0.557			
constant	904.6648	8.21***	0			

Statistically significant at the: * 10% level, ** 5% level, * 1% level**

For the instructions model, the performance of Controllers 4 and 5 were compared to that of Controller 3. The results show that while both Controllers 4 and 5 performed better than Controller 3, there was no statistical difference between the performance of Controller 5 and Controller 3. Controller 4's 430 seconds better performance, on the other hand, was statistically significant at the 1 percent level. Experience increases performance, therefore, it can be hypothesized that the more experienced the controller, the less time it will take to complete a transaction. This is not what the data shows, though, as Controller 5 was

expected to complete the instructions transactions faster than both Controller's 3 and 4. Instead, Controller 5 was only faster than Controller 3. Controller 4 was approximately 276 seconds faster than Controller 5. The number of containers was statistically significant as well, and the coefficient shows that time increases as the number of containers increase. The format of the MBL instructions and shipping instructions were not statistically significant in explaining the time spent on completing shipping instructions, but whether or not AES was filed was significant. When AES was filed, it took approximately 415 seconds longer to complete instructions then when it was not filed, which was as hypothesized in Chapter 3. The results also showed that while it was 100 seconds faster to use FileBound® to complete instructions transactions, this was not statistically different from the time it took to complete the instruction transactions manually.

4.2.3 Bill of Lading Model

There we three different regressions ran for this portion of the file process: Proof time, Original BL (OBL) time, and Pre-Alert time. The results of the Proof Time model are show in Table 4.8, the OBL time model in Table 4.9 and the Pre-Alert time model in Table 4.10. With F-values of 4.74, 7.67, and 197.34 for Proof, OBL, and Pre-Alert models respectively, we see that the models are significant overall at the 1 percent level.

For the Proof Model, we get an R-squared value of approximately 34 percent and an adjusted R-squared value of approximately 27 percent. These values state this model explains the variability in time about only 27 percent of the time after adjusting for the number of explanatory variables in the model. The lower R-squared may be explained by

the lower number of observations in the model compared to the booking model because not all booking transactions result in a proof.

Table 4.8: Proof Model Results

	β	t	P>t		N	63
CONTR4	-205.253	-3.59***	0.001		F(7,65)	4.74
CONTR5	-8.8797	-0.05	0.961		Prob > F	0.0006
CTBL	-1.06415	-0.07	0.947		R-squared	0.3367
booktypebl	79.81978	0.62	0.54		Adj R-squared	0.2656
proofformat	-23.7431	-0.18	0.857			
approvalformat	29.58313	0.66	0.511			
constant	391.61	3.1***	0.003			

Statistically significant at the: * 10% level, ** 5% level, * 1% level**

Given the results in Table 4.8, we can see that only Controller 4's time was statistically significantly faster, which fits our hypothesis as Controller 4 had more experience, when compared with Controller 3. Controller 4's time was about 205 seconds faster than Controller 3. Again Controller 5 was not significantly faster than Controller 3 or Controller 4, which is opposite of what was hypothesized in Chapter 3. Though none of the other variables were significant, it should be noted that it took longer to complete the proof using the FileBound® method than the manual method.

The R-squared and adjusted R-squared values are 52 percent and 45 percent respectively, for the OBL model, as seen in Table 4.9 The results show that Controller 4's time was not significantly different from that of Controller 3, despite being 33 seconds quicker as hypothesized. Controller 5, who took approximately 718 seconds longer to print OBL's than Controller 3, was statistically significant at the 1 percent level. The time for Controller's 3 and 4 were faster than Controller 5. This again is not as hypothesized in Chapter 3. The format of the proof sent and the approval received were not statistically

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significant. It should be noted that as the number of containers increased the time did take longer, as expected, approximately 20 seconds, though this was not statistically significant. Likewise, the method type, manual or FileBound®, was not statistically significant, but it could be noted that it did take approximately 107 seconds longer to complete the OBL using the FileBound® method, which was not as hypothesized.

Table 4.9: OBL Model Results

	β	t	P>t		N	50
CONTR4	-33.1597	-0.3	0.765		F(7,65)	7.67
CONTR5	717.9625	2.88***	0.006		Prob > F	0
CTBL	20.95425	0.66	0.51		R-squared	0.5171
booktypebl	106.7342	0.48	0.636		Adj R-squared	0.4497
proofformat	113.2878	1.04	0.302			
approvalformat	-138.645	-0.6	0.555			
constant	330.145	1.47	0.149			

Statistically significant at the: * 10% level, ** 5% level, * 1% level**

As seen in Table 4.10, the pre-alert model resulted in R-squared and adjusted R-squared values of 82 percent. Therefore, this model explains approximately 82 percent of the variability in time it takes to complete a Pre-Alert after adjusting for the number of explanatory variables in the model.

