Abstract
The airline deregulation act has stimulated the competition and allowed the growth of the air transportation. Consequently, low cost airlines emerged, which revolutionized the entire market. These companies had a huge economic and social impact and present specific operational requirements that forced the airports whose strategy is to lure these companies, to adapt to such characteristics. However, the great dynamism of this industry has exposed airports to several competitive forces. For that reason, it is essential to find analysis methodologies suitable to identify the best strategic options to deal with different types of competition. This document’s objective is to analyze various methodologies in order to choose the most effective one for evaluating the strategic options followed by the airport managements. Among these methodologies, it was considered that the five competitive forces model of Michael Porter is the best to apply to Orio al Serio airport, whose operations are largely dominated by low cost airlines. It was developed a quantitative methodology to classify the intensity of the different competitive forces that affect this airport. It was possible to conclude that the power of the airlines operating on it is the most intense competitive force on this type of airport which follows a generic competitive strategy of focus on the market segment of low cost airlines.

1. Introduction
The current growth of the airline industry has been accompanied by the emergence of low cost airlines, which contributed to the growth of this industry and have revolutionized many processes due to the simplified procedures required by those airlines. In this context, the airports have been forced to define strategic plans. There were several impacts over the airports due to the growth of low cost airlines, so it is important to analyze the airport strategies. The model applied in this document is the Porter five competitive forces model, along with a methodology to evaluate the intensity of each competitive force at Orio al Serio airport.

2. Literature Review
The airline industry has changed largely due to the airline deregulation act, which occurred in 1978 in the United States of America. The effects of this act were hereafter extended to the entire world. One of the results of this industry liberalization was the emergence of low cost airlines. Before the act, the pricing structure consisted of a restrictive model which inhibited the industry’s growth. The main objectives of the deregulation act were the removal of state control over routes, fees and new airlines entrants into the market, among others. This law exposed this industry to the competitive market forces. Nonetheless, the passenger’s fares decreased in several markets because of the growth of the competition, mainly due to the entrance of new
airlines as low cost ones. In the decade of 90, the strategies of low cost airlines have attracted special attention from the traditional airlines. The pioneer airline introducing low fares for short routes was *Southwest Airlines*, in the USA, considered to be a role model airline in terms of low cost segment. In Europe, the deregulation act was preceded by a fast liberalization between the United Kingdom and Ireland, in the decade of 80. This liberalization created conditions for the emergence of the first European low cost airline, *Ryanair*.

### 2.1. Low Cost Airlines

By definition, the low cost airlines have lower costs than the costs of their competitors. Their business model is mainly characterized by the product simplicity, low operating costs and a specific positioning, enabling them to offer lower prices to their customers, without providing many of additional services. The low prices offered by low cost airlines have been attracting new customers to this market and the airports have adapted to the growth of those airlines. As the low cost airlines require lower fares, airports assigned to this segment should pay special attention to the revenue generated by non aeronautical activities, as commercial services. These commercial spaces try to exploit the flow of passengers and their willingness to pay for that kind of services, which increases the revenue. The low cost airlines are characterized, among other things, by operating mainly in point-to-point routs between secondary or regional airports, not congested and with low landing fees. These airlines try to reach good agreements with the airports, like discounts on airport charges. It should be noted that regional authorities may also contribute to attract low cost airlines through regional subsidies.

### 2.2. Airports

There are some airports almost exclusively devoted to the low cost segment. Even between the bigger airports, there are some of them who created specific terminals dedicated to this type of traffic. It is important that airports evaluate carefully the investments based on their strategic perspectives and trends of the air traffic. For instance, the development of an airport can be seen in terms of its potential as a transit platform or the attractiveness of their location. The most common criteria of airports differentiation is the traffic in terms of aircrafts movements. The mega-hubs are big airports that are more focused on a dominant airline at the airport and their respective alliance. The secondary hubs are airports with similar characteristics to mega-hubs, but with a smaller dimension, having less capacity to attract long route flights. There are also small hubs that, in general, try to serve a large catchment area and, therefore, should base its expansion strategy by planning incremental investments over the time. Generally, the secondary and regional airports are small. These airports should have a strict control over the costs, in order to achieve a good profitability. Moreover, when optimized in terms of structure simplification, an airport is able to have a big part of low cost airlines traffic, so it could be called a low cost airport. The activities of the airports can be categorized as aeronautical or non aeronautical activities. The non aeronautical activities could be key activities as handling services or air traffic control, but also commercial services. The revenues from those services...
may have significant relevance in the financial position of an airport, especially in small airports. Low cost airlines, therefore, emphasize their operations in the point-to-point traffic system. This system is characterized by connections between two points without integration of other points. With the emergence and growth of low cost airlines, the point-to-point system has gained more importance. Nevertheless, the airports should consider the benefits of accommodating low cost airlines, as these require a very simple airport infrastructure. The airports should also be able to respond to the requirements of that kind of airlines and have an adequate capacity regarding the airlines movement, providing facilities like runways or terminals, adapted to low cost airlines operations. For bigger airports, luring low cost airlines can be seen as a way to fill an eventual overcapacity. The secondary and regional airports are the main target of low cost airlines as these tend to present a much lower traffic from the traditional airlines, when compared to larger airports. Low cost airlines also have the ability to change easily to alternative airports. If the airport management intends to increase its activity, it should consider the situation in order to decide if it is beneficial to build, for instance, new facilities. However, the airport management should also consider eventual conflicts between airlines already established and low cost airlines, as both want lower charges. Many airports with public management try to attract low cost airlines in order to bring some benefits to itself and to the local economy. Besides creating jobs inside of these airlines at airports or in a specific region, low cost airlines could also increase the tourism in that region and complementary services at the airports. Moreover, these airlines had impacts on regional tourism, and also on all European tourism.

