UNIVERSITY OF ALMERÍA

MASTER'S FINAL PROJECT

FACTORS AFFECTING EUROPEAN AIRLINES' ENVIRONMENTAL POLICIES AND MEASURES

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INDEX

1. INTRODUCTION

Environmental care is possibly the most important issue concerning European population during the first years of the new century, at least until economical crisis made its appearance in 2007. European Union has made several efforts during decades in order to protect the species and habitats in extinction danger and being more responsible in the resources using. European Union has developed for ages one of the strictest environmental policies of the whole world, which have become even harder in the last years due to the implementation of the European Trading System (ETS), that aims to cut CO_2 emissions progressively in the next years among EU-27 industries, including air sector.

On the other hand, we tend to be a more interconnected world thanks to new technologies and an easier access to long distance ways of travel. Air transport has played a very important role in globalization; even more since airlines pricing policy is lowering fares to historical levels. Nowadays thanks to airlines any European can reach any EU-27 country in a relatively short time.

Therefore, under this frame of stricter environmental policies, increasing importance of airlines and a surrounding global crisis hitting hard to our continent; we have made a huge effort to try to give an answer to an unavoidable question that assaulted our minds: Which features of an airline are important when deciding their environmental policy and the measures they'll undertake in order to cut emissions?

This project will be divided in two clearly divided parts: first the "Frame", where we will try to give a make analysis of current European airline's sector. This analysis

will include different aspects that affect this sector in our continent. Firstly, we will make a quick description of its current situation and how important is this sector for European industry and its present economical health. Then, we will try to explain which are the issues that are going to affect this sector in the closest future and the way it might evolve in the following years. After that, we are going to talk about the different competitive strategies existing within this sector, explaining the characteristics of each of them. Regarding economic aspects of the European airlines, we have to talk as well about their business model and strategies and also and particularly about Low Cost companies, whose importance within this sector is gradually rising year after year.

After talking about these issues, more related to the economical aspect of the company, we will start dealing with the important aspect of this project: Airlines' environmental aspects. One of the most important issues to talk about regarding environmental policies among European airlines is the European Trading System, a policy European Union is implementing in order to cut CO_2 emissions by limiting greenhouse gases emissions allowance to the companies progressively each year. Finally, to end up with the first part of the project, we will speak largely about the different environmental strategies that airlines in the EU-27 implement (or not).

The second part of our project consists in an "Empiric Analysis", in which we are going to give an answer to these hypothesis launched at the very last chapter of the first part, called "Factors which affect companies' environmental strategies".

After giving a short explanation about how we obtained the data and which analysis we will do, we are going to make a descriptive analysis in which we will make a description of the different figures we collected in our database and that can tell us with realistic figures the real situation of this sector in our continent. Our next step will be making a Cluster Analysis, so that we can create different groups of airlines

depending on the different environmental aspects of them. Once we have our EU-27 airlines classified in different groups, we will make the final analysis of this project: the Regressions. To do so, we will check how do economic aspects of the airline affects or not to the airline's environmental policy. Thus, this analysis is supposed to give a final answer to the very first question we asked ourselves at the very beginning of this introduction: What features of an airline affects when an airline decides its environmental policy?

2. FRAME

1. SECTOR

On the following pages, we will make a detailed description of air industry. We are about to go deeper into air sector importance in worldwide economy, discovering how many employment it generates and its weight in nations' GDP. After that, we will try to forecast its future perspectives, how it will deal with the current global crisis and which could be its presumable future.

Finally, we are going to make a brief study about airlines competitive advantages following Porter's method, studying the 5 forces that shape airlines industry. Our last chapter of airlines sector will consist of the environmental issue that affects this industry and the measures that airlines can implement in order to avoid damaging the environment. In the very end, we will analyze the European Trading System, the measure that European Union is going to use to decrease air sector emissions and which is supposed to help decreasing them by 50% in 2050.

1.1- DESCRIPTION

Air transport consists in carrying passengers from one place to another by aircrafts with a lucrative purpose. Although at the very beginning this sector was thought to transport only passengers, the volume of goods transported year by year is rapidly increasing thanks to the design of new planes destined to freight and the use of air containers. The total of goods transported by air represents 35% of the goods transported in the world.

This means of transport is characterised for being the fastest one covering long distances, what makes it very important in the delivery of perishable products or urgent deliveries.

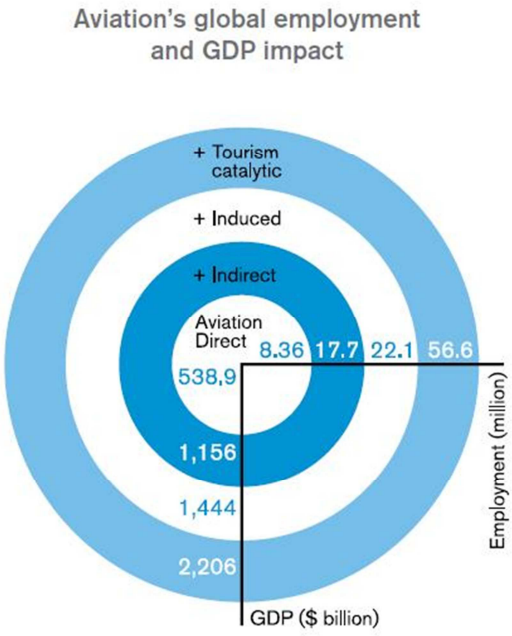
Commercial flights can be divided in two kinds: regular (airlines) and non regular ones (charter flights). Airlines are fixed to schedules, routes and frequencies and they don't depend on the existing demand of flights; meanwhile charter flights are not. Charter flights are set "on request", depending on the demand.

This sector is the safest way of travelling, and last year was the safest year in the history of aviation. This happens because of the advances held in safety and telecommunications. Last year, 2'8 billion people flew safely all around the world, in a total of 38 million flights. It supposes an increase of the number of passenger of 175 million last year, with expectative of reaching the 3'5 billion in 2015.

1.2- ECONOMIC IMPORTANCE

Aviation generates directly 8'36 Millions of jobs, and it is the third industry by contribution to the GDP, with $539 Billions right behind of Food and Beverage ($1.162 trillion) and Chemical ($977 Billions). 1'86 millions of these 8'36 jobs are carried out in Europe, becoming one of the main sources of employ of the old continent.

Airlines sector is passing through a crucial time nowadays. The companies have to face several issues that will affect their future development in the closest future.



1. IATA's anual revision 2012

With a decrease of their benefits in 2012 within the global sector of 62% comparing to the previous year (IATA's annual review 2012; www.iata.org; 15,03,2013) and losses in

European Airlines of € 1.300 Million (AEA Outlook 2013;www.aea.be ;15,03,2013), companies are not living their best times. However, airlines sector generates almost 8 Millions of employs only in Europe and it is still being a key sector of worldwide economy.

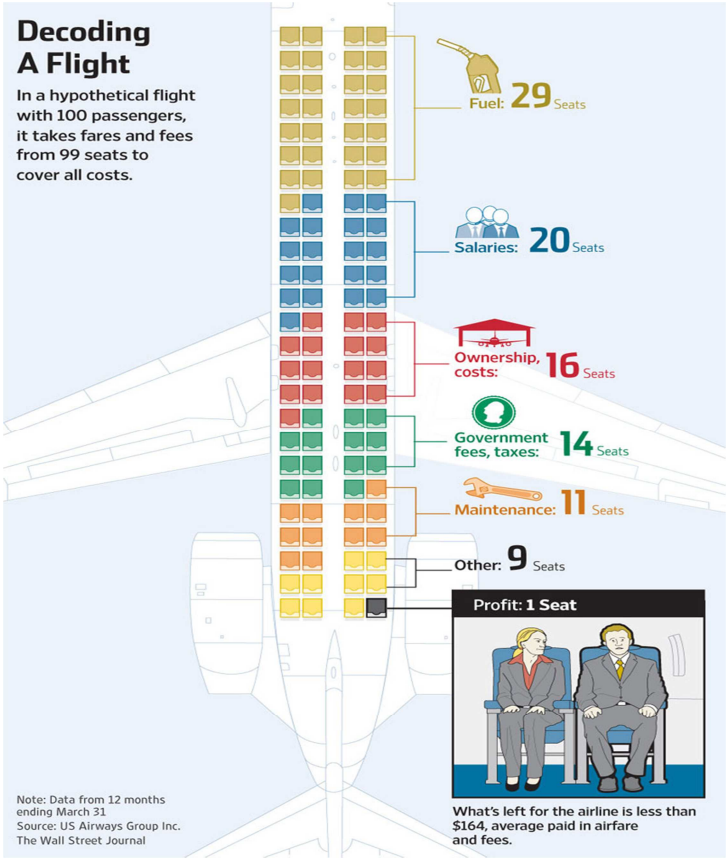
But, how can a sector with an increasing number of passengers of 5% and an improved load factor have losses? Well, as it tends to happen, there's not only one fact that made them reach to this situation. There converge three issues that caused this big harm to European Airlines: Fuel price rise, Economical crisis impact on the sector and low cost competition.

