AIRPORT STRATEGIES IN A COMPETITIVE ENVIRONMENT

JIMENEZ, Edgar. ejimenez@inescporto.pt. INESC TEC (formerly INESC Porto) and Faculdade de Engenharia, Universidade do Porto. Rua Dr. Roberto Frias, 378, 4200-465 Porto, Portugal.

CLARO, João. jclaro@fe.up.pt. INESC TEC (formerly INESC Porto) and Faculdade de Engenharia, Universidade do Porto. Rua Dr. Roberto Frias, 378, 4200-465 Porto, Portugal.

PINHO DE SOUSA, Jorge. jsousa@inescporto.pt. INESC TEC (formerly INESC Porto) and Faculdade de Engenharia, Universidade do Porto. Rua Dr. Roberto Frias, 378, 4200-465 Porto, Portugal.

ABSTRACT

The liberalisation of the air transport market has introduced new dynamics in the airport industry, greatly increasing its complexity. In recent decades, airports have evolved from infrastructure providers in a monopolistic context, to commercially-orientated enterprises in a competitive environment. Existing research on airport competition is usually focused on traffic leakage from neighbouring airports for origin-destination markets, or between large hubs for transfers. However, the existence of competition between airports, in the different ways presented in this work, has created a change of paradigm and sufficient evidence for abandoning the idea of airports as monopolies.

This work aims at proposing an integrated framework for the analysis of the airport industry in which an airport is seen as a multi-service firm that interacts with a network of stakeholders - the airport business network – to deliver several service packages to different groups of customers.

We present three novel contributions for the analysis of the global airport industry: a new definition of customer groups for the airport, viewed as a multi- service firm; the airport business network, a model to examine the interactions between the agents involved in the airport business to produce the airport service packages; and an identification of differentiation factors that airport managers may combine to produce competitive strategies. We also propose the integration of these elements, in order to provide a common framework to support the analysis of the current competitive environment within the industry.

Keywords: Airport, Airport competition, Airport business, Airport management, Airport strategies

1. INTRODUCTION

Airports have been traditionally considered as monopolies (A. Graham, 2003) with no real competition between them. It is normally assumed that airports are restricted to the potential demand within their catchment areas. It is very difficult to build a new airport in attractive locations that are already served by an existing infrastructure. Moreover, it is usually believed that several neighbouring airports would lead to inefficient traffic allocation and higher costs to some of them. Therefore, the airport that is able to attract more traffic would force the others out of the market (Forsyth, Gillen, Müller, & Niemeier, 2010).

Such perspective was further supported in early stages of air transport market growth when airlines were also in a non-competitive environment. The Chicago Convention on International Civil Aviation of 1944 structured the market in a hardly contestable way through bilateral agreements in which airlines had no incentive to compete (Barret, 2000). Liberalisation of air transport around the world has introduced a competitive pressure for airlines which, in turn, created competition for airports due to the fact that airlines are free to choose any airports they want to operate in (De Neufville & Odoni, 2003; A. Graham, 2003). Deregulation also pressured for a change in airport ownership towards privatisation (De Neufville & Odoni, 2003). New owners with different perspectives force airports to be more focused on costs and commercial revenue, and on the need to attract and retain airlines (Bush, 2010). Private ownership also creates an increasing concern for regulators about policy issues to control monopolistic behaviours. Such concern can be considered as an implicit recognition of airport competition (Forsyth et al., 2010).

As a consequence, an increasing number of studies are approaching the issue of competition between airports. A group of them perform general competitive analysis for particular cases, regions or instances of the topic, while another group implement choice models to analyse travel behaviour on air transportation (Forsyth et al., 2010, provides a comprehensive set of papers in both groups). In that sense, this paper provides a wide and cohesive perspective on the subject, restricted to competition between different airports and not between air transport and other modes.

This paper presents a framework to define the specific areas in which airports compete. In this way, it intends to be generally applicable to any airport and to assist managers in the analysis of particular strategies to create competitive advantages and generate value to the airport customers. Additionally, it aims at being a reference for airport operators to define their competitors and facilitate industry benchmarking.

The paper is structured in six sections. After this introduction, section two discusses the clients for the airport product and section three explains how airports compete nowadays. The fourth section presents a conceptual framework to analyse the airport business, while section five provides details on airport strategies. The final section presents the main conclusions of the study.

2. THE AIRPORT CLIENTS

Airports can be seen solely as infrastructure providers that sell aeronautical services to allow the interchange between air and surface transport. Thus they provide runways, air traffic

control, taxiways, aprons and terminals for the use of airlines, which in turn, sell seats to passengers and cargo space to shippers. However, airports take advantage of the passenger throughput to offer a variety of non-aeronautical services (European Commission, 2002). Over the last decades non-aeronautical revenues are becoming increasingly important for airport operators. In many cases they represent a higher income for the airports than aeronautical revenues, especially in North America, Europe and Asia (Francis et al., 2003).

The greater importance of non-aeronautical revenues is to blame for the increasingly ambiguous definition of the airport clients. Moreover, it may expose some conflicts of interests, since airport operators are interested in offering a good level of service to both, airlines and passengers, by providing quick and easy access to aircraft; while at the same time they want passengers to spend more time, and thus money, enjoying the non-aeronautical facilities (Francis et al., 2003).

Graham (2003) simply disregards the airline – passenger dichotomy and states that airports have several different costumers. “For the airport product, demand comes from a variety of markets each with their own specific requirements” she adds. Using this wide perspective, the clients are classified in three categories. Those in the trade group directly buy the airport facilities and can be more or less associated to aeronautical services. The passengers group includes the travellers who consume or utilise the airport as a gateway to access the services provided by those in the trade category. However, at the same time, they are the main target for a portion of the non-aeronautical services. The third group includes other stakeholders which are also clients, since they may play a significant role in determining non-aeronautical revenues and costs.

To account for such diversity, and to consider the interests shared, to some extent, by different customers, in this paper we propose three customer groups as described in Table 1.

The *aviation trade* group includes the customers directly interested in using the airport as a gateway to provide air traffic (in terms of cargo or passengers). They are mainly focused on the air-side facilities and aeronautical services that the airport and other suppliers provide. Nevertheless, some of these companies may also be interested in land-side developments, such as offices or warehouses.