3. Airport Strategies and Analysis Methodologies

In the 80s, the studies of Michael Porter developed the concept of competitive strategy: instead of focusing only on the product competition, extended the scope to the industry. One of the most important considerations was the segmentation of the market which means identification of specific groups of costumers who respond differently to the same competitive strategies.

3.1. Methodologies of Analyse

In order to choose the most useful methodologies to apply to a case of study, it was considered four analysis models. First, the Ansoff matrix can be defined as a table that allow to evaluate the options of a company to define their current situation and get the best return on a potential future investment. The growth types defined by Ansoff matrix are: market penetration, market development, product development and diversification. Another model is the PESTEL analysis that allows the organizations to analyze the external environment of their business and the competitive forces related. This analysis is a methodology to characterize the problems that affect an industry, synthesizing the influences over the market environment with political, economic, social, technological, environmental and legal factors. SWOT analysis is a technique that helps to understand the strengths or weaknesses of an organization, having in consideration the opportunities and threats that it will face. This analysis defines the objective of the business and identifying the internal and favourable or unfavourable external factors. One of
the main interests of this analysis is that it is possible to discover the main opportunities that a company can explore in a particular business area. In other hand, knowing the weaknesses of the business, it is possible to control and eliminate some threats that could affect that business.

3.1.1. Five Competitive Forces Model
The airlines liberalization has led to an increase of the competitive forces over the airports. In that way, the airports had the need to undertake competitive analysis in order to define their strategic options. One of the most useful models that can be applied to make these analyses is the five competitive forces model developed by Michael Porter. The forces defined are the threats of new entrants, threats of substitute products or services, bargaining power of suppliers, bargaining power of buyers and rivalry among existing competitors. Normally, the threat of new entrants is low due to the high investment required to build a new airport. Relatively to the threat of substitute products or services, the high-speed train is the main threat for the services provided by the airports. This threat will have more impact to smaller airport as the regional ones. However, the growth of low cost airlines has turned the option for the air travel, in many cases, more favourable in economic terms, compared with the train travel. The bargaining power of suppliers will be high if there are few suppliers, if there are not substitutes for those suppliers or if their prices are a big part of the total costs of the airport. There are several services that can be provided either by the airport management or others. Those services include air traffic control, security, ground handling and commercial activities. In other hand, the buyers of the airport services are the airlines. The power exercised by the airlines could be high, influencing the airport charging. In general, when there are few airlines operating in an airport, it is expected that those airlines have considerable power, i.e., the bargaining power of buyers. The rivalry among existing competitors can vary quite between existing airports. For instance, there is a tendency for a weak rivalry at airports that have a large concentration of services, whether long or short distance. The sources of competitive advantage can be defined as being low cost, differentiation or looking for a market niche. The airport’s managements should have absolute control over the entire infrastructure, including non aeronautical services. They have also an important influence on prices and characteristics of products. Therefore, it is possible to examine these issues from the perspective of competitive strategies that airports have developed. Porter identified key generic competitive strategies as cost leadership, differentiation and focus. If the strategy followed by the airports is to capture a particular type of airline, such low cost, the most adequate strategy is the focus in a market segment. The competitive strategy of focus consists into the selection of a target group of customers in which the company will specialize in function of specific segments or niches, through the differentiation or the cost of their products or services.

