Down on the ground:

COMPREHENSIVE AIRPORT STRATEGIES

Student Scientific Conference
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This paper purposes a Comprehensive Airport Strategy Matrix, for the management of airports. This matrix is based on two fundamental factors: characteristics of the airport and type of dominant airlines. Based on this model, four major strategy can identified (question mark, hub, periphery and emerging) and can divide into sustainable and non-sustainable strategies. Sustainable strategies (hub and periphery) mean the equilibrium points of the model in a longer perspective. Non-sustainable strategies are changing dynamically and moving toward the equilibrium. Another trend can be seen, the convergence of the airports in the same metropolitan area, with a hub and a periphery strategies. This new approach is the multi-airport clusters (MACs), which analyze these local networks as business cluster. At the end, this paper analyze how the MALÉV bankruptcy influenced the Budapest Airport’s operation.
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I. INTRODUCTION

Aviation is a relatively new industry, which revolutionized the transportation. The airports are in the focus of this paper, which are the symbol of this revolution. In this paper, I introduce a Comprehensive Airport Strategy Matrix and the concept of Multi-airport Clusters (MACs), which helps to understand the margins of the particular airports. Based on this matrix, my hypotheses are the followings:

\( H_1: \) There are two equilibrium strategies for airports: Hub and Periphery strategies.

\( H_2: \) Airports with not sustainable strategy converges to the equilibrium.

\( H_3: \) Creation of Multi Airport Clusters (MACs) can be the optimal solution in the case of metropolitan regions.

During the preparation phase first I heavily relied on the following three components: (1) current business literature of aviation, (2) three analyzed case studies (Vienna International Airport Aéroports de Paris and Budapest Airport) and (3) lectures held by top executives and industry experts (Martin Gauss, Magdolna Költő, Piotr Ikanowicz) of the Hungarian aviation industry.

In the first chapter the paper focuses on the general introduction of aviation industry. After the presentation of an airport stakeholder map, I will outline the whole process of aviation. In the next section, based on Osterwalder’s (2005) work, I will analyze the business models of the airport in a general level. In the third chapter the paper presents a Comprehensive Airport Strategy Matrix, which suggests broad solutions for distinct type of airports. Then, I launch the definition of multi-airport clusters (MACs) and illustrate it in the comprehensive airport strategy matrix. At the end of the paper, I analyze how the bankruptcy of the MALÉV influenced the strategy of the Budapest Airport within the Comprehensive Airport Strategy Matrix. How it fell back from the emerging category to the periphery.

II. AVIATION INDUSTRY

Aviation industry can be seen as a symbol of globalization and progression. The historical development of the industry, led to the reinterpretation of time and distance. Due to its complexity, today this is one of the most strictly regulated
markets, it is an area, where the pure political and business interests are mixed with safety and environmental issues.

Because of the reinterpretation of time and distance, the value creation of aviation – and also the airport – industry on a national level is more than significant and it is characterized by a multiplier effect. Oxford Economic Forecast (2006) argues that the main links between aviation and economic growth is mainly derive from direct (e.g. job creation, export and production) and indirect (effect through the related industries) impacts. Due to the report, the industry employed 186 000 people in the UK and contributed 11.4 billion £ to the British GDP. Moreover, 520 000 people’s jobs depend on aviation industry in Great Britain (OEF, 2006 2.p). The British example shows well the significance of the industry on a whole nation economy level.

After I showed the significance of the industry on a national level, in the following, I will introduce the main stakeholders of an airport, and then present the process of aviation from the ticket reservation to the landing.

II.1. Stakeholders of an airport

Before I would review the main stakeholders of an airport, it is essential to define the term of stakeholder, which derives from Freeman (1984). He stated that a stakeholder is that entity, who can affect or is affected by the achievement of organization’s objectives (Freeman, 1984). Regard to this, I draw up a stakeholder map of a theoretical airport.

**Figure 1. Stakeholder map of an airport**

*Source: own concept*
In the following part of the section, I introduce these main stakeholders of the airports and their interest briefly.¹

**KEY STAKEHOLDERS OF AN AIRPORT**

**Airlines** symbolize the aviation itself. When people buy a ticket to somewhere they purchase it because of the brand of these companies. The core activity of airline is the transportation of the customers from one place to another. There can be large differences between the quality and the variety of the services. Airlines can seen as the biggest customers of the airport. They choose their target airports by the combination of geopolitical location, airport taxes and quality of provided services.

**Retail stores and boutiques** within the airport building are also significant. These stores sell wide range of products to the passengers, employees of the airport and the crew of the airplanes. These stores and boutiques target different customer segments (from mass product to luxury brands).

**Ground handling companies** can seen as both a customers or supplier of an airport, it depends on the contract between the ground handling company, airline and airport. In some cases (like MALÉV) the airline has its own ground handling company, while in other cases the ground handling activity is outsourced from the Airlines to a specified company (e.g. Celebi).

**Air traffic control** is the entity that controls and manages the air traffic. It is responsible for the uninterrupted and safe operation of the airport and airspace. The core activities of these air traffic control companies are internationally highly regulated. **Local government** has also a crucial role in the operation of an airport. The air traffic is associated with significant noise which can disturb the neighborhood of the airport. It can has an influence to the airport through the levied taxed.

**Closest Airports** can be seen as the main competitors of our theoretical airport. Nearby airfields can decrease the geopolitical value of the analyzed airport. These airports can compete against each other both in price and quality.

