

## **Non-Aviation Revenue in the Airport Business – Evaluating Performance Measurement for a Changing Value Proposition**

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### **Abstract**

Non-aviation activities have become increasingly important for airports. In recent years the sector has become more complex and diverse. Consequently, measurements of non-aviation activities are an important indicator of an airport's performance. But lack of a common definition and variations in data availability as well as limited transparency make interpreting such performance problematic. Currently used definitions need to be revised to better reflect the complexity of non-aviation as well as the uniqueness of airports when performing benchmarking and strategic reviews.

**Key Words:** Non-aviation, Airports, Performance Measurement, Benchmarking

# 1. Introduction

In recent year the nature of airports has changed vastly. Traditionally airports were regarded as a part of transport infrastructure by providing airlines with the necessary resources to conduct their business. In other words they were a facilitator of airline operation which less desire to pursue other revenue sources. Consequently, aviation related revenues used to be the most important source of revenue. In times of regulated air travel, with dominant national carriers, the environment of operation was less driven by the kind of market forces we observe today. At present modern airport are no longer just providing infrastructure for airlines, but have evolved to a sophisticated market entity with diversified revenue streams.<sup>1</sup> Non-aviation revenue has, therefore, become a key figure for measuring an airport's performance and therefore benchmarking. This however is not reflected in the current financial reporting, making the measurement of non-aviation difficult if not impossible, as the comparison of current figures remains nearly meaningless without a full understanding of their exact composition. Though airports have broadened their business operation, it still appears as if all revenue is dependent on the airlines and their related traffic volume, a debate which becomes central in the current single and dual till debate.

The aim of this paper is to highlight some of these problematic issues as well as to propose necessary changes in performance measurement, allowing for improved benchmarking and reflecting today's significance and complexity of non-aviation revenue. First, we would like to highlight the changing value proposition of airports and introduce the concept of passenger independent revenue streams. Second, we will analyze data in financial reports to illustrate the problematic data availability. Annual reports are often the only source of data and an analysis of this reveals that non-aviation remains a very ambiguous topic complicating data collection. Third, we will discuss current performance measurement and argue for an improved approach which takes the complexity and importance of non-aviation revenue in to account.

At this stage of our research we would like to provide an overview and discussion of current performance indicators in use, focusing on some of their problematic aspects. Our aim is not to propose a new definition of non-aviation, but to critically evaluate current performance measurement which is often based on a very narrow and ambiguous definition of non-aviation. In the near future we aim to use the feedback from this paper to produce a new approach in measuring non-aviation performance, starting first with German airports as part of the GAP project.

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<sup>1</sup> Jarach, David. (2005, p. 71). Airport Marketing. Burlington: Ashgate

## **2. Changing Value Proposition**

### **2.1 The increasing importance of non-aviation**

Aviation revenues, traditionally the main revenue source of airports, have come under significant pressure in the face of market liberalization. Several drivers of change have created various imperatives to which the industry reacted implementing a commercialization process.<sup>2</sup> First, increased competition between airlines resulted in lower airfares and increasing passenger numbers, airlines had to cut cost and attempted to operate on limited margins while regulated aviation charges had a propensity to remain stagnant.<sup>3</sup> Second, privatization efforts and a decline in state control have also amplified pressure on airports to identify other revenue sources ensuring continued revenue growth and maintaining or increasing profitability. In light of changing airport economics, non-aviation has therefore become an important component of revenue generation for modern airports, inducing a new value proposition. Airports regardless of size have attempted to increase their share from non-aviation, as profit margins from this sector are typically higher.<sup>4</sup> Therefore, having a high non-aviation share is an attractive figure for managers and investors alike.<sup>5</sup>

### **2.2 Recognizing an airports revenue streams**

Aviation charges still are an important revenue source but it is no longer the nucleus. In addition, non-aviation activity leaves airport operators with more creativity to generate additional revenue. It is recognized that passengers are the centerpiece of non-aviation activity, nonetheless not all revenue are strictly tied to passengers or airlines which channel them to the airport. There are more alternatives than to focus all activity around the passenger. Airports have changed to a multi service point creating a complex non-aviation sector.

