



LOGISTIC PROBLEM

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Abstract

The purpose of this research is to learn more about logistic problems and how it can be solved, and to discuss about the different document reviews that can be applied. This is a complete documentary investigation which was based by a company interview. The company is dedicated to the transport of goods both import and export, it spent more money and time, because 8 suppliers was sending 3 trucks for each one to transported their products to a warehouse, the solution was that only a truck transported all products. This study case provides a comprehensive review of literature and it is primarily documentary and therefore does not any other kind of data, except document reviews.

Keywords – logistic, operational management, strategies.

Introduction

The overall management of the way resources is obtained, stored and moved to the locations where they are required. Logistics management entails identifying potential suppliers and distributors; evaluating how accessible and effective they are and establishing relationships and signing contracts with the companies who offer the best combination of price and service. A company might also choose to handle its own logistics if it is cost-effective to do so.

The company will be called transportes RON. It is dedicated to a high quality level of freight transportation service. Providing safety, capacity, attention and service that their customer requires, under an environment of unity and companionship, procuring along with this, the growth and continuous improvement of the company for the benefit of its customers, suppliers, employees, community and shareholders.

Talking about operation they have 130 units Freightliner, international and ken worth tractors, models 2005 to 2013. These equipment's have state of the art transportation technology, with rolling stability systems, ABS and air ride suspension, they have 250 Trailers with air ride suspension.

Their operators are trained in safety measures in general for a safe operation of their vehicle, for the safety of their customers, highways, the company and their own. Through the Department of Operations, the operators are constantly reminded about the importance of security. They receive monthly literature and an annual training course

They have trailer interchange agreements with various carriers in the United States and Canada. Some of these include: CFI, Werner, Carter Express, Averitt Express, PAM, TSI, Panamex, GTS, DHT, Express Carriers, U.S. Express, Continental, Schneider, USA Logistics, NDL, Landstar, among others.

All their units are equipped with the Satellite Positioning System (GPS). This allows drivers to be communicated at any time with their offices. By the same token, their offices are in communication with their drivers at any time, as well as know their exact location at any moment.

By having an efficient supply chain and proper logistical procedures, a company can cut costs and increase efficiency. When shippers, vendors, and customers can seamlessly pinpoint the location of any shipment at any point of a supply chain, all parties are sent into a nirvana-like state of visibility, knowing that they can keep tabs on everything from the raw materials to the final product.

The list of steps that logistics professionals—who are equipped with the technology and the drive—can follow on the path to optimal visibility are:

Step 1: Assess your logistics strategy

The introduction of a new process always starts with an introspective look. Supply chain visibility is no different. “You really need to take a step back and remove the hinges off of your logistics strategy before getting into any visibility implementation,” says Shanton Wilcox, principal for Cap Gemini Consulting’s supply chain management practice. The firm that relies on 3PLs and

is looking to improve its warehouse visibility, for example, should consider whether to enhance its operations internally, or turn to the outside providers that already possess the platforms necessary to achieve better levels of visibility. “By focusing on which visibility platform makes the most sense for your individual firm and factoring in your existing logistics strategy,” says Wilcox, “you’ll be able to make the most sound decisions regarding your visibility initiative.” McCrea (2011).

Step 2: Determine ownership

The concept of visibility looks good on paper, but if no one takes ownership of the initiative it will fail. You can avoid this trap by determining ownership early in the game and by setting up processes, alerts, and functions to ensure that the visibility is used to benefit your entire organization. Decide who the decision makers will be when an alert goes off for a specific trade lane or carrier, or when a shipment turns up missing. In some cases the logistics manager may be the most valid choice, but in others the customer service department could be the right candidate. “You really have to figure out who owns the process and how things will be handled once the technology tells you that there’s a problem,” says Wilcox. “Only then can you get the most value out of your visibility initiatives.” McCrea (2011).

Step 3: Integrate with trading partners

Supply chain visibility proves its worth when shippers automate specific actions and then use the resultant information—which comes in the form of alerts, notices, and other messages—to make educated decisions based on the data received. Shippers that take the time to integrate their technology with that of their trading partners—who may be using EDI or even manual systems of emails and faxes—will gain the most benefit from their visibility programs. “Gaining visibility is all about getting timely, complete information from a variety of trading partners who may or may not be up to speed with technology themselves,” says Adrian Gonzalez, director at Logistics Viewpoints. McCrea (2011).