Table 4.10: Pre-Alert Model Results

	β	t	P>t		N	133
CONTR6	-578.317	-10.800***	0.000		F(3,129)	197.34
CTBL	-1.085	-0.150	0.882		Prob > F	0
booktypebl	364.462	22.410***	0.000		R-squared	0.8211
constant	895.208	16.590	0.000		Adj R-squared	0.8169

Statistically significant at the: * 10% level, ** 5% level, * 1% level**

There were only three different variables for this model, two of which were statistically significant at the 1 percent level. Controller 6 is compared to Controller 3 in this scenario. Controller 6 took approximately 578 seconds less than Controller 3 to complete a pre-alert,

which was as expected because this is Controller 6's primary function. The number of

containers was not statistically significant, and as the number of containers increased the

time it took to complete the Pre-Alert only took 1 second less. The method type was the

other significant variable. When using FileBound®, it took around 365 more seconds to

complete this part of the process. This is opposite of what was hypothesized in Chapter 3,

as it was expected using FileBound® would speed up the transaction process. One possible

explanation for this variance is that not all the necessary documents required for a Pre-Alert

were uploaded to FileBound® when it was time to send the Pre-Alert. Again, Controller 6

requires three documents for the Pre-Alert: the pre-advice document, the HBL and MBL.

Time spent locating or printing these documents to put into FileBound® could explain the

time variance.

4.4 The Booking Type Effect

In Chapter 3, it was hypothesized that FileBound® processes would be quicker than

manual processes. This was not proven to be statistically true in any of the models.

Though it can be said that booking and instructions processes were quicker with

Filebound®, it cannot be said for any portion of the bill of lading process. Indeed,

FileBound® was statistically significantly longer when used in the pre-alert process. Given

the overall results there is no reason neither to adopt nor not adopt the FileBound®

software. In the subsequent chapter, employee opinion will be discussed, which should be

taken into account on whether or not to adopt the FileBound® software. Printing concerns

were brought up by the employees which could explain the longer times during the bill of

lading processes.

CHAPTER V: STRATEGIC IMPLICATIONS AND RECOMMENDATIONS

The overall goal of this study was to determine if using FileBound® would save document specialists in a container freight company time, thus making them more efficient. More efficient employees will lead to cost savings for the company, in that a more efficient employee will be able to handle a larger work load and therefore, the company would have to hire less often. The time studies that were run did not support this overall hypothesis that it would be quicker using FileBound®, therefore we must reject them for all models. The booking and instructions processes showed a decrease in time using FileBound®, but they were not statistically significant. On the other hand, the proof, OBL and pre-alert models showed an increase in the time it took to complete their processes than the manual method, though the pre-alert model was the only one that was statistically significant. When you look at the complete file process, there is not significant reason to use FileBound® over the manual method.

5.1 Cost Savings

Since there is no real reason to do either one, we must look at the other potential savings avenues. What kind of savings can Container Freight have by not using as much paper and storage space? Table 5.1 shows paper and storage supplies data from fiscal year 2007 complied for all three offices of Container Freight (Overland Park, Chicago and Minneapolis). The average number of printed pages per file was estimated to be 15, while the average number of pages per file is 25. The difference between these two numbers is from documents that must be printed on Container Freight bill of lading paper. The value of a printed page is approximated at $0.02 per page. The total possible paper savings is

$2174.10, calculated by taking the number of files, 7,247, by the average number of printed pages, 15, by the value, $0.02.

There is also the storage cost that must be considered. Since Container Freight must keep files for at least three years, there are some opportunities for storage savings. The previous year's files are kept on-site in file cabinets, but files prior to that are boxed and sent to off-site storage. The number of banker's boxes required for file storage was estimated to be around 300. The total cost per banker's box is $48.50. This cost was calculated by including the cost per year, the delivery charge, the destruction charge, and assembly charge. Total possible savings for storage is calculated by taking number of boxes, 300, by the cost, $48.50, to get $14,550. Total possible savings for Container Freight per year is $16,724.10. Not included in this cost savings estimates is the retrieval cost associated with going to storage locations and searching for and retrieving stored documents for clients when such documents are requested.