The most significant revenue streams can directly be attributed to airline operation and passenger volume. At this point it should be stressed that the passenger is not the only potential customer at an airport. However, the reason most other customer segments are present is because of the presence of the passenger. We will come back to this in section 4. For example if airlines reduce flight operations, the number of passengers will be reduced as

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<sup>2</sup> Freathy, P. (2004, p. 191). The commercialization of European airports: successful strategies in a decade of turbulence, *Journal of Air Transport Management* 10

<sup>3</sup> Freathy, P. and O'Connell, F. (1999, p. 589). Planning for Profit: the Commercialization of European Airports.: *Long Range Planning*, Vol. 32, No.6

<sup>4</sup> De Neufville, R., Odoni, A. (2003, p. 268). *Airport Systems – Planning, Design and Management*. New York: McGraw-Hill.

<sup>5</sup> In 2003 Fraport's non-aviation activity, according to their definition (real estate, retail and parking), has contributed 79% of EBITDA

will revenue streams originating from or depending on them (e.g. concessions from shops etc.). Via their particular passenger volume airports generally have five possibilities to generate revenue: Retail<sup>6</sup>, services, food and beverages, parking, and passenger access.<sup>7</sup>

To a much smaller amount some revenue streams are not based directly on the passengers presence but on the airport's infrastructure and flight operation competencies. It allows the airport to generate a more diversified revenue stream and, perhaps more important, to maximize its non-aviation revenue. The direct impact of decreased passenger volume on revenue will be less severe.<sup>8</sup> Accordingly, real estate rental or income from third parties not directly related to the aviation operation at the relevant airport can contribute to a more diversified income structure.<sup>9</sup> Notably different types of airports will have different prospects in this area.

This distinction shows that the measurement of non-aviation activity is not a very simple field and that it spreads out into many directions leaving it to the airport's creativity and assumption of risk on how to generate additional revenue. Revenue directly related to the passenger can strongly differ in variety and composition, but generally it will be revenue related to retail, service, as well as parking. However, when it comes to a further diversification there are few limits for additional revenue sources. With respect to an optimal strategy, one has to consider the costs and benefits of engaging in additional revenue generating activities, especially in competition with commercial activities near the airport.

### **3. Non-Aviation Data Availability in Financial Reports**

#### **3.1 Lack of clear definitions**

As mentioned above there are a wide variety of possibilities to enhance non-aviation revenues. This is, however, where the topic's complexity becomes apparent, making it challenging to compare how airports are performing and how effective new non-aviation strategies are. Currently, no common definition for reporting of non-aviation revenues is found in the accounting literature, leaving much leeway in financial reporting and analysis. As with accountants, market researchers and strategic consultants also have used different

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<sup>6</sup> This also includes Duty Free related revenue stream. However it is helpful to regard Duty Free activity separately.

<sup>7</sup> Charging for having access to passengers is indirectly dependent on passenger. The airport is basically charging other companies to access its passengers who will demand certain services/goods or will be exposed to company's promotional activities such as through advertisement, or transportation companies (incl. taxis), which do not have a service, point at the airport.

<sup>8</sup> The impact will be dependent in how far the decrease in passenger volume and flight activity threatens the airports existence.

<sup>9</sup> Examples of passenger independent revenue are consulting services, real estate development,

definitions which are then reflected in different results for the same airports.<sup>10</sup> This makes further strategic analysis difficult. Moreover, it merely provides biased or questionable information for the purpose of benchmarking, since one is comparing apples and pears.

Many articles or financial reports state that non-aviation revenues have increased by x % compared to the previous year, but the definition used as well how the figures were compiled often lack transparency. We will provide specific examples below. Statements of this nature lack the essential components of serious empirical analysis for any significant conclusions to emerge and hence make benchmarking meaningless. It is clear that a figure for non-aviation revenue is needed, since without it, nothing substantial can be said about the topic. Airports' data sources available from annual financial reports are heterogeneous in regards to data availability. Definitions of the same airports also vary depending on the reporting period, further contributing to the problem. Accountants can change figures, definitions, and /or shift figures, making it nearly impossible for an outsider to fully understand the true contribution and composition of non-aviation. Thus, while individual airports have disaggregated revenue available and can understand their own performance, using benchmarking as a management tool across airports is very challenging without generally acceptable definitions or more inter-airport cooperation on these issues.