Step 4: Rethink that lean inventory strategy

In response to challenging economic times, many companies have stripped back their inventory levels to avoid getting stuck with too many goods. Unfortunately, this strategy doesn’t lend itself to optimized visibility, and it can even open the shipper up to further problems once business partners can “see” that inventory levels are low. “Companies have leaned out their inventories too much,” observes Jerry O’Dwyer, principal at Deloitte Consulting , “and they now

really need to do a better job of inventory planning.” To get started on that path, O’Dwyer advises logistics managers to talk to their finance departments to “figure out how to get a bit of extra inventory into the system, rather than focusing on the fear of getting caught with too much product that doesn’t move.” McCrea (2011).

Step 5: Open lines of communications with customers

Your customers can play an important role in helping your organization achieve better supply chain visibility—that is if you let them get involved. In fact, such initiatives can serve as market differentiators in today’s competitive business environment where customers want everything delivered yesterday and at the lowest possible costs. “Talk to your customers about your visibility initiatives and the role that they can play in those efforts,” Wilcox advises. Make those customers a part of the community by sharing bills of lading, tracking, and alert mechanisms with them. McCrea (2011).

Step 6: Go beyond just taking orders

Shippers striving for improved supply chain visibility have the opportunity to go beyond just taking orders and often transcend into more advisory roles for both their vendors and customers. There’s true value in knowing what day a shipment was received, when it arrived in the warehouse, when it was shipped back out, and exactly what time it will get to its destination. And knowing a year’s worth of shipping data for a specific client—and being able to pull up that data at a moment’s notice—puts the shipper in an even more positive light. “Companies that achieve a high level of visibility across their operations put themselves in a great position to provide additional recommendations and advisory services to their customers,” says O’Dwyer. McCrea (2011).

Step 7: Think globally

There was time in the not-too-distant past when international orders languished for months at sea, on docks, or in trucks. During transit, those shipments were difficult to track, at best. By combining technology with visibility strategies, shippers can get granular details about those overseas activities. By linking into freight forwarders, ocean carriers, 3PLs, and other providers’ networks, shippers can monitor ETAs (using “transit messages” and alerts) on a minute-by-minute basis and make decisions based on that information. “If a ship’s drive shaft breaks and delays the shipment by three days,” says Dwight Klappich, research vice president for Gartner, Inc., “you’ll know immediately and be able to adjust accordingly.” McCrea (2011).

Step 8: Use the information wisely

In some cases, “adjusting accordingly” could simply mean letting the customer know that delivery will be behind schedule by three days. It could also mean pulling inventory from another DC to cover the late order—knowing that the new shipment will be arriving within 72 hours. “Just because something is late doesn’t necessarily mean there is a problem,” says Klappich, who expects visibility solutions to be tied more closely with event management programs in the near future. “We’re not quite there yet, but as the two are tied more closely together shippers will be even better equipped to diagnose and resolve problems.” McCrea (2011).

On the other hand, a company with poor logistics will fail to meet customers' expectations and see its business suffer. And this happened with the company Transportes RON, they have a problem with logistics which was causing that the company lost money and time.

Problem

The main operational problems of the company are varied, the consolidation of routes as well as human resources are the main ones.

As a transport company daily operation issues are different, one of the most important problems that the company had, was an automotive company in Silao-Guanajuato, that had 8

truck 20 ft			
	Mexico	Toluca	Puebla
Monthly trips made	2	3	3
Kilometers	403.3	332.1	466.1
Cost	131637.12	162 596.16	228202.56

suppliers in the metropolitan area of Mexico City, each supplier was sending different types and sizes of trucks to transport their product, this caused many losses of money and time.

