Business Consulting for the Transportation Industry: Increasing Profitability, Performance, and Productivity by Using GIS Data and Tools to Support Better Decision Making

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Abstract

Through the use of improved business processes and the support of GIS tools, companies can increase revenue, decrease time to make better decisions and use GIS technologies to replace underperforming processes. In the trucking industry, technology has been used for many purposes including communication, mapping, planning, and reporting. This project compares the effectiveness of new logistics technologies to old techniques that typically used more man hours to complete similar tasks. The process and resulting recommendations are supported by companies that saw a 30% increase in the number of trucks managed compared to the number workers assigned to manage them, decreases in key areas that caused companies to lose revenue and provided improvement in asset utilization. The results of each case study varied, but in each case, significant improvements were made in how the customer processed data or eliminated hours of data entry. The study and recommendations provided ways to analyze business needs, set achievable goals, and ways to improve an organization.

Introduction

"The Motor Carrier Act of 1980 partially deregulated the trucking industry, dramatically increasing the number of trucking companies in operation" (United States Department of Transportation, 2002). The deregulation of any industry causes competition to increase and the trucking industry was no exception. The competition among trucking companies led each company striving for more profits through competitive advantage. Competitive advantage, as defined at Investor Guide (2009), is "a condition which enables a company to operate in a more efficient or otherwise higher-quality manner than the companies it competes with, and which results in benefits accruing to that company." The trucking industry involves shipping one company's product on another company's truck. To be competitive, the owner of the trucks (carrier) must find ways to price their deliveries, track their assets such as trucks and trailers, and deliver the customer product on time better than their competition. Without advancements in technology, decisions were made on hunches or hours of analyzing spreadsheets of data to

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determine the best process to increase revenue. Trucking companies used manual methods, requiring paper and pencil or multiple spreadsheets, for years. However, the introduction of computers and software specifically designed for the trucking industry has allowed for more efficient and practical methods of management to occur. The historic generation of trucking companies used magnetic boards and erasable chalk to diagram processes of transportation. Communication was limited to two way radios and the drivers' honesty of his/her location. The variables of competition were limited. To gain competitive advantages over other companies, software was developed to increase the visibility of trucks while in-transit to a customer location, process more data with less employees and make better business decisions with information stored in databases.

Trucking companies embracing technology to gain a competitive advantage use tools such as logistics software, Geographic Information Systems (GIS), Radio Frequency Identification (RFID) readers, and Global Positioning Satellite (GPS). GIS was used in the transportation industry since the late 1980's when some companies including Schneider National, the first to sign a contract, started using Qualcomm units in their trucks. Qualcomm was originally installed as an onboard communication device that allowed communication with the dispatcher. This provided opportunities for better delivery route tracking and communication between the drivers and carriers shipping products. Since the 1980's, spatial data has become more prevalent and is growing in part due to the enhanced data collection via devices such as sensors, satellites, RFID readers, and GPS enabled devices. 80% of business data has potential to be geo-referenced, i.e. have spatial location attached (Bossler, 2002). In the transportation industry, there is a plethora of geo-referenced data to be analyzed, which can support clear and profitable decision making. GIS tools are utilized to support these decisions and provide the decision in a timely manner.

In this study, four trucking companies were analyzed to measure the effectiveness of logistics technologies compared to old techniques that typically used more man hours to complete similar tasks. Logistics is defined by the Business Dictionary (2009) as "Planning, execution and control of the procurement, movement, and stationing of personnel, material, and other resources to achieve the objectives of a campaign, plan, project, or strategy." Four case studies were used to evaluate implementation logistics techniques at each company and to analyze how effectively they were utilizing technology. Recommendations were provided regarding how technology can be utilized to gain competitive advantage.

Methods

A good strategy is based on meeting the business needs of the organization (Douglas, 2008). To meet the needs of an organization, the needs must be understood. The methodology used to evaluate the organizations researched in the following case studies was broken down into four phases.