Table 5.1: Possible Annual Container Freight Company Savings

Paper Supplies	Savings
Number of files	7,247
Average pages per file	25
Average printed pages per file (that could be uploaded into FileBound®)	15
Cost of printed page	$0.02
Total Paper Savings	$2,174.10
Other Consumables	
Number of bankers boxes	300
Cost per bankers box	$48.50
Total Other Consumable Savings	$14,550.00
Total Container Freight Savings	**$16,724.10**

The foregoing would seem to suggest that by superimposing the economics of the approaches on the analysis, it may be possible to show that while time savings was not a significant contribution from FileBound®, paper, printing and storage cost savings presented by FileBound® could make it a preferred solution, just as we found by Doctor's Walk-in Clinics and Impact Satellite.

5.2 Employee Opinion

It is important, when implementing new software, to have all employees on board. It makes the learning process and transition period faster and smoother. It is also important to listen to feedback from employees to determine whether the software is a good fit. When employees were asked what they thought of the FileBound ® method over the manual method they were very critical. Employees stated that they felt the working with FileBound® took longer than the manual method. On the other hand, though, the analysis in the foregoing sections of the thesis showed no statistically significant difference between manual method and FileBound® method. Specifically, they observed that it took longer to print bills of ladings and other documents from FileBound® than from the export documentation system (IES) and the document upload process (to the electronic storage) took longer than it would take to print the document and place it in the file. Likewise, it took longer to retrieve the document than it would to manually pull the file. Another problem was the format of the file when it was emailed, which, at the time of the study, could only be sent as a TIF file. There were problems with customers and agents overseas accessing this file format. There was talk, that in the newer version of FileBound®, this would be taken care of and that files will be able to be sent as PDF files. But it still means that they have to be converted into this format, which can take time and exhibit its own

potential technical challenges. Another issue was that there was no way to merge numerous documents into one attachment, so if a document specialist was emailing five documents then they would have five separate attachments. This could present some challenges to customers in determining how to organize the files in order to ensure the right sequent of information.

Overall, most of the document specialists and sales managers thought that the idea of going "paperless" was a great idea, but that the current FileBound® software was not a good fit for the processes they were doing. They were receptive to the idea of learning new software and understood the technology demands.

5.3 Recommendation

Given the time trial results and the potential costs savings, it is recommended that FileBound® be used as a storage device only. Emails and correspondence should be uploaded into the FileBound® system and thus, hard copies should not be printed. When possible documents should be printed/emailed/faxed from the IES system and a record or copy of the document should be uploaded to FileBound®. Pre-alerts should be sent the manual way and then a copy of the email sent and the attachment should be uploaded to FileBound®. Table 5.2, shows the process that could be handled manually or with FileBound®. Any other documents, such as commercial invoices, packing lists, etc, that are prepared should be printed out of their respective creation software (such as Microsoft Word or Excel) and a copy uploaded to FileBound®.

By just using FileBound® as a storage device only, Container Freight will be able to take advantage of the potential cost savings of $16,724.10 without dealing with the time

challenges reported by document specialists and observed in this experiment. Since the time study showed that the method type (FileBound® or manual) is not significant in the time it takes to complete the file process, Container Freight documentation specialists should be able to use either method with the same efficiency. That being said, in today's economy, companies need to find any way possible to save money. That is why we recommend a plan of action to incorporate the potential cost savings with using FileBound®.

A further recommendation is to incorporate FileBound® with Container Freight's website, making it an interactive online tool for customers to access their shipments 24/7; much like the way the Container Freight is able to access their shipments online with the various steamship lines. If customers are able to access their documents and correspondence electronically, without having to contact their sales manager or documentation specialist, this should increase their efficiency. Container Freight employees should see a decrease in time spent either on the phone or in writing email correspondence, thus enabling them to focus more time on creating customer documents. This, in turn, should allow them to increase their workload.