The *individuals* group is considered to distinguish those customers that do not have a business-orientated perspective, thus act on their own behalf. Their main interest is to have a pleasant “stay” at the airport while they travel, shop or work there. It is important to differentiate between travellers (passengers) and non-travellers, since their expectations and requirements also differ, and due to the increasing proportion of people accessing some airports without any intention to take a flight. This non-travellers subgroup (visitors, local residents and employees, including airport employees, airline crews and the employees of all the companies established in or around the airport) may benefit from commuting connections via railway or bus or from extended opening hours at retail shops.

Finally, the *commercial trade* group includes those customers whose main focus lies on the land-side developments of the airport. They are normally not interested in the aeronautical services, but rather on the opportunities presented by the passenger throughput (as hotels, car rentals and retail stores for instance), by logistics facilities, or just by the ease of connectivity provided by the airport. Moreover, given that the airport business is reaching a

global scale, other airports appear also as potential customers of consulting or managerial services.

Table 1 – The groups of airport customers

Aviation trade	Individuals	Commercial trade
Commercial airlines General aviation Travel agents Tour operators	Passengers Visitors Local residents Employees	Tenants and concessionaires Local and global businesses and institutions Other airports

The three groups of customers are easily found in established airports. For new entrants, however, the fact that they have no flights to offer prior to entry simply means that airlines deserve greater importance. From a simple point of view, airlines attract passengers that can provide the airport with other sources of revenues. De Neufville and Odoni (2003) put it this way when explaining competition for transfer traffic at hubs: "in a deregulated environment, airlines compete with each other for the same customers (...) As one airline succeeds at the expense of the others, so does its hub airport compared with its competing hubs".
Therefore, a close cooperation and a clearly commercially defined relationship between the airport and the airlines is needed for a successful business (A. Graham, 2003). This has a great impact in airport competition, since a wrong assessment of the needs of the airlines would make them less interested in using a specific airport, limiting the existence of other types of competition for other customers. In brief, the diversity of clients consuming what an airport has to offer implies that airports can compete in satisfying the needs of all those customers. Defining their priority in accordance with the particular characteristics of an airport is of paramount importance in strategic terms.

2.1 Non-user stakeholders

Besides the three groups of customers already described which, directly or indirectly, buy services provided by the airport, there is an additional group that may not be considered as a group of customers straightforwardly. Such group has been called the non-user stakeholders, given that they are not directly interested in acquiring any of the airport services. However, they may be crucial to provide funds and public support to the airport, hence the airport operator should address them in order to sell the benefits that they can obtain from the airport.
As a consequence, the non-user stakeholders group includes all the entities or institutions that have an interest on the externalities associated to the airport, such as national and local governments (who may also share ownership in the airport), tourism promoters, and regional and local development or commercial associations.

3. HOW DO AIRPORTS COMPETE?

As Lian and Rønnevik (2011) summarise, previous works on airport competition used to exclusively focus on the competition for passengers within the catchment area, especially in the case of several airports in a metropolitan area. From a traditional point of view, airports

compete in two ways: overlapping catchment areas and transfer traffic at hubs (De Neufville & Odoni, 2003; Forsyth et al., 2010). Under this perspective, it is assumed that passengers can decide what airport to choose if they have several nearby alternatives or the airport of their preference to transfer for a longer journey. However, very often passengers are not confronted with those kinds of choices regarding airports but rather concerning airlines. According to Morrell (2010) "airports compete with other airports to attract airlines". Once the airlines are there, the airports are able to offer other services to passengers, such as their desired destinations. As a consequence, the airlines will choose which airport to serve in a multi-airport system and which airports to use as their connecting hubs.

The traditional view is being expanded according to the evolution of the airport businesses (Bush, 2010). As said before, liberalisation provides a better environment for competition to flourish. In fact, the steady growth of Low-cost Carriers (LCC) in deregulated markets has become an incentive for the creation of Low-cost airports. As De Neufville (2008) notes, "low-cost airports largely develop in competition with major airports, either as secondary airports in a metropolitan multi-airport system, or as destinations that bypass the use of a centralized metropolitan hub."

Forsyth et al. (2010) have compiled a selection of studies that discuss the issue of airport competition with a broader scope. Consequently, we have concentrated not only on the literature but also on the airport business practices, in order to identify six general areas of competition between airports (see Figure 1): competition to attract airlines and provide differentiated services according to their network strategies; competition for passenger demand within the airport catchment area; competition for transfer passengers; competition for inbound demand that is interested in accessing the airport itself or its hinterland as a destination; competition in a global market of airport-related services; and competition to attract alternative sources of funding. Additionally, attention is drawn to the competition between air transport and other modes, as well as to the possibility of complementarity between modes.

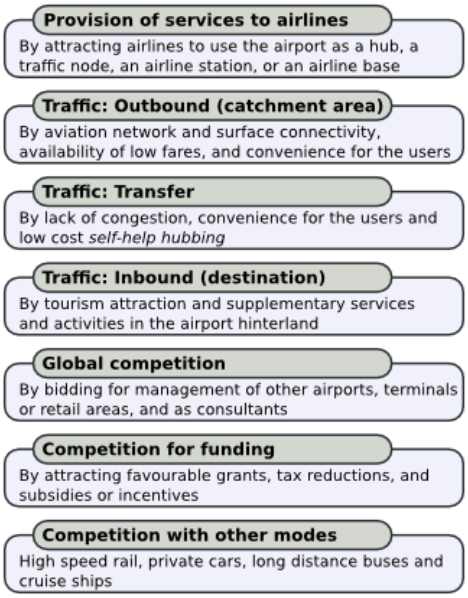

Figure 1 – Summary of the areas of competition for airports.

3.1 Provision of services to airlines

Airports strive to provide different services to the airlines in order to assure their presence at the airport. However, airlines can be established at a given airport with different kinds of operations. Burghouwt (2007) defines the role of the airports within an airline network in three categories: hub, traffic node, and airline station. In addition, we consider the airline base as a fourth category whenever the airport serves as a permanent position for one or several aeroplanes of a given carrier. A base provides the airport with an opportunity to generate additional revenues associated to services for the aircraft and crew, such as maintenance and training, but also brings more visibility and positive externalities (e.g., employment generation).

The concept of airline base gains special relevance for low-cost carriers (LCC) that are interested in establishing bases to increase their dominance or importance in a given airport. This allows these carriers to offer lower fares to price-sensitive passengers, increasing their propensity to fly (Barbot, 2006; Malighetti, Paleari, & Redondi, 2009). A low-cost base is different from a hub in the sense that LCCs normally do not operate coordinated schedules. However, bases are not restricted to this type of carriers. Regardless of its business model, any airline can decide to base their aircraft at a given airport to take advantage of scale economies. Moreover, bases are not exclusively used by passenger airlines. Freight integrators deserve particular attention, since they are becoming increasingly important in total air traffic (European Commission, 2003).

