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TÍTOL DEL TFC: Viability of Low Cost on Long-Haul

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Summary:

One of the biggest wonders of many companies nowadays is fly cheaper for receive more customers and at same time, make more competence between other companies. The reason of the appearance of low cost carriers is because people won't pay large sums for short trips. It means, prices had been too high because companies had some unnecessary expenses for show a good image. But what people want now is travel, and come around. It doesn't matter too much how, but when.

We already know the existence of low cost on short-haul in Europe and USA (Ryanair and Southwest, respectively). But we don't have one which connects the two continents. Why doesn't it exist? Is it viable? Will we have enough passengers travelling between the two richest continents? Some of these points will be explained in this project, and will be tried to be sorted out.

To my family for its support
To all those I'm gonna miss in a future

INDEX

Chapter 1: Introduction	1
Chapter 2: Motivation	2
Chapter 3: Definition of Low Cost	3
3.1. Business Model.....	3
Chapter 4: Costs	5
4.1. Cost Distribution.....	5
4.2. Cost Reduction in Order of Importance.....	7
4.3. London Gatwick Airport (United Kingdom) – Westchester Airport (United States).....	9
Chapter 5: Costs Point-to-Point	10
5.1. Fuel & Oil.....	10
5.1.1. Connections.....	10
5.1.1.1. <i>Non-Direct Connection (via Reykjavik)</i>	10
5.1.1.2. <i>Direct Connection (Gatwick – Westchester)</i>	12
5.1.2. Aircrafts.....	13
5.1.2.1. <i>B777-200</i>	13
5.1.2.2. <i>B767-400ER</i>	15
5.1.3. Prices.....	16
5.1.4. Classes.....	18
5.1.5. Seat Occupancy Rate (Passenger Load Factor).....	19
5.2. Ticketing, Sales & Promotion	21
5.3. Crew and Services.....	23
5.3.1. Cabin and Cockpit Crew.....	23
5.3.2. Services.....	25
5.4. Aircraft Insurance, Depreciation & Leases.....	29
5.5. Station & Ground Costs.....	30
5.5.1. Other Point of View	33
5.6. Maintenance & Overhaul.....	36
5.7. Airport Landing & Related Charges.....	37

5.8 Total Costs per Trip (80% Occupancy)	41
Chapter 6: Other Markets	46
Chapter 7: Price for the Study	47
Chapter 8: Conclusion	48
Chapter 9: Bibliography	49
Appendix 1: Gatwick Airport Map	1
Appendix 2: Rotation Crew	2

Chapter 1: Introduction

The main idea with low cost airlines is to decrease costs by removing or modifying a variety of expensive services offered by the traditional major airline companies, e.g.:

- - Free meals
- - Free services (assistance, wheel chairs, etc.)
- - Different classes
- - Arrival and departure from major airports close to city centers
- - Faster rotation time
- - More flight hours
- - Single type of planes

Low cost airlines continuously seek to decrease or completely eliminate cost related to the above in order to provide travelers with a better ticket price. However, the question of interest is, whether this continuously elimination of expensive services will have a negative effect on the customers overall experience or is it possible for low cost airlines to decrease costs without jeopardizing the level of service.

The project starts out by explaining this, which defines a low cost carrier in contrast to a full cost carrier.

After explaining what we are going to study about, we divide every part where we want to reduce costs as they are different ambits. We not only study each part for see where we can reduce costs, but also applying our theories on a real route, that will be from London Gatwick (UK) to New York (US) which is one of the most popular route in the world. We will travel to Westchester, White Plains Airport (New York County) instead of JFK, La Guardia or Newark because it's a secondary airport, situated about 35 miles away from Manhattan Downtown.

Everything say previously will help to find out the difference in ticket price between what we can do it for and what is already offered by other major companies (British Airways, US Airways,...).

And finally we will try to find out if it's viable to carry on with this proposal.

Chapter 2: Motivation

Every project has a background, ideas and details before starting to an emphasis about a reason. What I have gone around thinking the last couple of years is try to move more people around the world so travelling is not an act done only by people with money. We already have companies who can make you travel for less than an US Dollar. How can that be possible? It's some of all those questions people are questioning for the last about a low cost airline carrier. It's just gamble or fooling people with hardcore economic programs.

Maybe there is a ticket on sale for \$1, where the base cost is \$50, but there is another ticket somebody will pay \$99 for. This equals to pay \$50 per ticket. We are not cheating people, we only attract people with false promotion. There may be 5 cheap tickets, but there will be 20 expensive ones.

What I like of this concept, is that maybe some times you will pay for the expensive ones and other for the really cheap ones, but at the end, it's cheaper than flying with a full cost carrier. Why? There are a lot of useless points, departments, activities,... they are carrying on with which people don't need, because the true reason of travelling is nowadays come around.

Also, you need to have in mind I'm a student, with reduced sources for pay a travel far away. I want to know exactly what I'm paying for, just for see the relation between what I pay and what I get for this amount.

So, the proposal of this project is try to find out how cheap we can do a long-haul trip, for really see the costs. We don't want a company which tricks you like an animal, but one where after leaving from the plane you feel comfortable and satisfied with what they have given to you for the price you have paid. We also know there are a lot of points normal passengers won't think about (fuel, taxes,...) for judge a trip, but in comparison with other carriers they have travelled with see the relation quality/price.

Finally for synthesize all said, we want to optimize a route, abolishing some expenses and centering us a lot on this sentence: "Quality is not equal to price".

Chapter 3: Definition of Low Cost

3.1. Business model

Low-cost carrier business model practices include [1]:

- A single passenger class
- A single type of aircraft (commonly the Airbus A320 or Boeing 737 families), reducing training and servicing costs
- A minimum set of optional equipment on the aircraft, further reducing costs of acquisition and maintenance, as well as keeping the weight of the aircraft lower and thus saving fuel:
 - no AVOD etc.; often excluding conveniences such as ACARS and auto-throttle
 - no in-flight entertainment systems made available
 - no seat recliners, seat pockets, window blinds or seat headrest covers
- A simple fare scheme, such as charging one-way tickets half that of round-trips (typically fares increase as the plane fills up, which rewards early reservations)
- Flying to cheaper, less congested secondary airports and flying early in the morning or late in the evening to avoid air traffic delays and take advantage of lower landing fees
- Fast turnaround times (allowing maximum use of aircraft)
- Unreserved seating (encouraging passengers to board early and quickly, thus further decreasing turnaround times)
- Simplified routes, emphasizing point-to-point transit instead of transfers at hubs (again enhancing aircraft use and eliminating disruption due to delayed passengers or luggage missing connecting flights)
- Encourage the use of direct flights. Luggage is not automatically transferred from one flight to another, even if both flights are with the same company.
- Generation of ancillary revenue from a variety of activities, such as à la carte features and commission-based products
- Emphasis on direct sales of tickets, especially over the Internet (avoiding fees and commissions paid to travel agents and computer reservations systems)
- Employees working in multiple roles, for instance flight attendants also cleaning the aircraft or working as gate agents (limiting personnel costs)
- A disinclination to handle Special Service passengers, for instance by placing a higher age limit on unaccompanied minors than full service carriers
- Aggressive fuel hedging programs
- Passengers paying charges for extras, such as hold luggage, online check in and priority boarding
- Avoiding using jet ways to board and alight passengers by using a mobile stairway which is a cheaper alternative.
- Not supplying meals in a flight, but offering snacks, sandwiches and drinks instead to purchase on board
- No refunds or transfers to later flights in the event of missed flights, i.e. if the aircraft leaves on time without a passenger who arrived late, he will have to buy a wholly new ticket for the next flight.

Not every low-cost carrier implements all of the above points. For example, some try to differentiate themselves with allocated seating, while others operate more than one aircraft type, still others will have relatively high operating costs but lower fares.

The price policy of the low cost carriers is usually very dynamic, with discounts and tickets in promotion. Even if the advertised price may be very low, sometimes it does not include charges & taxes.

As the number of low-cost carriers has grown, these airlines have begun to compete with one another in addition to the traditional carriers. In the US, airlines have responded by introducing variations to the model. Frontier Airlines and JetBlue Airways advertise satellite television. Advertiser-supported Skybus Airlines launched from Columbus in 2007, but ceased operations in April, 2008. In Europe, the emphasis has remained on reducing costs and no-frills service. In 2004, Ryanair announced proposals to eliminate reclining seats, window blinds, seat headrest covers, and seat pockets from its aircraft.^[2]

The budget airlines frequently offer flights at low prices – often flights are advertised as free (plus applicable taxes, fees and charges.) Perhaps as many (or as few) as ten percent of the seats on any flight are offered at the lowest price, and are the first to sell. The prices steadily rise thereafter to a point where they can be comparable or more expensive than a flight on a full-service carrier.

Additional expenses charged can border on the fraudulent, such as levying a credit card charge while credit card is the only payment method accepted.

Traditional perceptions of the "low-cost carrier" as a stripped-down, no-frills airline, as seen on Southwest Airlines, have been changing as new entrants to the market adapt the business model in new ways. AirTran Airways and Spirit Airlines offer a premium cabin while Frontier and JetBlue offer live in-flight television, sometimes for an extra fee. AirTran has XM Satellite Radio available at every seat. Frontier, JetBlue, and AirTran all use assigned seating. Some airlines even have services not available on some legacy carriers, such as mood lighting, found in Virgin America.

Chapter 4: Costs

4.1. Cost Distribution

For a short-haul carrier with a high frequency hub feeder operation, airport charges can be significant – as much as 20-25% as a proportion of total operating costs. For long-haul carrier operating large aircraft, airport charges can be about 5% of total operating costs. Depending on the region of the world, this figure can increase to 10-12% or be as little as 2-3%.

Operating costs Iata International Scheduled Services	2001	Order of importance
Cockpit Crew	7,1%	7
Fuel & Oil	15,4%	1
Aircraft Insurance, Depreciation & Leases	12,4%	4
Maintenance & Overhaul	10,1%	6
Airport landing & related charges	5,1%	8
Air Navigation Charges	4,8%	9
Station & Ground costs	11,1%	5
Cabin Crew / Passenger Services	13,9%	3
Ticketing, Sales & Promotion	14,9%	2
General & Administrative	5,1%	8
TOTAL	99'9%	

Figure 3.1: Operational Costs distribution (IATA 2004) [5]

As the operational costs hasn't been updated on the last, we make a lineal supposition saying that the change of price is lineal for the following years, in accord to what has happened between 1991 and 2001.

We do this because we don't really know what will happen from 2001 to 2011, so the most coherent way is doing it lineal. But we need to remember there have been a lot of advances (new technology, internet, drop off, check-in online,...) from 2001, and which have and will improve with the consequence to do this cheaper. It's just a way for obtain a data with fundamentals.

	1991	2001	2011
• Cockpit crew	3,3	2,8	2,38
• Fuel & Oil	6,1	6,1	6,1
• Aircraft insurance, Depreciation & Leases	4,9	4,9	4,9
• Manteinance	4,8	4	3,33
• Airport charges	2,1	2	1,9
• Air Navigation Charges	1,4	1,9	2,56
• Station and Ground Cost	5,6	4,4	3,46

• Cabin Crew + Service	6	5,5	5,04
• Ticket and Sales	8,9	5,9	3,91
• General Administration	2,7	2	1,48
	45,8	39,5	35,06
	115,90%	100%	88,70%

What we can see is, if we take as reference 2001 stating all the costs are 100%, in 1991 and 2011 there will be an increment and a decrease respectively in the price. It means that in 2011 we will have 11,3% less expenses in comparison with 2001.

Next point will do a brainstorm about each of these paragraphs for see what expenses we could change, modify or delete for make it whole cheaper.

4.2. Cost Reductions in Order of Importance

1- Fuel & Oil:

- Refill fuel tank where it's cheapest in case of doing a scale.
- Shortest distance possible between stand-runway
- Optimizes aerodynamic profile & speed while en-route
- Inside configuration

2- Ticketing, Sales & Promotion:

- Sale on Internet (web)
- Online booking and check-in
- Promotion on board
- Newspaper publicity
- Publicity at the airport
- Extra fee for get priority
- No intermediate seller. No commissions
- Sale of products on board (cigarettes, perfumes, sweets, watches,...)