- Assessment
- Auditing
- Implementing Change
- Evaluating Results

Assessment

The assessment phase was the most important step in understanding the organization because the information gathered was the basis for which future recommendations would be made. The goal of the assessment phase was to measure and identify areas for organizational improvement. To identify improvement over a period of time a baseline performance must be established. After the baseline is measured, the opportunities for improvement are found by comparing the baseline to comparison baselines. Opportunity is defined as a metric that is not performing well compared to benchmarks of other optimized companies. Selected areas of opportunity were chosen to focus on and a current state model was created. According to The Bridgefield Group (2006), current state is defined as the review process to determine current status of a system or process that defines its inputs, data flow and outputs and provides the starting point for identifying changes required to reach a desired future state. This is also referred to by the "As-Is" state. To find the areas for improvement, benchmark metrics were used. Benchmarks were found by generating a list of metrics commonly used by comparable companies. The metrics were compared and measured against the researched companies. Common metrics included percentage of average non-revenue generating miles, the number of deliveries completed per customer and revenue per delivery. The metrics were designed specifically to measure business drivers in the transportation industry that equate to profitability, performance, and productivity. The data elements provided a base line to begin pre and post evaluation of businesses performance indicators. For a full list of metrics please refer to Appendix A. In this list, areas in need of improvement, highlighted in red or yellow, were discussed with each organization and were later used to measure success. Biographical data was also captured to compare the processing speed of employees to their job functions. Biographical data can be found in Appendix B.

Auditing

The auditing phase was performed to provide the understanding of current procedures of each organization's software architecture along with data flow. This is referred to as a company's current state. This is displayed in Figure 1. Bottlenecks, events that decreased productivity, in the data flow accounted for hours of time spent on manual tasks where the process was dependent on a human task to be completed before another task could be started. Manual processes were identified in Figure 1 as dashed lines connecting two tasks. As-Is reviews were consistently the most beneficial task completed because this provided information related to data flow. It also provided areas of improvement that were commonly fixed by use of software applications with spatial components to automate manual procedures or providing web applications with map features to disseminate data more quickly. Examples of automated procedures and GIS tools are discussed in the Analysis section where it was found that the coupling of technology and GIS would provide benefits.

Another part of the auditing phase was to review the organization

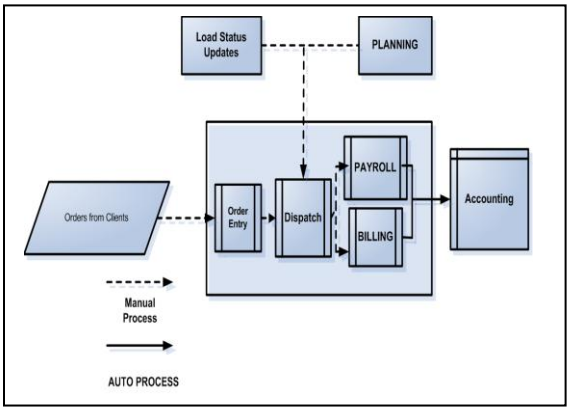

Figure 1. Microsoft Visio files displaying current state workflow. Dashed lines represent manual processes between tasks. Solid lines represent automated tasks performed by employees.

business practices and existing software. Employees of the researched companies were interviewed and the information was used to gain insight into business processes and software technologies. The answers provided in the interviews were compared against the organization's strategic goals and objectives to ensure the software was optimally designed. Performance indicators such as the number of dispatchers compared to the number of managed drivers, average number of phone calls per order and percentage of average non-revenue generating miles were evaluated to identify improvements as either a technology-based tool, such as GIS based map, or process-based improvements that would change the current procedures. The indicators were measured against the benchmark companies that have effectively utilized techniques and technology capabilities (Figure 2). Figure 2 has a white section in the middle representing the software tools being used. The maroon section represents software technology that was available to the organization but was not being utilized efficiently. Each label represents a task that was performed by employees of the customer being analyzed or important criteria by which they are measured.