These four categories (hub, traffic node, station and base) are related to the different characteristics an airport should have in order to attract an airline to operate a particular model. For instance, peak capacity is a crucial factor for a hub but it is less important for a traffic node or a base. Similarly, the attractiveness of the catchment area, in terms of potential demand, is less important for a pure transfer hub than for an airline station or a traffic node, in which a high origin/destination market makes it possible to operate high frequencies. Airport fees and efficiency to guarantee quick turnaround times are paramount for LCCs when deciding where to establish a base, whilst FSCs may demand larger spaces and business lounges for a traffic node. The airport operator must identify the particular requirements of the airlines (and of the aviation trade customers group, in general) and respond to those requirements accordingly with the right infrastructure and services.

Consider some examples of how airports compete to provide services to airlines. For an airline hub, Munich Airport was able to attract Lufthansa to create their second major hub instead of using a second terminal at Frankfurt Airport (De Neufville, 2008). For an airline traffic node, TAP Portugal currently handles most of their operations in Lisbon, but they could also do it in Porto or in a new Lisbon airport. It may even happen that their services are reduced if the Portuguese airline is sold to another carrier operating large hubs elsewhere. For an airline station Morrel (2010) presents a hypothetical example in which an Asian airline desires to introduce a new service to Europe. Multiple airports then compete as an attractive destination, either in terms of local market, connection opportunities with other airlines in the same alliance, or both. For an airline base, easyJet has decided to open its twentieth base in Lisbon. According to the airline, they have “selected Lisbon over a number of other European cities because of its market potential” (easyJet, 2010).

The steady growth of low-cost airlines has had a particular effect on airport competition in relation to the services provided to the carriers. The business model of most LCCs requires cheap infrastructure without congestion problems. This has created opportunities for under-used airports or former military airfields to embrace the development of LCCs. De Neufville (2008) argues that "competition between 'legacy' and 'low-cost' airlines leads to competition between 'legacy' and 'low-cost' airports" in mainly three ways: as alternative secondary airports in a metropolitan multi-airport system; as an alternative to hub connections; and as an alternative parallel network.

These three cases share a common feature: low-cost airports compete with 'legacy' airports because LCCs avoid the use of hubbing practices. However, as Burghouwt (2007) suggests, LCCs may present connectivity opportunities to their passengers by self-help hubbing; introducing additional competition for transfer traffic. Self-help hubbing means a transfer process may be in place without a conscious wave-system structure (incoming and outgoing flights coordinated in time). By increasing frequencies in point-to-point services (through quick turnarounds and extensive aircraft utilisation) and increasing the acceptability of waiting times (through low prices), connection opportunities are naturally provided, and consequently, a cheaper and less complex hub model arises.

LCCs have not only propelled competition by catalysing the development of low-cost airports, but have also forced legacy airports to compete back with the newcomers. As de Neufville (2008) explains "the point is that competition now exists between the low-cost and the legacy airports, in a way it did not when the low-cost carriers were marginal. Many legacy airports have lost their previous virtual monopolies. This fact has to motivate their management to build facilities that will be more competitive with low-cost airports".

3.2 Passenger demand in the catchment area

The provision of services to airlines is strongly related to the provision of an aviation network to passengers. This relationship between the air services provided by the new airlines and the services offered to the new passengers is described as a "virtuous circle" by the Civil Aviation Authority (CAA, 2005). According to Graham and Shaw (2008) airports are now "actively seeking additional carriers so that both aeronautical but especially non-aeronautical revenue growth allow the cycle to continue". In this way, LCCs play an important role when they are attracted to previously unknown airports that then extend their catchment areas.

The catchment area of an airport is the geographical location of most of the existing or potential demand. This rather dynamic concept varies with the type of services offered by the airport and the particular characteristics of the passengers. Hence the specific ways in which airports compete for demand within their catchment areas reflect these dynamics, since passengers and journeys are not homogeneous. For instance, an intercontinental leisure flight may have a larger area to catch potential travellers than a short-haul business flight.

In a similar way, airport connectivity with surface transport networks can also extend the airport catchment area. "Airport services are provided in the context of the door-to-door transport network, whether for passengers or freight. Air service will always be 'consumed' in conjunction with one or more sectors provided by other transport modes" (Morrel, 2010). Therefore, the better the airport is connected with those other modes, the easier for passengers is to reach it from a far location.

Regarding their catchment area, airports can compete in several different ways. First, in terms of network provision, we consider both the aviation network, and the connectivity with surface transport networks. In the air side, airports compete to offer the most desired destinations. In the land side, competition occurs because a good connection with the surface transport network makes an airport more easily accessible from longer distances, thus widening its catchment area. Porto airport, in Northern Portugal, is a good example in both aspects, when competing with neighbour airports in Spain. Porto offers a larger set of direct destinations than Vigo, for instance, and it also offers land side connections via motorways, light rail and buses, while Vigo is only accessible by car and bus.

Secondly, and in direct relation with the network provision in both the air and the land sides, there is competition for passengers willing to have access to low flight fares. Airports that attract LCCs gain a competitive advantage in the sense that these airlines can offer remarkably lower prices for their flights (Malighetti et al., 2009), expanding the catchment area by attracting price-conscious passengers. Again, Porto competes with surrounding airports, Lisbon included, thanks to the presence of Ryanair.

Finally, airports sharing similar catchment areas can compete for outbound traffic by providing a more convenient service to some passengers. Airports served by LCCs offer the opportunity to bypass bigger hubs and avoid transfers, delivering a higher quality service, in terms of travel time. Additionally, smaller airports can be viewed as an easier alternative for passengers wishing to stay away from the confusion caused by very large airports. In contrast, other airports can offer differentiated products that are more convenient for business travellers, such as a central location, speedy check-in process or the availability of lounge areas. As an example, de Neufville (2008) states that “Londoners interested in going to the South of Spain can now go on Ryanair directly to Jerez, and avoid passing through Madrid as they would ordinarily have had to do on a legacy airline, such as Iberia”. This means that passengers will prefer to start their journey at Stansted instead of Heathrow.