During 2012, fuel represented for Airlines on a global level a cost of € 24.500 Million, with an average cost of 99'25 Euros each barrel (IATA), which supposed a 30% of the total expenses airlines had among last year. Fuel price has a very important impact on Airlines economies, as it happens with most of the companies all around the world and it definitely determines airlines pricing policy.

The Wall Street Journal launched a question to their readers last year: How do you expect airlines spend your airfare? Well, the answer was at least surprising. Using US Airways data, they made a simulation of an airplane's seats (100), and they gave one colour to each of the expenses in which they use every single dollar a customer pays for his ticket. The result was that after paying for the fuel, salaries, government taxes, maintenance, ownership costs, catering and other costs, there was left only 1 seat of profitability for the company.

As it happens in other sectors, middle-east and Chinese companies are growing in a wild rhythm, not only in routes but in profitability. They achieved to reject European airlines from the Asiatic-European route, changing consumer preferences when choosing what company flying with to cover this route. At the same time, Asiatic low cost companies are living a real explosion of passenger's volume, growing in market share and profits.

It is clear that the sector is living a restructuration period of time, with new and more powerful competitors. Companies like Emirates or Qatar Airways have broken into the leadership of the sector and it doesn't seem like they were going to be moved from their position.



2. Wall Street Journal's simulation. Scott McCartney "How Airlines Spend Your Airfare". Retrieved 03/02/2013

1.3- FUTURE EXPECTATIVES

But the best is about to arrive: Chinese emergent airlines are going to shake the industry even more. According to IATA data, these companies won $22.000M or, in other words, almost three times more than all the airlines of the world. And even more, Airlines companies from Middle-East and China are holding very big investments in wide body aircrafts Miguel (Ángel Diez "Tormenta en el Sector Aereo- Cambio Seguro"; Retrieved 27-02-2013). If the forecasts are reached, Emirates will be the undisputed leader of this kind of airplanes.

Although globally the sector is suffering, Middle-East and China are in an optimum situation to take advantage of the crisis and avoid the storm existing on the sector. In crisis time, those with the capability of investing have a place in the pole position to win the race once the recession finishes.

Situation in Europe and North America is the other side of the coin within airlines market. Anyway, both future expectative is not the same: although European and North American are living tough times,North America seems to be in a better position. American Airlines are expected to make a big contribution on the sector's benefits with $3'4 Millions. Both markets share the same problems (Fuel, Economy and slow growth), but North Americans are having the capability to reappear from their ashes. Most of the American airlines are passing through a process of restructuration and consolidation, being involved in bankruptcy proceeding. This decision, although painful and hard to be taken, is allowing them to fight against economical problems better than their European partners.

Furthermore, European airlines have to deal with important structural obstacles in their way to profitability, such as the high cost of airport's infrastructure or the cost on the air route's management. To provide an example, Spanish government increased airport's taxes on an average of 28% last year (Tony Tyler "Hacia unas aerolineas europeas más competitivas". El País; Retrieved 02-03-2013). According

to the Board of Airlines Representatives in Spain, this tax could decrease the amount of tourists visiting our country in 2'9 millions, with a cost for the tourism and Spanish economy of €1.600 Millions.

Flights inefficacy is another unnecessary harm. The cost of a flight within European borders is the double that this same flight would cost in North America. Europe is trying to solve this problem with the achievement of the Single European Sky, which is an initiative of the European Commission that looks for transferring the coordination of the regulation, administration and design of the European air space to the European Union. The implementation of this initiative is supposed to decrease to the half the average cost of flight from 800 to 400€ before 2020, but it has become a slow process in which Spain seems to be the only one in the European Union really willing to achieve.

For this and other reasons, Europe is starting to be a less attractive place for business. Large regulations and high taxes are the responsible for this situation. It is necessary for European governments to take into account the importance of the air sector. Single European Sky seems to be one of the most suitable solutions to improve the European sector results, and it is a measure that should be better considered by the rest of the countries of the eurozone.

Once the turbulences started in 2008, financial collapse sank air traffic and it swept along the entire sector. Big companies like Iberia, who had been making profits for 13 years, started having bad results and ever since are still in red. Iberia, by the way, represents perfectly the challenges flagship airlines have to deal with in order to survive in the coming years. The Spanish company, in joint venture with British Airways through holding IAG, is delivering a huge restructuration of the whole company in a last effort to survive (Jorge Díaz Cardel "Éxito con o sin crisis"; 18-12-2012). They must reduce and change their costs structure for being more productive and, in consequence, more competitive in the market.

This is a sector in constant change, because the environment in which this game is being held also changes very frequently. Now is the time for companies to think in which path they want to spend their steps. If they want to survive to their

competitors, it is very important to think again their strategy, their business model and their tactics.

We are talking about an industry, not that different to many others. It all is about competing and surviving in a market which is not static, it is always changing. All companies have to do is overtake this changes and use them in their own benefits, or at least trying to minimize the harm it could cause them.

1.4- COMPETITIVE STRATEGIES

The competitive strategy of an enterprise has the purpose of defining which actions the company is going to implement to improve each one of the business in which the enterprise is working. It refers to how a company competes in a particular business, and it is concerned with how a company can gain competitive advantage through a distinctive way of competing. The competitive advantage of an enterprise is the position that firm occupies in its competitive landscape.

In order to improve the decisions planning and knowing a little better the path a company should follow to have a better market position, companies should make an intensive analysis of the industry or the sector. To do so, it exist a tool called Porter's Analysis (Michael E. Porter "The Five Competitive Forces That Shape Strategy").

It was created by the economist and Harvard university teacher Michael Porter by using concepts developed in industrial organization and in economy to identify the 5 strengths that determine the competitive intensity and, in consequence, the market attractive. It refers to the strengths close to the company and that affects its capability to offer its product to the clients and make a profit.

The five strengths are: **Threat of new entrants, Rivalry among existing firms, Determinants of Buyer Power, Threat of Substitute Products and Determinants of Supplier Power.**

Let's analyse our sector according to Porter's theory.

Threat of New Entrants. In many businesses, it is very easy to start up a new establishment because of the small investment needed. In air sector's case the situation is quite the opposite: the amount of resources needed to organize an airline is soaring. In this sector, the competitors' quantity is not that high, and it is not easy that new ones appear (although it is not impossible).

In low cost sector, every airline has to adjust itself in a determined segment developing its activity, launching its routes from a strategic operations' centre. The need of having an optimal aircraft fleet for being able to compete as well as the high investment that each airline must afford to be settled up means a high barrier to the new entrants.

4. Michael E. Porter "The Five Competitive Forces That Shape Strategy". Harvard Business Review.

Companies will be able to compete in the routes they cover thanks to

the economy of scale , in this case the capability to fill in as much as possible the airplanes, and the increase of the curve of experience (what is known as the "know-how" acquired).

Another barrier to the entry of new competitors would be the sensitiveness of the client to the ticket's price. Companies like Ryanair or Easyjet already have a very developed market and it wouldn't be easy for new competitors to gain their market share in routes they already cover.

Threat of Substitute Products or Services. In airlines case, within their own sector, most of companies are cutting services to their clients, having to pay for them if they want to enjoy them and not offering them for free as it used to happen a few years ago in flagship companies. This means that nowadays the only factor that makes one company different to another is the price and the route it covers. Real substitute products for airlines could be within the same industry, the competition between low cost, flagship and charter flights; and high speed train competition. Bus, car or regular train could be seen as well as substitute transport for short distance flights. In the last decade high speed train has levelled off air traffic in a sensitive way. High speed trains are the biggest substitute of the airplane. The first consequence of the appearance of this transport, that could make the same route in a cheaper price and only in a few more time of travelling, was that some airlines abandoned their short-distance routes to focus on the long ones.