¹ Detailed analysis of these industry actors is out of the scope of this paper. I present the activity of these stakeholder from the point of airports.
In the deep analysis of the potential airport strategies, it is crucial to understand the motivation and the role of the industry players. In the next section I present the whole process of the aviation from the traveler (customer) point of view.

II.2. Process of aviation

In this section, I will present the process of the aviation from the booking of the flight ticket (figure 2.) till the arrival to the targeted city. The whole process can be separated into three phases: pre-flight on-flight and post-flight stages.

**Figure 2. Process of aviation**
*Source: own concept*

**Pre-flight stage**

1. *Passenger buys a ticket.*
   
   Customers can buy their flight ticket in travel agencies or online by themselves. There are special websites where customers can compare the prices and book their flight ticket in-advance (e.g. e-dreams, skyscanner).

2. *Arrival to the airport*
   
   With public transport, taxi or own car. These require parking and basic infrastructure (railway, bus, subway station etc.). Inside the airport there are two areas: a common hall and a security zone.
   
   a. *Shopping*
Within this area people can buy in the retail stores, boutiques. In the security zone there are duty free shops, which offer products without tax.

b. **Baggage check**

If people have baggage’s the have to check-in it before the security control. These bags will be handled by a ground handling company and delivered to the airplane.

c. **Passport and security control**

Security measures are extremely important in the aviation, because of the vulnerability of the plane in the air. These control measures are mandatory for all kind of passengers. Airlines can provide priority boarding services, to avoid the queuing.

3. **Boarding**

Boarding is the process, when passengers enter into the airplane and take their seats. With the boarding the passenger left the area of the airports, and contact only with the airline company.

**On-flight stage**

4. **Transit flights**

In the case of long haul flights, passengers has to change plane and wait. In these situation they often spend hours with waiting, working or shopping. Airport hubs, which are focusing on transit passengers usually provide high quality business lounges and retail services in a relaxing environment.

**Post-flight stage**

5. **Landing**

After landing, passengers have to go through the same process, like at the departure. They have a passport and visa control then, they can get their bags. Parallel with this, they can do shopping in the retail stores.

a. **Passport and visa control**

Airports have usually extra security regulations where the passport and visa control at the entering play an important role. These measures are always managed by the local police or military agencies.

b. **Baggage check-out**
After the passport control desk, passengers can get their bags. To deliver back the baggage to the passengers is the ground handling company’s responsibility.

c. Shopping

Variety of the retail stores increases the quality of the airports. People spend more money in these boutiques and the price of property is higher in these airports.

6. Leaving the airport

People can leave the airport by public transport, taxi or rented car. The quality and the size of the public transport network have a positive effect to the value of the whole airport.

It is almost clear, that during the process of aviation, the passengers meet with several kinds of services or obligations. So it seems evident, that the service of aviation is a pretty complex process, where the value creation is based on the cooperation among the main actors.

III. BUSINESS MODEL OF AIRPORTS

In this chapter, based on Chikán’s (2003) dual value creation theory and Osterwalder’s (2005) business model concept, I will present a general framework for the operation of an airport.

The fundamental goal of a company is to create shareholder return and satisfy the customer needs. This is the so called dual value creation argued by Chikán (2003). In his article he differentiated customer and shareholder values. First, the customer value is based on a significant customer need, while the driver of shareholder value is the profit (Chikán, 2003).

The starting point is the same in Osterwalder’s model (2005), which are the customer need and the related product or service. Osterwalder states that “a business model is a conceptual tool that contains a set of elements and their relationship and allows expressing the business logic of a specific firm. It is a description of the value a company offer to one or several segments of partners for creating, marketing and delivering this value and relationship capital, to generate profitable and sustainable revenue streams” (Osterwalder, 2004 15.p).
Osterwalder’s (2005) framework tries to answer four basic questions: (1) What the company offers, (2) who is the customer (3) how it satisfies the customers need and (4) how much can be earning by this business. This shows that the starting point of the model is the product and the related customer need. The satisfaction of these needs requires infrastructure and resources. Because of the dual value creation theory, shareholders invest their money because of the expected returns, so the profitability and the finance have also significant role in the framework.

### III.1. Product

Value proposition describe an overall view of the company’s bundle of products and services that represent value for a specific customer segment. This is what differentiate a company from its competitors and answers the question why customers should by from our firm.

According to Chikán and Demeter (1999), the customer value can be divided into three sub-factors, which are the value of location, time and use. The location value of the value creation is related to the geopolitical location of the airports, how easy is to reach it from the city center by public transport, and to how many destinations is the airport directly connects. The time value in the case of airports means the density of traffic, the number of flights between the biggest (hub) airports. The use value means the quality of the services which is provided by the airports.
CUSTOMER VALUE | EXAMPLES FROM AIRPORTS
--- | ---
1. Location value | - Distance from the city center  
- Connections with public transport  
- Road and parking infrastructure
2. Time value | - Number of destinations  
- Frequency of flights
3. Use value | - Waiting time at security control  
- Quality of business lounge  
- Number of stores

Table 1 Customer value in the case of airports  
*Source: Based on Chikán – Demeter (1999)*

The fundamental customer need is to fly from A to B in a convenient way. This is added with extra services. In aviation industry, we can distinguish different customer segments. One of the most basic classifications is based on the type of the customer, whether B2C or B2B. In the case of aviation industry the end B2C customers are the travelers and the B2B customers are the companies (e.g. ground handling companies, airlines, retail stores, parking companies) whose are consist the supply chain.

**III.2. Infrastructure**

Infrastructure means those factors (e.g. capabilities, value configuration and partner network) which are essential inputs in the value creation and the reach of the potential customers.