3.3 Transfer traffic

As pointed out before, this type of competition is normally associated to the ability of the airports to attract airlines that extensively use hubbing strategies. In this sense, it is crucial for an airport to provide space and capacity for the network airline(s) to grow using infrastructure that facilitates their transfer processes. This has allowed, for example, the rapid growth of Emirates and Dubai International Airport in competition with the European airlines and hubs (i.e., London/Heathrow, Amsterdam, Frankfurt, Paris/Charles de Gaulle), especially for the North America – South East Asia traffic (CAPA Centre for Aviation, 2010).

Nevertheless, airports have the opportunity to attract passengers that are in a position to choose their preferred point of connection. First, and still related to airline strategies, passengers may be attracted by the loyalty program of their favourite airline or alliance, thus using the airports in its network. Second, a given airport may offer a wider network with better opportunities to connect to more destinations. Finally, the particular characteristics of an airport may make it the best alternative as a connection point, either in terms of geographical location by minimising detours (and thus minimising total travel time), by developing an efficient design that minimises connecting time, or even by providing shopping and leisure facilities that increase the desirability of a longer layover.

In addition, the expansion of LCCs makes it possible for smaller airports to compete for medium-haul transfer passengers (by using the concept of self-help hubbing explained above). For instance, low cost airports (such as Brussels/Charleroi, Paris/Beauvais, Frankfurt/Hahn or Rome/Ciampino) can effectively offer connection opportunities for passengers wishing to travel between Eastern and Western Europe. Although there is no available data to illustrate this statement, and Reynolds-Feighan and McLay (2006) claim that such transfers are not attractive or practical, Malighetti et al. (2008) provide evidence that suggests the potential of this type of interconnections, and Franke (2004) argues that FSCs may reduce the complexity of their hub models following the example of LCCs practices.

To make our point, it suffices to analyse the implications of the business model of LCCs. Since it is based on point-to-point services, passengers are not penalised with higher fares if they transfer to a different carrier, airlines do not need to provide compensation and special arrangements for missed connections or lost luggage, and airports do not have to deploy expensive and complex transfer facilities (not to mention they are able to charge connecting passengers twice, with arrival plus departure fees). Moreover, given that connections are not ensured by the airlines, the passengers are encouraged to increase their connecting time, and airports may take advantage of their longer stays to increase non-aeronautical revenues.

3.4 Inbound demand or “destination competition”

Another way in which airports compete that is not much referred in the literature is the destination competition (Tretheway & Kincaid, 2010). It is related to the possibility that airports have to attract passengers or other users solely by the attractiveness of the surrounding environment (the hinterland) or even by the characteristics of the airport itself. To some extent, this occurs in airports with a large share of inbound traffic. Normally these airports are located in or nearby tourist destinations.

In this sense, the Marketing Plan for Algarve's Faro Airport, in Portugal, highlights that “Faro airport becomes, inherently, a competitor of all the airports that serve tourist destinations which compete with the Algarve” (ANA, 2007). Consequently, the attractiveness of the airport hinterland is a key factor in competition and one that is particularly challenging to the airport, especially in terms of tourism attractiveness, since the airport operator has little or null control over what the region has to offer.

Nevertheless, airports have higher control in what concerns the land side commercial development in order to promote the airport itself as a destination. This is true both for the individuals and commercial trade customer groups in general. Some airports develop supplementary services or activities, by themselves or in association with commercial partners, that range from hotels and convention centres to concerts, sport events and airport tours. Moreover, other airports are actively developing real estate projects around the airport to diversify the land use, far beyond a land-air travel modal interchange. Amsterdam Schiphol airport city and airport corridor, Frankfurt airport city and The Circle project at Zurich airport, are a few but expressive examples of such activities.

3.5 Global competition

The airport industry is becoming increasingly composed by international groups working across the world. There is a well-established process of globalisation for the airport industry, substantially increased with airport privatisation, but not limited to private companies (De Neufville & Odoni, 2003; A. Graham, 2003). This expansion has led airports also to compete for the services they are offering at a global scale, with four forms in which this competition can be expressed: airport companies can compete to buy or earn a contract for the management of other airports; they can compete with their consultancy services in areas such as engineering, economics or construction; they can operate retail facilities in other airports; and, finally, they can compete by operating entire terminal buildings in other airports.

Graham (2003) provides a number of examples in which airport companies, such as BAA, Aéroports de Paris, Aer Rianta, Schiphol Group, Fraport and many others have interests in airports around the globe. The sample is not restricted to companies previously related with the airport business. In fact, many property developers, construction companies, financial investors and other transport companies also have interests and large shares in airports. Not surprisingly, airlines have also shown interest in airport operations, as it is the case of easyJet unsuccessfully trying to buy London/Luton airport, Ryanair proposing the construction of its own low-cost passenger building at Dublin, or Lufthansa successfully partnering with Munich Airport to build terminal 2. Indeed, in Australia and in the United States, traditionally the relationship between airlines and airports has been more direct, since the carriers can lease terminals from the airports, through long-term contracts.

3.6 Competition for funding

Airports may also compete to obtain funds for developing airport expansions or upgrades, aiming at achieving more competitive positions. In a general way, funds can be in the form of grants with special conditions (such as very low interest rates or long repayment periods), tax reductions or subsidies (where allowed by regulators). These funds can come from governmental or private institutions, such as tourism authorities (all of them part of the non-user stakeholders group described in the previous section). All these entities can be interested in providing funds as a mean to foster economic development, tourism and employment in the airport's hinterland. Additionally, some governments may be keen to invest in regional airports in order to reduce the pressure of congestion or environmental constraints in major airports (Davison, Ryley, & Snelgrove, 2010).

As an example, Bel and Fageda (2009) show how the Spanish airports compete to attract public expenditure. According to their analysis, between 1994 and 2003 Madrid/Barajas received 60% of the total investments made by AENA, with the remaining 40% invested in the other 46 airports managed by the Spanish authority. Curiously, the purpose of the authors was to demonstrate how common ownership has prevented competition in Spain for the sake of a non-existent solidarity (cross-subsidisation across airports).

Funds can also be used to enhance the competitiveness of an airport by preparing it to compete in any of the other referred forms of competition, even if the money is not directed to the airports but to the airlines (see Morrel, 2010, for a list of airports in which Ryanair has

received an incentive to increase the number of routes the airline operates). Although this form of airline sponsoring is frequently criticised, mainly by some legacy airlines, de Neufville (2008) argues that "these deals (...) follow the pattern of airport development that prevailed for most of the last century". Indeed, airports have benefited from access to large amounts of capital from national and local governments under special conditions. That capital has often been used to build highly expensive architectural monuments.