But some companies had a different point of view about high speed trains: they thought that high speed could be rather an allied than an enemy, and they started to create intermodal stations in which airlines and railway companies cooperate (nowadays around 120 intermodal stations in the world).

Bargaining Power of Suppliers. Basic suppliers for a company are aircraft suppliers (aircraft parts, engineers, etc), fuel, catering and airports. Aircrafts are the essential good of airlines, that's why aircraft suppliers have a big bargaining power

because there are not many manufacturers in the market and they can sell their product to many airlines. Companies like Boeing or Airbus make planes according to the type of tourism they are going to deal with and they establish the price according to how many planes of this model are going to be sold, the relationship with the client or his importance in the market. As it is an irreplaceable product for the airline, we can say that the negotiation power against aircraft suppliers is really low according to this and the before related circumstances.

Fuel is another fundamental good for this industry, because of the lack of existence of an alternative energy. Airlines purchase it in giant quantities from companies like Shell with the purpose of reducing the price of it. Bargaining power of Fuel Suppliers is also high, but at least competitors neither have any power on suppliers, because fuel price is fixed by the oligopoly situation and it is the same for every company.

Airports offer their services to allow airplanes to operate there. Airlines negotiate with the airports the slots they want to use (it is the space and time in which the company wants to take off and land). The bargaining power in this case depends on the kind of airport the company is negotiating with: If it is a primary airport, the power decreases, but if it is a secondary one, the bargaining power tends to by high. For this reason many low cost airlines use secondary airports, because it is cheaper for them and they are the one who control the negotiations in this case.

Bargaining Power of Clients. Thanks to the new wave existing in the tickets purchasing criteria, companies are earning almost 100% of what the customer pays for his ticket. A few years ago, tickets were booked in travel agencies who earned for their services big amounts of the price of the ticket. Nowadays the client books his tickets often directly from the internet, and sometimes in travel agencies (physic ones ore in the internet). By this measure, companies save management expenses from intermediaries. In this aspect, airlines have an absolute bargaining power on the client.

Rivalry Existing Among Competitors. There exist a few level of rivalry among competitors. Services are very similar from one airline to another, prices are quite similar and there aren't aggressive strategies.

In the case of low cost companies, they operate in big segments with few competitors within. Year by year demand increases, and that's why the market can keep being divided into new operation segments.

1.5- THE ENVIRONMENTAL ISSUE: EUROPEAN TRADING SYSTEM (ETS).

EU wanted to play its role in the emissions game. To do so, they created the Emissions Trading System (ETS). This system consists in a cap imposed by EU on CO_2 emissions for flights arriving or departing from EU airports. In this trading system the total amount of emissions allowed at the country or region is limited so that they don't grow to potentially dangerous levels. Although the implementation of this system was postponed by the EU due to airlines pressure, it is supposed to carry on during this year or the coming one.

ETS is based on setting a limit of greenhouse gases emissions that can be emitted by the factories, power plants and other installations of the company (including airplanes). The cap will be reduced over time so that total emission falls. This system allows those with a lower emissions rate to sell their allowance to others with higher abatement costs. It means that every company who wants to emit over this cap, should trade with another company in order to get this "right to emit" from the emissions the other company doesn't use.

According to the European Environment Agency, growth in CO_2 emissions from international aviation in EU countries was 85% from 1990 to 2004, even higher than the growth that domestic transport or maritime emissions suffered in the same period of time. Aircrafts contribute to climate change by emitting nitrus oxides, sulphur dioxide, soot and water vapour, and in consequence they create condensation trails and cirrus clouds.

European Union's Emissions Trading System would be the first international measure with the target of reducing aviation's CO_2 emissions. It is also the world's largest emissions trading system and the first one crossings country borders.ETS is supposed to induce a behavioural change in companies' mind in short and medium term and technological changes in long term without being a threat to the competitiveness of airlines, countries or regions.

In order to be successful, European Union should establish a relative stable carbon price that incentivizes companies to undertake mitigation policies.

The European Commission first proposals when designing ETS foresaw the following important elements:

1- All airlines operating in Europe would be included in ETS system as trading entities, even those non-European airlines departing and landing in the European Union airports.
2- An EU-wide emission cap will be implemented based on historical emissions in order to establish CO_2 emissions from the aviation sector at the level of 2005.
3- Allowance will be distributed to individual cargo and passengers airlines in proportion to tonne-kilometres flown in the calendar year ending 24 months before the start of the first trading period for the airline industry (Benchmark period or reference year). The benchmark will be calculated by dividing the EU-wide cap for air transport by the total tonne-kilometres flown over the benchmark period by all the airlines included in the EU ETS.
4- The allocation methodology will be similar across all member state. A certain percentage of allowance will be grant for free, and the rest will be auctioned.
5- The proposed trading system will be opened. It means that airlines could negotiate with all other industries covered by EU ETS, but they can only sell their allowances to the air transport sector itself.
6- New entrants will purchase allowances via the market or through an auction.
7- The inclusion of airlines will be irrespective of nationalities or business models. The directive allows the exclusion of third companies from non-European countries that already practice any comparative measure. This measure will be decided through international negotiation.

Ever since, European commission has introduced three important to these principal elements. Firstly, they decided to unify all the caps in one single cap, instead

of 27 different ones for each one of the countries. Another change in the base of their policy is making of auctioning the default method of allocating allowances. Their very last change is that manufacturing industry will still receive free allowance, but this amount will regressively decrease from an 80% in 2013 to 30% in 2020.

EU ETS focuses on these emissions that can be measured, reported and verified easily with a high rate of accuracy, such as CO_2, Nitrous oxide and perflourocarbons. In air passengers transport sector this system covers CO_2 from flights within and between countries participating in the EU ETS. Although international flights to and from no-ETS countries are covered, the scheme's application has been deferred until autumn 2013 in order to gain time for reaching an agreement on a global framework. EU ETS is supposed to cover the 45% of the total greenhouse gas emissions from the 27 countries of the European Union.

2. BUSINESS MODELS AND STRATEGIES

On the second part of the frame, we will explain the different business models existing among airlines paying special attention to low cost companies, which are companies of a rising importance within this sector.

Then, we will talk about the environmental aspect of air sector, including the different impacts caused by aircraft's flights and the possible actions that could be held by airlines in order to cut these environmental harms.

2.1- BUSINESS MODELS AND STRATEGIES

As we said before, a business has to think the way they want to be and then create different strategies in order to reach this target. In this sense, they have to be sure of the way they want to compete with their competitors, how do they want to get to their goals or the way they want their business policies to be.

There are three generic competitive strategies; depending on the competitiveness of the company we can find Cost Leadership, Differentiation and Focus.

In **Cost Leadership** Strategy, firms set out to become the producer at the lowest cost in the industry. It is the most common in the years of economic prosperity and it consists in trying to produce and sell your product at the lowest price possible. Low Cost companies are focused on this strategy, reducing costs from distribution channel (sometimes they are the only ones who sell their own tickets, or at least just sell them in the internet), cutting services provided to the passengers in the airplane, trying to make as efficient as possible flights and many other measures. Low cost producers must find and exploit as many cost sources as possible, such as economies of scale or proprietary technology. If a firm is able to achieve and sustain overall cost leadership, then it will be an above average performer in its industry.

Ryanair could be the perfect example of Cost Leadership of Airlines Sector. How did they achieve it? First of all, they operate in secondary airports. It means that the airport is far away from the city of destiny, and it is cheaper for the company to work in these airports. According to AEA, they received € 793 Million in terms of Government grants for "promoting the city and the route". Besides, they have cut costs adapting their flights to the schedules that better adapts to their interests, and not adapting them to customer's interest. Finally, they have taken away everything useless from their services, like the free food during the flight or the press. Ryanair's profits for last year were € 503 Millions, a 25% more than in 2011 (Ryanair annual Report; 18, 03, 2013).

Differentiation strategies have a clear orientation to the market and look for satisfying the needs according to the characteristics of the potential client. Companies based on these strategies tries to differentiate their products from the competitor's products with tools like the brand's image, the design, the post-purchase service, etc. When following this strategy, company's competitive advantage must be clearly differentiated of the competitors of our sector. The target is creating a unique experience for the customer, in this case the passenger, that makes worth it paying extra money for using our service instead of the competitors' one.

Iberia in the last years was a clear example of differentiated company, although from 2010 the company is starting to reduce services and, as the majority of the companies of the sector, is starting "low-costing" process in order to try to mitigate the crisis harms on their economic wealth. In the previous years they offered Catering, 3 Kilograms extra weight for the suitcases and other services.