3- Cabin Crew/Passenger Services:

- Minimum crew staff
- Meal on board for cabin crew
- 8-9h journey – mode: 3 work - 1 off - 3 work - 2 off
- Necessary meals only (crisps + drink / meal + drink / sandwich + drink)
- Soft drinks, water, coffee & tea free
- Alcoholic drinks are not included in the ticket price
- 2 menus for choose (meat or fish)
- Numerated seats for faster rotation time. Forward and Back entrance
- Only baggage drop in airport (max 1 piece of luggage of 15kg + 10kg hand baggage)
- Possibility for get another baggage for a extra fee (max 15 kg)

4- Aircraft Insurance, Depreciation & Leases:

- Get the aircraft by dry-leasing (leasing arrangement whereby an aircraft financing entity, provides an aircraft without insurance, crew, ground staff, supporting equipment, maintenance, etc.)
- Get a rentable plane for the route

5- Station & Ground costs:

- Single hub (Gatwick in our case)
- Suppression of a part of handling:
 - Bus transport
 - Finger at destination
- Minimum rotation time at destination airport
- Arrival to Airport

6- Maintenance & Overhaul:

- As having new airplanes, maintenance just minimum and the ones specified in OACI
- Pilots must have experience for overhaul the airplane, for not contract ground handling
- Maintenance at hub

7- Cockpit Crew:

- 9h work
- Home-work (9h)-Home: impossible from our point of view

8- Airport landing & related charges:

- Use of secondary airports
- Minimum rotating time = minimum charges at destination
- Operations only while the airport is open for avoid extra charge fees

9- General & Administrative:

- Reduce staff at office and digitalize all the system.

10- Air Navigation Charges:

- We cannot reduce the price of air navigation charges, because the time we're in the air it's not possible to change, and it doesn't depend of us.

4.3. London Gatwick Airport (United Kingdom) – Westchester Airport, New York (United States)

We will discuss these topics from chapter 4.2 centered on a route chosen: London Gatwick (United Kingdom) – Westchester Airport, New York (US). Every idea has to be good for this route.

There is a distance of 2.993,31NM between both airports (without having in mind the distance for get to the nearest airway). That means we have about 3.050NM, between the airports, counting the procediments, approximately.

The reason we have chosen this airport is because looking at the future plans driven by Ryanair, they want to land/depart from small airports like: Long Island (New York) or Rhode Island (New England) [26]. These airports are still too small for receive big aircrafts, but having a small modification according to the ICAO legislation they can receive them perfectly [6].

In this project we will only center us in a company who only uses one kind of aircraft for reduce our costs at the area of reparation later on. And for carry out this project, why not center us on the most important low cost in Europe?

- Ryanair (Boeing (only B737-800) [9]
- Easyjet (Boeing+Airbus fleet = more expenses) [11]
- Air Berlin (Airbus + Boeing fleet)

So from now, we're going to use this data for get a conclusion.

Chapter 5: Costs Point-to-Point

5.1. Fuel & Oil

Our airline starts with one big problem. The aircrafts Ryanair has are only B737-800 which has a range of 2.100NM with full weight, and we need to do 3.050NM. So we should sacrifice passenger or baggage for arrive to destination without stopping halfway. This is not optimal for a low cost carrier who wants to bring as much passengers as possible. So we could do a study on different scenes for see which ones are best economically talking:

- Non- Direct connection
- Direct connection

Our point of view will be: having a defined MPL for reduces fuel = costs. Instead of departing from the idea of Maximum payload defined by payload-range diagram, we try to find out, which weight can give us better results.

Although, we depart from the JAR-1.620 regulation which tells us the weights of our passengers.

5.1.1. Connections:

5.1.1.1. Non-Direct connection (via Reykjavik):

Distance: London Gatwick – Reykjavik – Westchester = 3.287,23NM + procediments = 3.400NM.



Figure 5.1: Non-Direct Connection (via Reykjavik) [25]

The idea of flying non-direct is to continue with the same aircrafts (737-800) for not buy new ones. Characteristics:

- Range: 3.060NM
- Cruise speed (FL350): 0,785Mach
- Maximum Takeoff Weight (MTOW): 79.010kg
- Operating Empty Weight (OEW): 41.145 kg
- Maximum Fuel Tank: 26.020 lt.
- Passengers: 189 (1-class configuration)
- Cargo: 44 m³
- Maximum Fuel Weight (MFW)
- Maximum Zero Fuel Weight (MZFW)

- Gatwick to Reykjavik (1036NM -> 1100NM):

We need to get the weights we can carry for see if we still can use this aircraft. As usual, we focus on the worst situation. Our aircraft has a low fuel capacity, we will only carry the necessary fuel for arrive at destination, and also because the prices for kerosene in Great Britain and Reykjavik are similar.

Maximum Payload (MPL) = **18.711 kg**

189 pax · 84 kg (adults) + 189 pax · 15kg (baggage) (*Crew is already considered in OEW*)

Maximum Zero Fuel Weight = OEW + MPL = **59.856 kg**

MFW = MTOW – MZFW = **19.154 kg = 23.646,91 liters kerosene**

Fuel density = 0,81kg/ lt.

Fuel price = 212,2 cents/gallon (source: IATA 3rd April 2010) [5]

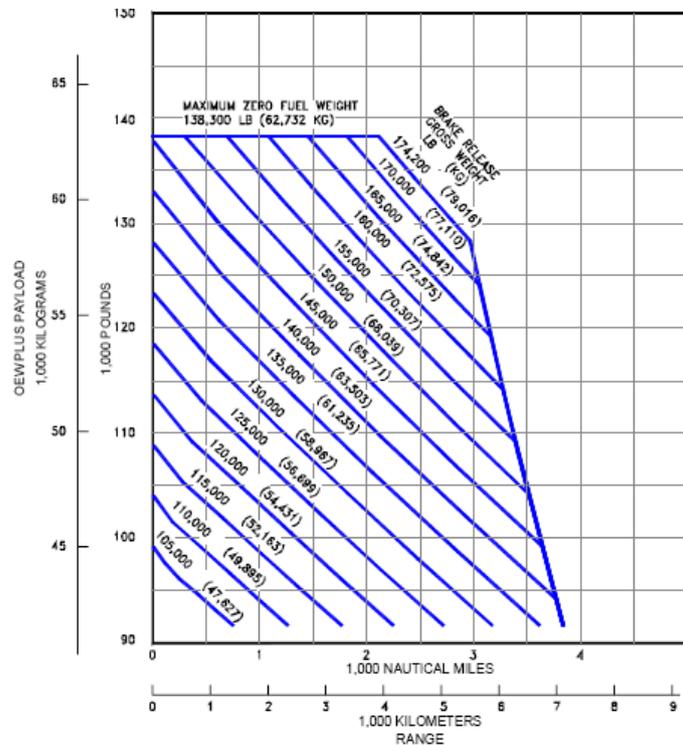


Figure 5.2: Payload/Range for Long-Range Cruise (Model 737-800 with winglets) [2]

As we can see at the graph, for a OEW+PL= 59.856kg, and a range of 1.100NM, the most efficient TOW is 70.000kg approximate.

That means that we will carry a mass of fuel = 10.144kg = 12.523,46 lt.

We could try to only refill fuel one place, but we have a limitation: our aircraft cannot land being heavier than 65.317 kg, and we are about 69.000 kg heavy, so this idea is not possible.

We need to refill every time. But in case of having few passengers, we could do it. We always want to optimize our fuel tank as much as possible.

So the fuel price for this trip will be:

$12.523,46 \text{ lt} \cdot 212,2\$ \text{ cents/gal} \cdot 1\text{gal}/3,78541178 \text{ lt.} = \$ 7.020,21$

- Reykjavik – Westchester (2.248NM – 2.300NM):

We do the same, as before. We will have a TOW of 76.000kg, which equivalents to 16.177kg fuel = 19.930,86 lt.

$19.930,86 \text{ lt} \cdot 212,2\$ \text{ cents/gal} \cdot 1\text{gal}/3,78541178 \text{ lt.} = \$ 11.172,71$

We observe we can perfectly do these flights, as we're not passing the MTOW.

If we depart from the data that a B757 Iceland Air which departs from Heathrow Airport takes 10h stopping at Reykjavik airport, with a cruise speed about 0,80Mach, then our 737, which travels at 0,785Mach, will take about 10h30 as it's slower.

5.1.1.2. Direct connection (Gatwick – Westchester)

For this point, we cannot depart from a specific airplane, as the B737-800 doesn't arrive at destination directly. So first, we have to find out which aircraft is best for the 8h travel.



Figure 5.3: Direct Connection Gatwick – Westchester [25]

5.1.2. Aircrafts

We already have found out that a B737-800 is unusable for this trip, so we have to find another one which could satisfy our requirements.

We choose 2 kind of aircrafts that could be useful:

- B777-200 [2]
- B767-400ER [2]

We would really like to use the 787-800 instead of the 767-400, but because its information is still being updated during the flight tests until the 4th semester of 2010, so we cannot assist this information. Another point of why not using a bigger aircraft is having a look on other companies doing this route between Europe and the States:

- British Airways use up to five B747 per day + B777 [20]
- Air France will use a A380 apart its A330-340 and B777
- Swissair uses or A330-A340 or B777
- United Airlines, Delta Airways, American Airlines and US Airways uses B777-767-757 [21][22]23]

But are we sure they fill their plane up totally? That information will be supplied later on when we study the *occupation factor*.

5.1.2.1. B777-200

Why do we choose this one? Reasons:

- It's the cheapest of the B777 family
- The B777-200ER doesn't interest us, because it's for longer range, and we have a too big fuel tank we won't use.
- Boeing recommend us to use the B777-200 instead B777-200ER, as they consider it the best plane for this trip.

We need to know if our plane can be filled up with passengers and luggage, and find out which is the most economic way of traveling across the Atlantic (3050NM).

- Range: 5.235NM
- Cruise speed (FL350): 0,84Mach
- Maximum Takeoff Weight (MTOW): 242.630kg
- Operating Empty Weight (OEW): 135.550kg
- Maximum Fuel Tank: 117.300 lt.
- Engines: General Electric GE90-77B
- Passengers: 440 (1-class configuration)
- Cargo: 151 m³

- NOTES:
- * STANDARD DAY, ZERO WIND
 - * 0.84 MACH STEP CRUISE
 - * TYPICAL MISSION RULES
 - * NORMAL POWER EXTRACTION AND AIR CONDITIONING BLEED
 - * CONSULT USING AIRLINE FOR SPECIFIC OPERATING PROCEDURE AND OEWS PRIOR TO FACILITY DESIGN

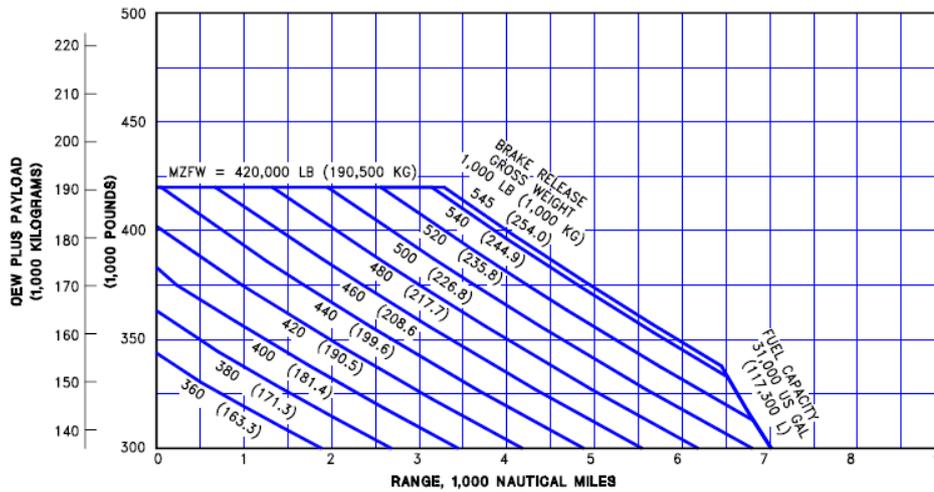


Figure 5.4: Payload/Range for 0.84 Mach Cruise (Model 777-200 Baseline airplane) [2]

Maximum Payload (MPL₁) = **43.560 kg**

440 pax · 84 kg (adults) + 440 pax · 15kg (baggage)

Maximum Payload (MPL₂) = **39.900 kg**

400 pax · 84kg (adults) + 370 pax · 15kg (baggage) + 30 pax · 25kg (baggage business)

Maximum Zero Fuel Weight₁ = OEWS + MPL₁ = **179.110 kg**

Maximum Zero Fuel Weight₂ = OEWS + MPL₂ = **175.450 kg**

MFW₁ = MTOW – MZFW₁ = **60.890 kg = 75.172,83 liters kerosene**

MFW₂ = MTOW – MZFW₂ = **58.550 kg = 72.283,95 liters kerosene**

Fuel density = 0,81kg/ lt.

Fuel price = 212,2 cents/gallon (source: IATA)

As we can see at the graph, for a OEWS+PL= 179.100kg, and a range of 3.050NM, the most efficient TOW is 231.300kg approximate.