Resource based view (RBV) states that the companies are the system of resources. This theory says that the goal of the company is to reach competitive advantage through the most efficient combination of these resources. The right use of resources can generate competitive sustainable advantage and increase the entry barriers for the new entrants (Grant, 1991).

In the case of an airport, the airfield has to have the capability to provide complex solution to the customers (to the airlines and the travelers). The airport has a central role in the local network of the aviation. It has to provide for example public transport, parking services, ground handling activity, shopping facilities, flights with
diverse destinations. The airport can satisfy these needs and create value through in-house activity (e.g. own subsidiary) or outside, from the market. This is the so called “make or buy” decision.

III.3. Customer

Ruwantissa (2010) pointed out different customer segments of airport. That is evident that travelers spend a lot of money on the airports and they form the biggest group of customers. In addition to them, the employees of the airport and the airline crew are also significant group. Another category of airport customers is the people who go to airport to meet with the passengers. While they are waiting in the lobby of the airport, they also consume.

The travelers can be further grouped into different segments according to their needs. The most used segmentation is based on the different life style and objectives of travelers. Based on these we can point out three major segments: business travelers, families and backpackers.²

<table>
<thead>
<tr>
<th>CUSTOMER SEGMENT</th>
<th>CHARACTERISTICS OF SEGMENT</th>
<th>AIRPORT SERVICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business travelers</td>
<td>- Not flexible</td>
<td>- Taxi services</td>
</tr>
<tr>
<td></td>
<td>- Convenience</td>
<td>- Business lounge</td>
</tr>
<tr>
<td></td>
<td>- Not price sensitive</td>
<td>- Boutiques</td>
</tr>
<tr>
<td></td>
<td>- Travels a lot</td>
<td></td>
</tr>
<tr>
<td>Families</td>
<td>- Seasonality</td>
<td>- Car rentals</td>
</tr>
<tr>
<td></td>
<td>- Not flexible</td>
<td>- Childcare</td>
</tr>
<tr>
<td></td>
<td>- Slightly price sensitive</td>
<td>- Fast food restaurants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Parking areas</td>
</tr>
<tr>
<td>Backpackers</td>
<td>- Price sensitive</td>
<td>- Public transport</td>
</tr>
<tr>
<td></td>
<td>- Flexible</td>
<td>- Fast food restaurants</td>
</tr>
<tr>
<td></td>
<td>- no needs for extra</td>
<td></td>
</tr>
<tr>
<td></td>
<td>services</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Customer segments and related airport services

Source: Own concept

² Totally different customer group is related to the cargo services. Cargo is out of the scope of this paper, so I will not describe it in details.
The target groups of the airports can be different. The range and the quality of the provided services or number of in- and out-flying airlines the can be those factors, which differentiate the airports among the airlines and the passengers (as customers). The different target groups requires different competitive strategies.

**III.4. Finance**

On the other side of the dual value creation stands the shareholder value. In this section I am going to present the main revenue streams and the profitability of the airports, thus I give an in-depth analysis about the cost and revenue sides of the income statement.

There is a large track on airport pricing and cost recovery in the aviation business literature. However the demand for airport services is growing constantly, the supply of airport services is limited because of the fix capacity and bottle necks of the runways and terminals.

Cost structure summarizes the monetary consequences of the means employed in the business model. Table 3 describes the main cost drivers at the benchmark airports (Budapest Airport, Vienna International Airport and Aéroports De Paris\(^3\)). Based on the annual reports, we differentiated four major cost drivers: consumables and services used, personnel expenses, depreciation and amortization and other operating expenses.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Consumables and services used</strong></td>
<td>34.7 29%</td>
<td>42.3 9%</td>
<td>857.1 44%</td>
</tr>
<tr>
<td><strong>Personnel expenses</strong></td>
<td>30.5 25%</td>
<td>238.1 53%</td>
<td>522 27%</td>
</tr>
<tr>
<td><strong>Depreciation and amortization</strong></td>
<td>43.6 36%</td>
<td>65.8 15%</td>
<td>405.1 21%</td>
</tr>
<tr>
<td><strong>Other operating expenses</strong></td>
<td>11.6 10%</td>
<td>101.6 23%</td>
<td>18.3 1%</td>
</tr>
</tbody>
</table>

*Table 3 Main cost drivers of airports*

*Sources: Budapest Airport (2011a); Vienna AR, (2011); ADP AR, (2011)*

\(^3\) Financial data of Aéroports de Paris are calculated on a group level.
From the table 3 once, we cannot say overall statements because of the different size and geographical locations, but on the other hand we can diagnose that the main scale of the costs of Budapest Airport is quite similar to Vienna. Aéroports De Paris operates the biggest Airports in Paris (Orly and Charles de Gaulle), which are one of the biggest European hubs.

