The FedEx brand name is synonymous with express package delivery. When a company or individual needs to send a package in a quick and timely manner, they say “FedEx it.”
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1) DEFINITION OF LOGISTICS

"Logistics means having the right thing, at the right place, at the right time, with right costs, to the right customer"

First of all, logistics is defined as a business planning framework for the management of material, service, information and capital flows. It includes the increasingly complex information which known by electronic data interchange EDI.

Logistics is also the science of planning and implementing the acquisition and use of the resources necessary to sustain the operation of a system: operations of procurement, purchasing, inventory, warehousing, Packaging, distribution, transportation, customer support, Stock control, financial and human resources.

FedEx, in this analysis is a quiet interesting company which is based on the history of a man, and then re-used through its logistics strategy.

2) INTRODUCTION OF THE COMPANY

During one of his two fighting tours in Vietnam, Federal Express CEO Frederick Smith got a significant lesson in survival from a Marine sergeant. The sergeant told Smith, “there’s only three things you gotta remember: shoot, move, and communicate.”

Thirty years later, and at the helm of one the shipping industry’s largest competitors, Smith has used that same tactical advice in the business world.

Aggressive “shooting” strategy

- with numerous shipping regions around the world
- A solid foundation and infrastructure for the company and its future.

Innovate its products and develop with the needs of its customers

Of communication has emerged as one of the company’s greatest competencies
• With customers
• Internally as well.

In an overview, we can follow this introduction with some eloquent figures with the most internationally known supply chain solution which is the FedEx international express with through its network ships 11.5 million pounds of packages per day, by the support of 15 international hub airports and local airports (USA) from which packages are locally collected and distributed.

Also, FedEx shipment data and assessing methods are based on logistic theory provide for the development of a logistic cost function. To determine the lowest cost operating strategy for FedEx international express.

Logistic costs are assessed for the current network, which consolidate international shipments into fewer hub airports with higher volume.

Then before going further on details about logistic specific terms and definition and about the several supply chain solutions of FedEx we can just mentioned some milestones of this company.

• Overview of FedEx milestones

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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| 1971 | Express Corporation is founded in Little Rock, Arkansas. Frederick Smith  
• The turning point of his idea was for one to two day package and air-freight delivery that was better than the current distribution system. |
| 1973 | The express-delivery concept is tested, using Dassault Falcon aircraft and covering 12 cities in the East and Midwest  
• Dassault Falcon aircraft was adapted for the goods shipments with an additional cargo door |
| 1977 | Congress passes Public Law 95-163 enabling FedEx and other cargo airlines to use larger aircraft with no geographic restrictions on routes. |
| 1984 | Federal Express acquires Gelco Express International and launches operations |
We can see through FedEx’s history the willing of expanding its activity nationwide and worldwide by using new technologies and purchasing companies (browlfield strategy).

So to get right to the point and to go deeply on details, we can begin the analysis of the FedEx’s logistics process with first of all the supply chain solution. FedEx understands that different customers have different needs. Therefore FedEx has divided itself into seven different segments

3) FEDEX SUPPLY CHAIN SOLUTION

3.1) What is a supply chain?

A supply chain consists of the series of activities and organizations that materials move through on their journey from initial suppliers to final customers.

3.2) FedEx Express
Delivering packages, documents and freight to 214 countries. Overnight service virtually extends to the entire United States population. Offers the most comprehensive international freight service in the industry. Backed by a money-back guarantee, real-time tracking and advanced customs clearance.

Alliances with certain retailers for drop-off sites—providing customers the opportunity to drop off packages at locations in office buildings, shopping centers, corporate or industrial parks and outside U.S. Post Offices. Agreements with the U.S. Postal Service that run through August 2008.

• FedEx Express provides air capacity for transportation of Priority Mail, Express Mail and First Class Mail for the U.S. Postal Service.
• FedEx Express has the option to place a self-service drop box in every U.S. Post Office location.

3.3) FedEx Ground: FedEx Home Delivery

Offering unique, convenient, customized service, most of which are not offered by competitors, including extended evening delivery, Saturday delivery, and premium services, such as day-specific, signature and appointment delivery. Provides ground service to 100% of the United States population.
Overnight service to approximately 92% of the United States population. Also provided to 100% of the Canadian population through a subsidiary.

3.4) FedEx Freight

Has a fully integrated Website, Freight.FedEx.com, which combines the resources of its operating company Websites to create a one-stop LTL information source including a bill of lading generator and e-mail delivery notification, make freight shipping easier and bring customers closer to their own account information.