3.2. Conclusion
It is important analyze which methodologies are better suited to apply to the study case that is generally characterized by an airport with vocation for low cost airlines. First of all, it is
considered that the Ansoff matrix is not the most appropriate methodology to characterize the strategic options of an airport like Orio al Serio, because their definitions of types of growth are not well suited to the study case. PESTEL analysis is more appropriate to characterize an entire industry than to characterize the competitive position of an individual organization. SWOT analysis can be very useful at the strategic planning of an airport in order to understand its competitive situation at present and helping to define the future strategic options. Porter five competitive forces model is the methodology developed in this document, because it is the best in terms of define the competitive forces that affect an airport.

4. Case Study: Orio al Serio Airport

The Orio al Serio airport is located near from the city of Bergamo, at the Italian region of Lombardia. This region is densely populated and it is one of the regions that have more commercial, business and industry activity in Europe. The management of this airport is from the responsibility of the S.A.C.B.O. S.p.A. (Società Aeroporto Civile Bergamo Orio al Serio). In 2003, with the arrival of Ryanair and, later, other low cost airlines, Orio al Serio airport began to grow exponentially, and soon became the main Italian airport to receive low cost flights. In 2008, the airport handled around 6.480.000 passengers, becoming the fifth busiest Italian airport. Over the time, the airport management has made general improvements to airport infrastructure. The Orio al Serio airport management’s priority is the development of the passengers’ movement, in particular, through the attraction low cost airlines. This infrastructure is located near from the A4 highway, which connects the cities of Turin and Venice. There are also other means of transportation like buses or trains that connect the airport to the near cities.

4.1 Application of Porter’s Five Competitive Forces Model

Before defining their future effective strategies, the airports must know well the competitive environment in which it is inserted. Moreover, there is competition at various levels in the air transport industry, so it is important to analyze those competitive forces. The Porter’s five competitive forces model can be very useful for this purpose. This method will be applied to the case of study qualitatively and quantitatively. For this methodology, it was construct a scale to classify the intensity of each force that affect the competitive environment of the airport. This scale will be applied to various factors that contribute for the existence of a particular competitive force. The scope is to define the intensity of the competitive forces through a weighted classification of each factor considered. The classifying scale is: 1.0 - Very Low; 2.0 – Low; 3.0 – Medium; 4.0 – Strong; 5.0 - Very Strong.

4.1.1. Threats of new Entrants

The threat of new entrants can come from two sub-forces: the conversion of other existing airports to low cost airlines attraction or the construction of new airports. It was defined as potential threats all airports located within 100 km from the Orio al Serio, i.e., Linate airport at 41 km, Brescia airport at 55 km, Lugano airport (Switzerland) at 71 km, Malpensa airport at 76 km
and Verona airport at 98 km. However, the Orio al Serio airport management indicated also the Bologna airport as a potential competitor, so it was includes into this analysis. Looking for the first sub-force, it was considered the factors that can contribute to the intensity of this sub-force. These parameters should have a weight because they have different influence on sub-force.

A) Activity level of low cost airlines on the airport - 30%

The Malpensa and Linate airports follow a strategy of attracting low cost segment in order to cover overcapacity, mainly due to the actual global economic crisis and the partial withdrawal of Alitalia from these airports. Malpensa airport still have a terminal where the low cost airline easyJet has an important presence. For these reasons, Malpensa airport is punctuated with 4,0 and Linate airport with 3,0. Bologna airport is smaller than previous ones and also has a considerable activity of low cost airlines, so it is punctuated with 4,0. In the other airports, the activity of low cost airlines is smaller, especially at Brescia airport, more specialized in cargo transportation. In that way, this airport is punctuated with 1,0 and the others with 2,0.

B) Airport simplicity - 20%

The structure of the Malpensa and Linate airports is very complex, which contrasts with the structure of the Verona, Brescia, Lugano and Bologna airports, which are simpler. However, the Malpensa airport has a terminal more used by low cost companies so, globally it is punctuated with 2,0, instead Linate airport is punctuated with 1,0. As Lugano airport seems to have the simpler infrastructure is punctuated with 5,0 and the other airports with 4,0.

C) Potential strategic options of airports in terms of attraction of low cost segment - 20%

As the potential strategies of Malpensa and Linate airports could be to keep attracting low cost airlines to fill their overcapacity, both are punctuated 4,0. Brescia airport, despite a simple structure, has a strategy of consolidation of cargo transportation, so it is punctuated with 3,0. At this moment, Verona and Lugano airports are focus on the charter segment but they have potential to attract more low cost airlines, so its punctuation is 4,0. Bologna airport, where there are some low cost airlines operating, has also potential to attract these airlines, so it is punctuated with 4,0.