So the fuel price for this trip will be:

₁75.172,83 lt · 212,2\$ cents/gal · 1gal/3,78541178 lt. = **\$ 42.139,80**

₂72.283,95 lt · 212,2\$ cents/gal · 1gal/3,78541178 lt. = **\$ 40.520,44**

*(₁ and ₂ are two different interior configurations)

5.1.2.2. 767-400ER

The main idea of chosen this aircraft is that most of companies traveling to the States use this one. As before, we need to calculate some points before the study:

- Range: 5.625NM
- Cruise speed (FL350): 0,80 Mach
- Maximum Takeoff Weight (MTOW): 204.116kg
- Operating Empty Weight (OEW): 103.148kg
- Maximum Fuel Tank: 91.370 lt.
- Engines: CF6-80C2B8
- Passengers: 409 (1-class configuration) or 378 – 20 (2-class configuration)
- Range: 3.050NM
- Cargo: 138,90 m^3

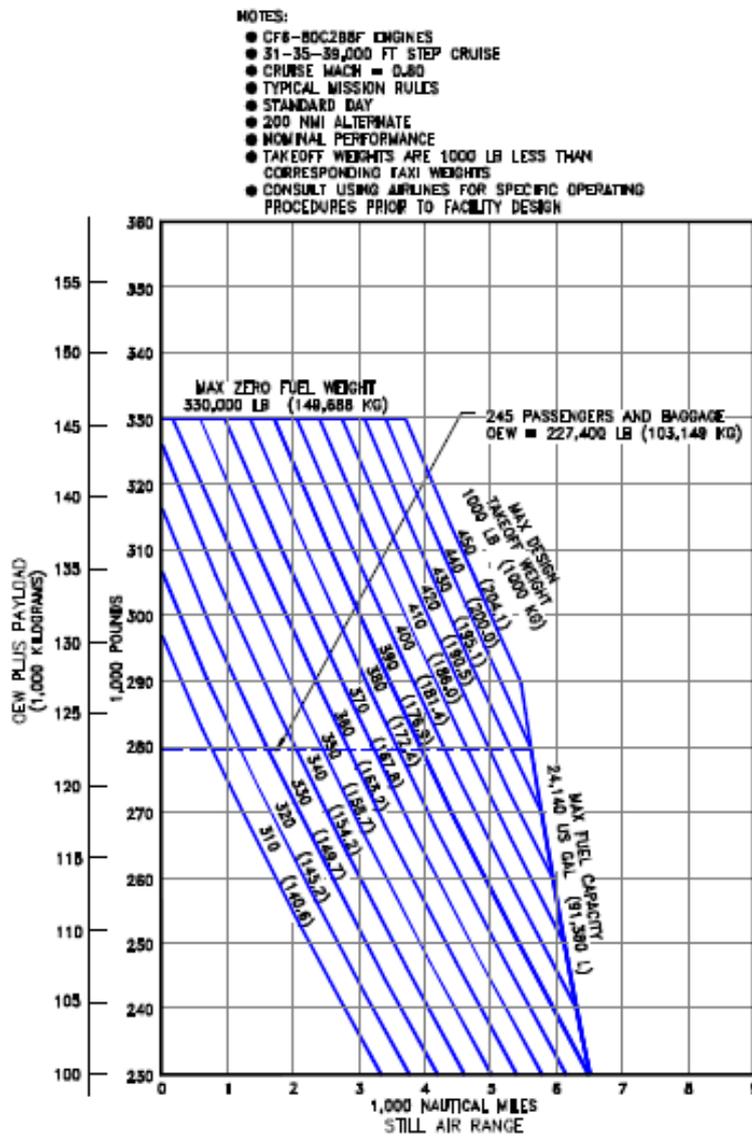


Figure 5.5: Payload/Range for Long-Range Cruise (Model 767-400ER CF6-80C2B6 Engines) [2]

Maximum Payload (MPL₁) = **40.491 kg**
 409 pax · 84 kg (adults) + 409 pax · 15kg (baggage)
 Maximum Payload (MPL₂) = **39.271 kg**
 394 pax · 84kg (adults) + 370 pax · 15 kg (baggage) + 24 pax · 25kg (baggage Business)
 Maximum Zero Fuel Weight₁ = OEW + MPL₁ = **143.639 kg**
 Maximum Zero Fuel Weight₂ = OEW + MPL₂ = **142.394 kg**
 MFW₁ = MTOW – MZFW₁ = **48.361 kg = 59.704,94 liters kerosene**
 MFW₂ = MTOW – MZFW₂ = **47.342 kg = 58.693,82 liters kerosene**
 Fuel density = 0,81kg/ lt.
 Fuel price = 212,2 cents/gallon (source: IATA)

Studying the graph above, we can observe we are nearly at the top of it. And nearly at the point where intersects the straight and the inclined line (mayor efficient point). That signify we are optimizing the aircraft. It's a very good result we just got.

So the fuel price for this trip will be:

$$\begin{aligned}
 &_1 59.704,94 \text{ lt} \cdot 212,2 \$ \text{ cents/gal} \cdot 1 \text{ gal}/3,78541178 \text{ lt.} = \mathbf{\$ 33.468,98} \\
 &_2 58.693,82 \text{ lt} \cdot 212,2 \$ \text{ cents/gal} \cdot 1 \text{ gal}/3,78541178 \text{ lt.} = \mathbf{\$ 32.902,18}
 \end{aligned}$$

5.1.3. Prices

Hence got this result, we should calculate the price per passenger per trip considering all passengers equal (we depart from the data we have used):

- 1- 737-800 -> 96,26\$/trip
- 2- 777-200₁ -> 95,77\$/trip
- 3- 777-200₂ -> 101,30\$/trip
- 4- 767-400ER₁ -> 81,83\$/trip
- 5- 767-400ER₂ -> 83,51\$/trip

So, the cheapest plane to full up is the B767-400ER. But what happens if we don't have full plane? Which one is so gonna be the best?

We can see that 737-800 is too expensive, although we spend more time travelling and the customer won't be satisfied. And the B777-200 is also more expensive in fuel terms, and later on we will see that in taxes and service are also more expensive. Those are some reasons why we won't use this airborne.

Another way of being satisfied is using the B737-800, having a huge volume of Iceland people who want to travel to US. But because of their economic situation, the Iceland people doesn't travel as much as people from UK, as it's better connected to the rest of Europe. Or also, having more planes to Iceland, but having holidays or business travels to there are not popular for the last. We also need to have in mind Iceland's economic situation which is failed. This causes problems to Icelandair, who is nearly gone bankrupt as it couldn't loan cash from the banks. It's all a "closed wheel".

Departing from the idea we only have 50% occupation, we will sort out how more expensive can it be only having this occupation rate:

- B767-400ER (205 pax standard):

MPL = 20.245,5 kg

MZFW = MPL + OEW = 123.393,5 kg

Fuel Weight = 167.800 kg – 123.395,5 kg = 44.406,5 kg = 54.822,83 lt. = \$30.732,21 = \$149,9/pax

On a bad plane we can see we have an extra fee of \$50/pax according from the point we depart from an occupation rate of 80%.

From this point, we will focus only on the 767-400ER, as it's the best for us on this trip. Also, we need to have in mind the expenses are in US Dollar.

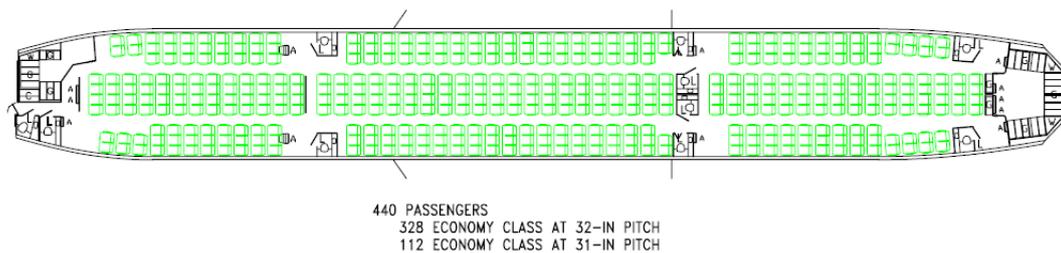
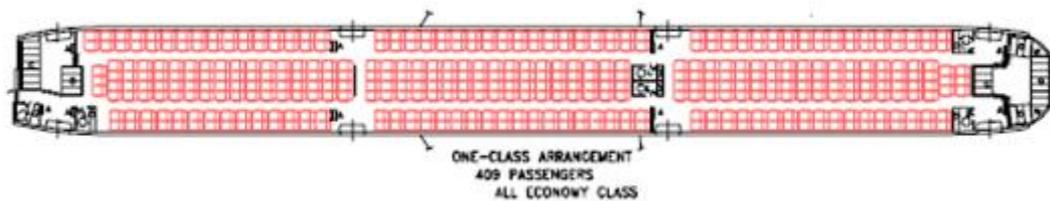


Figure 5.6: Interior Arrangements (All Economy Configuration model 777-200) [2]



2.4.7 INTERIOR ARRANGEMENTS
MODEL 767-400ER

Figure 5.7: Interior Arrangements (Model 767-400ER) [2]

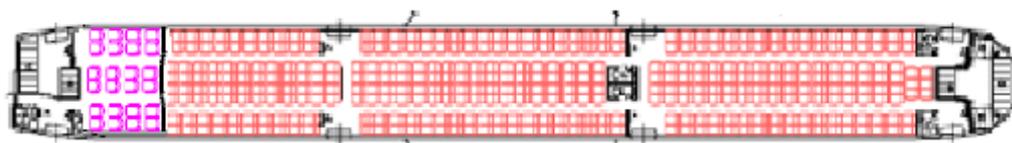


Figure 5.8: Modified model of 767-400ER for our request

Instead of having a single class at the B767-400ER, we will change to a two-class airborne for get more benefit per travel in case First/Business class is high demanded. In our concept we will call it "First Low Cost Class".

Service can be offered at high standing for no money. Quality is not equivalent to price. So we can see that instead of having 15 people more on a economy-coach than in First+Coach at the B767-400ER, we will increase the price for the First class travelers:

$$39 \cdot \$81,83 = 24 \cdot x; \text{ where } x = \mathbf{\$132,97}$$

This is equal to pay about \$51,14 more just for having more space and comfort. Then the service given on board by a steward has to be the same or better than one given at coach class, but with different products. Hence given an extra service could satisfy the customer. We repeat again, quality ≠ price.

5.1.4. Classes

Business class didn't have its best years lately . Searching at IATA, we can see the demand for first and business class airline seats is recovering with the arrival of global trade, although demands remains below highs reached in 2008 [4][6].

The total number of passenger on international flights was 6,8% higher in February 2010 than a year earlier, comprising a 5,9% increase in first and business class. At the end of March 2010, IATA said that international passenger kilometers flown, was 9,5% higher in February 2010.

That higher figure compared with passenger numbers reflect the fact that long-haul markets are recovering faster than shorter flights such as within Europe. This is very good for our company.

Despite the growth of business and first demand, IATA noted that claim for economy seats was increasingly driven by business travel.



Figure 5.9: Average fares on international markets rising in response to fuller aircrafts [5]

All this results and others not specified here, because it's not the priority part of this project, tells us we are in a good period for the airline industry. We skip the problem caused by the volcano Eyjafjallajokull, because we are centering us on a normal condition trip.

5.1.5. Seat Occupancy Rate (Passenger Load Factor)

Once total emissions for a flight are known, emissions per passenger can be calculated. It's important to note that calculators differ in how they take into account cargo versus passenger load, seat occupancy rate, and seat class.

Not all flights are fully occupied. Seat occupancy rate (also called passenger load factor) is the ratio of passengers to available seats on board a given flight.

Occupancy rates have fluctuated significantly over the last two decades. In the 1990s, the average load factor was around 65%. According to the Bureau of Transport Statistics [27] average load factor was 77,2% in 2005, increased to 79,2% in 2006, and further rose to 80,3% by November 2007 [10]. These fluctuating occupancy rates show the need for regularly update figures to increase the accuracy of air travel carbon emissions calculators.

Ideally occupancy data would be available by route and not just by air carrier. Such data is to our knowledge not available to date.



Figure 5.10: Interior of an aircraft [10]

Ryanair's goal is to get a minimum of 80% occupancy rate on each flight, and British Airways, the leader of airlines in this trip, has a occupancy rate of 72% in all routes [9][13][20]. So, having in mind we are cheaper than British Airways and the rest of airlines, plus the route is the 3rd most popular in the world, after Hong Kong – Taipei, and Los Angeles – New York, having 1.609.337 annually passengers [14], we will depart from the data we always carry 80% passengers, which is Ryanair's departure point.