Additionally, privatisation and commercialisation of airports create new opportunities to raise funds from their private owners or operators. In consequence, these moves are expected to "remove airports from a position where they compete for public expenditure" (Davison et al., 2010). On the other hand, airports that are not privatised (in the sense that local, regional or national forms of government maintain the ownership), but that have been delivered as a concession to private operators, are likely to raise private funds more easily to gain competitiveness.

3.7 Competition with other modes

The review conducted so far is entirely focused on competition between different airports. This does not mean that other airports are the only competitors, however. Competition between air transport and other modes also has a significant impact on airports (Tretheway & Kincaid, 2010). The expansion of high speed rail networks in Europe has proven an effective way of competition between surface and air transport. In France, for instance, a 7% decline in domestic air traffic is noticeable between 2000 and 2007 mostly due to the growth of the TGV network (International Transport Forum, 2009). In what concerns airports, train stations are normally better located and provide a more efficient boarding process that increases passenger throughput and decreases wasted time.

As a matter of fact, the European Union has been consistently promoting the substitution of air services by high speed rail, especially to reduce congestion at airports and to limit CO2 emissions from air transportation (European Commission, 2001). However, as described by Givoni and Banister (2007), there is a great potential in exploring the complementarity between both modes. Trains can extend the airport catchment area in a significant way, and they indeed compete with short-haul flights, as in the case of the Madrid – Seville connection. Or they can even be an integral part of airline services, as Lufthansa's AIRail services at Frankfurt, which go beyond just providing access to the airport.

This kind of cooperation between airlines and rail companies may prove quite beneficial for all parties involved. For a very short trip, a train connection may be much cheaper than flying an aircraft, so airlines can reduce costs and allocate their fleets more optimally. Moreover it is a natural way for an airline to extend its network, offering previously unavailable destinations (this is particularly interesting for companies flying intercontinental routes). Train operators gain customers at marginal costs, airports reduce congestion or free slots for higher yield flights, passengers reduce waiting time and benefit from train stations location, and last but not least, in environmental terms, there is less noise and lower gases emissions (Givoni & Banister, 2007).

It should finally be noted that competition also occurs between air transport and other modes, such as private cars and long distance buses. Moreover, airports may also compete inside their hinterlands with local providers of retail, food and beverages (Tretheway & Kincaid,

2010). Nevertheless, in this paper, when defining competitive strategies for airports, we focus on inter-airport competition as previously described. But before dealing with the actual strategies, it is important to understand the complex interactions between all the groups involved in the airport business.

4. THE AIRPORT BUSINESS NETWORK

From a rather operational perspective, Schaar and Sherry (2010) present a model that attempts to describe the interrelationships between the airport stakeholders in terms of their responsibilities and needs. Their model, however, is based on common practices in the airport industry in the United States that do not apply worldwide. In addition, the model becomes too complex for the analysis of the airport operator role in defining the characteristics of the airport business.
From a marketing perspective Jarach (2001) introduces the notion of “air transport pipeline”. His model aims at describing the business relations between a network of actors around the airport that operate in a complementary way in order to bundle service packages to final consumers. Although it allows an analysis with multiple customers and airport competition, this model is probably too simplified for developing strategies within the wider scope of airport business nowadays.

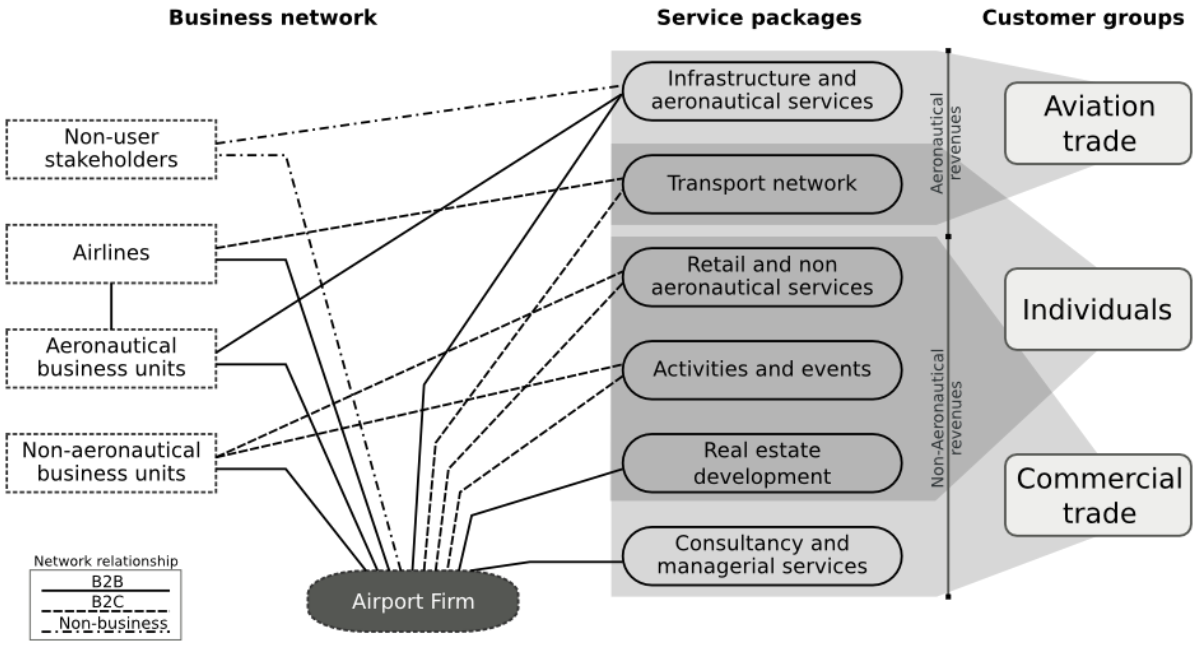

Figure 2 – The airport business network

This paper takes into account strategic and operational aspects of the airport business, in combination with marketing and economic analysis. With this wide perspective we examine the role of the airport operator to define its relationship with stakeholders, providers and customers, in order to bundle all the services that the airport ultimately offers.
Figure 2 presents the airport business network, a representation of the complex interactions between the network agents (at the left part of the figure) and the airport (acting as a multi-service firm) that result in the creation of several service packages (as the airport product)

targeted at the three customer groups described earlier. This model aims at providing a more specific tool for the current airport business context that is, at the same time, sufficiently general to be applied to different airports according to their particular characteristics.