Figure 1 Company expenses including monthly trips made and kilometers tours (truck 20ft). Adapted from the company’s data.

$$2\text{Mexico Silao } 403.3 \text{ km} * 8.5 = 3428.05(c/u)$$

$$3\text{Toluca Silao } 332.1 \text{ km} * 8.5 = 2822.85 (c/u)$$

$$3\text{Puebla Silao } 466.1 \text{ km} * 8.5 = 3961.85(c/u)$$

Truck \$6000 plus IVA minus ret. 4% = * 1.12, \$6720(350km)

truck		20ft
internal dimensions	long	5,898m
	width	2,352m
	high	2,385m
dimensions of the opening door	width	2,343m
	high	2,280m
volume		33,1m3

Figure 2 Measures of a truck of 20ft.
 Adapted from the company's data.

When the company realized that it was spending a lot of money and that a 20ft truck transporting few merchandise, it began to take drastic measures to reduce costs and time that these generated.

Hypothesis

The company made two hypotheses to treat to solve the problem

1. Deliveries to direct in Original their cross dock to warehouse that is the company rent in Mexico and consolidate the various products in trailers of 53 feet , by doing this they will reduce customer costs by using cross dock and the consolidation of the company start to operate having better margins with only logistic freight operation.

2. Implement forward logistics, which is about getting your product to market and uses automated information systems to track items. Forward logistics ranges from product development to manufacturing to distribution to end-market. This will reduce their lead-times and also increase their service levels by responding faster to customer enquiries and optimize their products to local customer demands.

Theory

Time and motion study

We must take a decision in the way the theoretical framework is taking importance so we base on Harper &Mousa (2013) Time and motion study is a Method for establishing employee productivity standards in which a complex task is broken into small, simple steps, the sequence of movements taken by the employee in performing those steps is carefully observed to detect and eliminate redundant or wasteful motion, and precise time taken for each correct movement is measured. From these measurements production and delivery times and prices can be computed and incentive schemes can be devised.

Harper &Mousa (2013) Time study began in the 1880s as a means of wage-rate setting by Frederick W. Taylor, who is regarded as the “father of scientific management.” It consists of a wide variety of procedures for determining the amount of time required, under certain standard conditions of measurement, for tasks involving some human activity.

Harper &Mousa (2013) Motion study was developed by Frank B. Gilbreth and Lillian M. Gilbreth and consists of a wide variety of procedures for the description, systematic analysis, and means of improving work methods. It is difficult to separate these two aspects completely. Frank and Lillian Gilbreth used motion picture to study worker motions – developed 17 motions called “therbligs” that describe all possible work.

Harper &Mousa (2013) Frank and Lillian also broadened scientific management by including the human element, therefore using psychology to gain the cooperation of employees.

Harper &Mousa (2013) Motion and time analysis could be used to help find a preferential way of doing the work and could assist in effectively managing or controlling the activity. This approach has been successfully applied to factories, hospitals, department stores, housework, banks, cafeteria work, libraries, music, and too many other human activities.

University of Washington. (n.d.). Learning Curve: Usually define learning as a percentage reduction in the time it takes to make a unit. The definition says a doubling of the total number of units made produce a constant decrease in the time per unit An 80% learning curve implies a 20% decrease in unit time with each doubling of the number produced (90% implies 10% decrease, 100% implies no improvement). Learning Curve Applies for Mass Production – Assembly line, G.T. Cell – Repetitive work and other places where representation works performed.

Unit	Unit Time (hours)
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1	10
2	$(.8)(10) = 8$
4	$(.8)(8) = 6.4$
8	$(.8)(6.4) = 5.12$
16	$(.8)(5.12) = 4.096$

Note: For an 80% learning Curve. Adapted from <http://courses.washington.edu/ie337/Motion%20and%20Time%20Study.pdf>. Copyright 2015 by University of Washington.

Harper & Mousa (2013) However, the goal of a time and motion study is not simply efficiency. These studies are done to create a baseline that can be used in the future when evaluating procedural, equipment, or personnel changes. The goal can be to understand the skills required to enable individuals to perform the work and, thus, to provide the correct training.