3.5) FedEx Trade Networks

A leading provider of international trade services, offering services for international businesses.

3.6) FedEx Services
To enhance its single-point-of-access strategy. Much of marketing activities for FedEx Express and FedEx Ground are combined under FedEx Services to more effectively sell the entire portfolio of express, ground and e-commerce services. Sells and markets the full portfolio of services offered by subsidiaries and provides customer-facing solutions that meet customer needs.

3.7) FedEx Supply Chain Services (subsidiary)

Offers an extensive range of supply chain management services, including transportation management, fulfillment and fleet services.

Its management programs use advanced electronic data interchanges to speed communications between customers and their suppliers, resulting in more cost-effective solutions and enhanced levels of customer service.

3.8) FedEx customs critical

FedEx Custom Critical, which provide shipping of products requiring special care in handling or specially equipped vehicles

FedEx is able to meet the needs of all these segments. They have spent an extraordinary amount of capital developing their infrastructure, just so they can make the best promises to their customers. FedEx transports more than 3 million items to over 200 countries each day. Within each business unit are specific functional units that perform particular functions. The main functional units are logistics and operations for its transportation system.

These units assure the coordination and smooth flow of FedEx’s deliveries. The end result is a high level of quality service. Their service includes customer responsiveness and innovations such as; its aircraft fleet, its hubs and package handling systems, package tracking, customer support functions, and logistics support. Not only does this help FedEx follow through with their promises, but in some ways that are superior to that of the competition.

4. THE AIMS OF FEDEX LOGISTICS

“Logistics is the time-related positioning of resources or the strategic management of the total supply-chain” and beyond this definition we can lay the emphasis on the supply-chain which describe a sequence of events intended to satisfy a customer. Besides in the case of FedEx we will see a strong company with important logistics capacities to respond to any demands.
5. DEFICIENCIES STEPS OF A SUPPLY CHAIN

Supply chains exist to help deficiencies between suppliers and customers. Overcoming physical distance is the heart of supply chains aims, plus some main additional criteria which show the efficiencies or deficiencies of a company like FedEx.

- **space** how suppliers physically separate from customers
- **Time** how times it takes from the shipper to the consignee
- **quantity** How the amounts are managed from the shipper to the consignee/from suppliers to the demand
- **information** how the data can inform customers about their products and how the supply chain can be adapted to the suppliers/shippers

In the case of FedEx we will study through several tools how the company overcomes the deficiencies and why FedEx is one of the most important international shipment companies. But how managers run efficiently the logistics process within FedEx huge network and what is the accurate way to define efficiency? There are plenty of answers, and managers may define it in terms of fast deliveries, low costs, quick response, low stocks, no damage, few mistakes, high staff morale, and so on.

6) WAREHOUSING STRATEGY OF FEDEX

6.1) What is a warehouse?

A warehouse is a building for storage of goods. Warehouses are used by manufacturers, importers, exporters, shipments companies etc. They are usually large plain buildings in industrial areas of cities and towns and villages. They usually have loading docks to load and unload goods from trucks. Sometimes warehouses are designed for the loading and unloading of goods directly from railways, airports, or seaports.
6.2) Worldwide logistics distribution centers of FedEx

Indeed FedEx Express has established a network of Distribution Centers in locations across Asia-Pacific specializing in Cross-Docking operations*, Service Parts management, and other adapted logistics applications.

Cross-docking operations* is a practice in logistics of unloading materials from an incoming semi-trailer truck or railroad car and loading these materials directly into outbound trucks, trailers, or rail cars, with little or no storage in between.

6.3) FedEx regional distribution centers

So to be accurate on the analysis we can also talk about a real example that show how the logistics distribution centers of FedEx are great.
6.4) Example of regional distribution centers in Asia:

![Diagram showing distribution centers](image)

6.5) Operations and benefits

The benefits of these Regional Distribution Centers are first of all the fact that it allow low risk and low cost start up. There is Global warehouse management system maintenance, plus a real supply & delivery chain management at the international scale. Moreover there is a Total Inventory Visibility and at least it’s convenient and reliable.

6.6) Example trough Turn-around time

Within the manufacturing the turn-around time designates the time interval, which is needed by beginning of the treatment up to the completion of a product. In detail the turn-around time sits down thereby together from preparation time, operating time and downtime.