Another example of differentiation that existed in the Air sector was Song Airline, called Delta from 2006. They thought they had to do something different within the sector to provide an extra value to their company. It already existed many "Businessman's airlines", but then they thought: What about women? Women represent the 51% of the world population; nobody had ever set up an airline taking into account females preferences. After an exhaustive research they discovered that

more than the 80% of the family trips are organized and booked by women. They changed the company's colour to green, never existing before. They made Women's Focus groups to find out what women wanted in airlines. Their preferences were healthy food and drinks different to beer and wine. And so they did: The airline started to offer features like organic food in the plane (for what women are willing to pay), and 5 different kinds of Martinis for $ 5'00 a piece. Both measures were so successful that the company sometimes made $1600 per flight just selling food and drinks. What else were women interested in? Well, most of them were family mothers with children, and their main need while flying was their sons and daughters to be amused during these hours of flight. Song's solution was installing analogical TVs in every seat and played both children's programmes and music for parents.

(John Selvaggio "Brand Strategy: Differentiating an airline"; Retrieved 19- 03-2013).

3. Song's analogical TV example.

Those enterprises whose strategy consists in **Focusing** look for a reduced competitive approach or focused on a segment of the market. It rests on the choice of a narrow competitive scope within an industry. The company selects a segment or a group of segments in the market and focus their efforts in serving them to the exclusion of others. This segmentation is half way between massive marketing and individual marketing. This strategy supposes that every consumer acts the same within the same segment and have the same needs and wishes.

This focus system has to variants:

- Cost Focus, in which a firm seeks for a cost advantage in its target segment.
- Differentiation Focus, in which a firm seeks differentiation in its target segment.

Good examples of airlines focusing in this strategy are those companies whose business is scoped in Charter Flights. Charter Airlines don't sell tickets, but rent the whole aircraft, sensitive to special events, urgent flights or whatever the need of the costumer is. Usually those flights are chartered by tour operators that sell them to travel agencies, sometimes offering mixed packets of flight plus other services.

They are very common during high season in holidays to those destinies with an elevated rate of tourists. Some companies, like Air Lingus, have mixed models among traditional and charter flights.

2.2- LOW COST COMPANIES

Low cost companies are those who offer cheap flights in return of cutting several traditional services to the passengers. This class of airline arose in the United States and in the 90's they extended to Europe. Originally, this term was used to name those airlines with operational low costs or lower than the competitors. Nowadays this term is used to refer to all those companies who offer cheaper tickets than competitors because they use secondary airports, offer short distance routes, have one single class without offering any free services on board and they bet for the direct sale, being even the only distribution channel in many cases, like Ryanair's. They are airlines that usually have lower fares and fewer comforts. Instead of offering services, they make their passenger pay for extras like priority boarding, choosing seat, food, baggage, etc.

Many airlines advertise themselves as low cost companies in order to gain a competitive marketing advantage over other companies with similar prices, although their prices can be similar to other regular companies of the concurrency.

Regarding low cost companies' business model, there are several different practices among companies, but all of them have a common target: Cost reduction and in consequence fares reduction as well.

One of the most common practices among low cost companies are operating always with the same model of aircraft, with the aim of reducing maintenance costs, having Boeing 737 and Airbus 320 as their most used airplanes. Forcing the passenger to pay for extra weight is another of their strategies. By doing so, they encourage their passenger to fly with less weight, and this way aircraft is lighter and flight becomes cheaper for the company. Besides, if the passenger decides to pay for his extra suitcase, they will earn more. They also save resources by refusing providing any kind of entertainment to the passenger, as for example satellite TV or radio during the

flight. Some companies also sell commission-based products during the flight, such as lottery, cigarettes, calendars, perfumes and many others things.

In Spain, in 2000 low cost traffic represented only an 8% of the total flights of the sector. Nowadays, these companies represent the 47% of the sector. In Europe, there're 37 low cost airlines flying in our sky. The incursion of these companies in the market has caused a total revolution in the sector, shaking it in from the bottom to the top. Low cost companies have created a change in the way people book their flights, doing it directly themselves from the internet and not going to the travel agency to do it. Besides, customer's behaviour is different since some years ago: while in the past price was not an exclusive matter when costumer was purchasing a flight and they cared more about the company (usually trying to use national companies for loyalty and trustful) in the present price has become a key factor to take into account by the costumer. This happens because in the past, price was not as variable as it is now because of the fewer competitors and the respect existing among competitors according to pricing policies.

This situation has become harder due the current economical crisis, which is causing a huge harm to flagship airlines especially in Europe. In crisis time, consumer tends to the low cost offer, and it doesn't only affect to airlines but to several different businesses: Hotels, cars, yogurts and bread. Quality and good treat to the client is important, but not enough. That is why it is so important for companies to adapt to the new reality of crisis in the market. In many low cost companies, air attendants make many different tasks while, after and before the flight is held. Usually, besides attending to the passengers during the flight, they are the one who tries to sell company's products, clean the aircraft after the flight or work as gate agents once the flight is over.

2.3- ENVIRONMENTAL STRATEGIES

Civil aviation produces a hard impact on the environment because of the emission of the airplanes' engines. These emissions create acoustic pollution, send out gases and particles and contribute to the climate change and the global darkening (which is the decreasing of the solar light existing in the sky because of the increase of the soot's particles pending in the atmosphere from the 50's due to human activities).

Despite the improvement of car's engines that levelled off pollution emissions and the better efficiency in fuel's consumption, the rapid growth that occurred on airlines' sector in the last years has increased the total contribution of this sector to air's contamination.

This increase of the CO_2's emissions to the atmosphere due to fuel's combustion has as consequence the acceleration of global warming. Air sector increases this pollution not only by the airplanes, but also by the vehicles used in the airport and those ones used by airport's workers and customers to get to the airport or even the emissions generated by the own airport building. Anyway, more than the 95% of the contamination generated by this industry appears while the airplane is on the air. Scientific community affirms that sky travelling pollutes 2-3 times more than those transports which operate on the ground or on the sea. It is important wondering whether although airplanes

Although the main greenhouse effect's gas is CO_2, airplanes also emit other damaging gases like nitrogen oxide, water vapour and suspending soot and sulphates particles, sulphur's oxide and carbon's monoxide.

In order to be ecological and environmental caring, an airline should be aware of controlling and reducing as much as possible the next issues:

- Environmental noise's management.
- Atmosphere pollution's management.
- Liquid wastes' control.
- Solid wastes' control.
- Other issues, like water and energy's consume rationalization.

Environmental noise management. Any noise pollution problem can be addressed from three different points: The noise generating source, the media in which the noise is spread and the population who suffers the consequences of this pollution. According to this, with the target of reducing this pollution actions should be held on one or more of these three elements. Measures would be taken depending on the airport's structure or the location of the population close to the airport. Some of the possible actions taken could be:

- Restriction of NNC aircrafts (Non Noise Certificated). For the evaluation of the noise done by an aircraft there is a sound test done in three concrete moments of a plane's trip: while it is taking off, in a reference line in the airport's landing strip and during the landing process. If the plane doesn't pass this test, then it wouldn't receive the NNC certificate and airports would have the right to refuse working with this Aircraft due to environmental issues.
- Improving the engines testing in the airport.
- Applying different rates according to the noise produced by the aircraft during the landing and the taking off.
- Applying several operational procedures such as NAP (Noise Abatement Process consisting in the use of flaps, reduced potencies, ascent gradient or

other measures to reduce noise within air law frame), STAR (Standard Terminal Arrival Route) or SID (Standard Instrument Departure).

- Installing Acoustic Barriers or acoustic treatment.
- Providing the program for hearing conservation to airport employees.