And other term related to Taylors study is the Taylorism that was the most influential management theory of the 20th century. Taylorism has largely vanished in the contemporary workplace, superseded by new techniques of flexible specialization and lean production. Taylorism aims to achieve maximum job fragmentation to minimize skill requirements and job learning time, separates execution of work from work-planning, separates direct labor from indirect labor replaces rule of thumb productivity estimates with precise measurements, introduces time and motion study for optimum job performance, cost accounting, tool and work station design, and makes possible payment-by-result method of wage determination. Wayne Ross (n.d)

Economic Theory of Production and Production Cost

The production theory show how firms transform inputs into desirable outputs and help us understand why productivity and living standards have risen over time and how firms manage their internal activities. Samuelson & Nordhaus (2010).

All companies, not matter whether devote to providing products or services need to know how many inputs are needed to produce the outputs. The companies have to satisfy the demand of the clients, but they have to do an efficient production at the lowest prices. Always the firms attempt to produce the maximum level of output avoiding loses.

Samuelson & Nordhaus (2010) the production function is the relationship between the maximum amount of output that can be produced and the inputs required to make that output. It specifies the maximum output that can be produced with a given quantity of inputs. It is defined for a given state of technical knowledge.

Starting with a firm's production function, we can calculate three important production concepts. The first one is total product which designates the total amount of output produced, in physical units by using a set of inputs. The second one is the marginal product of an input is the extra output produced when 1 additionally unit of that input is added while other inputs are held constant. And the third one is average output which is equals total output divided by total units of input. Samuelson & Nordhaus (2010).

Samuelson & Nordhaus (2010). Production requires not only labor and land, but also time. There are two different time periods are used to develop theories of production and production costs. The first one is the short run that is the period in which firms can adjust production by changing variable factors such as materials and labor but cannot change fixed factors such as capital. The second one is the long run which is the period sufficiently long that all including capital can be adjusted.

Another important topic is the production cost. The prices are important in the production and supply decision making, because each money expense reduces the profit of the company. Coming up next we'll see the concepts of economic analysis of cost

Total cost represents the lowest total money expense needed to produce each level of output, total cost rises as the quantity rises. *Fixed cost* represents the total money expense that is paid out even when no output is produced; it is unaffected by any variation in the quantity of output. *Variable Cost* represents expenses that vary with the level of output and includes all costs that are not fixed. *Marginal Cost* denotes the extra or additional cost of producing one extra unit of output. *Average or Unit Cost* is the total cost divided by the total number of units produced. *Average fixed cost* is total fixed cost divided by number of units produced. *Average variable cost* is total variable cost divided by number of units produced. Samuelson & Nordhaus (2010).

Each company has to decide the amount of input that it requires (labor, capital, land, energy, various materials and services). The companies have to choose what inputs required are and find the manner to reduce the total cost of production.

Effective Problem Solving Steps for Business

1. Identify the Problem: The first area of focus in your problem solving steps is recognition of the problem. This might sound like common sense; however, this is a very important step. Try to describe the problem as objectively as possible, as opposed to focusing on the potential consequences or implications of the problem. This can give you a better sense of the issue you are specifically dealing with at the moment. Robinson (2014).

2. Define and Analyze the Problem: In this second of six problem solving steps, you will want to figure out what caused the problem, what the problem looks like at this moment, and the urgency of addressing the problem. Find out the root cause of the problem. In this step, you want to also learn as much as you can about the problem. Be flexible in your approach. Do research on the problem. Look at the problem from a different perspective. Evaluate all of the different ways in which the problem could impact you. Robinson (2014).

3. Generate Potential Solutions: Here you want to brainstorm and come up with as many solutions as you possibly can for the problem as you come to the third phase of problem solving steps. Be creative and don't concern yourself at this point with how feasible the solutions which can fix the problem. You want a number of different options to choose from. This process of generating solutions can also help you look at the problem from multiple perspectives. Keep in mind that it may be impossible to address all areas of a problem. When this is the case, break the problem down and try to generate solutions by writing them down or speaking in a group. Robinson (2014).

4. Find solutions for parts of the problem (as opposed to the problem as a whole). It may be necessary to seek out help in your problem solving steps by polling trusted colleagues or friends. A cross-functional problem solving group can help. Different ideas, from different points of view, put on a white board helps. Anything goes; any solution is acceptable, no matter how outlandish. No comment is withheld. Freewheeling and objectivity are the keys here. Furthermore, this activity lends itself towards creating trust, leading to true collaboration. After all, collaboration is one of the tenets of innovation. Robinson (2014).