- **Turn-around time reduce**

The goal in the manufacturing should always be it the costs of a production order as possible to keep as small. This can be achieved by reduction of the turn-around time, whereby during the reduction the quality of the manufacturing may not become leg pregnant.

- There is the possibility the capacity of a job to increase on the one hand. By the higher capacity can become more generating in same time.
- Second possibility for the reduction of the turn-around time is to be saved it for preparation time. Around this to manage should homogeneous orders, which are to be
manufactured time near into an order are combined. Thus not the preparation time develops, but only for one for each order.

- As the third possibility the downtime can be reduced as the production plants is meaningfully arranged.

- **Lead time**

The lead time definition is dealing with the time it takes from ordering materials to delivering materials. The competition is rude between FedEx and the others heavy competitors, because one of the decisive point is of course the lead time. More the time is reduced between the shipper and the consignee and more the company is competitive hence an interesting strategy where customers can make the acquaintance with a reactive company as we can see it in the under mentioned schemes. » Fast deliveries” are definitely the master words of this analysis.
6.7) Express replenishment

6.8) Centralized Versus Decentralized warehousing FedEx analysis

If a warehousing strategy is used, someone has to decide whether to select a centralized or a decentralized system. In centralized warehousing, a single warehouse serves the whole market, while in decentralized warehousing the market is divided into different zones.

It is important to mention that Decentralized warehousing leads to reduce lead times since warehouses are much closer to customers. On the other hand, centralized warehousing is characterized by lower facility costs because of larger economies of scale. So in the case of FedEx it is internationally decentralized warehousing but nationally centralized warehousing because in most of the case there is at least one warehouse per country according the map above. Except for the United-states where around seven warehouses are established.

Besides Inbound transportation costs (from shipper to consignee) are lower in centralized system while outbound transportation costs (from warehouse to consignee) are lower in a decentralized system.

6.9) Inventory management

Inventory management is a key issue in logistics system planning and operations, inventories are stockpiles of goods waiting to be manufactured and especially here to be transported
• Materials stocked in distribution centers like we mentioned it before with FedEx
• Improving service level with finished goods in FedEx warehouses close to customers yields shorter lead times
• FedEx is reducing overall logistics cost to find it more convenient to satisfy customer demand from local warehouses
• FedEx Coping with randomness in customer demand and lead times. Inventories of goods help satisfy customer demand even if unexpected delivery delays occur
• It also allows FedEx overcoming inefficiencies in managing the logistics system. Inventories may used to overcome inefficiencies in managing the logistics system.

FedEx Distribution Strategy

7) TRANSPORTATION STRATEGY

7.1) What is lean transportation?

*Lean Transportation* — is an executive white paper that discusses how Lean Principles integrate into the transportation function. Written in a practical and informative manner, this white paper reviews key lean principles and how they apply strategically and operationally to transportation management. In addition, the reader will be introduced to the *Four Critical Laws of Lean Transportation*. Effective execution of these Lean Transportation laws will allow the practitioner to identify and eliminate waste in transportation. The paper will also discuss how to manage transportation costs while implementing the key Lean Logistics principles of Lot Size Reduction, Increased Delivery Frequency and Level Flow. This white paper is a must read for all Transportation, Logistics and Supply Chain managers who are attempting to understand and apply Lean principles to the transportation function.

“*Lean*” is defined in many different ways by companies. *Here is a sampling of common Lean.*
• **Definitions and goals**
  1. Lean is an organizational methodology designed to create a learning organization through a culture focused on relentless problem solving and teamwork.
  2. Lean is a philosophy based on lead-time reduction from customer order to delivery. Reducing lead times make an organization more flexible and responsive. Benefits of short lead times include fast feedback loops, responsiveness to the customer (short lead time) and elimination of supply chain costs related to inventory tracking and inventory carrying costs.
  3. Lean is a manufacturing method based on manufacturing strictly to customer demand and focusing on one-piece flow. The purpose is to eliminate any chance of over production that will result in excess, unnecessary and costly inventories.
  4. Lean is an operational model that discounts the value of economies of scale and focuses on cost reduction as a result of small, incremental continuous improvements.
  5. Lean is a set of tools to reduce waste, where waste is defined as any non-value added process. A non-value added process is defined as any process for which the customer is not willingly to pay.

7.2) **Lean transportation of FedEx**

Lean Manufacturing continues to increase in strategic popularity as organizations strive to increase flow of material and reduce waste at all levels in the supply chain.