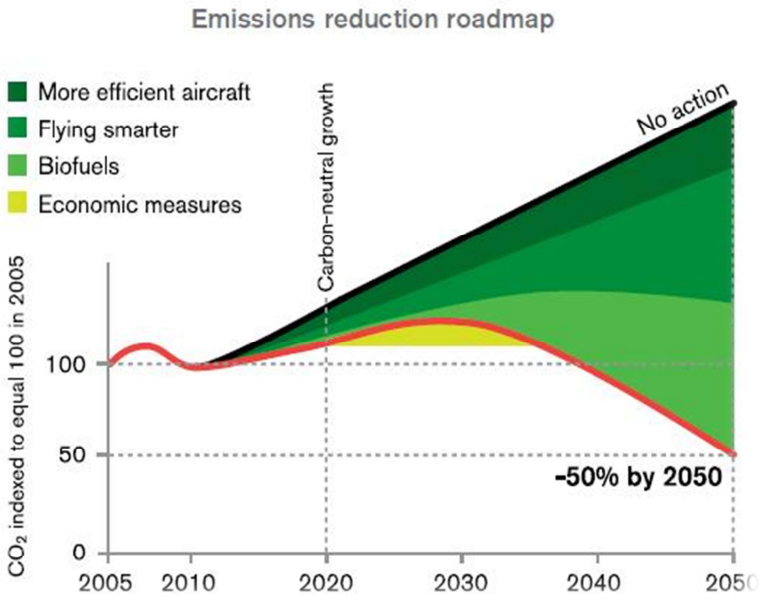
Liquid wastes' control. Domestic airport waters and aircrafts ones could become a serious problem if they weren't technically treated. Waters badly treated could suppose a sickness nest, as well as it can assist ground and air's population and also direct and indirect water spring's pollution. For these reasons, airports should take care of their liquid wastes assuming measures like creating:

- Creating Liquid wastes plants
- Activated mud plants
- Greasy tramps
- Waste products points
- Drainage nets and water separating.
- Septic Tanks
- Dykes for storage tanks.

Solid wastes control. Solid wastes picking in an airport must be well planned for being managed with security and efficiency. Airplanes and airports produce big amounts of solid wastes every single day. All this wastes picked up during a day, are taken to the incinerator to be burnt, which makes very important keeping an strict control on these incinerators because of the constant work they are subjected and the possibility of producing bad emissions to the environment due to combination of fire and products burnt. To low potential environmental harm produce by the incinerator, it should be controlled every two hours to eliminate the concentration of wastes close to the fire and avoid by this the increase of the emissions generated by the incinerator.

Atmosphere pollution management. Due to social and governmental pressure, airlines are becoming more ecological every day. In 2009, air industry agreed several points in order to become more sensitive with their environment while developing their activity. This agreement had three key aspects:

1. Improving fuel efficiency an average of 1'5% a year until 2020.
2. Capping net carbon emissions with carbon-neutral growth from 2020.
3. Achieving a 50% reduction in net carbon emissions by2050 compared with 2005.



5. Emissions Reduction Roadmap. IATA's anual Review 2012.

These measures would be taken and coordinated among all the main aviation sectors existing: Airlines, airports, Air Navigation Service Providers (ANSP) and aircraft manufacturers.

5 years ago, this commitment started to be a reality when the first biodiesel flight was reached. Ever since, more than 1500 flights have been successfully carried out using this combustible. This fuel cuts carbon emissions in an 80% comparing with jet kerosene, playing a significant role in emissions fighting in this sector.

Another important warrior against this battle against pollution is the improvement of aircrafts. Aircrafts' new generation are a 20% more efficient in fuel consumption than their predecessors.

2.3.1- FACTORS AFFECTING COMPANIES' ENVIRONMENTAL STRATEGIES.

After making a detailed study of the sector, setting precedents and future expectative, the different business models existing among the sector and the different environmental strategies, it is time to try to understand which are the possible factors that affect the company's implementation of the different environmental strategies existing.

Our very first hypothesis is that there's a possible connection between airline's revenues and their environmental commitment. It may happen that the bigger revenues a company has, the bigger the budget they assign to their environmental policy.

A second opinion, derivative from our first hypothesis, is that also airline's net result may affect their environmental measures in a sense of having a bigger leeway to perform their measures if the result is positive (it means if the company has benefits) or the result is negative and the company are having losses during the current year.

Finally, after previously having made a study of the environmental strategies that companies follow, we will try to prove that a company with a younger fleet is more proactive in their environmental policy than a company whose fleet's age is higher. The explanation for this hypothesis is that new aircrafts are more respectful with the environment than old ones, so a company which cares about making an investment in new aircrafts will be surely willing to control their environmental harming and will implement better environmental policies.

These entire hypotheses will be carefully analyzed and proved in the following part of our project, which is the Empiric Analysis.

3. EMPIRIC ANALYSIS

1. METHODOLOGY

After a careful research among European Airlines regarding different data of them related to environmental and economic aspects, we are going to make an empiric analysis to find out which aspects of an airline affect the most to their decision of implementing or not environmental measures.

1.1- HOW DID WE OBTAIN THE DATA?

For developing this analysis, our first step was making a detailed research among our targeted airlines. Due to the large number of airlines working all around the world, we decided to take into account only these ones affected by the European Trading System, which are the airlines from the EU-27 countries. Nowadays there are 59 airlines operating whose headquarter is settled in any of the EU-27 countries.

In order to make our analysis the most reliable possible, we have taken into account only those data published in airlines' annual reports or in their own web pages. We have NEVER used any information coming from other sources different from the own airline.

Among other data, we have looked for those figures regarding economic and managerial aspects of the airline, such as revenue, net profit, number of passengers, number of aircrafts, flights held, employees hired or load factor. Moreover, we have regarded some data very typically linked to airlines: RPK (Revenue Passenger Kilometre) and ASK (Available Seat Kilometre). ASK consists of two components: the

seats and the distance flown. So if the aircraft has 500 seats and it flies 10,000 km we have an ASK of 5,000,000 (500 x 10,000). As not every seat in a flight will be sold out, we have to measure the sale of our product in RPK. In our example of 5,000,000 ASK, if only 400 of the 500 seats were sold, then RPK will be 4,000,000 (400 x 10,000).

We have also been aware of obtaining data about environmental measures which these companies implement or not. Some of the measures we have looked for are their concern about treating their waste water, air pollution, solid wastes, global pollution, aesthetic aspects or the existence or not of social responsibility/environmental reports, environmental certifications, environmental values within the values of the company and also the average age of the airline's fleet (which influences in the CO2 emissions the aircraft produces) and the fuel consumption the airline had in a certain year. Besides, we have also looked for other environmental measures which are different from the previously said. To provide a couple of examples, Estonian Air has taken part in the "Let's do it!" project, whose target is to clean forest and towns, get responsibly rid of this rubbish and planting trees.

There are other companies like Iberia, Finnair, Hahn Air or Flybe who implement other different measures, such as making of their headquarter an environmentally sustainable building, using electric vehicles in the airport, transporting cargo in passengers flights in order to reduce the flights held, investing in de development of new fuels, being more efficient during the landing and taking off or using recycled materials on board.

1.2- WHICH ANALYSIS ARE WE GOING TO DO?

For confirming our hypothesis we are going to develop three different types of analysis: a descriptive analysis, cluster's analysis and finally a regressions analysis.

With the descriptive analysis we are trying to have a deeper knowledge about air sector nowadays and these figures that make up its composition, both economical and environmental, these last ones are indeed quite interesting for our purpose of trying to explain which components affect the environmental measures implementation by the company.

After realizing a descriptive analysis, we are going to create different airlines categories depending on the environmental measures they perform. To do so, we will make a Cluster analysis of the environmental figures we have in our data base.

Once we have classified the companies, now it is time to develop our regressions analysis in order to try to understand the relation existing among the way a company manages its different components and the environmental measures it undertakes.

1.2.1- DESRIPTIVE ANALYSIS

One of the purposes of our investigation is to describe the situation given in the air sector and to say how it is and how it affects a certain phenomenon to this sector and to its environmental policy. With this descriptive analysis we are trying to specify the important properties of this list of airlines we are working with, trying to measure or evaluate several aspects, dimensions or components of the airlines. In a descriptive analysis a range of questions is selected and each of them is measured independently in order to describe what is being investigated.

In our project, we will try to describe the most important figures of this sector in the EU-27 and these ones that affect environmental aspects of the airline. This analysis regards figures like revenues, net result, number of flights held by the company, number of employees, Revenue Passenger-Kilometre, fuel expenses, number of aircrafts used by the company, their load factor, their belonging or not to any of the existing airlines alliances or the average fleet's age.

Within environmental data we will describe, we find issues like if they made any environmental report in a certain year, if they have achieved to get any environmental certification, the different environmental measures the company implements and many other questions.

1.2.2- CLUSTER'S ANALYSIS

Cluster analysis is a data explorative analysis created to solve classification problems. Its aim consists in ordering things (persons, objects or in our case companies) in groups, so that the association degree among members of the same cluster remains stronger than the degree of association with members of other clusters. It means that objects belonging to one group will be very similar among each other and, in the other hand, those objects belonging to other groups will have a different behaviour in relation to the analyzed variable. Some of the most frequent uses of Cluster Analysis are:

- In Biology: To classify plants and animals.
- In Medicine: To identify illnesses.
- In Marketing: To identify groups of people with similar purchasing habits.
- In biometry (people's recognition): to identify the announcer and the faces of the people.
- Etc.