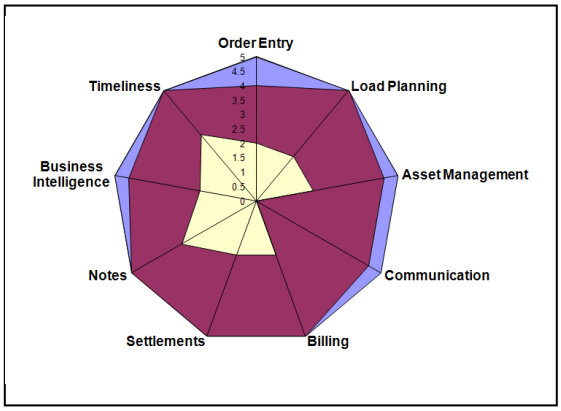

Figure 2. Graphical representation of software tools compared between the researched organization and an organization that is optimally performing.

Implementing Change

After establishing the goals of each organization researched for this project, a set of achievable improvement tasks were identified. Recommendations were provided in the form of future state process flows to graphically present how the process was altered from the current state. Future state process flows are representations of the how the current defined process will be altered after recommended changes have been implemented. The future state accounted for areas that increased profitability, performance, or productivity.

The process of implementing the recommendations utilized project management skills and techniques for change management. To implement new process changes, training was provided to ensure each employee understood the expectations and how the solution improved the process. Resistance to change, inadequate sponsorship, and

unrealistic expectations were found to be problems during organizational research for this project.

Evaluating Results

After changes were implemented to each organization, the final step was to measure the results. This was done by re-evaluating the data elements, such as the performance indicators, biographical data, and comparing pre-engagement and post engagement figures. The most common metrics included percentage of average non-revenue generating miles, the number of deliveries completed per customer and revenue per delivery. The recommendations were measured to determine if they had the desired effect on the organization over a period of time. The desired changes were increased revenue, decreased empty miles, and increased visibility of trucks on the road. If the results were positive the project was considered a success.

Analysis

Through the use of change methodologies described earlier, change was implemented to each company for the following reasons:

- Organization 1: Analysis found that a large percentage of deliveries had non-revenue generating miles that could be eliminated by implementing a mobile communication system which tracked movement of trucks across the country and provided enhanced communication with dependent personnel.
- Organization 2: Through interviews with management it was found that important products being delivered by a trucking company were not being managed properly. The process was failing due to a lack of visibility of the trucks and this data being kept in multiple spreadsheets. The data was not shared among employees and time was spent tracking down information for the shipping customer's product.
- Organization 3: Customers sighted lack of control over the amount miles being driven outside of the anticipated route. The extra miles driven were reducing the revenue associated with product being shipped, increasing the amount of wear on the vehicles, and using more fuel than necessary to deliver the product.
- Organization 4: Customers indicated the number of employees being used to enter data, call shipping companies for delivery appointments, and communication with truck drivers was increasing due to growing size of the researched company.

During the auditing phase of Organization 1, which was part of the initial phase of analysis, the standard operating procedure of the organization was found to be causing excessive non-revenue generating miles. It was found that dispatchers, whose job is to assign a driver to an order that is being delivered, did not know when a truck was available or how far they were from the next available load. Another issue related to the auditing process found drivers must call into the dispatch office to report their position and also when drivers delivered a load. The procedures were not efficient and provided inaccurate data. This caused inconsistent data used to pre-plan drivers and also caused more manual data entry than was necessary to complete the job function. The solution

for the issues was to use multiple GIS tools including mobile communications, mapping tools, and a reporting tool to dissect poorly planned resources. Mobile communications utilized GPS to send/retrieve data, such as reference numbers, weight, truck number, and trailer numbers without the need for manual data entry. The tool prevented the need to call back to the dispatch office, therefore saving time and providing customer data quickly and efficiently. The GPS positions were geo-referenced at multiple points in the process then the route could be further understood and became more predictable. The predictable route provided dispatchers the ability to make qualified decisions about which available truck was closest to the available order. The position reports also allowed the ability to plot truck positions on maps and to view the trucks on a digitally displayed map (Figure 3).