Maximum Payload (MPL_1) = **40.491 kg · 0,8 = 32.392,8 kg**

Maximum Payload (MPL_2) = **39.271 kg · 0,8 = 31.416,8 kg**

Maximum Zero Fuel Weight₁ = OEW + MPL_1 = **135.540,8 kg**

Maximum Zero Fuel Weight₂ = OEW + MPL_2 = **134.564,8 kg**

MFW₁ = MTOW – MZFW₁ = **47.459,2 kg = 58.591,60 liters kerosene**

MFW₂ = MTOW – MZFW₂ = **46.804 kg = 57.782,72 liters kerosene**

Fuel density = 0,81kg/ lt.

Fuel price = 212,2 cents/gallon (source: IATA)

So the fuel price for this trip will be:

$$_1 58.591,60 \text{ lt} \cdot 212,2\$ \text{ cents/gal} \cdot 1 \text{ gal}/3,78541178 \text{ lt.} = \$ \mathbf{32.844,87}$$

$$_2 57.782,72 \text{ lt} \cdot 212,2\$ \text{ cents/gal} \cdot 1 \text{ gal}/3,78541178 \text{ lt.} = \$ \mathbf{32.391,44}$$

That means a individual price of:

- $_1 409 \cdot 0,8 = 327,2 \text{ pax} \rightarrow 100,38\$/\text{pax}$
- $_2 370 \cdot 0,8 + 24 \cdot 0,8 = 315,2 \text{ pax} \rightarrow 102,76\$/\text{pax}$
- And having in mind our coach class do not need to pay more because of there is a First Low Cost class, the price, for First low Cost class it will be \$163,12 doing the same procediment as before.

Until now we have just done the same calculations as an established company could have done. But what conclusions have we done?

- Chosen a single type of aircraft, in this case the B767-400ER, cause it's the best aircraft for this route, having in mind the fuel consumption per passenger.
- Done a two class airborne for both demands: Coach and First Low Cost Class. Maybe it's the same plane, but there is going to be a true difference between them.
- Having a single kind of aircraft, we reduce costs in the area of maintenance.

5.2. Ticketing, Sales and Promotion

Having a look over what has happened the last 20 years, and adding the introduction of internet we can more or less preview the variation of every operating cost. The ultimate data cannot be assisted because of privacy. This document states from 2004.

Figure D4-1: Cost Breakdown Schedule

IATA Operating Cost IATA International Scheduled services	1991		2001		2001 vs. 1991
	US cents per ATK	% of Total	US cents per ATK	% of Total	% change
Cockpit Crew	3.3	8.4%	2.8	7.1%	-15.2%
Fuel & Oil	6.1	15.4%	6.1	15.4%	0.0%
Aircraft Insurance, Depreciation & Leases	4.9	12.4%	4.9	12.4%	0.0%
Maintenance & Overhaul	4.8	12.2%	4.0	10.1%	-16.7%
Airport Landing & Related Charges	2.1	5.3%	2.0	5.1%	-4.8%
Air Navigation Charges	1.4	3.5%	1.9	4.8%	35.7%
Station & Ground costs	5.6	14.2%	4.4	11.1%	-21.4%
Cabin Crew & Passenger Service	6.0	15.2%	5.5	13.9%	-8.3%
Ticketing, Sales & Promotion	8.9	22.5%	5.9	14.9%	-33.7%
General and Administrative	2.7	6.8%	2.0	5.1%	-25.9%
Total	45.8	115.9%	39.5	100.0%	-13.8%
	USD billion		USD billion		% change
Airport Landing & Related Charges	4.2		7.8		85.7%
Air Navigation Charges	2.8		7.4		164.3%
Total	7.0		15.2		117.1%

Figure 5.11: Cost Breakdown Schedule [5]

We have already used this data for break down the different expenses we need to have in mind when we are fragmentizing an airlines costs. Why this graph is shown at this apart is because the % change of ticketing, sales & promotion is the most significant in terms of cost reduction, followed by general and administrative costs, and station & ground costs in ATK (disposal space for a metric ton of payload for a kilometer distance).

Our concept will be based on sales on internet avoiding any kind of intermediate who could affect us by increasing the prices, which is done by the major airlines. That signifies a reduced work group for control the whole computer system, doing the reservations and change of price. That's a very significant date.

The promotion of our company has to be simple, cheap and easy. How?

- Cheap tickets.
- Making promotion on our airplanes and airports where we are going (in this case, Westchester airport).
- Posters at busy streets. It's only paper and ink.
- Sometimes in the paper, but not often, only when special offers come out.
- And the easiest promotion mode: mouth to mouth. We need to offer a good service/price, so our customers comment it to other people. If we are centering us on Ryanair, it already has an image of cheap flights, but the service has to be improved.

People nowadays want to travel, and that every act has to be as easy and fast as possible for not wasting their time. That's the main reason why we have arrived to the last conclusions. Auto check-in, and drop off are strong points at this paragraph which signifies a cost reduction.

We can generally see that airlines do not make offers on TV, as travelling is not cheap, and you do it when you need to do it. So when people are decided to travel, then they look at the offers, and there is where we have to be, showing our offers to satisfy the customer. That means we have some seasons where there is more demand, normally when there are holidays. All this points has to be controlled by a Business Management department where we will have the General Managers inside this group. In this group we will have marketing and management together for reduce departments and people. This is also a way to reduce staff and costs.

We can only say that if you offer a good service, and people see the existing of the company, you nearly don't need any promotion.

All this said means we will not have a large sum of expenses in this area, reducing it to nearly nothing.

5.3. Crew and Services

5.3.1. Cabin and Cockpit Crew

The requirements are 1 cabin crew per 50 passengers, but there is a minimum requirement on staff on a B767 which is 12 cabin crew, stated by Mark Austin Jensen, First Officer of B777 for Emirates. And then we have 2 pilots (we don't need 4 pilots because it's a trip of less than 10h).

Our crew will always stay 24h on land from arrival to departure, rule regulated by the FAA, states Mark A. Jensen.

We have a big problem in this situation traveling to a place with different time and so far away, cause our crew cannot do twice the route on the same day, which equals to 18h work non-stop approximately. That is not allowed. So what we have to do is find a place to allocate our workers, as many other companies like Emirates, where we have the following data from (Mark A. Jensen, First Officer B777):

Every crew will receive \$50 for the 24h they are staying in London or New York (away from home). We prefer having crew from US instead than Great Britain because the taxes are lower and they get more benefit, and second, salaries are higher in Britain in comparison with US. In case of having people from Britain, which we will have, they will receive the same amount, but to an American bank account because they will have an American contract. This means the company has to be founded in USA and pay its fees, taxes and charges there.

Their journeys will be like the following:

- 9h journey : 3 work (where more than 24h are leisure) - 2 off - 3 work - 2 off (APPENDIX 2)
- 4 weeks = 14 travels out of 56 travels done by the plane
- Every second flight, crew will be away from home, so at 4 week's time they will be out 7 times.

In our case we can perfectly say we have 2 airborne because other companies have from 2 to 8 planes per way/day. British Airways have 8 per way every day, and they have 72% occupation. So making the calculation of the passengers they bring and we reduce the number of aircrafts for get a 95% (it's nearly impossible to fill it totally up).

1 aircraft = x;
8 aircrafts per day = 8x;
72% (British airways occupation) · 8x = 95% · yx;
72% / 95% · 8x = yx;
0,758 · 8 = y;
y = 6,06 aircrafts

So, if we say we have 6 aircrafts, we should fill them nearly up. And if we say we only have 2 aircrafts, we shouldn't be afraid of have looses or a low benefit.

Year 2010 income brackets and tax rates

Marginal Tax Rate ^[2]	Single	Married Filing Jointly or Qualified Widow(er)	Married Filing Separately	Head of Household
10%	\$0 – \$8,375	\$0 – \$16,750	\$0 – \$8,375	\$0 – \$11,950
15%	\$8,376 – \$34,000	\$16,751 – \$68,000	\$8,376 – \$34,000	\$11,951 – \$45,550
25%	\$34,001 – \$82,400	\$68,001 – \$137,300	\$34,001 – \$68,650	\$45,551 – \$117,650
28%	\$82,401 – \$171,850	\$137,301 – \$209,250	\$68,651 – \$104,625	\$117,651 – \$190,550
33%	\$171,851 – \$373,650	\$209,251 – \$373,650	\$104,626 – \$186,825	\$190,551 – \$373,650
35%	\$373,651+	\$373,651+	\$186,826+	\$373,651+

Figure 5.12: Year 2010 income brackets and tax rates [24]

Our crew attendant will earn \$2.500 and pilots will earn \$6.500 (after 4 years we will change them for not give them a higher salary), before taxes. Accommodation at destiny is included in the salary so they have to pay it by them self. But there will be a fixed price. Vacations are not taken into account because it's the first year, and at first year our crew is not allowed to have vacations.

So, what our crew will earn is:

- Cabin Crew:
 - o \$30.000/year - Tax = 10% of \$8.375 and 15% of \$21.625 = \$2.201,5/month
 - o Travelling 9 times to London on a month = \$450
 - o Hotel Room at London Town Hotels (Twin bedded room (sleeps 2) - GBP 78 per room per night (normal rate GBP 159 per room per night, variable)) where 17,5%VAT included = \$58,5/night · 7 times = \$409,5.
The price is qualified by hotel manager Jesper Nørgaard, on our 28 people crew (2 planes) who needs accommodation 365 days/year. We consider the same price at New York, for those who lives in London.
 - o A net income after paying accommodation **\$2.242/month**
- Pilots:
 - o \$78.000/year – Tax = \$5.424,7
 - o \$450 for stay
 - o \$409,5
 - o A net income after paying accommodation **\$5.465,2/month**

So what we need to pay for our crew will be:

$$4 \cdot 12 \cdot \$2.500 + 4 \cdot 2 \cdot \$6.500 = \$301.000 \text{ for 60 travels} = \$2.866,67 + \$50/2 \cdot 14 = \$3.216,67$$

(we divide \$50 between 2 because every second travel they get the \$50 for the stay away from home)

Divided by the 80% occupation rate:

$$\$3.216,67 / (409 \cdot 0,8) = \$9,83/\text{trip (included tax)}$$

$$\$3.216,67 / (394 \cdot 0,8) = \$10,02/\text{trip (included tax)}$$

Coach class will still pay the normal fee as if the plane where a single class, where First Low Cost Class will pay the difference, \$16,58.

5.3.2. Services

For the check-in people must do it online (only Coach class), and then when they arrive at the airport, check-in again in case of bringing baggage for get the strip and then drop it on a stand. There will be 2 stands:

- A drop-off for coach class with an assistant, and several check-in machines for speed the process
- A check-in desk for First Low Cost Class

We do it like this for only have 2 attendant working, and so, reducing personal.

And in case of having a too heavy baggage (exceeding 15,5kg), they will have to pay an additional fee of 10\$/kg. All this points will state at Terms and Conditions.

The offers on board are going to be similar but not equal as the current airlines. The meals will only consist in the essentials on coach class, but depending on the way (to or from London) the meals will be served differently:

- London – Westchester:
 - o As welcome on board after an hour trip, we will offer a drink and a pack of crisps for who wants it. Price approximately, \$0'3.
 - o After 3h00, as leaving late out from London, there will be served the dinner, where people only can choose a standard menu where the main ingredient is meat: chicken or pork, as they are the cheapest products to buy at market, with garrison, and some salad, finalizing with a simple dessert. So there is a bit of everything, for every taste. An example of menu (counting a 20% increase to the catering company for the services):
 - A variety salad, will cost us 0'4\$, plus preparations and transport 0'48\$
 - Two options:
 - o 50 gram chicken with garrison costs 0'5\$ plus costs, 0'6\$.
 - o 50 gram pork loin with garrison costs 1'1\$ plus costs 1'32\$. (Data provided by Càrnica Batallé)
 - A dessert consisted in a yogurt, which cost 0'4\$So the result is a meal that costs maximum 2,2\$ without beverage.
 - o In case of not eating meat, being diabetic, or want another kind of meal, people can mark this option at booking, and pay an additional fee, if they are not satisfied with what is served. Everything will be documented on Conditions and rules.

We do this because if we request the catering to do different meals, the price will increase, and that is what we don't want.
 - o Finally, 1h30 before arrival, there will be served a sandwich and a drink for get our customer into the new hour routine. Price approximately \$1
 - o Water, and soft-drinks are free on the hole flight, but only served at the "kitchen"
 - o So the estimation approximately of all got on Coach class will be \$5.