Cluster's analysis could be defined as non supervised learning, it means, a really appropriated technique to get information from a database without setting previous restrictions. Therefore, Cluster is a very useful tool to create hypothesis about the considered problem without imposing patterns or theories previously established.

This analysis will help us discovering associations and structures that wouldn't be evident in a first sight and which can be useful once we find them. This analysis is based usually in the discovery of the distances, or the proximity or similarity measures among the subjects, and among these ones and the groups that are being created (R. Sierra Bravo "Diccionario Práctico de Estadística").

1.2.3-ANALYSIS OF THE REGRESSION

The statistic regression or average's regression is the tendency of an extreme measure to keep closer to the average in a second measurement. It is used to predict a measurement basing on another one's knowledge.

This concept was firstly introduced by Francis Galton, a British intellectual, in his book *Natural Inheritance* (1899). Francis Galton's work consisted in the description of the physical features of the descents throughout the parent's features. After making a study of the height of the descents, he reached to the conclusion that very tall parents tended to have descents who inherit part of this height but besides the study revealed that there was a tendency to return to the average height.

It is a very helpful statistic tool that quantifies the correlation degree among two or more variables. This analysis method keeps in consideration that a large part of the observed correlation can be due to chance.

Its uses are almost unlimited. It is used in engineering, physics, medicine, biology, economy, etc. In our case, this kind of analysis will let us analyze the relation existing among a company's shape and the environmental measures it implements, among other analysis.

The first stage of this process is to identify the variable we have to predict (the related variable). Then we will implement the analysis itself, focusing on the variables we want to use as predictors (explicative variables). After that, the regression analysis will identify the relationship existing among the related variable and the explicative variable or variables. So, finally, the result will be presented as model (formula).

All the economic data used were normalized with the purpose of avoiding magnitude differences among the variables.

2. VARIABLES

There exist three different kinds of variables in our analysis, which are the independent variables, the dependent variables and the control variables.

We understand as independent variables to these ones variables that we will manipulate or measure in order to reach a result.

INDEPENDENT VARIABLES	DESCRIPTION	MEASUREMENT
Revenue '09	Company's revenues along 2009.	Figure data
Net Result '09	Company's result along 2009, whether profits as losses.	Figure data
Average Fleet's Age	Average age of the total fleet of every airline, including both leased and owned aircrafts.	Figure data

The dependent variables will react to the changes existing on the independent variable. Our target is to see how it affects to the dependent variable these changes happening in the independent variable, so we will change something in the independent variable just to see if there's something happening in the dependent one.

DEPENDENT VARIABLES	DESCRIPTION	MEASUREMENT
Environmental Values	Existence of Environmental Values in the company's mission for the year.	0 if there are no Environmental values and 1 if there are.
CSR Report	Development from the side of the company of a Corporate Social Responsibility Report.	0 if there is no CSR Report and 1 if the company creates it.
CSR Certification	Obtaining or not of a Corporate Social Responsibility Certification from the Company.	0 if company doesn't have a CSR Certification and 1 if company has one or more.
Environmental Measures	Amount of environmental measures implemented by the company from a total of 7 measures.	A figure from 0 to 7 depending on the amount of measures implemented.
Environmental Report	Development or not from the company of an Environmental Report, informing about company's environmental policy and measures undertaken.	0 if the company doesn't makes any Environmental Report and 1 if the company does so.
Environmental Certification	In this variable we ask if the company has any Environmental Certification (Ecolabel, EMAS, ISO 14001) or not.	0 if the company hasn't any Environmental Certification and 1 if it has any.

Control variables are a kind of independent variable which will not be manipulated so it keeps constant to neutralize its effects on the dependent variable. Therefore, constant variables are these which remain constant in each test of the experiment.

CONTROL VARIABLES	DESCRIPTION	MEASUREMENT
Alliance Membership	This variable regards the airline belonging to any of the 3 existing alliances.	One World (1), Star (2) and Sky Team (3). The number in brackets means the value given in the database to each of the alliances.
Airlines' Age	This control variable takes into account the age of the airline.	A figure, calculated by deducting to the current year (2013) the year of airline's setting up.

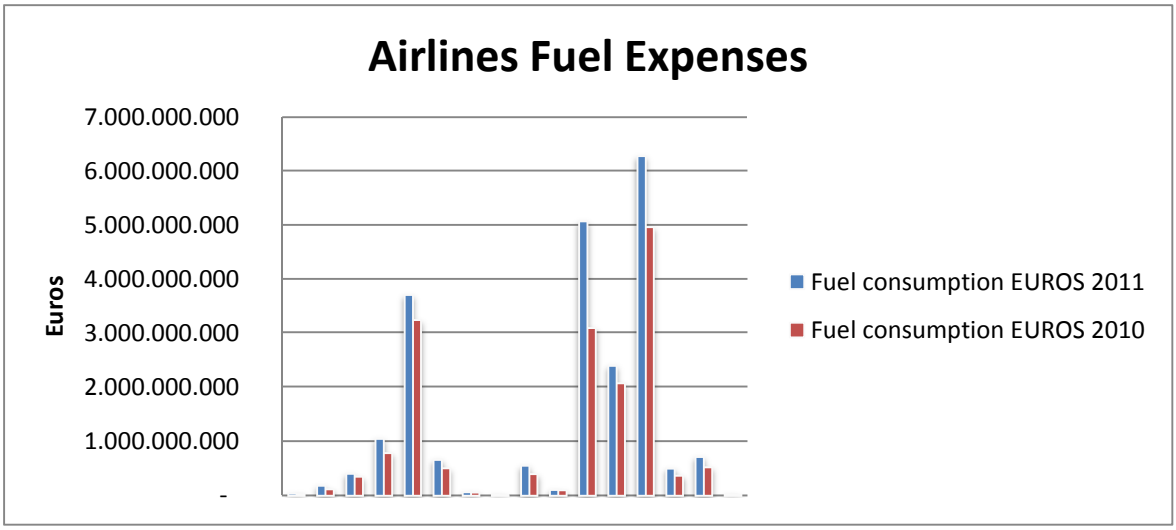
3. ANALYSIS

3.1- DESCRIPTIVE ANALYSIS

After explaining the data we are working with, we are going to give a little description of the EU-27 companies, the way companies are organized, their membership to any of the three airlines alliances existing nowadays and in the end the key figures to understand a little bit better this sector 's behaviour and its composition.

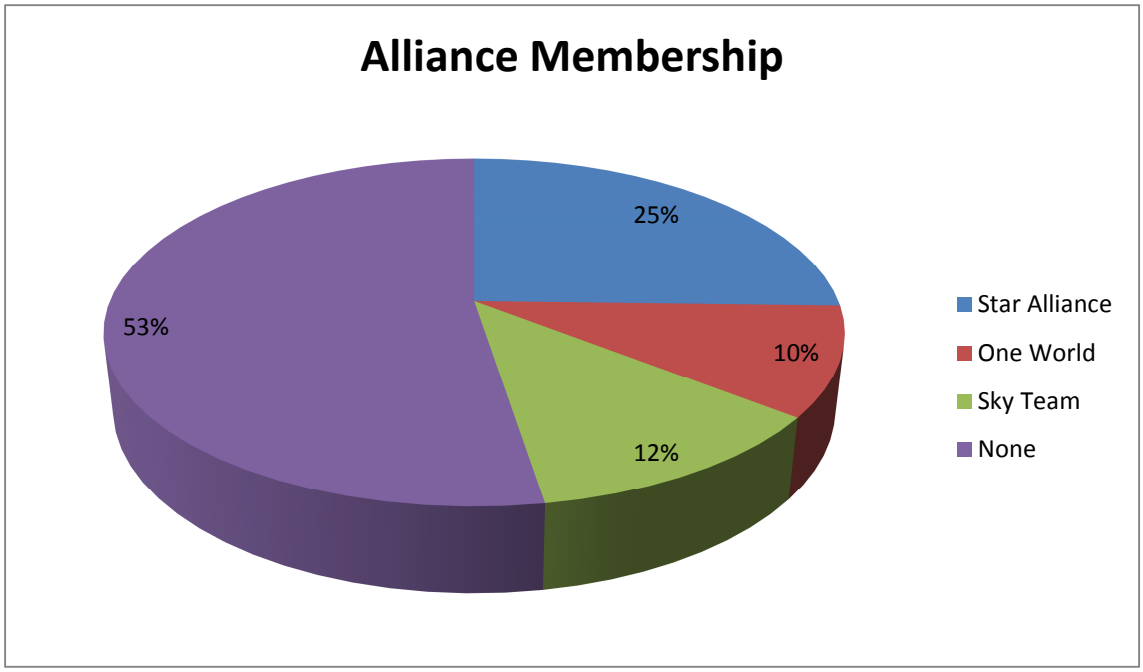
First, we will give a fast overview to the general data of the EU-27 companies. In 2011, total revenues of European airlines rose a 35'27% compared to the previous year (from 100.829.898.537 € to 136.393.574.168 €). By contrast, although revenues rose, net profit in 2011 was almost the half from 2010. In 2011, net result had an average of 37.893.689 € per company, while one year after it was of 70.617.475 €.