*Here is some Wastes according to FedEx Lean Thinking*

• **Over Processing**
The waste that is created when we do more than is required to meet customer’s needs.

• **Motion**
All motion that does not add value to the product or process. Walking around, searching for material or tools.

• **Waiting**
All waste that exists because we are waiting for material, people, upstream processes, orders and all other dynamics that result in waiting time before we can perform our work.

• **Transportation**
Transportation in excess of what is required if inventory and flow exists in the network. This includes underutilized equipment, inter-plant shuttles, trailer demurrage and other transportation wastes.
The 8 Rights fundamental goals of logistics. Transportation processes must efficiently support these 8 Rights without creating excessive material movement.

- **Right Materials**
- **Right Quantity**
- **Right Time**
- **Right Place**
- **Right Source**
- **Right Price**
- **Right Quality**
- **Right Service**

Four lean transportation laws can explain where and how transportation processes may be suboptimal and how the application of lean in transportation can positively impact overall FedEx organizational performance.

**Law N°1 = Lean Transportation – The Law of Transportation Waste**
All transportation is not waste and transportation can be used as a strategic differentiator. However, transportation in excess of what is required is waste and should be eliminated.

**Law N°2 = Lean Transportation – The Law of Transportation Strategy**
Transportation strategy and execution should support inventory strategies designed to support customer expectations. Inventory and customer strategies should not be a result of transportation strategies based on silo optimization of the transportation function.

- **Just in Time**

The term Just in Time (JIT) is not new, yet its application can be misunderstood. True JIT means requires delivery of inbound and outbound material in exactly the required quantities at exactly the required time.

**N°3 = Lean Transportation – The Law of Daily Event Management**
Transportation cost reduction cannot be realized through infrequent transportation network designs. Real savings will only result from daily management and optimization of transportation requirement variability.

**N°4 = Lean Transportation – The Law of Transportation Performance**
Transportation services are differentiated with distinct and measurable levels of performance. Lean requires stability in all systems so that planned operations will be executed efficiently.
7.3) FedEx Lean Transportation Going Forward

Lean manufacturing and Lean transportation is still in its infancy. Lean awareness is certainly reaching mature stages yet actual execution is lagging behind. How transportation management will compliment Lean is still uncertain in the minds of many logistics practitioners. What is certain however is that significant waste and unnecessary cost does exist in most transportation networks.

The key to eliminating waste resides in understanding key Lean principles and the four laws of lean transportation. Most importantly, transportation must support customer and inventory strategies, as opposed to transportation driving inventory and customer strategies. Secondly, a superficial understanding of Just in Time must be expanded to enable a paradigm shift away from an unwarranted belief that Lean cannot be implemented while reducing transportation costs. Lastly, comprehensive and frequent reviews of transportation network stability are essential for effective Lean transportation execution.

Based on a recent survey, “Transportation Best practices for Manufacturing” conducted by FedEx Corporation, reliability is the most significant factor for manufacturers when they selected a transportation carrier.

8) FEDEX, DIFFERENT MEANS OF TRANSPORT

8.1) Airplane
The airplane is the mean used the most by FedEx; the airplane is the fastest mean that exists nowadays. Especially for goods needed to be distributed quickly. The famous FedEx panda airplane is an example.

8.2) Trucks
Trucking is the most common mean used all around the world. Trucks are very flexible for long and short-distance-haulage it depend on the size of the trucks
8.3) Ships
Ship transport is an historical mean also famous with cargos and its containers with this idea of globalization. Here it is interesting to notice that except the Getaways with FedEx trade networks like over West Coast USA which support Ocean-Ground Distribution Service we can find ships which run rivers or canals like in Venice Italia.

8.4) FedEx Multimodal Transport
Like it mentioned in the Lead time point, FedEx is within the multimodal process because of the following definition according the different days deliveries the company use different means. “Multimodal transport - Combination of two or more modes of movement of goods, such as air, road, rail, or sea. Also called combined transport.”

9) THE ENVIRONMENTAL SUSTAINABILITY – EARTHSMART EXAMPLE

9.1) EarthSmart initiatives
The EarthSmart initiatives are elements in the company’s environmental sustainability strategy. Specifically, EarthSmart provides a platform to communicate the company’s actions and “create a culture”

The initiatives are designed to benefit the environment, customers and the business.