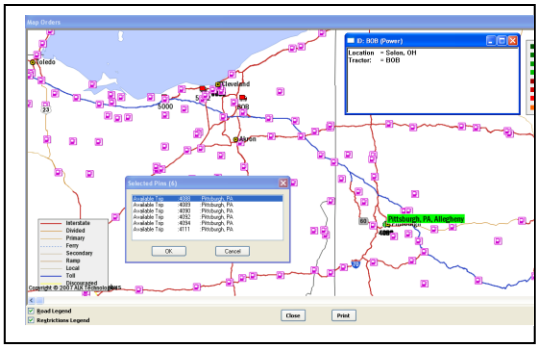

Figure 3. Map plots available loads versus trucks on map using ALK's PC Miler mapping software.

Through interviews with senior leadership at Organization 2, it was identified that tracking high priority loads had resulted in lost revenue and lower customer satisfaction. The customer provided high value freight with an emphasis of on-time delivery but had lost valuable revenue dollars due to the inability to track where the trucks were and when they were running late. After evaluation, it was decided a web portal with a spatial component would be implemented to address the concern of limited tracking of trucks. The web portal increased visibility of data for reporting purposes. It also provided dispatchers with the ability to track the identified loads and highlighted late delivery trucks. As seen in Appendix A, trucks were highlighted with green, yellow, and red dots indicating if they are on time (green), may be late (yellow) or are running late (red). In addition to the red indicator, an email notification was sent to the dispatcher and customer to indicate the product would not be delivered on-time. The external customer (the customer receiving the product) also had the ability to login to the portal to find the location of the delivery truck and the estimated time of arrival to their warehouse. The portal eliminated phone calls to dispatch from customers and enabled the external customers to get information quickly. The tool helped share information with end-users and management, thus providing a better understanding of the data in the system. The spatial feature of the web portal was used to graphically display information over the web. The resulting web portal (Figure 4) shows truck positions, available orders on a map, the number of available trucks by regional designation, and can also provide revenue and cost data.

The case study at Organization 3 revealed issues regarding trucks routed mileages and finding the best coordinated and efficient routes. To find out of route miles, a calculation was used by comparing the mileage of truck odometers to the estimated mileage of the route found using routing software.

Figure 4. Web portal with spatial features displaying high priority load information. Color coordinated dots indicated if product is on-time.

The organization research found trips included out of route mileage. It was determined a solution must be provided to decrease the number of miles being driven that are not associated with the actual delivery of a customer's product. This issue was discovered by using the initial metrics and was further analyzed by interviews with dispatchers during the auditing phase. The product being delivered had routes that were estimated to travel on roads equaling an anticipated number of miles. Without a process to track the position of the truck, the driver traveled on any route that he/she chose. The result was excessive wear on the vehicle, more fuel consumption and delays on the product being delivered. During the implementation phase, a web application with a mapping tool was introduced to eliminate out of route mileage that a truck driver may incur by taking the wrong roads not provided by the logistics software. A mobile communication solution was also implemented that tracked GPS positions and reported out of route mileage to dispatchers. After the delivery was completed, a dispatcher or manager used the maps to plot suggested routes versus actual completed routes based on GPS data collected along the trip. Figure 5 shows the plotted route from the dispatcher compared to the actual route driven.

Figure 5. Plot route versus actual. Blue line represents actual route, Green line represents dispatched route.

In the auditing phase of Organization 4, it was discovered that a trucking company had problems keeping track of vehicles that were being shipped from a processing facility to the automotive dealerships. The current process relied on data collected from drivers after the delivery was made. The automotive dealerships could not depend on estimated times of arrival and expensive cars were being transported without a proficient method of tracking. The gap in the existing technology was filled by using Radio Frequency Identification and bar codes on vehicles to save time on order management, provide GPS data and set estimated times of arrivals for dealerships expecting the new vehicles for delivery. Further problems were discovered during the audit phase of Organization 4. The issue was that hours were being spent by in-house staff updating orders after the driver completed the delivery. The process would involve a minimum of three phones calls from the carrier and then another three to five minutes of updating in the software. The solution

utilized technology and process improvements and used RFID technology to integrate the scanning of vehicles as they passed the gates from the origin and again when they made it to the entrance gate of the final location. RFID readers and GPS enabled devices were the solution. The solution allowed the customer to take data that was collected via the RFID readers and electronically import the information to the logistics software. The RFID reader updated the customer order each time it was scanned. This eliminated the need for phone calls or manual updates of order data, therefore reducing workload and gaining efficiency in the order processing, and more accurate tracking of vehicle deliveries.