Regarding the revenue streams, in the case of airport profitability the main source of money is linking to the core activity of airport (airport taxes, fees of slots etc.), which is almost 50% of the total revenue side. The second largest revenue streams are the ground handling services and the retail and property related income. The proportion of these items, is depends on the location of the airports (rental prices,

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Airport</strong></td>
<td>65629,7 35%</td>
<td>260 49%</td>
<td>1449,6 47%</td>
</tr>
<tr>
<td><strong>Handling</strong></td>
<td>65629,7 35%</td>
<td>165,2 31%</td>
<td>196,7 6%</td>
</tr>
<tr>
<td><strong>Retail &amp; Properties</strong></td>
<td>46533,2 25%</td>
<td>93,6 18%</td>
<td>1176,3 38%</td>
</tr>
<tr>
<td><strong>Other segment</strong></td>
<td>8407,1 5%</td>
<td>14,5 3%</td>
<td>262,3 9%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>186200,2 100%</td>
<td>533,3 100%</td>
<td>3084,9 100%</td>
</tr>
</tbody>
</table>

**Table 4 Revenue streams of airports**
Sources: Budapest Airport (2011b); Vienna AR, (2011); ADP AR, (2011)

The table 5. shows the EBIT and net profits of the benchmark airports. The numbers show us, that Budapest Airport has huge losses on EBIT level. The other two airports are profitable, Vienna International Airport realized 75.68 million EUR, Aéroports de Paris 235.88 million EUR in 2010.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EBIT</strong></td>
<td>-35.9</td>
<td>102.3</td>
<td>443</td>
</tr>
<tr>
<td><strong>net profit for 2010</strong></td>
<td>-36.3</td>
<td>75.68</td>
<td>237.88</td>
</tr>
</tbody>
</table>

**Table 5 Profitability of benchmarked airports**
Sources: Budapest Airport (2011a); Vienna AR, (2011); ADP AR, (2011)

In this chapter I showed the business model of a theoretical airport in general. In the next section I will go deeper and introduce a comprehensive airport strategy matrix, which is built on the main characteristics of the airport and the type dominant airlines.
IV. COMPREHENSIVE AIRPORT STRATEGIES

In the following section, I introduce a comprehensive airport strategy matrix, to describe the potentials of airports in different operating conditions. Before this, I will highlight two major factors, which are the main driving forces of an airport’s strategy. These determinants are: type of dominant airlines and the geopolitical location of an airport.

IV.1. Type of dominant airlines

Based on the business models, we can differentiate two basic airlines archetype: networked carrier and low cost carrier. The table 6 shows the main differences between the different business models.

The low cost concept was originally introduced by the Southwest airlines in 1967 in the US market. In Europe, Ryanair revolutionized the European aviation in 1991, with the imitation of the Southwest’s business model. The low cost airlines can be described by three elements: (1) low operating costs (cheaper labor costs and lower fees of secondary airports), (2) low costs of maintenance (one kind of aircrafts) and (3) high level of productivity (high daily utilization, short slot times) (Burghouwt – Huys, 2003).

In the case of network carriers, the corporate culture is characterized by the historical heritage (most of these companies are state owned companies). This means, that the employees have special rights and the trade unions have significant bargaining power. The travel agencies are important actors in sales activity.

<table>
<thead>
<tr>
<th></th>
<th>Low cost carrier</th>
<th>Network carrier</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Airports</strong></td>
<td>Primary and secondary airports</td>
<td>International airports</td>
</tr>
<tr>
<td><strong>Fleet</strong></td>
<td>Standardized fleet</td>
<td>Various aircraft types</td>
</tr>
<tr>
<td><strong>Retail</strong></td>
<td>Direct channels, use of travel agencies if extra costs are minimal</td>
<td>Most tickets sold via travel agencies and by the airline itself</td>
</tr>
<tr>
<td><strong>Network</strong></td>
<td>Direct flights, no transfers, short routes</td>
<td>Long haul and short haul routes with transfers</td>
</tr>
<tr>
<td><strong>Employees</strong></td>
<td>High variable-proportion of salary, higher utilization</td>
<td>High basic salaries, trade union affiliation</td>
</tr>
</tbody>
</table>

Table 6 Difference between low cost and network carriers

*Source: Kurth (2010)*
Table 5 summarizes the main differences in the business model of the low cost airlines and the network carriers. These categories will constitute the first dimensions of the model.

IV.2. Geopolitical location of an airport

The second dimension of my model is the geopolitical location, which is an extremely complex factor to evaluate airports. Geopolitical location has several aspects which describe well the significance of an airport in a macro-level. In this chapter, I will analyze through geographical, political, economic, and social aspects.

Geographical condition of airport is one of the most significant factors. The risks of landing and take-off are different in each case. There are airports which are located in an extremely challenging place (e.g. Gibraltar, Tioman Island, Hong Kong) (Journeyetc.com, 2011). Bad geographical conditions can be seen as an entry barrier, because to attract new airlines to these airfields is requiring the most experienced pilots.

Political conditions in a country are also important. Within the EU the Open Sky Agreement provides the freedom of flights among the member countries. Once, if the country signed the Open Sky treaty, there are no political barriers, but on the other hand, countries outside the Open Sky requires bilateral agreements on a political level.

Economic factors mean the business environment and the macro level performance of the country. This aspect includes the overall economic performance of the private and public sphere. In an economically more developed country, the business sphere requires better infrastructure, which means better airports. Employees of national and multinational companies (business travelers) are significant group of customers.

Social factors are related to the local demand for flying. The size of the potential passengers depends on several sub-factors, like the average salaries, the mobility of the population, holiday habits etc.

Based on these criteria’s, we can differentiate two different type of airports: primary and secondary airports. The main aspect of this grouping is the size of traffic,
which is measurable in the number of passengers. Table 7 shows the change of the passenger number at primary airports in Europe between 2009 and 2010 (Anna.aero.com)\(^4\).