As we said previously when talking about air sector's actual situation, in the frame, this decrease in the result is due to several reasons; the main one is the fuel price. In the next chart we can take a quick view to fuel price's behavior during the period coming from 2010 to 2011.



Fuel total consumption by airlines from the EU-27 rose in almost 6 thousand millions of Euros in a year. It means that fuel expenses rose even more than revenues in 2011, a 36'8%. We can also say that every European airline paid an average of 1.450.754.057€ as fuel expenses during 2010 against the average of 1.539.982.069 € spent by companies just one year later.

Regarding Alliances, we have to underline that there exist three powerful airlines alliances in the world nowadays: Star Alliance, One World and Sky Team. Among European companies, alliances membership remains as follows:



The first thing we can observed when taking a look to the chart is that almost the half of the companies, 28 out of 59, are member of any the alliances existing (47% of the total of companies), being Star Alliance the one with the biggest percentage of airlines belonging to it with a 25% (1 of each 4 airlines working in the EU-27). The rest of the pie is shared among Sky Team, with 7 EU-27 airlines swelling its ranks (12%) and One World with 6 companies (10% of the total).

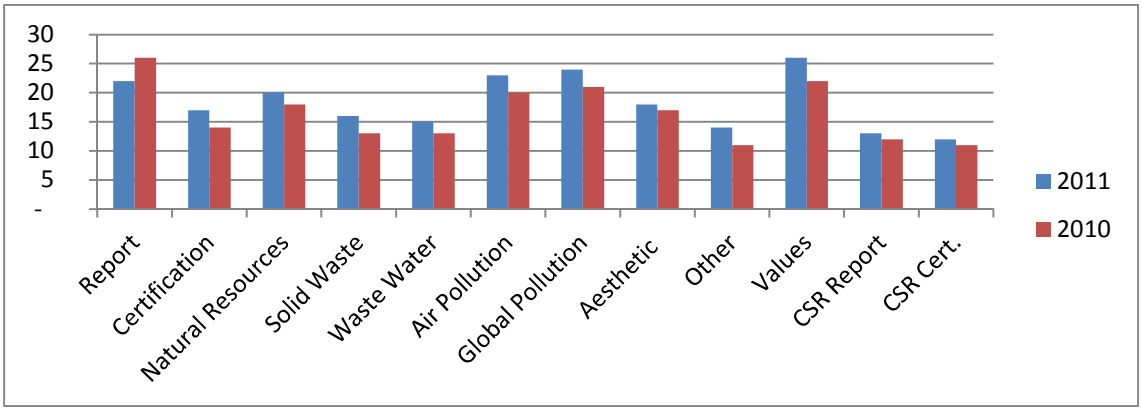
Although fuel costs were the most important ones in 2011, there have existed other reasons that may explain this huge decrease in companies' results. There were more passengers flying with EU-27 airlines in 2011, specifically 12 millions more. Furthermore, there were around 112.000 more flights held during the same year. Nevertheless, these two positive data are shadowed by the aggressive prices battle taking place in this sector and the lower load factor and Revenue Passenger Kilometre. Load factor has decreased a 0'285%, what is significant due to the large amount of flights held yearly (1.864.367 in 2011). In the case of the RPK (Revenue Passenger-

Kilometre) the drop has been even more evident: this amount has come from 529.889.895.007 in 2010 to 518.711.051.007.

Employees' increase has supposed another important expense in 2011 airlines' budget. Airlines have incremented their number of employees in a 25% from 2010 to 2011. Also companies have spent big money in renewing their fleet. In EU-27 companies there're have been 461 more aircrafts operating in 2011 than in 2010. Even though many of these aircrafts were leased instead of purchased, it is still representing a very high invest from the side of the companies. This investment is a direct consequence of European Trading System, due to the lower fuel consumption and therefore a lower CO_2 emission requirement from the EU to the airlines. This effort of the airlines for renewing their fleet has derived in a very low average age of the companies' fleet: 8'37 years.

EU-27 AIRLINES FIGURES	2010	2011
Revenue	100.829.898.537	136.393.574.168
Net Result	1.765.436.900	947.342.243
Passengers	295.132.849	283.123.811
Flights	1.864.467	1.752.623
Average Load Factor	0,7157	0,7128
RPK (Revenue Passenger-Km)	529.889.895.007	518.711.051.007
Fuel Consumption (Euros)	15.906.359.230	21.761.310.861
Employees	235.288	295.676
Number of aircrafts	2.113	2.574

Once we analyzed economic figures, it is time to make a description of environmental aspects of airlines all along EU-27. In the next chart there is a quick overview to general data of airlines' environmental policy.



The very first question we have to ask, in order to be able to make a real analysis about companies' environmental policies is "Does the company have a environmental report?" In 2011 there were a 10% more of companies who gave that step of making an environmental report, 28 companies (almost the half of all the EU-27 airlines) included some environmental information within their annual report or even created an annual report exclusively regarding environmental aspects of the company.

As we explained before, there exist some certificates that proves that a company is doing well environmentally, such as Ecolabel, ISO 14001 or EMAS. According to our research, in the year 2011 there were 3 companies that obtained any of these certificates and which didn't have it previously, passing from 14 to 17 airlines obtaining any of these certificates.

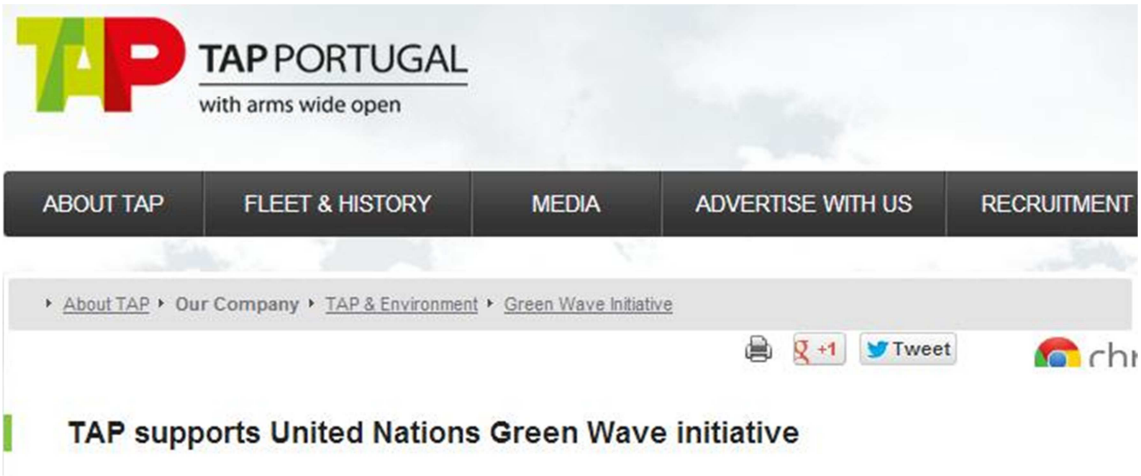
In 2011 many companies have really looked after their environmental measures, and in the sector there was little increase of the amount of measures taken in general, possibly as a consequence of the harder law that European Union was about to

introduce. Issues like caring the natural resources used by the company were taken into account by two companies in 2011 that were not doing so in 2010.

There has also been an increase of the 5% in the number of airlines that treat their solid wastes in an ecological way, increasing this figure from 13 to 16 airlines. Other wastes treatment that some companies have taken into consideration is the water one. Companies have been more aware of its importance and thus they have put more tools to be more efficient in their waste water treatment. 3 more companies decided to manage their water wastes that were not doing so previously, so that in 2011 there were 16 airlines implementing measures in this sense instead of the 13 which were doing such a measure in 2010.