D) Airport capacity - 15%

In order to punctuate the airport capacity, it was considerate the passengers movements in 2008. The airports with higher passenger movements that Orio al Serio airport are punctuated with 5,0, as Malpensa and Linate whose movements in 2008 were, respectively, 19,221,632 and 9,266,152 passengers. Bologna with 4,225,446 passengers, Verona with 3,402,601 passengers, Brescia with 259,764 passengers and Lugano airport with 188,798 passengers were punctuated respectively with 4,0, 3,0, 1,0 and 1,0.
E) Airport decongestion - 10%
The activity of low cost airlines in big airports as Malpensa and Linate can indicate that these airports have not a great congestion and, for that reason, both are punctuated with 4,0. Lugano and Brescia airports seems to be less congestion so they are punctuated with 5,0 and 4,0 respectively. Verona and Bologna airports are punctuated with 3,0.

F) Proximity to the Orio al Serio airport - 5%
According with the distances of each airport to Orio al Serio, Linate and Brescia are punctuated with 4,0, Malpensa, Verona and Lugano with 3,0 and Bologna with 1,0.

<table>
<thead>
<tr>
<th>Airport</th>
<th>Punctuation of Each Airport</th>
<th>Average</th>
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<tbody>
<tr>
<td>Malpensa</td>
<td>3,7</td>
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<tr>
<td>Linate</td>
<td>3,3</td>
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</tr>
<tr>
<td>Verona</td>
<td>3,1</td>
<td></td>
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<tr>
<td>Brescia</td>
<td>2,5</td>
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<tr>
<td>Lugano</td>
<td>3,2</td>
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<tr>
<td>Bologna</td>
<td>3,8</td>
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Punctuation of each airport and the average.

Applying an arithmetic average, the intensity of this sub-force is punctuated with 3,2. The second sub-force is the possibility of construction of new airports in the area that is considered almost impossible, so the intensity of this sub-force is punctuated qualitatively with 1,0. The criteria to obtain the final intensity of the competitive force 'threats of new entrances', is to choose the higher punctuation of each sub-forces, so the punctuation of this force is 3,2.

4.1.2. Threats of Substitute Services
The high-speed train can be the main threat to substitute the services provided by the airports. For this study case, considering the tariffs of the high-speed trains and the tariffs of the airlines operating at Orio al Serio airport, in general, the air transport is more economic. However, the competition between airlines should also be considered, particularly among the low cost and traditional airlines. For this threat, it is defined two sub-forces, also with different weights.

G) Travel Cost - 70%

H) Travel Time - 30%

Comparing the travel cost for high-speed train and the travel cost in a low cost airline (Ryanair), between Milan and Rome, it was defined a scale in order to convert the prices of each kind of travel for the intensity scale already defined in this methodology. By this scale, the sub-force G is punctuated with 2,0. Relatively to the sub-force H, it can be defined for the travel time three important factors: the trip distance, the infrastructure distance where the trip starts and the frequency of the transport mean considerate. It was defined qualitatively that a short trip is till 650 km and a long trip more than that. It is also considered a weighting of 30% for short trips and 70% for long trips. For short trips, the high-speed train is the bigger threat to the airport so it
is punctuated with 4,0. For long trips, this threat is lower so it is punctuated with 1,0, because for long trips, travel by plain is more advantageous in terms of time. The weighted average to this factor is 1,9. The infrastructure distance and the frequency are both qualitatively punctuated with 4,0. Weighting each factor with the percentages defined, the final punctuation for this sub-force is 2,2,. On other hand, for the sub-force related with the competition of traditional airlines as substitutes for low cost airlines, it should be noted that, in terms of travel time, both services are equal, so the factor H is not punctuated. In general, the price charged by traditional airlines is higher than the price of low cost airlines, so the factor G is punctuated with 1,0. Applying the criteria of choosing the bigger sub-force, the punctuation of this force is 2,3.

<table>
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<th>Punctuation</th>
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<tbody>
<tr>
<td>High-Speed Train</td>
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<tr>
<td>Traditional Airlines</td>
<td>1,0</td>
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</table>

Punctuation of each sub-force.

4.1.3. Power of Suppliers
To determine the intensity of the power of suppliers, it should be analyzed the following factors.

I) Air traffic control
By state imposition, the air traffic control is operated by ENAV (*Società Nazionale per l’Assistenza al Volo*) so there is no competition. Due to this reason, this factor is not punctuated.

J) Handling services
The provision of handling services is shared by the airport management, and a private company. Therefore, the intensity of the competition of this factor is punctuated with 2,0.

K) Security services
The security services are provided only by a private company. There is the existence of a monopoly so the punctuation of its competitive intensity is 1,0.