<table>
<thead>
<tr>
<th>Airport</th>
<th>Country</th>
<th>Pax 2009</th>
<th>Pax 2010</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. London Heathrow</td>
<td>United Kingdom</td>
<td>65 907 254</td>
<td>65 747 199</td>
<td>-0,2%</td>
</tr>
<tr>
<td>2. Paris CDG</td>
<td>France</td>
<td>57 906 866</td>
<td>58 164 612</td>
<td>-100,0%</td>
</tr>
<tr>
<td>3. Frankfurt</td>
<td>Germany</td>
<td>5 093 284</td>
<td>53 009 221</td>
<td>-100,0%</td>
</tr>
<tr>
<td>4. Madrid</td>
<td>Spain</td>
<td>48 270 581</td>
<td>49 863 504</td>
<td>2,9%</td>
</tr>
<tr>
<td>5. Amsterdam</td>
<td>Netherlands</td>
<td>43 569 553</td>
<td>45 211 749</td>
<td>-100,0%</td>
</tr>
<tr>
<td>6. Rome Fiumicino</td>
<td>Italy</td>
<td>33 808 093</td>
<td>36 337 050</td>
<td>-100,0%</td>
</tr>
<tr>
<td>7. Munich</td>
<td>Germany</td>
<td>32 681 067</td>
<td>34 721 605</td>
<td>-100,0%</td>
</tr>
<tr>
<td>8. Istanbul Ataturk</td>
<td>Turkey</td>
<td>29 757 384</td>
<td>32 145 619</td>
<td>-100,0%</td>
</tr>
<tr>
<td>9. London Gatwick</td>
<td>United Kingdom</td>
<td>32 361 199</td>
<td>31 347 444</td>
<td>-3,1%</td>
</tr>
<tr>
<td>10. Barcelona</td>
<td>Spain</td>
<td>27 311 765</td>
<td>29 209 595</td>
<td>6,5%</td>
</tr>
</tbody>
</table>

Table 7 European top10 airports by traffic
Source: Based on anna.aero.com (s.a)

Based on the needs of cargo companies and the newly created low cost airlines the importance of the secondary airports was continuously increased. Secondary airports are those airfields, which are farther from the center of the metropolitan region. Because of the characteristics of the location they offer lower prices than the primary airports.

<table>
<thead>
<tr>
<th>Metropolitan region</th>
<th>Secondary Airport</th>
<th>Low-cost airline</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
<td>Stansed</td>
<td>Ryanair</td>
</tr>
<tr>
<td>London</td>
<td>Luton</td>
<td>Easyjet</td>
</tr>
<tr>
<td>Paris</td>
<td>Beauvais</td>
<td>Ryanair</td>
</tr>
<tr>
<td>Frankfurt</td>
<td>Hahn</td>
<td>Ryanair</td>
</tr>
<tr>
<td>Brussels</td>
<td>Charleroi</td>
<td>Ryanair</td>
</tr>
<tr>
<td>Milan</td>
<td>Orio al Serio</td>
<td>Ryanair</td>
</tr>
<tr>
<td>Manchester</td>
<td>Liverpool</td>
<td>Easyjet</td>
</tr>
<tr>
<td>Rome</td>
<td>Ciampino</td>
<td>Easyjet, Ryanair</td>
</tr>
<tr>
<td>Stockholm</td>
<td>Skvasta</td>
<td>Ryanair</td>
</tr>
<tr>
<td>Oslo</td>
<td>Torp</td>
<td>Ryanair</td>
</tr>
</tbody>
</table>

\(^4\) These airports have the biggest traffic within the European countries. The table 7 shows the top ten airports.
As a conclusion, based on the existing literature on aviation, I will use the classical airport categories in my model. I will distinguish primary and secondary airports as basic archetypes.

IV.3. Comprehensive Airport Strategies

Along these two dimensions I evolved a matrix based model (figure 4.), where four major airport strategies can be written up: question mark-, hub-, periphery- and emerging strategies. These categories provide a comprehensive framework and help in the strategy planning process.

Table 8 European Metropolitan Regions with Secondary Airports significant due to the Traffic of Low-Cost airlines
Source: Neufville (s.a)

<table>
<thead>
<tr>
<th>Location</th>
<th>Secondary Airport</th>
<th>Low-Cost Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glasgow</td>
<td>Prestwick</td>
<td>Ryanair</td>
</tr>
<tr>
<td>Copenhagen</td>
<td>Malmo</td>
<td>Ryanair</td>
</tr>
<tr>
<td>Hamburg</td>
<td>Lübeck</td>
<td>Ryanair</td>
</tr>
</tbody>
</table>

The comprehensive airport strategy matrix distinguishes two major categories, sustainable and not-sustainable strategies. The first category means the equilibrium
points in the model and not-sustainable strategies, which—based on the fundamentals of the aviation industry—cannot be successful on a longer time period.

A. Question mark strategy

In this group there are airports, which have a good geopolitical location, but the operation of the airport is dominating by low cost carriers. On one hand these airports are characterizes by relatively high prices and the airlines are competing for free slots, but on the other hand the main characteristic low cost carrier is that they are extremely sensitive on airport and slot prices.

Therefore, this strategy for the airports is not sustainable in reality, only if the exact airport is an extremely prestigious point in the strategy of the low cost airline. It is not difficult to demonstrate - from a primary airport point of view - that, to attract low cost carriers is not rational. The reason of this are the expected lower return and high opportunity costs which derives from the capacity constrain of the airports (e.g. number of runways, terminals etc.).

However the airport is stated as a primary one the management of primary airport is faces with the following decision (1) attract more low cost airlines and became a – if there is no other competitors – quasi secondary airport or (2) switch the focus to the network carriers. It is important to note that the probability of the first case is not high, because a country with a primary airport, where the low cost airlines are dominating is unrealistic. It assumes that there is no need for business flights in the analyzed country. Business people and politicians are not traveling with low cost carriers, which manage point-to-point flights. On the other hand, the second option is more probable, The number of connection are increase the prestige and reputation of the airport, thus the main objective of the airport management should to attract new airlines. Co-operation with the central government is essential, because it has right to create a business friendly environment to attract multinational companies to the country.