Findings

During the assessment and auditing phases, it was discovered that all four companies benefited from improved processes and all are now using technology to improve the business's profitability, performance, and productivity. The organizations researched use these technologies to increase revenue, improve asset planning skills, gain better sales forecasting, improve on-time delivery percentages, and perform improved analysis on their data. The methods and tools that each organization utilized are different due to a number of factors. Those factors could be the business niche they are in, the level to which technology has been introduced to the company. Companies were able to increase profitability by limiting the number of non-revenue generating miles and eliminating out of route miles. As seen in Appendix B, companies that were able to change current processes in favor of utilizing technologies, such as RFID, were able to decrease the number of phone calls per day and increase the productivity of staff. This data was indicative of qualitative changes that can affect the overall happiness of employees. The overall effect may actually improve employee morale and hopefully result in fewer turnovers. Companies that utilized GIS tools and logistics software were able to keep employee numbers the same while increasing the number of managed trucks by over 30%.

- The results of the case study at Organization 1 included decreased empty miles associated with the order that negatively affects profit, increased revenue per mile, increased the ability of users to provide accurate and timely information regarding the customer's order, availability of resources or status while in-transit, and decreased manual processes to update load information in the database. Data provided in Appendix C.
- The benefits provided by the solution implemented at Organization 2 was real-time data sharing, ability to track and report on high priority freight, and automated notification to customers with interest in the load's delivery time. The solution improved performance and productivity by decreasing time spent communicating with customers. In addition, the solution provided increased ability for better decision making and data was based on real-time information.
- For the real-time solution provided to Organization 3, reports were created and triggered to send out email notifications that alerted dispatchers when the acceptable

tolerance of out of route miles had been broken.

- The evaluation of the customer issue and recommendations provided to Organization 4 increased profitability due to fewer hours used to input data, increased productivity due to not taking excessive phone calls and improved performance by drivers not have to report arrival and departure times after each pickup or delivery. The three phone calls per order were reduced to zero and the manual updates were eliminated due to information updates provided electronically.

All of the organizations benefited from enhancements in the visibility of trucks through the use of mobile communications. This was likely due to less time taken to find a truck's location and having data that is constantly updated allowed companies to quickly report on arrival or departure data. It was also found that when software tools were used to enhance the decision making process companies typically see empty mileage percentages decreased, revenue per miles increased and out of route miles decreased. Results indicated companies using mobile communication realized a decrease in 5% of empty miles for the months following recommendations from this project. The limitations of the analysis are the variables, including economic circumstances that could have increased the revenue with or without the recommendations and employee performance. It is difficult to evaluate the skill level or ability of an employee to make a decision. The improvements in key areas could be attributed to training or provided technologies but also could have been the normal learning curve of the employee to their job. Without the training, they may still have made better decisions thus increasing revenue and decreasing empty mileage.

It is apparent the increased utilization of technology will decrease manual dependencies, such as tabular data or manual documentation. This use of software and company specific recommendations allowed the organizations to leverage the tools that allow for better decision making such as sharing information that is stored centrally and communicated globally. The amount of time it takes to generate sales forecasting data and revenue reports were not specifically measured, but were significantly decreased. This is likely due to information being stored in one database and the automation of reports to pull specific information on a scheduled basis.

The significance of finding areas for improvement can be measured by operational metrics, increased revenue, employee satisfaction and overall reduction in the use of manual techniques.