About atmosphere pollution we can divide measures regarding this aspect in two: Air Pollution and Global Pollution. The first one addresses to the emissions of particles to the air while Global Pollution regards emissions that affects to the environment in general, such as CO2 or greenhouse gases. In this sense, there has been 3 more companies looking after pollution, passing from 20 to 23 companies in the case of Air Pollution caring companies and from 21 to 24 in the case of Global Pollution ones.

After studying the pollution and wastes treatments, it is time to see how many companies perform other practices that also affect the environment that surrounds their activity or are positive for the environment in general. As we said previously, we have found some environmental measures different from the given before which also helps to care the environment. Some examples of these measures could be the collaboration in reforesting or park cleaning projects, like the "Let's do it!" programme supported by Estonian Air; the building of environmentally efficient facilities like in the case of Finnair and Flybe; the investment in R&D in order to develop new fuels and usage of passengers flights for cargo transporting, as KLM does; using electric vehicles in the airport , recycled material on board and being more efficient in the landing and the taking off manoeuvre as Iberia suggest to do; and finally the TAP Portugal measures, which are supporting the EU Green Wave initiative that raises awareness about biodiversity among youth and children all around the world and using reduced flaps. According to our research, there have been 14 airlines performing other kinds of environmental measures in 2011, 3 more than the year before.



3.2- CLUSTER'S ANALYSIS

Final conglomerated's centers.

	Conglomerated	
	1	2
FINAL_Environmentalvalues	1,00	,13
FINAL_CSRreports	,67	,05
FINAL_CSRcertification	,62	,05
FINAL_ENV_MEAS	6,19	,34
FINAL_Environmentalreports	,81	,29
FINAL_EnvironmentalCERT	,86	,03

Number of cases in each conglomerated

Conglomerated	1	21,000
	2	38,000
Valid		59,000
Lost		,000

By using SPSS, we have achieved to create 2 conglomerates using the dependant variables "Environmental Values", "Corporate Sustainability Report", "Corporate Sustainability Certification", "Total Environmental Measures", "Environmental Report" and "Environmental Certification".

Within conglomerated nº 1 we can find these 38 airlines which are Proactive in their sustainability and environmental policy. They really care of environment and implement actions in order to be the less harming possible when developing their activity. Companies from conglomerated nº 1 regards the following attributes:

- All of them include "Environmental Values" in their mission. It means that one of their targets as a company is not to be harmful with their environment.
- 67% of them undertake a Corporate Sustainability Report containing information about the different actions the company does which make the airline more sustainable and respectful with the environment.
- A 62% of the companies in this conglomerated have or have had a Social Responsibility Certification.
- Companies from this conglomerated undertake an 88'42% of Environmental Measures.
- An 81% of these airlines create also an Environmental Report.

- There's an 86% of companies within this conglomerated which own any of the existing Environmental Certifications in the UE (Ecolabel, ISO 14001, EMAS, etc).

Conglomerated nº 2 airlines are these 21 airlines which have a reactive position regarding environmental measures and policies. They are companies which are not really concerned about the harming their activity causes in the environment or actually they don't implement environmental measures due to other reasons, whatever they are. Within this conglomerated we can find companies with the next features:

- Just a 13% of them include Environmental Values in their mission.
- The percentage of companies from this conglomerated which create a Social Responsibility Report is only of the 5%.
- It is also of the 5% the percentage of companies within this conglomerated which own a Social Responsibility Certification.
- A 4% of them implement environmental measures.
- About a 29% of these companies create or have created any environmental report in the last years.
- It is only of the 3% the amount of companies belonging to this conglomerated having an Environmental Certification in the last years.

Now that we have clearly defined the two conglomerated it is the time to check out which of the companies' characteristics affects their belonging to one or the other group.

3.3- REGRESSIONS

Estimaciones de los parámetros

Cluster[a]		B	Error típ.	Wald	gl	Sig.	Exp(B)	Intervalo de confianza al 95% para Exp(B)	
								Límite inferior	Límite superior
Env_Proactive	Intersección	-,335	,503	,443	1	,506			
	ZRevenue2009_2	4,199	1,777	5,582	1	,018	66,649	2,046	2171,245
	ZNetResults2009_1	2,035	1,230	2,736	1	,098	7,651	,686	85,279
	ZAverageAgeFleet_1	-,741	,371	3,991	1	,046	,477	,230	,986
	ZAge	,312	,347	,804	1	,370	1,366	,691	2,698
	AllianceMember	,184	,322	,325	1	,568	1,201	,639	2,257

a. La categoría de referencia es: Env_Reactive.

Once we have separated our database in two different conglomerated, it is the time to make a study of which are the economic factors that affect type of environmental policy implantation by a company. To do so, we are using Regressions that will establish a relation among the airlines' economic data we chose and its environmental measures undertaken.

As you can see in the table, we have picked up as economic measures with possible influence on airlines' environmental decisions airlines' revenues, net results and average fleet's age. As we explained before, we are taking Airline's age and its membership to any of the alliances as control variables.

The first thing we can see when taking a look at the table is that the three measures are statistically reliable, being Airline's revenue the most reliable one with a significance of the 0'018, followed by Fleet's Average age with a 0'046 and Net Result with a 0'098. It means that every hypothesis we did previously was right and that these economic measures have a direct influence the airlines' policies regarding environmental issues.

We can observe that the one which affects the most to environmental policies of the airlines is airline's revenues. It means that the bigger the airline's revenues are, the more measures a company implements.

There exists also a big relation among companies' net result and the amount of measures implemented by the company regarding environmental caring. Also, as in revenue's case, it has a positive relation, it means, the largest net result a company has the more measures it implements related to environmental issues.

Finally, regarding Fleet's average age, there exists a negative relation among fleet's average age and an airline' environmental policy. Therefore, the lowest fleet's average age will mean that a company is implementing more and better environmental policies than other airline's whose fleet's age is higher.

4. CONCLUSIONS

After developing many different analyses and making a deep study of the air sector characteristics we have obtained the knowledge enough to reach some conclusions from this project.

When studying air sector's frame, we reach several conclusions. Firstly, we can have an idea of its current situation. It is one of the most important sectors of global economy, the third in contribution to Europe's GDP. There are lots of people working in this industry, and it contributes to create a more interconnected world through people and cargo transport. We also have realized of the problems which European sector is suffering nowadays, including the hard price competence that is being held in the sector currently and the need companies have of restructuring their price policies in many cases to survive in this battle, Middle East airlines threat due to the good position they are reaching before crisis finishes, and the structural problems in European airlines that are not making possible that all of them survive to the current crisis.

We have also made an analysis of the different strategies companies are undertaking, regarding business models and environmental strategies. In the first case, business models, we find out that there's no big difference among air sector and other industries. There are three predominant business models: Cost Leadership, represented by low cost companies; Differentiation, represented by those airlines which are giving an added value to their aircrafts or their activity; and Focus strategy, which is implemented by those companies which focus in a certain part of the sector which is unattended. We have also made a list of the different environmental measures that companies tend to implement, regarding emissions, treat of wastes, esthetic issues like noise, energy's consumption and many other features that will be used in our empiric analysis to classify the companies.

Regarding our analysis, which is probably the most important part of the project, we have discovered many different aspects that affect companies' environmental policies' implementing. The first conclusion we reach from our empiric analysis is that airlines' environmental measures are dependent of company's revenues. It means that the companies give more importance to their economic development rather than their environmental policy. Once a company has achieved having their targeted revenues, then they start working on improving their measures regarding environmental aspects, increasing their Social Responsibility and making more activities for the society's benefit. This conclusion is enforced by the second aspect of companies' economical aspects that we studied: Airlines' Net Result. We found out that the better net result an airline has, the more environmental measures a company implements.

Finally, we discovered that the fleet's average age is also an important indicator of companies' environmental commitment. We found out that these airlines with a lower fleet's age tend to be more proactive in their measures implementing. It happens because the newer an aircraft is, the more sustainable is its activity. Newest aircrafts have the last technology and in consequence they are less aggressive with the environment than older ones.

I would like that this project's final words were used to express all my endless gratitude to my professor and director of this project Mr. Miguel Pérez Valls. Thank you so much for that big time you spent helping me to find the right way for this project when I was lost and also for suggesting the project's topic. I hope that this project reflects all the commitment you put in it.

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