As a conclusion it has to be stated that question mark strategy is not static status (not an equilibrium point), which means that it is sustainable in a long run. Airports with a question mark strategy are moving to a hub strategy.
B. Hub Strategy

Main characteristic of a hub strategy is the central location of the airport due to historical reasons. These are the busiest airports, with the highest passenger numbers in the country. Furthermore, the dominance of the biggest airlines (e.g. Lufthansa, British Airways, KLM, Air France, American Airways etc.) is typical phenomena in this case.

Potential growth strategy of these airports can be described by three factors: (1) attract more airlines and enlarge capacity, (2) increase the quality of the additional services (e.g. shopping, public transport) and (3) better optimization of their internal processes. These huge airport hubs often suffered from the limits of their capacity. If they want to attract more airlines or increase the flight frequency, they have to make extensive investments (e.g. built new runways, terminals). They hubs can increase their added value and strengthen their international brands, with the reconstruction of their existing infrastructure (e.g. modernization of the existing public transport facilities) or increase the efficiency of their internal processes (e.g. decrease the number of lost or broken bags, number of waiting time).
1. CASE STUDY: VIENNA INTERNATIONAL AIRPORT

From Vienna International Airport 70 airlines fly to 172 destinations. The most popular destinations are Frankfurt, London and Zürich. The whole complex employs approximately 19 000 people, 22.1% (4200 people) of them is the employee of Flughafen Wien Group (Vienna AR, 2011 9 p.). The airport provides high quality services to its customers (more than 5 900 m² shopping area and gastronomy areas 3 700 m²) (Vienna AR, 2011 17 p).

The company is publicly listed on the Vienna Stock Exchange. 50% of the shares represent free float, the city of Vienna and the province of Lower Austria own 20%-20% of the stakes. The remaining 10% is in the hand of the employee foundation (Vienna AR, 2011 43 p).

![Figure 5. Catchment Area of Vienna International Airport](source)

The key priority of the airport’s strategy is to create a transfer hub to Central Eastern European and the Middle East. 69.6% of the total passengers are from Western Europe, 17.9% are from Eastern Europe, 5% are from Middle East and 4% are from Far East, 2.1% are from North America and 1.4% are from the rest of the world (Vienna AR, 2011 20 p.).

*Source of the whole case study: Vienna AR (2011)*
To sum up, the **Hub strategy is a sustainable strategy, airport with these attributes have a stable business model.** The main goal of these airports once, is to attract further travelers and increase the limited capacity (e.g. new terminals, runways). Secondly to improve the quality of provided services and further increase the revenues from retail and property rental activities.

### C. Periphery strategy

These airports have a secondary status within the national aviation strategy. In the most case, the main objective of these airfields is to attract more airlines. Because of its worse geopolitical location, has a disadvantage against the major airports, which are closer to the city center. Because of these facts, these airports competitive advantage derives from the lower costs.

These airports are linking to the circulation of international aviation through point-to-point flights and this means that the number of transit passengers is not significant. Other significant characteristic of these secondary airports are the not utilized capacities, which are caused by the shortage of traffic.

The potential strategy of these secondary airports can focus on two directions. Once, they can try to attract more low cost airlines or start negotiations with their current partners to increase the number of point-to-point flights and destinations. Secondly, they can increase their added value, which is basically means that they start to introduce extra, quality services. This second solution can lead to the lost of the cost advantage of the airport and place the company to an unknown market segment.

As a conclusion, we can state that the **periphery strategy is also a stable, sustainable strategy,** which is specified to the low cost airlines. In this case future growth can be built on the attraction of more low cost carriers or cargo services.

### D. Emerging strategy

Airports with emerging strategy are secondary airport, which are dominating by network carriers. These airports are mainly in developing or emerging countries,

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5 Other potential ways of growth is the specification to cargo activities. Cargo aviation requires container facilities, different kind of storages, excellent infrastructure linkage with the biggest cities, factories in the region.
which are in a earlier stage of development and outside from the circulation of world economy. The biggest customer group of these airports are the business passengers, those, whose company have special business relationships, subsidiaries in the exact city, country.

Good examples for the emerging strategy can be the Tirana Airport or Sarajevo Airport. These on the country level these airports are primary ones, but if we look the whole European level, these are secondary airfields. The airports are characterized by lack of routes and shortage of flights. The passengers have to change their flight which is uncomfortable.

The main objective of these airports is the raising of destinations and the modernization of the basic infrastructure, which helps in the attraction of travelers and airlines. These airports can use their airport fees to attract new airlines to the area.

![Figure 5. Sustainable and not-sustainable strategies in the matrix](source: Own concept)

Figure 5 shows the relationship between the four major strategies. Airports with question mark and emerging strategies are facing with a strategic decision and they are moving into one of the equilibrium points. This kind of convergence appears in the attraction of new airlines and in the diversification in the service portfolio. Airports with an emerging strategy, invest a lot of money into additional services to create regional hubs. (e.g. Budapest Airport and the Skycourt).
Based on an own concept, the comprehensive airport strategy Matrix, I proved my hypothesis \((H_1)\) that “there are two equilibrium strategies for airports: Hub and Periphery strategies”.

From the point of not-sustainable strategies (question mark and emerging), I described the main drivers behind the existing strategies, I highlighted the inconsistencies between theory and reality and also proved my second hypothesis \((H_2)\) that, “airports with not sustainable strategy converges to the equilibrium”.