Customer projects such as the ones identified in this report are successful or failures due to many factors. Some common reasons for failure include:

1. Senior Management buy-in is not secured.
2. Limited user involvement in the planning stages.
3. Inadequate upfront planning or communication.

The same is true for why projects succeed and include:

1. Benefits can be measureable and common goals are established.
2. Focus is on users.

3. Executive sponsor the project through to the end.

Additional limitation put on process improvement can be from existing employees unwilling to provide accurate representation of their duties or company cultures that do not promote change. Technology enabled solutions may increase profitability and productivity but a management staff that does not understand the value of promoting the need to change or how to manage the change can impede the performance of the employee. The most significant limitation is the executive level sponsorship of the project. Without the continued support and leadership from management, end users typically resist any change that may negatively affect their day to day duties.

Conclusions

This project was developed to measure the effectiveness of new logistics technologies compared to old techniques that typically used more man hours to complete similar tasks. The result of the research and analysis provided ways that any company can evaluate their own processes and measure the effectiveness of changing from antiquated habits to embracing technology for purposes of profitability, performance, and productivity. The use of GIS tools and software technologies improves the profitability, productivity and performance of trucking companies. Case studies in the research were evaluated and the analysis supports recommendations made to clients regarding how technology is utilized to gain competitive advantage. The result of the research and analysis provides ways that any company can evaluate their own processes and improve their performance by introducing technological advances in the trucking industry. The project has provided a deeper understanding of the advantages in utilizing software technology. Information gained from this project will be used to further analyze existing trends in technology and as a basis for company comparisons.

Acknowledgements

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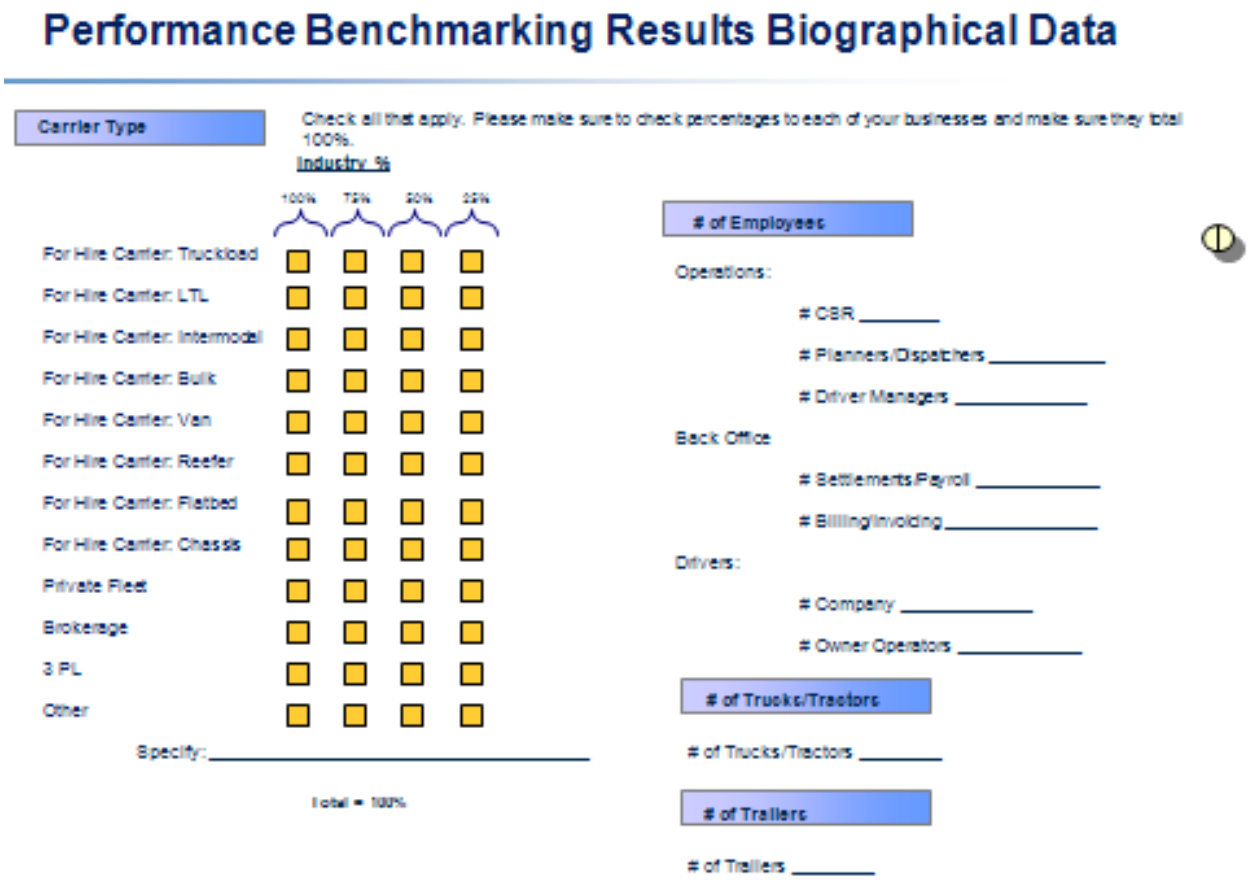
Appendix A. Key performance data found by using excel macros with SQL code to pull specific metric data from the SQL database. The information is used to measure productivity and performance statistics.