9.2) The drivers
FedEx truly think that the success of the business and the protection of the environment are closers meaning. FedEx laid the emphasis on the importance of gaining and maintaining the trust of team members, customers, shareholders and communities.

9.3) EarthSmart Solutions
EarthSmart Solutions addresses the sustainability performance of the company’s services and physical assets like aeroplanes, trucks and facilities. In order to achieve this, FedEx places a strong emphasis on the importance of innovation.
• **Examples**

FedEx has purchased a Boeing 777F in 2009 (reducing fuel consumption by 18%). Flying direct between Asia and the US also reduce the demand on fuel.

FedEx also has the largest fleet of hybrid electric parcel delivery vehicles in the industry, achieved by investing in new vehicles and by converting traditional trucks.

FedEx is testing fuel cell and hydraulic hybrid vehicles and investing in zero emissions all-electric vehicles and hybrid-electrics vehicles. These initiatives have to reduce plane emissions by 20% and increasing vehicle efficiency by 20% by the year 2020.

In relation to its facilities, FedEx has been installing solar rooftop installations in an increasing number of its buildings. One such installation currently stands as the largest in the US. FedEx had a total of five solar arrays running as of the end of 2010.

**9.4) Business benefits**

The EarthSmart strategy is designed to provide not only environmental and social benefits, but also feeds back to FedEx’s business objectives.

• **Example**

Efficiency measures have allowed the company to cut emissions by reducing fuel usage, which in turn has led to cutting costs, providing direct financial benefits.

The activities also encourage the growth of stakeholder trust in the company – something of growing importance in an increasingly competitive market.

**9.5) Impact of a Hybrid Transshipment Model**

Since the lowest costs result from the models with zero or one transshipments, it makes sense to explore a hybrid transshipment model: if the demand is high enough on one link between two international hubs, the packages will fly directly; otherwise they will be shipped with one transshipment.
Given the demand on each link, the optimal cut off point of package volume between those shipments needing transshipments and those shipments not needing transshipments to minimize the total cost was found. The local cost will be the same as with zero or one transshipment, whereas the sorting and the long haul transportation will be modified. The most significant changes in cost will be in the long haul transportation cost, so therefore, the cut off point is optimized so that the long haul transportation cost will be minimum.

The minimum cost was determined to be when the cutoff point for shipment volume is 20,000 lbs. It is clear that the cut off point to ship directly between two international hubs will be set at 20,000 lbs on a link, which is the optimal value for both cases.

We can then compute the total global cost to operate the network with a hybrid transshipment model. It is found that the total cost for the hybrid transshipment model.

10) FEDEX INTERNATIONAL SERVICE REGIONS

10.1) FedEx network details

Network Description
FedEx has a current service region which defines the areas eligible for international express shipments. This section will describe that service region, as well as a proposed expanded network.

10.2) What is a network system within logistics process

A total of 11.5 million lbs/day are delivered through the international express package network (FedEx Annual Report, 2005). FedEx delivers international packages through 15 international hubs (listed below) which are distributed throughout the world.

• Dubai, United Arab Emirates
• Frankfurt, Germany
• Hong Kong, China
• Indianapolis, Indiana, USA
• London, England
• Memphis, Tennessee, USA
• Miami, Florida, USA
• Oakland, CA, USA
• Paris, France
• Seoul, Korea
• Subic Bay, Philippines …
Each international hub resides in an international influence zone. These international zones are non-overlapping and delineate the entire service area served by that international hub. The “status quo,” is described as shipping packages directly between international hubs. Two alternate logistic systems are estimated in this paper, one involving one transshipment and two transshipments.

10.3) Strategies for expanded network

The expanded network model is built to determine if the costs from expanding the network to other areas of service can be outweighed by the revenue. The expanded network proposed in this study includes three regions which are un-served in the current networks. These regions include South America, Africa, and India. In the three areas, one new international hub will be placed, along with corresponding local airports from which local distribution can occur. Memphis will serve Rio de Janeiro, Paris will serve Johannesburg, and Philippines will serve Mumbai. As three new hubs will be placed, the total number of international hubs and zones will then increase from fifteen to eighteen. It is important to note that in moving from the current network to the expanded network, the size and shape of the 15 existing international zones does not change. Each hub is serving the same population that it served in the current network. Using demand estimation described below, we will show that daily volume on this expanded network increases from 11.5 million lbs/day to 14.6 million lbs/day.