4.1 The agents in the network

The concept of an "airport business network" emerges when the airport acts as a commercially orientated company (the airport firm) to harmonise the relationships with other players, inside and outside the industry, in order to provide services in the air and the land sides of the airport. Since the multiple agents in the business network have different requirements and interests, three types of network relationships have been identified: a) Business to Business (B2B), when the agents are companies that interact to provide integrated or complementary services; b) Business to Consumer (B2C), when the relationship is intended to provide a product or service for final consumption; and c) Non-business, when the relationship is not directly mediated by commercial interests (such as profit maximization), or when those interests are not the main outcome of the interaction.

Non-user stakeholders

The non-user stakeholders, as mentioned before, include entities and institutions whose interest is mainly driven by the positive externalities produced by the airport, especially concerning the social and economic development of the communities surrounding the airport, but also in terms of the alleviation of negative externalities, such as pollution and noise emission.

The non-business relationship between the airport and the non-user stakeholders is normally associated with the airport role as a promoter of employment, tourism and trade opportunities. Additionally, some governments may be keen to invest in regional airports in order to reduce the pressure of congestion or environmental constraints in major airports (Davison et al., 2010). Therefore, the airport firm must develop strategies that involve national and local governments, tourism, trade and local community associations. With this group of non-user stakeholders, the airport firm acts as a facilitator to establish common goals for infrastructure development and sustainable growth.

Besides directly investing in infrastructure development for capacity expansions, the non-user stakeholders may as well provide (or cooperate with the airport in the provision of) incentives for air services. For instance, the Portuguese airport authority (ANA Aeroportos de Portugal) established a partnership with the Portuguese tourism promotion office (Turismo de Portugal) to create a common incentive plan to support route development programs. The plan includes marketing support, advertisement and reductions in fees, and is available to any airline willing to operate from/to the airports managed by ANA in mainland Portugal and the archipelagos of Azores and Madeira (ANA, 2010).

Airlines

A second group of agents is composed by the airlines, including not only commercial airlines (scheduled and charter, passengers and cargo) but also business/executive aviation and general aviation. As de Neufville and Odoni (2003) state, airlines are key customers and they are, of course, in the core of the airport business. However, the traditional perception of the airlines as the main customers and the airport solely as a gateway for the airline users to access air services has gradually changed over the last decades. In the current context, the airport business network suggests a B2B approach between the airport firm and the airlines.
This kind of relationship implies a better understanding of the real requirements of airlines in terms of infrastructure and operations. Thus airports should implement flexibility and adaptations to serve the diverse business models of different carriers and alliances. In addition, a closer cooperation between the airports and airlines is a key factor for the airport business success, partially because besides paying aeronautical fees, airlines will attract customers for the non-aeronautical services of the airport. Indeed, the airport may influence the carrier's decisions regarding network expansion and engage in common marketing of new destinations to make the airport more attractive for other users.

Aeronautical business units

Airlines also follow a B2B relationship with the third actor in the airport business network, the aeronautical business units. These units comprise a series of agents that provide services to the airlines and to the airport, that are essential for the aviation-related part of the airport business (such as air traffic control, meteorological services, communications, baggage handling, passenger handling, aircraft cleaning, fuel provision, aircraft maintenance, in-flight catering, airport security and fire fight and general safety services). Some of these services may be provided by the airport itself, but they are often delivered by third-party providers (Doganis, 1992).
Although airlines can establish a direct relationship with the aeronautical business units they are interested in, they can also perform some of the related activities by themselves. Thus the airport firm is linked to the aeronautical business units through a B2B relationship as well. It is the airport responsibility to guarantee airlines the access to competitive services, and to guarantee a sufficiently attractive business environment for the aeronautical units, while at the same time fulfilling all applicable existing regulations.
The B2B relationship between the aeronautical business units and the airport firm should contribute to an efficient use of the infrastructure and to the provision of aeronautical services for the aviation trade group of customers, as indicated in Figure 2. Similarly, airlines offer their networks of destinations to their own costumers (B2C), while the B2B relationship between the airport and the carriers implies that the airport is also offering the aviation network provided by all the airlines (through a B2C relationship). Moreover, the airport must create synergies with other transport modes in order to be able to offer a complete transport network for both air and surface travelling.

Non-aeronautical business units

Like its aeronautical counterpart, the non-aeronautical business units are not necessarily part of the airport company, but they provide essential services that complement the airport product with non-aviation activities. Among others, the tenants and concessionaires of retail shopping, parking or car rental are part of these business units, as well as the providers of security and cleaning services of the passenger buildings. The relationship between these non-aeronautical units and the airport firm are also of a B2B nature. Nevertheless, as with the aeronautical side, the airport may be directly involved in providing some of these services. Therefore, both the non-aeronautical business units and the airport firm hold B2C links to customers of retail and non-aeronautical services and activities and events.
Finally, the airport firm may, itself or through business partners, provide real-estate development of the land surrounding the airport, and offer consultancy and managerial services, mainly to other airports worldwide. These two groups complement the airport service packages that bundle the several products and services that the airport offers as a result of the interactions in the airport business network.

4.2 The airport service packages

According to Jarach (2001) the airport firm concept can be achieved "through the implementation of more complex forms of service packages in order to satisfy evolving needs of enriched audiences". In fact, practice shows that airports can successfully bundle their portfolio of activities and products into service packages targeted at particular groups of customers. Moreover, these packages are the result of conscious interactions between the airport firm and the other players in the airport business network, as described above. As Figure 2 illustrates, six types of such service packages can be viewed as integrating the airport products and as targeting at one or several customer groups.
The first two types of packages – infrastructure and aeronautical services, and transport network – are directly related to aeronautical revenues, and the other four can be translated into non-aeronautical revenues for the airport firm. This arrangement somehow highlights the great possibilities of increasing income from non-aviation activities. Conversely, non-aeronautical revenues can be obtained from previously unexplored opportunities and less regulated markets. An approach taken by airports worldwide consists of offering retail and complementary non-aeronautical services – the third type of service package – mainly taking advantage of the passenger throughput created by the aeronautical services. These packages can be expanded according to the airport possibilities in such a way that passenger buildings may turn into actual shopping malls.
Airports can implement a fourth type of service packages intended to provide activities and events, in order to entertain passengers or to attract visitors, and to satisfy the needs of other customers in the individuals customer group, such as local inhabitants or employees of the airport and the companies settled in or around it. These services can range from open concerts and sport events, to art and commercial exhibitions, and even the organisation of business meetings and congresses.
The fifth type of service package – real estate development – includes all sorts of projects in the airport vicinities that explore the dynamics created by the airport in terms of trade and

mobility opportunities. The possibilities seem endless, from “traditional” logistic parks, hotels, office buildings and convention centres, to medical centres for quick surgeries and academic clusters for top management graduate schools (as in The Circle of Zurich airport), or research centres for high-mobility scientists (as in Frankfurt airport city), or even less conventional developments, such as the photovoltaic park for solar electricity generation in Athens airport. Some airports may choose to keep land-side development departments inside their organizational structure, while others may opt for creating separated companies or joint ventures with property developers.