Table 5.2: Process Recommendations

TSC Processes	Manual Procedure (Documents created out of IES System)	FileBound® Procedure (Documents Uploaded to FileBound®)
Email from customer requesting booking		Copy of email uploaded.
Booking confirmation from carrier (email or fax)		Copy of email with confirmation uploaded. Faxed confirmation scanned and then uploaded.
Booking confirmation emailed to customer	Booking confirmation emailed from IES.	Booking confirmation uploaded out of IES. Copy of email sent to customer uploaded.
Work Order faxed/emailed to trucker	Work Order emailed/faxed from IES.	Work Order uploaded out of IES. Copy of email sent/fax confirmation uploaded.
Shipping instructions received from customer (email or fax)		Copy of email with instructions uploaded. Faxed instructions scanned and then uploaded.
AES filed		Export Declaration uploaded out of IES.
BL instructions sent to carrier	BL instructions emailed/faxed/EDIed from IES.	Copy of email sent/fax confirmation uploaded. EDI confirmation uploaded out of IES.
Proof HBL created and sent to customer	Proof HBL printed from IES, then scanned and emailed to customer.	Copy of scanned HBL and email sent uploaded.
Customer approves proof HBL via email or fax		Copy of approval email uploaded. Approval fax scanned and then uploaded.
Print OBL/Waybills and send to customer	BL printed from IES. Shipping labels printed from UPS website.	Copy of BL and UPS label uploaded to website.
MBL received from carrier via email or fax		Copy of emailed MBL uploaded. Copy of faxed MBL scanned then uploaded.
Pre-Alert sent to agent overseas	Pre-Alert printed from IES, then scanned and emailed to customer	Copy of scanned Pre-Alert and email sent uploaded.
Correspondence from customer via email		Copies of emails uploaded.
Tracking and tracing documents		Documents uploaded.

CHAPTER VI: SUMMARY AND CONCLUSION

6.1 Summary

The purpose of this thesis was to determine if using FileBound® document management software would benefit Container Freight by saving the company money and making its employees more efficient. With increased efficiency, the employees would be able to complete their tasks more quickly and thus, be able to handle more work. Therefore, Container Freight would not need to hire as often and could save money that would be used to recruit/hire/train new personnel. The current employees would be able to access customer files more quickly because they would be available electronically with a few keystrokes. Printing supply costs and storage costs were another area in which savings could be realized.

To determine if FileBound® would make the employees more efficient, a time study was completed. Six employees participated in the study, two of which were sales managers, three were document specialists and one was an operations support person. Employees timed how long it took them to complete the processes using the manual method, what they were currently doing, and then using FileBound®. There are several different processes to complete the file: booking, instructions, and bill of lading. Times were taken over all three of these processes. The number of containers and the format of documents sent/received were also taken into account. The booking process also accounted for if a work order was sent. The instructions process also accounted for if AES was filed on the shipper/customer's behalf. In the bill of lading process, times were taken for how long it took to create a proof HBL, how long it took to print OBL and how long it took to complete a Pre-Alert (primarily an operations support task).

After running regression analysis on the data collected, it was found that the method type (manual or FileBound®) was not statistically significant, except for Pre-Alerts, where it was found that using FileBound® was statistically significantly longer than the manual method. It was found that whether or not a work order was required was statistically significant in the booking process and whether or not AES was filed was statistically significant in the instructions process. The number of containers was only significant in the instructions process, which makes sense because this is the point in time when each individual container number is entered into the IES system. The data actually shows that for the booking and instructions processes, the FileBound® method is quicker than the manual method, but for the bill of lading processes (proof, OBL and pre-alert), the manual method is quicker than the FileBound® method.

6.2 Conclusion

In general, the manual method is easy for the employees because it is what they are used to, but the data shows that the employees should be able to produce the same outcome using either the manual or FileBound® method. That being said, what is the company's motivation to use FileBound®? We must look at the potential cost savings to determine this. Personnel costs, such as hiring, salary, etc. should not be considering in the potential costs savings because it was determined that efficiency was neither increased nor decreased. Therefore, the cost savings will have to be realized through printing costs and storage costs.   With data from fiscal year 2007, it was determined that the potential paper supply cost savings was $2174.10 and the storage costs savings was $14,550.00. Combined, this is a total costs savings of $16,724.10 per year. Every little bit helps out, especially in today's economy.

There were some disadvantages that the employees discovered when they were using FileBound®. Overall, they thought the process took up more time than when they were doing it the manual way. Specifically it took longer to print documents from FileBound® and to upload documents to FileBound®. It was also mentioned that the attachment format, when emailing from FileBound®, was not compatible with some customers and agents email software.

Because of the potential cost savings mentioned above it was recommended that Container Freight use FileBound® for storage only. Instead of printing documents, specifically bill of ladings and pre-alerts, from FileBound®, documents should only be printed from IES. Electronic copies of the documents should be uploaded to FileBound® for storage. This way, Container Freight takes advantage of the benefits of FileBound® without the disadvantages. Overall, the employees like the idea of going "paperless" and were receptive to using new software and technology. In conclusion, the benefits and cost savings of going "paperless" outweigh the disadvantages of not.

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