Using the increase in package volume per day, as well as the average revenue from a FedEx international package, $14 per package, it can be estimated that the earnings from expanding the network are 12.8 million ($/day). By this measure, FedEx could gain considerably by expanding its network to Africa, South America, and India.

10.4) Definition of transshipments and hubs

Transshipments: Transfer of a shipment from one carrier, or more commonly, from one vessel to another. Transshipments are usually made where there is no direct air, land, or sea link between the consignor's and consignee's countries.

Hubs: A hub describe a building in which a crossing activity take place. This is the point of carriers included cross-docking. Goods from several sources are consolidated in a specific place to be shipped then straightforwardly forward consignee.
10.5) Transshipments and hubs within FedEx strategy

- **Zero Transshipment**
  Each international hub ships packages directly to each other international hub under the zero transshipment models. There are three levels in this international network for delivering a package. Each international influence zone is further divided into several local delivery areas, each served by a local airport. These local airports have their own local influence zone. These local influence zones are non-overlapping, and together, all local influence zones cover an entire international influence zone. From the local airports, packages are distributed through vehicle tours to the destination.
  This model differs to the one and two transshipment models because it delivers packages in the shortest time as all flights are direct.

  The clear restriction to the statement that all international hubs ship directly to every international hub is that those hubs within the same country do not ship to one another directly, as those shipments are considered domestic. This is only the case in the United States, where there are multiple international hubs in the same country. Smirt, Boubert, Calloud, and Papson are lower than in other models, which indicate an opportunity to save money through economies of scale.

- **Two Transshipments**
  The two transshipment model uses two transshipment points, termed super international hubs (or super hubs), which are chosen at three international hubs. The super hub at Memphis acts as a midway point for all packages originating in North and South America; the super hub at Paris serves Europe and the Middle East; and the super hub in the Philippines serve Asia and Australia. All packages travel from an international hub to the designated super hub, then on to the super hub which serves the destination international hub. From the international hub, local air and vehicle delivery occurs. Using two transshipments, there are four levels in the international network for delivering a package. Each super international influence zone is further divided into several smaller regional international zones. These regional international zones are similar to the international zones described in the zero transshipment models, except that now super international influence zones are comprised of multiple non-overlapping regional international influence zones. It is thought that this model provides benefits from concentrating volume; however, the reduced costs may be outweighed by the extra flights needed for two transshipments.
10.6) Transshipments and hubs schemes

ZERO TRANSSHIPMENTS

[Diagram showing transshipments and hubs schemes with labels for Hub International, Flights to others International Hubs, International hub influence Area Border, Local airport Influence area Border, and Local distribution]
Zero Transshipment Case

Sorting Question: 1) Is the package destined for an international or domestic location?
Sorting Choices: 2
Sorting Complexity: log(2)

Sorting Question: 2) Which international hub is the package destined for?
Sorting Choices: # of international airports not in the defined domestic region of the current hub
Sorting Complexity: log(# airports)

Sorting Question: Which local airport is the package bound for?
Sorting Choices: the number of local airports assigned to hub
Sorting Complexity: log(# of local airports)

Two Transshipment Case

Sorting Question: Is the package destined for an international or domestic location?
Sorting Choices: 2
Sorting Complexity: log(2)

Sorting Question: Which super hub is the package destined for?
Sorting Choices: 2
Sorting Complexity: log(2)

Sorting Question: Which international airport is the package bound for?
Sorting Choices: the number of international airports assigned to super hub
Sorting Complexity: log(# of local airports)

Sorting Question: Which vehicle tour will this package be delivered by?
Sorting Choices: Number of tours per local airport
Sorting Complexity: log(# of vehicle tours)
10.7) Example of “hub-and-spoke” model

The hub-and-spoke concept was introduced to the aviation market after the US airline deregulation in the late 1970s; it becomes the primary distribution model employed by leading international logistics companies such as DHL, UPS and FedEx. This pattern drives the companies to consolidate shipments on the large scale at major terminals.

The Hub and spoke model describe organization which focused on a central connexion point.

**COSMOS®**: the Hub- and-spoke system requires a sophisticated transportation logistics information system. One of Fred Smith’s key tenets is that information about a shipment is as valuable as the contents of the shipment. In 1979, FedEx introduced COSMOS®, the Customer, Operations, Service Master On-line system, the first centralized computer system in the industry used to keep track of all packages handled by the company. This system not only gave FedEx employees the ability to obtain real-time information on the exact status and location of a shipment, but also made the information available to customers who phoned the FedEx toll-free number.