Finally, in the process of developing all these service packages, the airports have gained plenty of expertise and know-how in several areas, and accumulated very valuable technical and human resources. Therefore, the final type of service package includes the consultancy and managerial services that the airport firm is able to offer, mainly to other airports or actors within the airport industry.

It is clear that not all airports want or do implement all mentioned types of service packages. Nonetheless, no current evidence appears to suggest that it is impossible to any airport to implement all of them, except for the lack of available space for expansions that clearly limits the scale of some of the packages, especially in what concerns the real estate development. With this in mind, it appears that all of the packages are scalable and may be implemented according to the particular characteristics of every airport and its surrounding area.

5. COMPETITIVE STRATEGIES FOR AIRPORTS

The seminal work of Porter (1980) defines three generic competitive strategies. When targeting a broad market, cost leadership and differentiation are sources of competitive advantage. Another alternative consists in targeting only particular segments of the market, and with this narrower scope, use differentiation and cost leadership as the drivers for defining competitive strategies.

Graham (2010) briefly discusses Porter's generic strategies in the context of the airport industry. She highlights the fact that Porter's ideas have been criticised due to their simplistic nature. She argues that the relevance of cost leadership is questionable in the case of airports that lack competitive pressure, are subsidised or are part of a group of airports that practices common prices. In opposition, “there appears to be some scope to pursue differentiation” and focus strategies, she adds. Consequently, her analysis includes some examples of airports practising this kind of strategies.

We argue that Porter's approach does not take into account the specific features of the airport context, in addition to the generalised criticism that it does not adequately consider combined strategies. Graham (2010) ideas, on the other hand, hinder generalisation to any type of airport, as we have looked for across this work.

Therefore, in an attempt to support airport firms in the construction of competitive strategies, this section discusses differentiation and cost leadership within the context of the airport industry and under the framework of the airport business network. First, we propose a series of differentiation factors that may be selected independently or in combination, and used to promote the airport to the customer groups analysed. Second, we summarise some arguments found in recent literature about the implications of airport pricing as a competitive strategy.

It is worth noting that some airports may choose a pure differentiation strategy to target a selected market segment. In this sense, there are airports specialised in particular niches, such as general aviation (e.g. Cascais Tires Airport in Lisbon, Portugal), business/executive aviation (e.g. Le Bourget Airport in Paris, France), air cargo (e.g. Liège Airport in Belgium2) or low-cost carriers (e.g. Beauvais-Tillé Airport near Paris, France). However, in practice, most commercial airports serve several segments with a broader market scope. In this case, instead of pursuing a single differentiation strategy, it is more relevant for airports to select a set of differentiation factors that may be used to target different customer groups with different value propositions.

5.1 Differentiation factors

Figure 3 summarises the factors identified as possible sources of differentiation for airports. As referred before, these factors are linked to specific customer sub-groups, at whom the strategies that implement each (or a combination) of the factors may be targeted. These sub-groups are defined by partitioning the three main customer groups for the airport service packages. We can therefore easily merge the scheme of Figure 3 with the airport business network of Figure 2, in order to identify the network agents that may be involved in the implementation of particular strategies and the service packages that materialise such strategies.

The first differentiation factor, the availability of slots, is extremely important and is targeted specifically to commercial airlines. As Barret (2000) suggests, this has been one of the advantages for low-cost airports when attracting airlines. Indeed, it is undeniable that any airport willing to establish a competitive position must provide available capacity to accommodate the desired increase in traffic. However, the question is not only about spare capacity, since slots assigned to particular times of the day may be associated to a more attractive market. Moreover, the current methods to allocate slots usually favour incumbent airlines that already have the right to use them (De Neufville & Odoni, 2003). Therefore, availability of slots is also crucial to develop an environment of competition between airlines that may benefit passengers through lower prices.

A second differentiation factor consists of dedicated infrastructure targeted mainly to commercial airlines and general aviation. This may include the use of exclusive terminals, parking stands, boarding gates and/or check in areas in the passenger buildings. Initially, dedicated infrastructure appears attractive to airlines using the airport as a hub or a traffic node (in order to gain visibility, improve branding, and even influence airport planning). However, exclusive infrastructure may be used also to separate market segments with dedicated areas for low-cost carriers (e.g. Kuala Lumpur Airport in Malaysia), freight integrators (e.g. Memphis International Airport in the United States), or even premium passengers (e.g. Lufthansa's First Class Terminal at Frankfurt Airport in Germany).

Integrated services appear as a third differentiation factor targeted to all aviation trade customers. For instance, this factor may be interesting for airline alliances willing to provide a seamless travel experience to their passengers, or for LCCs by providing integrated ground handling that supports cost reductions in ground staff. As another factor, airports may implement strategies that include incentive programs to support route development of

commercial airlines. This kind of programs has been discussed above, as a mean to attract more customers to the airport.