5. Decision-Making: In this fifth of our problem solving steps, you want to evaluate the solutions you came up with in step 3. Weigh the short- and long-term pros and cons of each solution. In addition, in this step, you want to start to evaluate how feasible each solution is. That is, how easily can you implement the solution to the problem? Mark each one on a scale of feasibility,

so you can sort them how you wish later in some way when you transcribe what you are creating on a white board. Robinson (2014).

6. Implement a Solution and evaluate its Success: In this final of our problem solving steps, you want to choose a solution and implement it. Take action. In choosing a solution, you want to weigh the pros and cons of each potential solution, and it is generally a good idea to start out with a solution that is associated with low risk and that is compatible with your priorities and future goals. Once you have implemented a solution, evaluate how it was and was not successful. If the solution did not completely address the problem, you can then move back through some of the different stages to address other areas of the problem. Robinson (2014)

Methodology

This research is a documentary, non-experimental, personal interviews, and not empirical investigation of a case study through a company interview and document reviews. This type of research can be used to build on as reduce costs when a company has logistics problems. It covers a complete investigation about a logistic problem and the solution of that problem using general information of a transportation company, strategies used, methods, analysis, reducing cost and time, among others. The authors analyze and structure the relevant data through different ways. To develop this investigation, the authors had to follow some steps. The first one step was going to a company for an interview and to ask about a problem that they had and the solution. After to know this information the authors began to search related information, theories, documentary information and investigate more about that company and finally, they started to structure this case study.

The logistic problem occurred on summer 2014, the company realize that spend many money and time, so it began to search what the problem is, one time that the problem was found, the logistic operations manager searched a solution, with the collaboration of the logistic department, the suppliers and the transport drivers, together analyze the problem and then they made the costs and mapping operation procedures. The decision was successful and it was implemented definitely.

The goal is that this information can serve others to solve this kind of problem, because it is a real problem that occurred and could be solved in a large company, this might work for many companies or individuals who want to know a little more about such problems. The results are very

good; we can realize that the company is saving a lot of money because it solved the problem correctly.

Results

The company did was to direct these deliveries to its cross dock that is a warehouse that RON rents in Mexico and consolidate the various product in trailers of 53 feet. The results of using the first hypothesis was so successful that they currently developing, by doing this we reduced customer costs by using cross dock and consolidation RON start to operate as a logistic having better margins only freight operation.

The company is currently developing a similar project between Monterrey and Silao. It managed to save the 50 percent of what they did before.

No there was no other solution that would mean this much of cost reduction. By doing a new operation the economic risk was that is this operation fails the chain supply would have stop to our client and that would mean millions in cost by stopping the manufacturing, we were very careful with this operation and now it represents many financial benefits to the client.

Figure 3 Company expenses including monthly trips made and kilometers tours (truck20ft) after apply the hypothesis. Adapted from the company's data.

Final Cost:

Mexico- Silao → 79825.1998

Toluca- Silao → 119499.12

Puebla-Silao → 168703.93

Truck		53ft	20 ft	
internal dimensions	long	12,032m		
	width	2,352m		
	high	2,690m		
dimensions of the opening door	width	2,343m		
	high	2,560m		
volume		76,1m3	1	1
			352.1	486.1
			43097.04	59498.63
		51811.9202		

Figure 2 Measures of a truck of 53ft. Adapted from the company's data.

As we can see, with the solution that the company took, it reduced its costs significantly and consequently the time was also reduced. This solution was implemented and definitely favored much to the cost of the company.

Discussion and conclusion

In this research, we could learn about some of the different theories of the logistics process and how an enterprise can reduce cost and time in the process of a problem using a methodology for each solution, on the process of looking for a solution was found that they're different types of steps that a company must follow if they want to have a good logistic into the company. In this case the hypothesis that the company took was the first, consolidate the various products in trailers of 53 feet, by doing this they reduce customer costs by using cross dock and the consolidation of the company start to operate having better margins, the second hypothesis was not selected because the first was more feasible and then it resulted successful. The company in this case in particular saves the 50 percent of what they did before.

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