L) Commercial services
There is a competition between the commercial services into an airport so that fact diminishes its power relatively to the airport. Due to that fact, this factor is punctuated with 2,0.

Punctuation of the Effects of the Competition of the Services to the Airport

| Punctuation of the Effects of the Competition of the Services to the Airport |
|-----------------------------|---------|
| I                           |         |
| J                           | 2,0     |
| K                           | 1,0     |
| L                           | 2,0     |

Punctuation of each factor.

Choosing the bigger value, the intensity of the power of suppliers at Orio al Serio airport is punctuated with 2,0.
4.1.4. Power of Buyers

The power of buyers to Orio al Serio airport can be defined as follows:

M) Capacity of an airline to choose an alternative airport - 50%

The low cost airlines are predominant at the Orio al Serio airport. These airlines have a considerable ease of change to another airport with a simple structure. Indeed, even big airports have interest in attract them. By the classifying scale, this sub-force is punctuated with 5,0.

N) Reduced number of airlines at the airport - 50%

There are also a small number of airlines operating in Orio al Serio airport. In particular, Ryanair operates a large number of flights, guaranteed a very strong power over the airport. For this reason the punctuation of this sub-force is also 5,0.

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<tr>
<th>M</th>
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<th>Punctuation of the Influence of the Airlines</th>
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Punctuation of each sub-force.

Therefore, the power of buyers is punctuated with 5,0, which means that it is very strong for Orio al Serio airport.

4.1.5. Rivalry of Existing Airports

In order to apply this methodology, it is possible to define that the rivalry between existing airports is similar to the threat of new entrants. Excluding the possibility of building new airports, the rivalry felt by Orio al Serio airport come from the existing airports. The difference is at one factor that, for the threat of new entrants is ‘Potential strategic options of airports in terms of attraction of low cost segment’ and, for the rivalry of existing airports is ‘Actual strategic options of airports in terms of attraction of low cost segment’.

O) Activity level of low cost airlines on the airport - 30%

P) Airport simplicity - 20%

Q) Actual strategic options of airports in terms of attraction of low cost segment - 20%;

R) Airport capacity - 15%

S) Airport decongestion - 10%

F) Proximity to the Orio al Serio airport - 5%

The punctuation of the factors O, P, R, S and T is analogous to the analysis of the factors A, B, D, E and F, respectively, into the analyze of the threat of new entrants. Relatively to the factor Q, it is possible to say that the current strategy of Malpensa and Linate airports has been to attract low cost airlines in order to combat the respective decrease of traffic. For that reason, both are punctuated with 4,0. In other hand, Brescia airport is specialized in the cargo transportation, so it is punctuated with 1,0, because it is totally different of the low cost segment. Verona and Lugano airport have bet preferably to increase the charter segment, having still few
low cost traffic. For that reason, they are punctuated with 2.0. As the current strategy of Bologna airport has been reinforcing its focus on low cost airlines (as evidenced by recent agreements with Ryanair), the airport is punctuated with 4.0.

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Punctuation of each airport and the average.

Applying an arithmetic average to each score, the intensity of this competitive force is punctuated with 3.0.

5. Final Results and Conclusions

The final results of this methodology were as follows:

<table>
<thead>
<tr>
<th>Threat of new Entrants</th>
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<td>Power of Buyers</td>
<td>5,0</td>
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<td>Rivalry of Existents Airports</td>
<td>3,0</td>
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</table>

Intensity of each competitive force.

It was identified that the competitive force of the power of buyers is the most intense, punctuated with 5.0, i.e., a very strong intensity. Also the threat of new entrants and the rivalry of existing airports have intensity near from medium. The other competitive forces have intensity near from weak. It should be also taken into account that the Porter generic competitive strategy followed by Orio al Serio airport is the focus on the low cost segment.

With the application of this methodology based on the five competitive forces model developed by Porter, it is possible to conclude that, in the current context, Orio al Serio airport is under a strong power of buyers of their services, i.e., the airlines, in particular Ryanair that has an important operational base in this airport. Naturally, there is a relationship of mutual dependence, but it was concluded that this airline, like others, may not find many difficulties to change to an alternative airport. In addition, according to the perspective of the management of Orio al Serio airport, the methodology formulated indicates that Bologna, Malpensa and Linate airports are the ones that beget greater competition. It should also be noted the importance of non aeronautical revenues to an airport like Orio al Serio, as a way of ensuring its economic and financial stability. In that way, it is possible to the management to apply lower fees which, with an optimized structure for the low cost airlines operations, has resulted into the growth of Orio al Serio airport in terms of volume of traffic and its financial condition.
6. References

Books

Documents

Scientific Articles

Internet