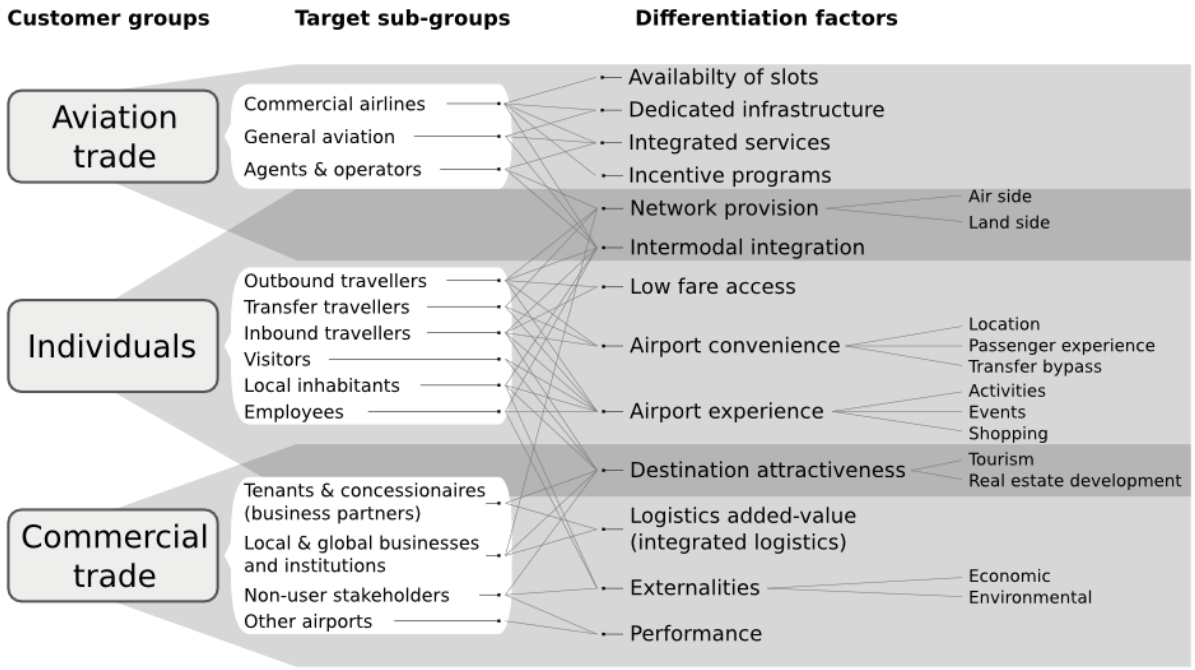

Figure 2 – Differentiation factors to formulate airport competitive strategies.

Network provision appears as a key differentiation factor that is, by nature, in the core of airport competitiveness. The offer of a wider network through improved connectivity, or the provision of a denser point-to-point network, in combination with adequate frequencies and timetables, is essential to define the airport catchment area in dynamic terms. Moreover, network provision is not related exclusively with the set of air services, but also with the land side connectivity guaranteed by surface transport. In this sense, this factor may be targeted to travel agents and tour operators, outbound and transfer travellers, and even local and global business and institutions.

Strongly associated to the network provision, intermodal integration is also a key differentiation factor for airports. This factor may be targeted to all customers in the aviation trade group, especially to airlines willing to offer complementary services (such as air-rail, air-cruise, or air-bus origin to destination travel), and to all kind of travellers, as well as local inhabitants and employees in the customer group of individuals.

Outbound and inbound travellers may be particularly attracted by the access to low fares as another factor of differentiation that is strongly linked to the presence of low-cost companies in the airport. Similarly, all types of travellers may base their airport choice on the airport convenience. This may possibly be assessed in terms of the location of the airport in relation to the origin and/or destination of their trips, the overall experience in their use of the airport3 or the possibility to make a quicker and cheaper trip bypassing transfer airports.

All customers in the group of individuals may also be targeted with the airport experience as a differentiation factor (not to be confused with passenger experience which is intended only for travellers, as referred above). Strategies to improve the airport experience must encourage individuals to enjoy the airport as a place to be at, and not only to pass by.

Therefore they should include activities and events (airport tours, viewing terraces and the others described earlier), airport shopping and services such as banks or pharmacies.
Destination attractiveness has been identified as another differentiation factor, based on the promotion of the airport or its hinterland as a destination. Thus this is targeted mainly to inbound travellers, visitors and local inhabitants within the individuals group, and to tenants and concessionaires, local and global businesses and non-user stakeholders4 in the commercial trade group of customers. Destination attractiveness may be explored in terms of tourism and the opportunities created by the real estate developments made around the airport. For instance, the project of The Circle at Zurich Airport, to develop a centre for quick surgeries, may attract “medical tourists” to the airport.
An additional factor of differentiation consists of integrated logistic services targeted to business partners established inside the airport (such as aeronautical and non-aeronautical business units), and to local and global companies and institutions located (and willing to be located) in the airport hinterland. This logistics added value may be attractive to companies that have no relation with the aviation business, as long as they can perceive an advantage from the synergies created by clustering different activities (as in a logistic park). For instance, a large supermarket distribution centre is located inside the Frankfurt Airport City, even though air cargo is not an essential part of their business model.
Taking advantage of the growing development around the airports, a further differentiation factor arises related to the externalities produced by an airport in economic and environmental aspects. Strategies to explore positive externalities can be targeted to local inhabitants, employees and, particularly, to some of the non-user stakeholders.
A final differentiation factor identified in this work is related to the own performance of the airport firm in terms of its profitability and sustainability. Since a good performance does not occur by chance, the airport may propose strategies targeted to other airports (and materialised in a specific service package, as referred above) and to the non-user stakeholders.

6. CONCLUSIONS

This paper presents three novel contributions for the analysis of the global airport industry: a new definition of customer groups for the airport, viewed as a multi-service firm; the airport business network, a model to examine the interactions between the agents involved in the airport business to produce the airport service packages; and an identification of differentiation factors that airport managers may combine to produce competitive strategies. The paper also proposes the integration of these elements, in order to provide a common framework to support the analysis of the current competitive environment within the industry.
Furthermore, this analysis contributes to the current discussion on airport competition by providing a comprehensive, broad scope review of the issue. The existence of competition between airports, in the different ways presented in this paper, has created a change of paradigm and sufficient evidence for abandoning the idea of airports as natural monopolies. Nevertheless, airport competition appears to be a rather recent concern for airport managers and researchers. Although airports are strongly affected by the uncertainty of the aviation industry, they had been traditionally more reluctant to accept competition with other airports, whilst delivering the burden of market development solely to airlines.

New dynamics in liberalised markets, such as the opposition of airlines and regulators to increases in aeronautical fees, the pressure from governments for airport self-sufficiency, and the emergence of multiple customers for the airport services, are forcing airport managers to develop strategies for creating real competitive advantage. In fact, there are signs of an increasing awareness of airport operators regarding this issue. This paper highlights how airports may implement successful strategies, particularly by exploring several differentiation factors.

The process of strategy development implies a close relationship and involvement of the airport with other players in the airport business network. Therefore it is of paramount importance to align the goals of competitive strategies with those of infrastructure planning, to ensure the sustainability and the success of the overall airport business.

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