TMW Suite	
Version	2008.07_08.0981
Active Tractor Count	168
System Admin	
Users Entered	100
Groups Entered	16
% Users To Groups	83.00%
File Maintenance	
% Cities With Valid Region 1	8.93%
Total Companies	72409
Non Imported Companies	72409
Companies with Missing/Incomplete Zip	1013
Active Bill To Companies	58100
Ship or Cons Without Directions	61859
Active Drivers	169
Drivers Manually Entered	654
AP Drivers	0
AP Drivers with No PayTo	0
Active Tractors	168
Tractors Manually Entered	523
Payroll Tractors	0
AP Tractors with No PayTo	17
Active Trailers	858
Active Pay To's	4039
Orphaned PayTo's	54
Active Carriers	3565
Carriers with No Acct Type	0
GLReset Entries	14
Pay Details with No GL	13392
Inv Details with No GL	254
Order Entry	
Total Orders	44982
Completed Orders	42179
Non Completed Active Orders	220
Copied Orders	3570
Non Copied Orders	41412
Non Copied Last 30 days	1361
Non Copied Last 90 days	4165
Master Orders	29
Orders Copied From Master	189
Users Creating > 20 Non-Copied Orders	39
Imported Orders	0
% Pre-rated Orders	0.03%
Dispatch	
Split Trips	9322
X Dock Moves	486
Standalone MT Moves	471
% Moves With 1 Or More MT Events	64.83%
Driver Beams	4618
Tractor Beams	4311
Trailer Beams	17687
Trip Views on Pln Worksheet	20
Resource Views on Pln Worksheet	20
Regions Schemes Setup	4
% Trips w/Valid Org Reg1	14.65%
Consolidated Moves	809
% Drivers Utilized	94.65%
% Tractors Utilized	96.37%
% Trailers Utilized	94.18%
Orders with Carrier Assigned	10094
% Trips with Calculated Mileage	99.41%
Legs with >1 Payable Resource	18181
Legs with No Payable Resource	46