In a central database located at the Memphis headquarters, COSMOS® maintains data on package movement, pickup, invoicing and delivery. A barcode is attached to each parcel at the point of pickup, and scanned up to 20 times for international shipments at each stage of the collection and delivery cycle. The COSMOS® system handled 63 million transactions per day in 1999.
**GOC:** The global Operations Control Center houses huge electronic displays that track weather patterns and the real-time position and movement of FedEx aircraft and trucks. New systems have also been introduced to predict with great accuracy the amount of inbound traffic, allowing FedEx to prioritize the hundreds of variables involved in the successful pickup, sorting and delivery of shipments. COSMOS® and the GOC are ideally suited to work in tandem to control the hub-and- spoke model. These systems have been adopted by many other carriers.

**DADS®:** The Digital Assisted Dispatch System was put into place in 1980. Under this system, small terminals were installed in vehicles for the purpose of transmitting digital information on orders, thus guiding couriers to their next pickup.

**11) WHAT IS VERTICALE INTEGRATION?**

Another note is the horizontal integration that has recently been carried out by FedEx. Horizontal integration is a way of trying to increase the profitability of a company by reducing costs, increasing the value of a product offering, managing industry rivalry’s, or increasing the bargaining power of a company. These economic benefits are usually the rewards of company mergers and acquisitions in an industry. Horizontal integration is predominately characterized by similar companies merging together or acquisitions sought by the industry leaders.

FedEx has carried out horizontal integration for many years, from as early as the mid 1980’s with their acquisition of the Flying Tiger air fleet to one of their most recent acquisitions of American Freightways in 2001. The FedEx acquisition of American Freightways was the most recent effort of significant size toward horizontal integration. FedEx completed its purchase of American Freightways in February 2001 for $ 1.2 billion. Since FedEx had already acquired Viking freight in the late 1990’s, Viking freight and American Freightways, both independent operating companies under the FedEx corp. umbrella, will now be known as FedEx Freight. “To address geographical issues, American Freightways will be known as FedEx Freight East while Viking Freight will be called FedEx Freight West.” (CMP Media)

With a singular brand name, Frederick W. Smith, FedEx Corp.’s chairman, president and chief executive officer, said, FedEx will boost its sales and marketing capabilities in the growing LTL (less-than-truckload) market. (Scripps Howard Inc.)
While American Freightways and Viking have excellent reputations in their market segments, by joining their sister FedEx companies to compete collectively with the transportation industry's most diverse portfolio of shipping services, FedEx may gain a competitive advantage in the less-than-truckload shipping market.

12) WHAT IS HORIZONTALE INTEGRATION?

On the vertical side of integrating the strategy of attack by FedEx is very aggressive. Due to the enormous amount of infrastructure FedEx has, like cargo planes, delivery trucks, and holding hubs, they have a strong competitive position in the shipping services industry. FedEx seems to have tapered integration because although they control most of the distribution channels for their services, they still buy from independent suppliers in addition to company owned suppliers. Most of the independent suppliers provide maintenance services to FedEx, like aircraft maintenance and repair, facilities maintenance, and ground vehicle support equipment; however, some independent suppliers also provide some packaging supplies as well. Most of the vertical integration carried out by FedEx looks to be in the downstream direction, therefore, FedEx has great control over the distribution channels, but it lacks in some upstream activities, such as raw materials and some component part manufacturing. However, with FedEx being largely a services industry it would be very difficult to see if the upstream vertical integration would pay off considering the bureaucratic costs, as well as all of the other implementation costs. It is obvious at this point that FedEx neither has the capability or the need to begin manufacturing their own truck or airplanes.

While FedEx has moved in a very aggressive manner to build up its international infrastructure of planes, shipping hubs, and services we thought of a couple of industries and directions that FedEx could follow to further expand. We will examine this according to opportunities presented by looking at the entire FedEx Corporation as a portfolio of competencies.

Currently FedEx has its own large fleet of aircraft, extremely efficient storage and packaging capabilities, and tracking functions. This allows FedEx to follow through with its guarantee to customers that their packages will get where they need to go in the time promised. FedEx has a strong commitment to its customers and is constantly working on being able to meet a variety of needs through technology. FedEx also has a competency in technology and innovation. They have a global mindset are presently seeking to grab a global market share. This wouldn’t be possible without a constant push to improve upon and develop new technologies to improve their service.
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