Lian and Ronnevik (2011) pointed out the regional airports (airports at countryside) are losing ground to main airports. In their article they analyzed the Norwegian airports and found that travelers want to travel and drive hours in order to take cheaper fares and better services.

With the presence of low cost airlines, a parallel airport network started to develop, where, the primary and secondary airports complement each other and constitute a multi-airport system (MAS). “Multi-airport system is the set of significant airports that serve commercial transport in a metropolitan region without regard to ownership or political control of individual airports”. (Neufville and Odoni, 2003 p 132 in Neufville 2005).

From one aspect, these MASs can be described as Multi-airport Clusters (MACs) which is a wider approach than the MAS. It is extremely important to apply this network approach because of the complexity of the whole industry, because the competition within the industry is rather a rivalry among networks (networks of airlines, airports and ground handling companies), than only airports.

The theory of business clusters were introduced by Michael Porter (1998) and states that “clusters are geographic concentrations of interconnected companies and institutions in a particular field” (Porter, 1998 78. p). These formations are include suppliers, the most important stakeholders from linked industries (e.g. financial institutions) and also governmental institutions.

Because of the importance of the geographical location and the complexity in the network of aviation, it is logical to state that the Multi-airport Systems (MACs) can be optimal solutions in the case of metropolitan regions \((H_3)\).
Formed Multi-airport Clusters provide more efficient coordination of these airports. More efficient system – from the aviation point of view – basically means the (1) creation of well known airport brands, (2) sharing of knowledge and (3) use of economies of scale (in the functional areas).

Under creation of a well known airport brand I understand that the strong cooperation helps to build an aviation hub (not only a hub airport) where the most prestigious industry players are represent themselves and this helps to build an airport with an excellent reputation. It is not only about marketing strategy of an airport, it requires governmental incentives and decisions for a longer perspective from the side of the governments.

The second factors are those benefits which are derive from the share of knowledge. In an Multi-airport cluster, the industry players are operating close to each others, so the tacit and explicit knowledge can flow easier among the parties. They can meet more often; see other’s best practices and the can imitate their competitors.

Last but not least the third point is the economies of scale which can reached trough a multi-airport cluster. This results higher bargaining powers in the negotiation

![Diagram](image)

**Figure 6. Multi-Airport Clusters in the Airport Strategy Matrix**

*Source: Own concept*

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6 One other, national level benefits are: (1) job creation (an aviation cluster attracts multinational aviation companies, who needs skilled labor and physical workers) (2) Improvement of the transportation infrastructure.
The multi-airport cluster approach can be placed in the matrix of comprehensive airport strategies (see figure 6.). The network based cluster approach means a diagonal third dimension in the model, which links the two equilibrium – hub and periphery – strategies.

2. CASE STUDY: BUDAPEST AIRPORT AS A MULTI-AIRPORT CLUSTER

The predecessor of Budapest Liszt Ferenc Airport was started its operation in 1950. The biggest shareholders of the airport are HOCHTIEF AirPort (37.25%), Hungarian State (25%), GIC Special Investment (13.62%) Caisse de depot et placement du Québec (13.625%), Aero Investment S.á.r.l. (7.5%) and KfW IPEX-Bank (3.0%).

Currently, the Budapest Airport is shifting from an emerging into a hub strategy. This means that the enlargement of the service portfolio is one of the main issues. In the past few years the construction of the new Skycourt terminal was the most significant investment at the airport. With this new terminal area, the transit travelers can move easily among the gates. There are new extra services (e.g. business lounge) for the passengers. The increased shopping area and retail services are new sources of revenues.

In the future, Terminal 1 and Terminal 2 (with A and B) could be analyzed as a Multi-airport system. This means that, the different terminals are targeting different customer segments. Terminal 1 is specified for the low cost airlines and the low cost travelers; terminal 2 is more about business and network carriers.

Based on this concept that Budapest Airport as MAS, the next step is the establishment of a Budapest Airport Cluster, which is a multi-airport cluster. This suggestion shows new opportunities to the Hungarian aviation industry.
In this chapter, on one hand, I introduced a comprehensive airport strategy matrix, with four major strategies. On the other hand, I introduced the concept of Multi-airport Clusters (MACs), which is heavily built on the concept of MAS, but it views the airports from a wider – network based – perspective.

V. MALÉV BANKRUPTCY AND THE BUDAPEST AIRPORT

In this chapter I present how the bankruptcy of the Hungarian Airlines affected the Budapest Airport. The first part of this chapter highlights the key facts about the bankruptcy and presents the mutual dependence between the airport and MALÉV. The second part, shows how the collapse of MALÉV influence the Budapest Airports strategy within the Comprehensive Airport Strategy Matrix.

V.1. Bankruptcy and its impacts

The Hungarian Aviation industry was shocked with the collapse of the MALÉV Hungarian Airlines on the 3rd of February, 2012. The bankruptcy of the national airline was not unexpected. Based on what was presented in the chapter I. the bankruptcy of MALÉV has significant effect on the national competitiveness. This chapter focuses only the Budapest Airport.

The first declaration about the potential losses of the Budapest Airport was 3 weeks after the bankruptcy. The Hungarian Airlines provided approximately 40% of the traffic of the whole Budapest Airport (index.hu, 2012). Mihály Hardy, the communication director of Budapest Airport, commented that the traffic of the Airport will be decreased approximately with 2 million travelers. The airport planned with 9.2 million travelers. As Hardy stated in an interview, the Budapest Airport lost the 1.5 million MALÉV transit travelers (gazdasag.ma.hu, 2012).