- Westchester – London:
 - The plane is leaving late, so the first thing served on the trip will be the drink, and at same time as the dinner, avoiding giving a snack.
 - As it's a night flight, most people will sleep and the demand of beverage will be less than the trip from London to Westchester.
 - As the other trip, before landing, there will be served a single type of breakfast.

We offer a service with a limit, but enough for the customer. Alcoholic drinks and additional food will not be served on board for free. This will give us an additional ingress.

There will be no personal screen, only shared, but own headset. This is abolished because individual screens are more expensive. Simple, it's easier for install 15 screens than 409.

In case of having First low cost class, we will have the following conditions:

- London – Westchester
 - There will be a welcome drink when the passengers take seat, before departing.
 - As the other customers, there will be offered a snack and a beverage.
 - During the flight, the customers can request whatever they want to drink, alcoholic and non-alcoholic drinks. The products have to be good and cheap. We will not serve a \$100 champagne to our customers.
 - For the meal, there will be 4 different main plates, and 2 desserts, where you can choose what you want (that means a maximum of 2 dishes plus dessert). We can do an easy calculation of high-quality meal (counting a 20% increase to the catering company for the services):
 - Fresh lobster at market costs \$8, plus garrison and preparation and transport, it will maximum cost you \$9,6. (Data from Port de Palamós)
 - A 150gr Duroc meat costs \$1'5, plus garrison and preparation and transport, maximum \$1'8. (Data from Càrnica Batallé)
 - A 100gr salmon costs \$2'3, plus garrison and preparation and transport, maximum \$2'76. (Data from Port de Palamós)
 - A variety salat costs \$0'4, plus preparation and transport, maximum \$0,48.
 - Desserts consisted in fruit or cake, can maximum cost you totally \$1,5.

This means a total cost of all the meal is maximum \$13'86, and then add the beverage.
 - Before arriving at destination there will be offered the same as on coach, but with a better presentation. Same price, same product, more satisfaction.
 - So, let's estimate \$20 for example. Too much, but we need some reasonable value.
- Westchester – London:
 - It will be the same as the outbound, but there will be a more varied breakfast. In conclusion, we will offer more variety in comparison with coach, and all free.

If we compare this with a coach class at an ordinary airline, we can see it's the same product, but better served and shown.

Apart all this conditions, having in possession a business boarding card, will give you apart a priority check-in for not stay in cue and priority boarding. In terms of lounge clubs, they will be abolished, reducing more our useless costs. Every seat, bigger and more comfortable, will have on individual display and headset.

The concept we are doing is fooling our customers, showing we are offering a lot, but which cost no money.

In terms of rotation time, until now Low Cost carriers like Ryanair has done a bad track. If you want to fill the plane up as fast as possible, you enter first the passengers sitting in the middle of the aircrafts, and then through the ends. What Ryanair has done is get a profit for priority boarding (6€), but then, the rotation time takes a bit longer if you choose the seat you want. So what we are going to do is, as already First Low Cost Class pays for priority, there will be 3 stairs to the airplane. One for First, and three for Coach. In case of Gatwick airport the fingers are included in the taxes as we can see and understand, but at Westchester Airport, they have piers in front the main building, but no fingers. There is where we will do this procediment, and also it's where we want to rotate as fast as possible.

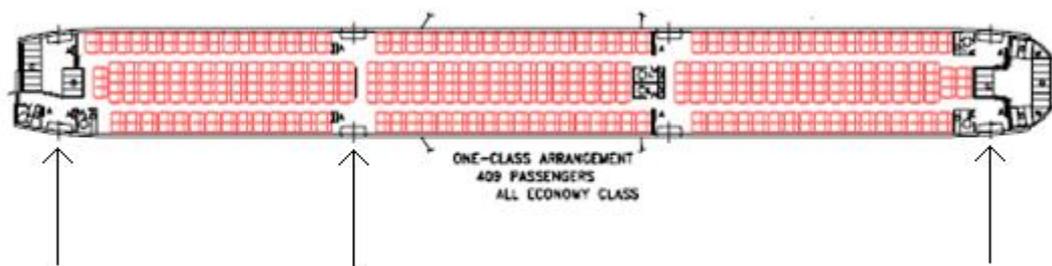


Figure 5.13: Removable stairs for B767-400ER [2]



Figure 5.14: A Boeing 767-400ER from Continental Airlines [18]

In the area of baggage, it will only be allowed to carry 1 piece check-in bag and then 10kg hand baggage for coach. Additional 15kg are free for First Low Cost Class.

If it's wanted to carry another 15kg bag, you must add to your fee \$30. Another ingress.

We do it by this way because of the following test done our self:

7. ¿Qué le gusta más?		Porcentaje	Respuestas total
Pagar menos y llevar 10kg de mano + 15kg de maleta		78,05%	32
Pagar más y llevar 10kg de mano + 23kg de maleta		21,95%	9
Total respondentes			41
Filtros aplicados			0

Figure 5.15: Statistics about luggage

We have a 78% who prefers paying less and take less baggage with them. The reason why we do this study.

We can make a calculation of what signifies carrying more baggage in terms of \$:

We consider 50% carries extra baggage of the 80% occupied aircraft (just an idea):

- Single class: 327 pax
 - o $327\text{pax} \cdot 50\% \cdot 15\text{kg} = 2452,5\text{kg}$
 - o $327\text{ pax} \cdot 50\% \cdot \$30 = \$4.905$
 - o $143.639\text{kg} + 2.452,5\text{kg} = 146.091,5\text{kg}$
 - o $\text{MFW} = \text{MTOW} - \text{MZFW} = 48.908,5\text{kg}$
 - o $\Delta\text{Fuel} = 60.380,86\text{ lt.} - 59.704,94\text{ lt.} = 675,95\text{ lt.} \cdot 212,2\$ \text{ cents/gal} \cdot 1\text{gal}/3,78541178\text{ lt.} = \$378,90$
 - o **$\Delta\text{Ingress} = \$4.905 - \$378,90 = \$4.526,09$**
- Double-class (we don't have to consider First): 296pax
 - o $296\text{ pax} \cdot 50\% \cdot 15\text{kg} = 2.220\text{kg}$
 - o $296\text{ pax} \cdot 50\% \cdot \$30 = \$4.440$
 - o $141.958\text{kg} + 2.220\text{kg} = 144.178\text{kg}$
 - o $\text{MFW} = \text{MTOW} - \text{MZFW} = 48.322\text{kg}$
 - o $\Delta\text{Fuel} = 59.656,79\text{ lt.} - 58.693,82\text{ lt.} = 962,97\text{ lt.} \cdot 212,2\$ \text{ cents/gal} \cdot 1\text{gal}/3,78541178\text{ lt.} = \$539,81$
 - o **$\Delta\text{Ingress} = \$4.440 - \$539,81 = \$3.900,18$**

We need to have in mind we cannot exceed the MZFW = 149.688kg, so there are a maximum number of available tickets where you can book extra baggage. In case of being a big demand, we will lift the price up.

Also, in all this cases we depart from a graphic which is not the most precise.

5.4. Aircraft Insurance, Depreciation & Leases

In this point we cannot do anything different in comparison with other companies, but we will explain what is done here.

We know that an aircraft can work for 20-30 years without problems and having its revision when are mandatory. So what we do is consider after 30 years our aircraft is \$0 value. What does this mean?

If our aircraft costs between 158 – 173 M\$, Ryanair (company we depart from) is a very important customer, and we will minimum buy 2 aircrafts, where the interior will not be too much luxurious, we will consider the minimum price. Other sources states Boeing is selling the B767-400ER from 152-167 M\$. We consider the maintenance in the price. And we are not buying the whole aircraft. We will lease it, so we pay a fee every month, and so, the insurance will automatically be included in the price.

$$158\text{M}\$ / 30 \text{ years} = 5.266.666,67\$/\text{year} = 438.888,89\$/\text{month}$$

We know that on one day, we can do 2 trips:

GTW-HPN

Monday afternoon – Monday evening

HPN-GTW

Monday evening – Tuesday morning

And doing the same procediment every day, we conclude we have 60 trips on 30days. And saying we carry 80% of the full occupation of the aircraft:

$$438.888,89\$ / (60 \cdot 327,2 \text{ pax}) = 22,35\$ + 3\% = 23,02\$$$

$$438.888,89\$ / (60 \cdot 312 \text{ pax}) = 23,44\$ + 3\% = 24,15\$$$

For First Low Cost Class, \$37,41.

This means, every passenger pays per trip this fee in consequence of lease the aircraft.

What we do here after the 30 years is sell the aircraft which is 0\$ value for our balance sheet, so we get a net profit out of our sale. It's an optimization in finance. Note: we add a tax of 3% because the bank/institution lean us money.

5.5. Station & Ground Costs

We have already centered on two airports:

- London Gatwick:

It's the airport with the cheapest taxes and easiest place to get to, as Heathrow Airport. Ryanair has just revealed they will change Stansted to Gatwick because it's cheaper as Station (Hub). That signifies as being headquarter the prices for a good customer will be cheaper than another who only do few operations there.

- Westchester Airport:

It's one of the secondary airports which is near New York City, and could change its configuration because it has sufficient space for modify its 1.990 meters long runway. We could also take Long Island Airport, but it's more far away in comparison with Westchester for connect with New York City, but in case of failure of Westchester we have this option, which in terms of terrain that could be modified is also possible, stated by the Peter Scherrer on a phone call 7th-July-2010, manager of Westchester Airport.

We know our aircraft will maximum take off with 195,1 tons = 430.000 pounds, so having a look on the graph:

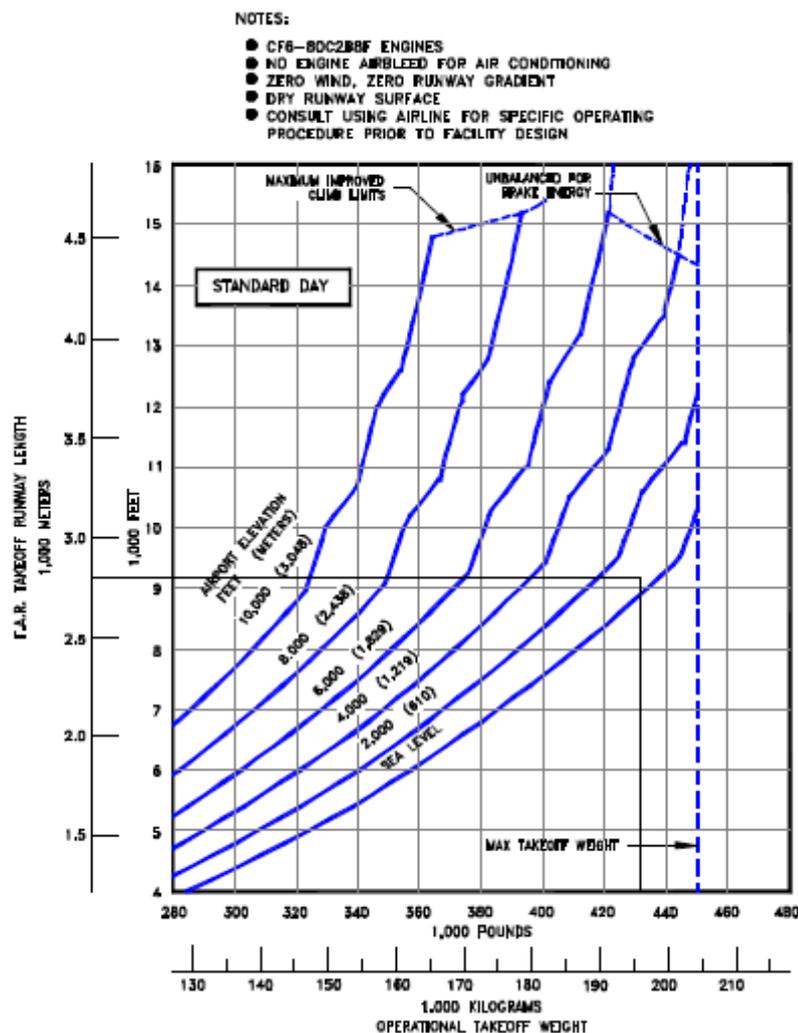


Figure 5.16: F.A.R Takeoff Runway Length Requirements – Standard Day (Model 767-400 ER CF6-80C2B8F Engines) [2]

We have an airport situated at 133,8m altitude [19]. We know that we need more runway for take-off than landing, so we start from this point. And also, we have taken the graph for normal conditions because we always land late afternoon-evening and temperature will not be exaggeratedly high. So according to the graph we will need about 2.800m, 800m more than what the runway is.