Invoicing	
Invoice Selection Entries	3
Total Invoices	45570
Active Chargetypes	14
% Active Chargetypes with GL#	100.00%
Miscellaneous Invoices	55
Supplemental Invoices	418
Printed Invoices	45269
Transferred Invoices	45263
Master Bills Printed	0
Invoices Created Last 30 Days	1725
Invoices Created Last 90 Days	4836
Credit Memo/Rebills	3182
% Invoices With Accessorial	31.96%
% Auto Rated Invoices	0.02%
Settlements	
Pay Header Count	22021
Future Pay Periods	35
Settlement Schedules	4
Transferred Pay Headers	21273
Closed Pay Headers	745
Active Paytypes	48
% Active Paytypes with GL#	100.00%
Payable Drivers with No Activity Table	0
Payable Tractors with No Activity Table	0
Payable Carriers with No Activity Table	1
Standing Deductions	381
Pay Details from Standing Deductions	8
Resources with Standing Deduction	305
% AP Tractors >1 Closed Pay Header	86.06%
% PR Drivers >1 Closed Pay Header	10.53%
% Auto Rated Trips	69.89%
% CMP Trips With a LH Pay Detail	94.40%
Rating	
Billing	
Primary Billing Rates	5
Accessorial Billing Rates	4
Line Item Billing Rates	1
% Acc/Linked LI with Attached Primary	100.00%
Billing Rates Used	2
Pay	
Primary Pay Rates	16
Accessorial Pay Rates	8
Line Item Pay Rates	0
% Acc Pay Rates with Attached Primary	100.00%
Pay Rates Used	22
Fuel Import	
Fuel Cards Set Up	1450
Account Codes Set Up	1
Customer Codes Set Up	3
Payable Tractors Without Cards	72
Payable Drivers Without Cards	67
Cards With No Asset	0
Fuel Purchases	51585
Fuel Purchased Pay Details	87745
Cash Advance Pay Details	11676

Appendix B. Biographical data of each organization that is being analyzed. The benchmarking data was compared against other companies and used to create ratios for performance statistics.



Performance Benchmarking Results Biographical Data

Carrier Type

Check all that apply. Please make sure to check percentages to each of your businesses and make sure they total 100%.

Industry %

	100%	75%	50%	25%
For Hire Carrier: Truckload	☐	☐	☐	☐
For Hire Carrier: LTL	☐	☐	☐	☐
For Hire Carrier: Intermodal	☐	☐	☐	☐
For Hire Carrier: Bulk	☐	☐	☐	☐
For Hire Carrier: Van	☐	☐	☐	☐
For Hire Carrier: Reefer	☐	☐	☐	☐
For Hire Carrier: Flatbed	☐	☐	☐	☐
For Hire Carrier: Chassis	☐	☐	☐	☐
Private Fleet	☐	☐	☐	☐
Brokerage	☐	☐	☐	☐
3 PL	☐	☐	☐	☐
Other	☐	☐	☐	☐

Specify: _____

Total = 100%

# of Employees

Operations:

CSR _____

Planners/Dispatchers _____

Driver Managers _____

Back Office

Settlements/Payroll _____

Billing/Invoicing _____

Drivers:

Company _____

Owner Operators _____

# of Trucks/Tractors

# of Trucks/Tractors _____

# of Trailers

# of Trailers _____

Appendix C. Tabular revenue and mileage data collected prior to the case study and after the recommended changes were implemented.

GetData

Start Year **2008**

	Revenue	Revenue	Revenue	Revenue	Total Miles	Total Miles	Total Miles	Total Miles	Empty Miles	Empty Miles	Empty Miles
	2008	2009	2010	2011	2008	2009	2010	2011	2008	2009	2010
Jan	$2,135,840	$2,021,169			1,425,284	1,613,076			95,984	117,985	
Feb	$2,176,684	$2,171,571			1,469,550	1,864,990			108,573	108,197	
Mar	$2,379,526	$2,698,724			1,584,560	2,221,329			105,543	142,797	
Apr	$2,170,166	$2,657,302			1,425,571	2,153,517			106,620	149,279	
May	$2,528,826	$2,752,936			1,592,671	2,232,238			113,198	153,004	
Jun	$2,712,148	$2,016,556			1,618,693	1,585,074			133,730	109,392	
Jul	$2,504,571				1,451,678				154,315		
Aug	$2,516,144				1,509,505				183,964		
Sep	$2,853,523				1,681,738				166,343		
Oct	$2,710,557				1,668,880				173,677		
Nov	$2,282,844				1,463,669				131,785		
Dec	$2,373,334				1,635,556				123,186		
Total	$29,344,163	$14,318,258	$0	$0	18,527,355	11,670,224	0	0	1,596,918	780,654	0