The bankruptcy of the Hungarian Airline also means a significant loss in terms of number of destinations. From Budapest only MALÉV had flights to Belgrade, Damascus, Skopje, Sarajevo, Zagreb, Saint Petersburg and Beirut. In the beginning of March, the Chinese Hainan Airlines canceled its Budapest-Beijing direct flights.
The most significant market players were reacted immediately to the bankruptcy. The biggest airlines – Lufthansa, British Airways, Air Berlin, Aegean Airlines, Ryanair, Smart Wings and Wizz Air – announced several new flights from Budapest. These announcements can influence the 70-75% of the MALÉV’s point-to-point travelers. The low cost carriers expect 2.5 travelers for the next year, which seems to be optimistic (gazdasag.ma.hu, 2012).

As it was presented in the chapter III., significant part of the Budapest Airport’s revenues (25% in 2010) is coming from the retail and real estate segments. As the most significant airline in Budapest, the MALÉV rented several properties – offices, parking places, hangars) in the area of Budapest Airport. Hungarian Airlines would rent three renewed office building. The renovation of these building was suspended because of the bankruptcy.

On the middle of March Mihály Hardy also stated, that the Budapest Airport will shut down the Terminal 1 in several steps till the end of August. This means that 12 flights will be depart from the Terminal II. from the next month. Ferihegy I. will provide services only to the Jets2, German Wings and Easyjet. All of the Wizair flights will move to the Terminal II. till the end of March (index.hu, 2007).

The closure of the 62 years old Terminal I., will affect the retailers within the terminal. In the beginning of March there ware 6 big retailers on the Terminal I.: Heimann Duty Free, Hub, Hungaricum Store, Szamos, Relay and Moa (index.hu, 2012).

V.2. Falling back: from emerging to periphery

According to the Comprehensive Airport Strategy Matrix, the collapse of the Hungarian Airlines changed the Budapest Airport’s opportunities significantly. As I stated Budapest Airport is an emerging airport, with significant development plans in order to create a regional hub.

As I draw-up the opportunities in the Multi-airport Clusters (MACs) in the case of the Budapest Airport, the history showed the other side of the coin. The bankruptcy of the Hungarian Airlines presented how important is to decrease the mutual
dependence between the Airport and the Dominant network carrier in the case of an airport with an emerging strategy

The main B2B customers of an emerging airport are the network carriers. Budapest Airport was the home base of the Hungarian Airlines, which means that the most Liszt Ferenc Airport lost its biggest partner. This means that the portfolio of the airlines customers changed significantly and the dominance of the network carriers decreased. This fact is strengthened by the fact that Ryanair entered to the Hungarian aviation market and the other low cost airline, the Wizzair also increased its presence in Budapest. These facts – if the number of the travelers would not decrease because of the market entry of the new low cost airlines – will still decrease the revenues of the airport. The target group of the LCCs is much more price sensitive and they spend less money in the retail stores at the airport.

Based on the Comprehensive Airport Strategy Matrix, we can elaborate, that the Budapest Airport – because of the Malév bankruptcy – is now falling back from the emerging category to the periphery. Now the key task is to attract new – mainly network carrier – airlines to the airport.
VI. MAIN CONCLUSIONS

In the above explained matrix, I introduced four major airport strategies, and form sustainable and not-sustainable strategies. Based on the comprehensive airport strategy model, and the analyzed case studies (Vienna International Airport and Budapest Airport), I proved the following three hypotheses:

There are two equilibrium strategies for airports: Hub and Periphery strategies (H$_1$). These are stable strategies, and are distinguished along the classical industry archetypes (low cost vs. networked and primary vs. secondary)

The hypothesis that states: “airports with not sustainable strategy converges to the equilibrium” (H$_2$) means that the question mark and emerging strategies are dynamic strategies, which are getting closer to one of the equilibriums.

In the H$_3$ I try to give an integrative solution to the convergence of the sustainable strategies. and I prove that “Multi-airport Clusters can be the optimal solution in the case of metropolitan regions” (H$_3$).

Trough the analysis of these questions, and the whole concept is beneficial for management of the airports and also to the aviation industry as a whole because of the following reasons:

- For the airport managements of the different kind of airport I suggested four major strategies. In the case studies, I presented the strategies of different airports. Two of the, Vienna and Budapest are competitors with the relatively same characteristics. .
- The introduced model is useful for airlines, because it helps them to understand the airport management’s background motivation. They can select airports easier and the whole concept reduces the risks related to this selection process.
- For the Hungarian policy makers I suggested the establishment of a Budapest Airport Cluster, which has several benefits both on a regional and national level.

It is important to note, that this paper is not give in-depth analysis in several topics, which essential and has to be analyzed in the future. These areas of the future researches can be:
- **Empirical analysis of the model.** Run regressions and make econometrical analysis to test the research questions of this paper. IATA and the airlines have huge database about the main functional areas (sales, operations etc.), based on this calculations can make about the correlation between development of a metropolitan region and the strategy of the airports.

- **In-depth analysis of the behavior of the airlines** in regard to the selection of the destinations. Try to find the most significant factors which influence the strategic decisions of the airlines.

- **Implementation plan of the Budapest Airport Cluster.** An in-depth analysis about the implementation of the Budapest Airport Cluster. Find the main key success factors and the potential risks of the implementation; make calculations about the required investment costs and the future returns.

- **A detailed crisis plan for the Budapest Airport.** Deep analysis of the potential scenarios and a new marketing strategy in B2B business, in order to attract more airlines to the Budapest Airport.
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