Usually, in order to derive a non-aviation revenue figure for further analysis and to make it fit the chosen definition, adjustments have to be made due to the fact that reported data is nearly incomparable. It then becomes difficult for readers to comprehend these adjustments to the publicly available data in financial reports, which are most often the only empirical foundation available for deriving a figure for non-aviation. This results in a figure that is labeled as non-aviation, but only the figure's creator has a true understanding of what is represented by it and can fairly easily announce misleading data according to which information is to the airport's benefit. With this in mind previous analysis on the topic needs to be put under scrutiny and the usefulness for the industry needs to be evaluated.

### ***3.2 Variations in the definition of non-aviation***

For the purpose of this paper we will focus on how non-aviation revenue is presented in airports' financial reports. Below we would like to show some definitions and data presented in financial reports of German airports. Lacking a clear definition as well as different data availability and breakdown of revenue make annual reports very problematic data sources for estimating non-aviation revenue. They need to comply with the same reporting standards

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<sup>10</sup> For more detail please see: Zenglein, M. et al (2007), Performance Measurement of Non-Aviation Revenue in the Airport Business, GAP Discussion Paper 02.

following the requirements of the German commercial law (HGB). In Germany airports listed on the stock market are obliged to report in accordance with International Financial Reporting Standards (IFRS) plus the additional HGB requirements. However, in spite of the identical legal environment, homogenous financial reports have not emerged.

Variations in ownership structures are also reflected in the publicly reported financial statements and the disclosure of information. Airports which are privatized or partially privatized and listed on the stock market, such as Düsseldorf, Hamburg, or Frankfurt will provide more detailed information than small publicly owned airports, as they are legally required to disclose segment information. Consolidated financial reports of airport groups create additional problems as only aggregated data for consolidated airports is reported. This makes it difficult to compare airport groups that own or partially own several airports with other individual airports.<sup>11</sup> The result is heterogeneous reporting and availability of data, as can be seen in Table 1 below. A comparison between the two groups therefore has little meaning.

**Table 1: Data availability in selected German Airports as reported in financial reports, 2005**

	<b>Aggregated</b>	<b>Disaggregate</b>
<b>Berlin Airports**</b>	X	
<b>Bremen</b>	X	
<b>Cologne</b>	X	
<b>Dusseldorf* **</b>		X
<b>Fraport AG* **</b>		X
<b>Hamburg*</b>		X
<b>Hanover*</b>		X
<b>Munich</b>	X	
<b>Stuttgart</b>		X

Source: Annual Reports 2005.

\* Indicates privatized or partially privatized airport.

\*\* Consolidated annual reports.

Airports marked under aggregated data display only a single figure for non-aviation in their annual reports. Often this figure is set equal to revenues from rentals (e.g. Berlin Airport Group) or rentals and utility/service (e.g. Bremen). Data availability for airports marked as disaggregated also varies extremely, contributing to a very heterogeneous picture of the available data. It ranges from a relatively detailed report for Fraport AG to an aggregated one for Düsseldorf as is illustrated in Table 2.

**Table 2: Breakdown of available disaggregated non-aviation revenue stream, 2005 in million EUR**

	Düsseldorf	Fraport	Hannover	Stuttgart	Hamburg
Advertisement	n.a.	20,60	n.a.	n.a.	n.a.
Parking	n.a.	53,20	n.a.	n.a.	18,12
Real Estate	n.a.	157,00	n.a.	n.a.	n.a.
Concessions	n.a.	n.a.	n.a.	34,14	n.a.
Rents*	87,56	97,30	33,25	17,47	40,38
Utility/Supply Services	7,56	n.a.	7,08	7,74	n.a.
Other	11,85	45,90	n.a.	4,57	8,99
Total NA Revenue	106,97	374,00	40,33	63,92	67,49
Annual Revenue	337,28	2.089,80	133,60	198,50	203,42
NA as % of Revenue	31,72%	17,90%	30,18%	32,20%	33,18%

Source: Annual reports 2005

\* Income from rents includes revenues from concessions and real estate activity, as no disaggregation is provided.