We have also the landing requirements:

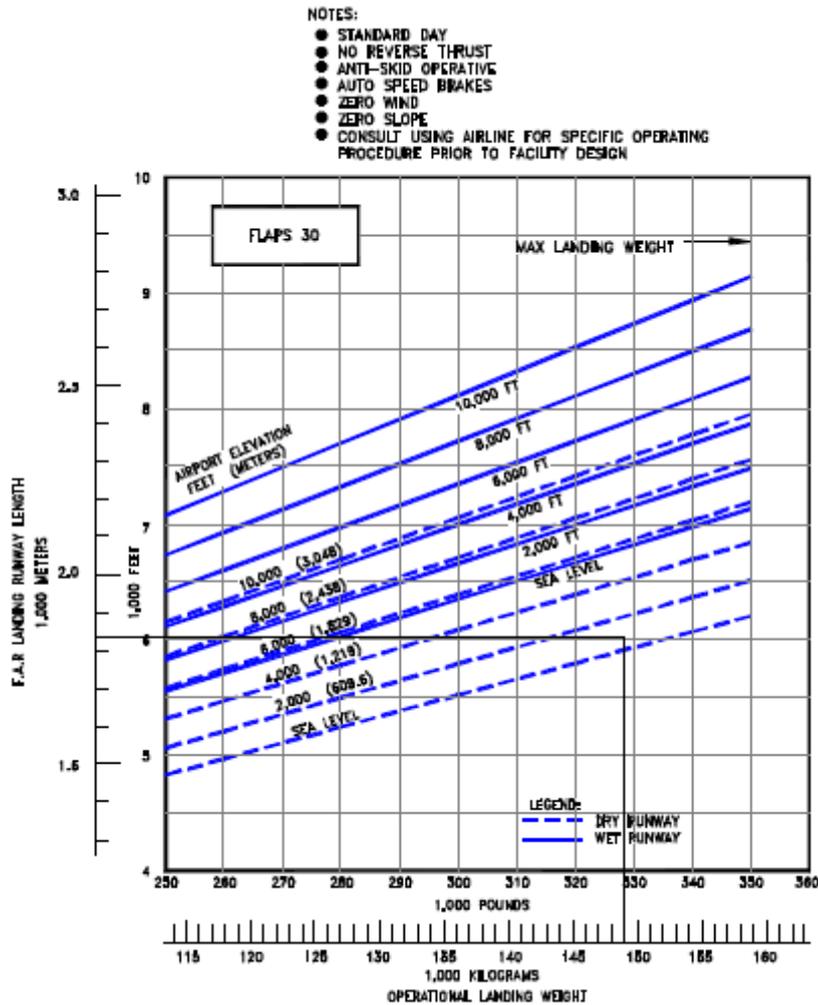


Figure 5.17: FAA Landing Runway Length Requirements – Flaps 30 (model 767-400ER) [2]

We can see that for landing we only need 1.850m.

Another point is, maybe we can get some grant for bringing tourism to this zone. For compare it with Europe, for example, Ryanair gets approximately 2€ per passenger brought to Girona Airport, and 4€ to Malmö Airport. But we do not count it because we prefer to disparage pluses and depart from points we 100% know.

Our schedule will be the following:

- 16:30 London (GTW) – 19:45 Westcheter (HPN)
- 21:30 Westchester (HPN) – 09:30 (+1day) London (GTW)

Aircraft Type	Pax Load	Load Passenger	Unload Passengers	Aircraft Servicing	Through Flight	Turnaround Flight
B	40	10	5	10	-	25
C	130	20	10	15	25	45
D	250	30	15	30	45	75
E						
1 DOOR	350	40	25	45	45	110
2 DOORS	350	25	15	45	45	85
F						
1 DOOR (^M)	470	55	30	80	60	165
2 DOORS (^M)	470	30	20	80	60	130

Figure 5.18: Rotation time proposed by IATA [5]

The reason why we have 1h45 for rotation time is because of this graph. We have an aircraft type D, and as we say we have 80% occupation (327-312 passengers) we are between what is demanded for a turnaround flight type D (75min), and a 2 -doors turnaround flight type E (85min). But we can have full plane (409-390 passengers). We know that in Westchester we have 3-doors. So we do the following:

- Load passenger:
 - o 2-doors Type E (25min)
 - o We will estimate 5 minutes more
- Unload passengers:
 - o 2-doors Type E (15min)
 - o We will estimate 5 minutes more
- Aircraft Servicing:
 - o Type D (30 min)
 - o 2-doors Type E (45min)
 - o We could have a full plane so we estimate 5 minutes more

So we have a sum of:

$$30\text{min} + 20\text{min} + 50\text{min} = 100\text{min}$$

As we pay per quart-an-hour, we give 5 minutes more extra time for be safe (105min = 1h45).

What we will do during the plane is at ground will be:

- At 15:45 the plane will move from the pier to a boarding platform where finger is not needed. And then following make on-board passengers.
- 16:30 departure.
- From 19:45, when passengers are getting off the airplane, start cleaning and refill the catering on board. At same time, refill the aircraft with fuel, and the new crew staff gets on board. Pilots check the outside of the plane in case of damage. It means, do all what is necessary.
- From 21:00 passengers will start boarding.
- 21:30 departure.

- At 10:15 or as soon as possible, when everybody is off the aircraft, it will be brought to a pier where it can stay until the afternoon, and been checked when it's needed for pass the different tests it needs. We do it like this because from 0600 to 1159 UTC the price is 3 times more expensive being at the pier in front the terminal building. While it's there, it will be refilled up with fuel and catering before departing, so just when it arrives to the boarding platform only baggage has to be carried on.
- Maybe we need to pay the taxi for bring us to that point, but I'm sure it's cheaper than staying at the pier in front the terminal during hours.

We don't know prices for having there the Hub, but we will depart from the data we just have a parking to still the plane while it's not flying.

In comparison with the main companies, what we do is reduce our rotation time in Westchester airport, and at Gatwick, remain as short as possible on a stand, for liberate space for other aircrafts.

So what we need is, without having in mind the essentials (400Hz, waste,...), we will need a fleet of handling people for baggage and check-in which we will subcontract with some company like Gatwick Handling Limited, so in case of problem it won't be ours.

In case of having a kind of hub there, the prices may change for better.

The prices for handling are not shown cause can't find them, but at the end we will do an estimation of some costs we don't know.

5.5.1. Other point of view

Depending on the meaning of station, you can have an idea or another. In this case it will be consider the airport. But not only centering us inside the airport, but also outside. How do people arrive? Could we get money out of this point?

Some companies has a shuttle, but what we are going to do is a transport from the airport to the most popular destination, in this case New York City and London.

From Gatwick to London there is already a train departing every 5 minutes (Southern Railways), but from Westchester, there are no fixed transports. So what we will do is set a number of buses from the airport to Grand Central Station.

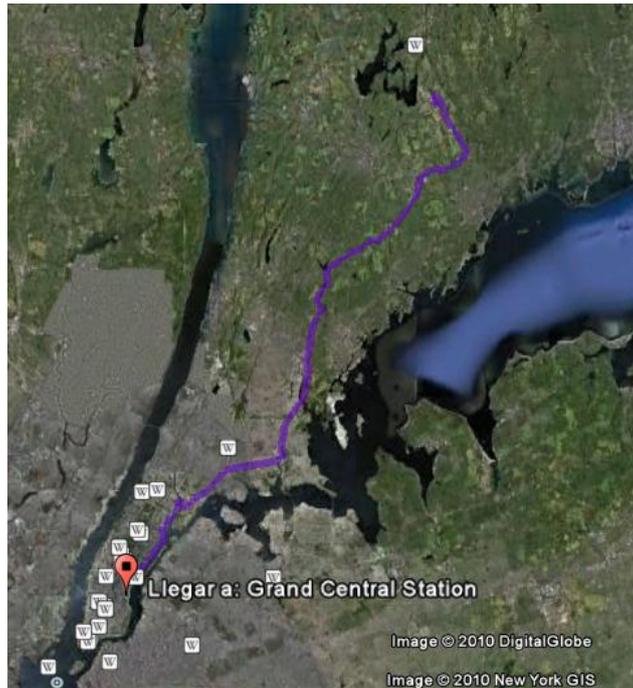


Figure 5.19: Route from Westchester Airport to Downtown New York

Where we have a distance of 33,5 miles, which equals to 43 minutes (we will estimate an hour).

With a full plane, we have between 409 and 321 passengers, but before departure from London we know how many are flying. So, what we can do is calculate that all passengers flying will take the bus for be sure no passenger will need to take a taxi. That's a good offer for our customers, and we could sell it with a pack. This means, in every bus there can be 50 people maximum, so we will maximum have 9 buses and minimum 7. We should calculate what minimum costs a taxi from the airport to Downtown:

$$\$2,5 \text{ (start fee)} + \$0,5 \text{ (NY State Tax)} + \$0,4 \text{ (per one-fifth mile)} \cdot 33,5 \text{ miles} = \$70 \text{ [17]}$$

That means if 4 people are riding the cab, it will minimum cost per person \$17,5.

So, if we say the bus costs \$10 per trip would it give us a benefit? We can compare it with the bus going from Girona to Barcelona that costs 15€, so it's rentable.

This means we can have between \$4.090/trip and \$3.210/trip divided in 9 or 7 buses. And counting that a bus uses 2,7 liters fuel per passenger per 100 kilometer, in this trip every passenger will use 0,91 liters, equivalent to \$1 approximately. So there will be \$9 per passenger to pay the bus and the bus driver and a benefit for the company.

The bus driver has to depart 3h00 before the aircraft leaves, from the bus station (18h30). The company already knows how many people are on the flight so they can estimate a number of passengers. Arriving at Westchester Airport at 19:30, passengers will have 2h00 for check-in and pass the security and immigration control, having in mind, the boarding starts is about 40 minutes before departure. Enough time.

From the time the people is getting off the aircraft the buses will begin being filled up, and leaving through Grand Central Station. The last bus must leave after being sure all passengers from the aircraft has passed the security control plus a margin for pick up their baggage. We estimate about 1h as it's a small one. So the last bus arrives at destination about 21:30.

Another good this is that on the bus we will always have place for our crew so they will go for free to downtown and then the crew goes home by them self.

So, the result of this out/back trip gives us a minimum of \$6.420 for pay 7 buses fuel, lease and driver.

The net result will so be: \$5.778 for pay the bus and the drivers 3h00 work, whose receive \$900/month for 40h/weekly, which equals to about \$6/hour (salary of a medium-class in US) and a sum of \$18 per 7 drivers, that are \$126.

So the income got by the company for them and the buses are **\$5.650/day**.

There may be some expenses we do not count cause we don't have conscience of its existence so, we omit them. But we can perfectly see it's a good business.

5.6. Maintenance & Overhaul

We have already considered the periodical overhaul will be in the buy price of the aircraft. This makes us arrive to an easier conclusion, and also because this data is not available. But an important point here is we only have one kind of aircraft, so we only need one group of mechanics who understand about B767, and not like other companies who needs different groups because they have different aircrafts for long-haul, like British Airways (B747, B767, B777).

As we have Gatwick as our Hub, we will do every inspections and revisions there.

Our pilots need the knowledge of supervising an aircraft while it's on land, so we don't need extra people to do this job, and so we reduce costs also in this area.

In case of having a minor problem and which allows us to fly without endanger our passengers.

The different maintenance are:

- Linier Maintenance: daily inspection, which is done before the first flight. In our case, at every flight we will do this. And it's a general revision. The S revision done every 100 hours, will be done while the plane remains at London.
- Minor Maintenance:
 - o A: done once a month
 - o B:done every 3-4 month
 - o C: done every year, and the plane remain stopped for a week or a bit more
- Major Maintenance:
 - o D: also called "Big Stop", consists in disassemble the whole plane. When it gets out from the factory, it's considered like a new plane with 0 hours flight. The new A340 do not need to do this every 5 years, but every 10. So we can consider our aircrafts also need this revision every 10 years. It takes about a month.

We don't have in mind that sometimes the plane has to be out of work.

5.7. Airport Landing & Related Charges

For estimate the costs for departing and landing at the two airports, we use the data from Gatwick airport as we don't have them from Westchester Airport, but there using the US Dollar instead of the Pound, as it's their currency.

We will do it in steps:

Gatwick – Westchester:

10:15 – 15:45: Waiting on a pier away from the terminal building (APRENDIX 1).

15:45 – 16:30: Waiting in front the Passenger Terminal (APPENDIX 1).

We will not stay all day long in front the Passenger Terminal Building for not pay 3 times the fee and so the passenger do not need to pay the Remote stand rebate tax.

Charges per quarter hour or part thereof: GBP 4.82 plus 7.5p per metric tonne

5.20: Charges per quarter hour or part thereof at Gatwick Airport

***Peak parking element** – occupation of a pier served stand in the Passenger Terminal Area between 0600 and 1159 UTC (GMT), 1 April to 31 October – each minute will count as three minutes (see paragraph 3.3.5). At other times the standard charge will apply.

6h15 = 25 · 15 min;

25 · (4,82 + 0,0075 · 149) = 399,88GBP + 17'5% VAT

Domestic and International Flights										
	#Peak (GBP)					Off Peak (GBP)				
Helicopters	133.00					133.00				
Fixed wing aircraft not exceeding 16 metric tonnes	605.00					176.00				
	♦Ch 2 & Non Cert	@Ch3 High	*Ch 3 Base	•Ch3 Minus	^Ch4 or Equivalent	♦Ch 2 & Non Cert	@Ch3 High	*Ch 3 Base	•Ch3 Minus	^Ch4 or Equivalent
Fixed wing aircraft over 16 Metric tonnes not exceeding 50 metric tonnes	1,815.00	907.50	605.00	544.50	514.25	528.00	264.00	176.00	158.40	149.60
Fixed wing aircraft over 50 metric tonnes	1,815.00	907.50	605.00	544.50	514.25	595.50	297.75	198.50	178.65	168.73

Peak Period 0600 – 1159 UTC (GMT) and 1700 – 1859 UTC (GMT), 1 April to 31 October.

Off Peak - All other times.

*Base Charges – These apply to jet aircraft meeting the requirements of ICAO Annex 16 Chapter 3, to non-jet aircraft and to all aircraft not exceeding 16 metrics tonnes (see paragraphs 3.1.3 and 3.1.4)

♦Surcharges - The base charge is subject to a 200% surcharge for ICAO Annex 16 Chapter 2 jet aircraft and for jet aircraft not meeting Chapter 2 noise certification standards (see paragraph 3.1.5.)

@ The Chapter 3 high charge applies to those Chapter 3 aircraft whose certified noise performance lies within 5EPNdB of Chapter 3 limits (see paragraphs 3.1.7 and 3.1.9)

•The Chapter 3 minus charge applies to jet and non-jet aircraft in excess of 16 metric tonnes with QC values on BOTH ARRIVALS AND DEPARTURES of 0.25, 0.5, 1.0 or are exempt (See paragraph 3.1.10 and 3.1.11).

^ The Chapter 4 or Chapter 4 equivalent charge applies to aircraft which were first put into service on or after 1 January 2006 and/or meet the noise certification standards of ICAO Annex 16 Chapter 4. (See paragraph 3.1.12).

Figure 5.21: Fixed Landing Charges at Gatwick Airport

Landing in Westchester: \$168,73 + 13%VAT (US VAT)

ANS Charge		(GBP)
Charge per landing		85.00
Charge per metric tonne		0.50

Figure 5.22: Landing Charges at Gatwick Airport

Navigation tax: \$85 + 149 tons · \$0,5 = \$159,5 + 13% VAT

Emissions Charge		(GBP)
Charge per kg of NOx		2.02

Figure 5.23: Emission Charges at Gatwick Airport

NOx emissions tax: 2,02 · 12,64 kg (ICAO Emission Data Sheet) · 2 motors = \$51,07 + 13% VAT

Total = \$1,5/GBP · (469,86 GBP) + \$190,66 + \$180,24 + \$57,71 = **\$1.259,91**

(1GBP = \$1,500; 29-June-2010)

Westchester – Gatwick:

We start counting the back strip from the moment we take contact with Westchester airport, for try to arrive to the minimum tax, \$155.

		(GBP)
Minimum charge on departure		155.00

Figure 5.24: Minimum Charge on Departure

19:45 - 21:30 (1h45): As we are out of the Peak parking element, we will park at the Passenger Terminal Area so we don't have to pay the individual tax.

$7 \cdot (4,82 + 0,075 \cdot 149 \text{ tons}) = \$111,96 + 13\% \text{ VAT}$

We don't arrive to the minimum, so, we have to pay \$155 + 13% VAT = \$181,35

So what we could do is arrive to the minimum point so we don't need to pay more at Gatwick Airport.

9:30 Landing at Gatwick airport.

Landing at Gatwick: 514,25GBP + 17,5% VAT

Navigation tax: 85GBP + 149 tons · 0,5GBP = \$159,5 + 17,5% VAT

NOx emissions tax: 2,02 · 12,64 · 2 motors = \$51,07 + 17,5% VAT

We will take a look on if it's cheaper leave directly the aircraft at the pier away from the terminal or not:

Case 1: leaving it at the Passenger terminal Building

- 9:30 – 10:15 (45min):
- $3 \cdot 3 \cdot (4,82 + 0,075 \cdot 149 \text{ tons}) = 143,96\text{GBP} + 17,5\% \text{ VAT}$

Case 2: leaving it away from the Passenger Terminal Building (add 2,52GBP/passenger)

- 9:30 – 10:15 (45min):
- $3 \cdot (4,82 + 0,075 \cdot 149) = 47,99\text{GBP} + 17,5\% \text{ VAT}$

We divide this fee between the 80% occupation factor (327 or 312 passengers):

$$169,15\text{GBP}/\text{occupation factor} = 0,52\text{GBP} - 0,54\text{GBP}$$

$$56,39\text{GBP}/\text{occupation factor} + 2,52 + 17,5\% \text{ VAT} = 3,13\text{GBP} - 3,14\text{GBP}$$

So we can see definitely that leaving the plane in front the Passenger Terminal Building while passenger are disembarking it's the best and cheapest, so passengers directly go inside the main building.

The total expenses for a round trip will be:

$$\$181,35 + \$1,5/\text{GBP}(604,25\text{GBP} + 187,41\text{GBP} + 60,01\text{GBP} + 169,15\text{GBP}) = \mathbf{\$1.712,58}$$

$$\$1.712,58 + \$1.259,91 = \mathbf{\$2.972,49}$$

Departing from we have a 80% occupation (considering them all equal):

- 327 passengers $\cdot 2 = \$4,55$
- 312 passengers $\cdot 2 = \$4,76$

Then we need to add an additional fee of 11,21GBP or \$11,21 on the ticket price, depending where they are leaving from.

	(GBP)
Domestic	7.35
International	11.21
International (Republic of Ireland)	9.03
Remote Stand Rebate	2.52

The remote stand rebate applies per terminal passenger for flights arriving at or departing from stands which have been designated remote (see paragraph 3.2.2).

Figure 5.25: Charges payable per terminal departing passenger

We could still reduce the costs by departing and landing on other moments, and also because if we depart from the data used, it's cheaper staying in Westchester than in Gatwick because of the VAT. But another point is, that this amounts are few dollars, and we don't have the real data. It's not an important cost in the final ticket price.

This means, that per trip, every passenger pays \$24,52 maximum.

We can affirm this conclusion because the normal fee for International travels are about \$40 on coach travels [15][16].

There is some sources which says a single trip costs \$40 in air navigation and ground taxes. And we have calculated \$24,52, so we will do the medium calculation, which will be about \$32,3/trip.

In this case we consider all passenger equal, so they will pay the same because we don't know exactly the real prices.

Another point is, Westchester airport may be cheaper than Gatwick because it's a smaller one, and with not so much traffic, having 422 operations/day (based on 12-month period, ending on 31 December 2008), where:

- 46% transient general aviation
- 29% local general aviation
- 18% air taxi
- 6% commercial
- <1% military

This means 23 aircrafts/hour.

5.8. Total Costs per Trip (80% occupancy)

To find out the price for the ticket selling, we need to join our expenses calculated previously. We start with those we really know and have found:

Fuel cost (included VAT):

- Coach = \$100,38
- First = \$163,12

Crew (taxation included):

- Coach = \$9,83
- First = \$16,58

Meal (VAT included):

- Coach = \$5
- First = \$20

Leasing & Insurance (VAT included):

- Coach = \$23,02
- First = \$37,41

Air and Airport Taxes/Charges (VAT included):

- Coach = \$32,3
- First = \$32,3

With the numbers we have, a flight will cost us:

Coach = \$170,53 = 113,68GBP = 134,28€ (1€ = \$1,27 (8-Jul-10))

Business = \$269,41 = 179,61GBP = 212,13€

So we know that an airborne costs per trip:

Single Class: $(409 \cdot 0,8) \cdot \$170,53 = \$55.797,42$

Double Class: $(370 \cdot 0'8) \cdot \$170,53 + (24 \cdot 0'8) \cdot \$269,41 = \$55.649,55$

We remain:

- Administrative fees
- Sales, ticketing, promotion
- Station costs

We know from the chapter 4 the different costs of the company:

Station and Ground Costs = 3,46/35,06

Ticket and Sales = 3,91/35,06

General Administration = 1,48/35,06

A total of 25,18% additional cost. We assume the ticket costs 20% because our assumptions departs from Steer Davies Gleave study, which is shown at continuation, and also, we can perfectly consider that the departments of Administrative and Sales, Ticketing and Promotion

exists already in Ryanair and they can do this work also, without a need of contract more people. That is why we assume the 20%:

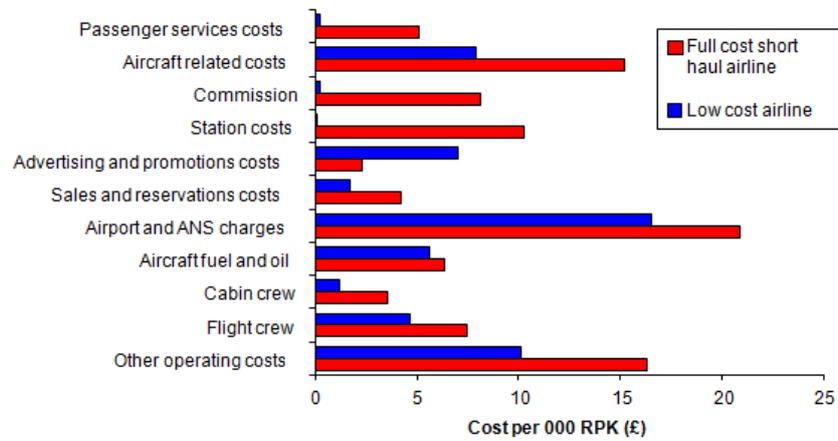


Figure 5.25: Steer Davies Gleave transport planning consultant statistics about carriers

We can see that a Low Cost station and services costs are much lower than Full cost airline (this graph is on short haul, but it doesn't matter if we are at an airport at the states or in Europe).

Sales (included General administrative in our case) are also lower, than full cost airline, but here advertising and promotion is higher. In our case we suppose not.

That is why our assumption is 20% for have an exact %.

But of course there are many fees we have paid more than what they really are. Another reason why we only state 20%.

$$\text{Coach} = \$204,63/\text{trip} = \$409,27 \text{ roundtrip}$$

$$\text{First} = \$323,29/\text{trip} = \$646,58 \text{ roundtrip}$$

We know that an airborne costs per trip:

$$\text{Single Class: } 409 \cdot 0,8 \cdot \$204,63 = \$66.954,94/\text{trip}$$

$$\text{Double Class: } 370 \cdot 0,8 \cdot \$204,63 + 24 \cdot 0,8 \cdot \$323,29 = \$66.777,65/\text{trip}$$

We will sell the first tickets for lower price and then later on increase the tickets by the way they are sold out, like making small packs of tickets. Also, when we show the price, the part taxes will include (fuel, crew, leasing, charges and the additional 20%), so we can show that the trip is cheap, but there are some costs which are fixed always, independent day or time. That's another way to trick people, but at the end they are satisfied with the price because it's cheaper than other companies.

The first coach tickets will give us losses, but the last one will give us proceeds.

We will follow the same mode :

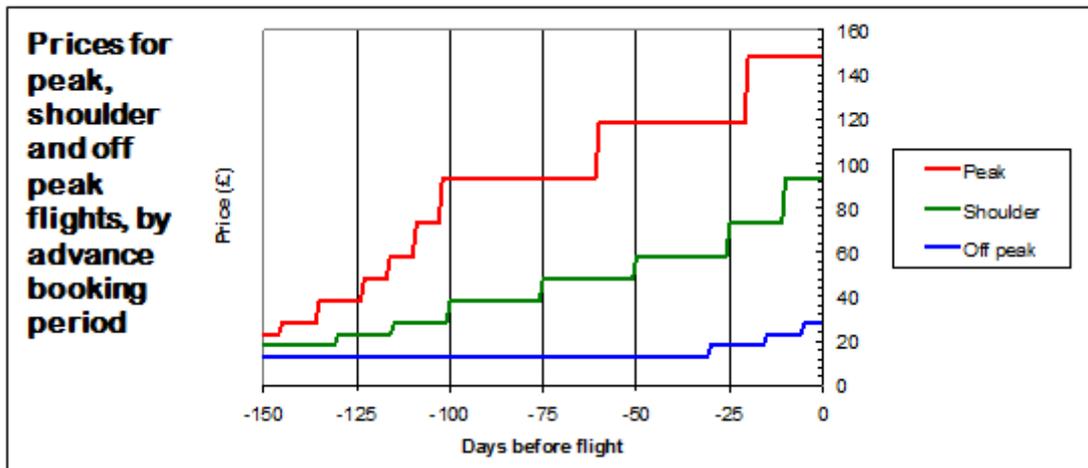


Figure 5.26: Steer Davies Gleave transport planning consultant statistics about price increase above time

Prices set by other companies doing a London-New York Trip (searched 19th May 2010)

British Airways (date of trip: 12-19 October 2010):

- Coach: from \$578 on B747
- Business: from \$1.540 on B747
- First: from \$3.920 on B747

United Airlines (date of trip 12-19 October 2010):

- Coach: from \$452 on B777
- Business: from \$2.090 on B777
- First: from \$3.780 on B777

American Airlines (date of trip 12-19 October 2010):

- Coach: from \$494 on B777
- Business: from \$4.000 on B777
- First: from \$6.000 on B777

Here we can see the price increasing by British Airways per week: flying in middle-week (today it's 8-Jul-10) and returning exactly one week after because if we take single trip we pay 2-3 times more:

Departing London – New York City Airports:

- 13-Jul-10 to 20-Jul-10:
 - o Coach: \$1.051,5
 - o Club/Business: \$6.546
- 20-Jul-10 to 27-Jul-10:
 - o Coach: \$1.024,5
 - o Club/Business: \$5.343

- 3-Aug-10 to 10-Aug-10:
 - o Coach: \$990
 - o Club/Business: \$5.343
- 24-Aug-10 to 31-Aug-10:
 - o Coach: \$763,5
 - o Club/Business: \$2.892
- 14-Sep-10 to 21-Sep-10:
 - o Coach: \$571,5
 - o Club/Business: \$3.234
- 9-Nov-10 to 16-Nov-10:
 - o Coach: \$513
 - o Club/Business: \$3.279
- 8-Dec-10 to 15-Dec-10:
 - o Coach: \$513
 - o Club/Business: \$3.279

We depart we will have 80% occupancy (328 or 296 + 19) and our benefit has to be \$0 or nearly, but never negative.

We will always have the normal fee for pay the costs (\$204,99 for approximate), but about 4-5 months before departure we start doing the following:

Single Class:

- 5 tickets: \$49,99/trip
- 5 tickets: \$99,99/trip
- 5 tickets : \$104,99/trip
- 5 tickets: \$109,99/trip
- 10 tickets: \$114,99/trip
- 10 tickets: \$124,99/trip
- 10 tickets: \$159,99/trip
- 10 tickets: \$189,99/trip
- 10 tickets: \$199,99/trip
- 10 tickets: \$204,99/trip
- 20 tickets: \$209,99/trip
- 20 tickets: \$214,99/trip
- 50 tickets: \$219,99/trip
- 80 tickets: \$224,99/trip
- 40 tickets: \$229,99/trip
- 20 tickets: \$234,99/trip
- 10 tickets: \$239,99/trip
- 8 tickets: \$ 249,99/trip

Double Class:

Coach:

- 5 tickets: \$49,99/trip
- 5 tickets: \$99,99/trip
- 5 tickets : \$104,99/trip
- 5 tickets: \$109,99/trip

First Low Cost Class:

- 4 tickets: \$329,99/trip
- 5 tickets: \$399,99/trip
- 5 tickets: \$499,99/trip
- 3 tickets: \$549,99/trip

10 tickets: \$114,99/trip
10 tickets: \$124,99/trip
10 tickets: \$159,99/trip
10 tickets: \$189,99/trip
10 tickets: \$199,99/trip
10 tickets: \$204,99/trip
20 tickets: \$209,99/trip
20 tickets: \$214,99/trip
20 tickets: \$219,99/trip
80 tickets: \$224,99/trip
40 tickets: \$229,99/trip
20 tickets: \$234,99/trip
10 tickets: \$239,99/trip
6 tickets: \$ 249,99/trip

2 tickets: \$599,99/trip

Which gives us a total of:

- Single Class: \$67.571,72/trip, a benefit of **\$616,78/trip**
- Double Class: \$69.141,85/trip, a benefit of **\$2.364,2/trip**

Our sales team, has to find out also, in case we are coming near the travel date and no tickets are sold, increase the price directly. So maybe there are some tickets there should be sold at one price, and because that people hasn't bought them in a period, they have increased. And otherwise, if there are a lot demand, we introduce the rest tickets in a middle price, like \$219,99. It's needed to be controlled at every time. It's the most important part of the company.

So in comparison with British Airways and others, we offer a much better price. We could still sell the last tickets for \$400/trip at last minute, and still be cheaper.

Chapter 6: Other markets

As we can see on other companies like Ryanair [9], which we have centered us on, they don't only earn money by flying, also in other areas like the following:

- Hotels: they receive a commission by contribute to bring people to certain hotels
- Car rentals: Ryanair is partner with Hertz so, every booking done through Ryanair's web site they receive also a commission per booking.
- Contact center: for every phone call Ryanair receives at customers attention they receive about 1€/minute.
- As said previously, Ryanair also receive money for bring and take passengers from some airports
- Having publicity on their web page
- Travelling insurance
- Bus service, as explained
- Sale on board: draws, cosmetics, beverage,...

Our idea has not to be centering the company in only earn money in one area, but in many others, consequences of the first one. We need to find out people needs starting from the point of travelling.

Another point we could also improve is amortize our aircraft better. Instead of having it on ground from it arrives to it departs (we have about 5h), we could do an extra flight inside Europe on a popular route, like London – Barcelona (2h + 1h rotation or less + 2h). Instead Ryanair sends a B737-800 we could send a bigger plane in case of there is a lot of demand. Also, as more people we take, cheaper it will be.

Chapter 7: Price for the study of Viability

This project was seriously started around 21st January, with a preliminary study one month before for see if we could have some profit out of this study. Today is 18th of July, so we have nearly taken 5 month, where not every day has been a profitable day. This means there has gone 150 days approximately. Our job consisted to use about 180 hours (18 credits), and we have used around 210 hours.

This work has been done only by one worker, Mr. Rasmus Stauning Agerskov, who has spend independently work days or weekends for finish this study, has a salary of \$50/hour.

Our study had only a maximum date of deliverance which is 8th of December 2010, and nobody has said there had to be a high performance. So if we want to see how well we have done this project we have to make some calculations:

- Worker = 40h/week
- 21 weeks

$$40\text{h/week} \cdot 21 \text{ weeks} = 840 \text{ hours}$$

$$210 \text{ hours} / 840 \text{ hours (per worker)} = \mathbf{0,25/1}$$

This means we have a performance of 25% of our work time. And if we have in mind we beside had other jobs, counting 225 hours (22,5 Optional Credits) + extra hours, we can see it has ben satisfactory.

So the salary Rasmus S. Agerskov needs to receive is an total amount of:

$$\text{\$}50/\text{h} \cdot 210\text{h} = \mathbf{\text{\$}10.500 \text{ before taxes}}$$

Chapter 8: Conclusions

What we have done for the last 48 pages is a sum of theories, optimizations and expenses about a long-haul carrier on a very popular air route (London Gatwick Airport to Westchester Airport (New York)). We have been reducing the different points of costs of a company, switching to other options that give us a better price, and so arrive to the first conclusion of the project. Are fixed costs cheaper or not in comparison with other carriers like British Airways or United Airlines who also do a similar trip, travelling to other airports? Yes, it is cheaper.

We don't have all those expenses a full cost airline has, being optimum on every existing cost we have to satisfy, reason why we can be a bit cheaper than them, but get out of your mind we can reduce ticket price to the half for all tickets. But could we do it? This is another important point.

The concept is selling few tickets for no money, and others which cover the losses these tickets have led us. Therefore people look on promotion and see we are much cheaper than the other ones. This economic model is great against competence, because while they are selling their cheapest tickets, we sell the tickets we lose money on. But while time is elapsing, the other companies increase their ticket price, and so do we, but always under their sales price. Reasons? Again, we have less expenses and our standard price is always beneath them and at same time our business model is better: we won't earn a lot of money per plane. We prefer earn lesser on a plane and having lots of airplanes. Second conclusion.

We are traveling to an airport which is not allowed to receive the kind of aircraft we want to use (B767-400ER). Here appears our biggest problem. There are no secondary airports nearby New York that allows this aircraft. So here comes the third conclusion. If we want to land in New York County we need to go to main airports with higher taxes, more traffic, and special handling programs we cannot decide about. This equals to more costs.

This project has arrived to reasonable conclusions, which can be considered real, so the ticket price calculated could perfectly be true, but my finally conclusion is:

"If low cost on long-haul where possible nowadays, there would be already companies doing it. Our main problem is the airport in US. We don't have a secondary airport which allows us to do faster our necessities, and having a lower tax, which is an important point for us. So as response to the title of the project, right now I don't think it would be viable to try doing low cost on long-haul to New York because the important point which is the airport doesn't satisfy our requirements. We could do a cheaper trip, but not as cheap as we thought".

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**Escola Politècnica Superior
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UNIVERSITAT POLITÈCNICA DE CATALUNYA

Appendix

TÍTOL DEL TFC: Viability of Low Cost on Long-Haul

TITULACIÓ : Enginyeria Tècnica Aeronàutica, especialitat en Aeronavegació

AUTOR: Rasmus Stauning Agerskov

DIRECTOR: Lucas García Serrano

DATA: 21st July 2010

Appendix 2: Rotation Crew

	London		Westchester	Crew Group
Week1	Monday afternoon	->	Monday evening	1
	Tuesday morning	<-	Monday evening	2
	Tuesday afternoon	->	Tuesday evening	3
	Wednesday morning	<-	Tuesday evening	1
	Wednesday afternoon	->	Wednesday evening	4
	Thursday morning	<-	Wednesday evening	3
	Thursday afternoon	->	Thursday evening	2
	Friday morning	<-	Thursday evening	4
	Friday afternoon	->	Friday evening	1
	Saturday morning	<-	Friday evening	2
	Saturday afternoon	->	Saturday evening	3
	Sunday morning	<-	Saturday evening	1
	Sunday afternoon	->	Sunday evening	4
	Monday morning	<-	Sunday evening	3
Week2	Monday afternoon	->	Monday evening	2
	Tuesday morning	<-	Monday evening	4
	Tuesday afternoon	->	Tuesday evening	1
	Wednesday morning	<-	Tuesday evening	2
	Wednesday afternoon	->	Wednesday evening	3
	Thursday morning	<-	Wednesday evening	1

	Thursday afternoon	->	Thursday evening	4
	Friday morning	<-	Thursday evening	3
	Friday afternoon	->	Friday evening	2
	Saturday morning	<-	Friday evening	4
	Saturday afternoon	->	Saturday evening	1
	Sunday morning	<-	Saturday evening	2
	Sunday afternoon	->	Sunday evening	3
	Monday morning	<-	Sunday evening	1
Week3	Monday afternoon	->	Monday evening	4
	Tuesday morning	<-	Monday evening	3
	Tuesday afternoon	->	Tuesday evening	2
	Wednesday morning	<-	Tuesday evening	4
	Wednesday afternoon	->	Wednesday evening	1
	Thursday morning	<-	Wednesday evening	2
	Thursday afternoon	->	Thursday evening	3
	Friday morning	<-	Thursday evening	1
	Friday afternoon	->	Friday evening	4
	Saturday morning	<-	Friday evening	3
	Saturday afternoon	->	Saturday evening	2
	Sunday morning	<-	Saturday evening	4
	Sunday afternoon	->	Sunday evening	1
	Monday morning	<-	Sunday evening	2
Week4	Monday afternoon	->	Monday evening	3

Tuesday morning	<-	Monday evening	1
Tuesday afternoon	->	Tuesday evening	4
Wednesday morning	<-	Tuesday evening	3
Wednesday afternoon	->	Wednesday evening	2
Thursday morning	<-	Wednesday evening	4
Thursday afternoon	->	Thursday evening	1
Friday morning	<-	Thursday evening	2
Friday afternoon	->	Friday evening	3
Saturday morning	<-	Friday evening	1
Saturday afternoon	->	Saturday evening	4
Sunday morning	<-	Saturday evening	3
Sunday afternoon	->	Sunday evening	2
Monday morning	<-	Sunday evening	4