In case of a more detailed breakdown, an appropriate definition of individual categories is also missing. This makes it impossible to attribute the exact revenue sources as non-aviation revenue. Instead, the exact composition is hidden under a label chosen by the airport.

For example revenue streams coming from utility service or supply of services like de-icing, waste removal, as well as concessions from aviation fuel or engineering services to the lessee cannot automatically be characterized as belonging to non-aviation without a clearer definition. For instance provision of aviation fuel as well as fees derived from provision of engineering services to shops and associated utility charges could be both included under Utility or Supply services. Depending on one's understanding of non-aviation, some parts could be considered as aviation revenue while others could be considered as non-aviation revenue; however, both are included within a single figure in the financial report.

Similar problems occur with real estate concessions or rents. Do these revenue incomes include rents from airlines and aviation related third parties or not? It is certainly disputable if all real estate income can be considered as part of non-aviation revenue. The distinction of rental revenue from cargo/hangars and fixed base operators (FBOs) used by the Federal Aviation Administration (FAA) makes this very obvious.<sup>12</sup> But according to other approaches found in annual reports it is not clear if these are just aggregated into revenues from real estate. We will return to this problem below when discussing our own definition of non-aviation in section 3.

Another problematic component is "Other income". Anything could be aggregated here and without additional information, no conclusion can be drawn regarding where to add it.

<sup>12</sup> Fixed Base Operators (FBO) refers to businesses which provide flight or aircraft support services, such as sale of aircraft fuel, maintenance or hangar facilities.

Depending on the annual report analyzed, “Other income” can aggregate revenue from parking, other income from property, engineering services, utilities or security services, to name a few possibilities we found in our assessment of financial reports. Clearly, some can be considered as non-aviation activities, whereas for others (e.g. security services) the allocation is questionable and the exact contribution of each will remain in the dark.<sup>13</sup> For example Fraport AG lists Information Communication and Technology (ICT) services, energy as well as the staff cafeteria as non-aviation revenue sources, but does not indicate the exact figures.<sup>14</sup> This discussion illustrates that without a more precise definition of what components constitutes non-aviation revenue, such data has severe limitations for the purpose of benchmarking.

The examples above indicate that data definitions are a major problem due to the fact that the exact components comprising non-aviation revenue often remain unclear. This results in a lack of transparency of what exactly is labelled as non-aviation revenue. International comparison with variation in accounting standards may also contribute to the complexity. Even if all airports would apply the IFRS standard, further variations in revenue (and cost) allocations are possible, as the German example illustrates. It will be no surprise that studies dealing with airports have taken different approaches in attempting to provide insight. Consequently, the scope is very challenging and in order to obtain data, compromises in data quality have to be made.

## **4. Performance Measurement**

### **4.1 Implications**

After having illustrated some issues pertaining to the definition and data availability of non-aviation, we would now like to briefly introduce some concerns and ideas regarding the analysis of airports’ revenue structures. A precise differentiation between aviation and non-aviation revenue streams -following such a disentanglement approach- could provide relevant information on truly judging proposed increase in non-aviation revenue increases, efficiency, and investment decisions, as well as to pinpoint revenue streams more precisely. Entangled revenue streams on the other hand may lay the foundation for wrong or sub-optimal evaluations and analysis. This becomes especially important since airports are unique in nature and what works at one may not be successful at another since the operating environment may not be comparable. Non-aviation revenue will be a key figure in many

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<sup>13</sup> De Neufville, R., Odoni, A. (2003, p. 273). *Airport Systems – Planning, Design and Management*. New York: McGraw-Hill.

<sup>14</sup> Fraport, (2003, p. 47). *Annual Report 2003*.

strategic managerial decisions and decision makers as well as analysts need to be aware of the potential short-comings. However, several issues emerge. First, what kind of non-aviation revenue share to total revenue is economically achievable for what kind of airport? Second, given the problems pertaining to financial reporting (see above), how best to determine the success of an airports non-aviation activity?

At this point we would like to stress that in order to implement such an analysis, definitional issues mentioned above must be addressed first. Otherwise potentially misleading data would be used in the analysis. It is clear that the quality of the input has a major impact on the quality of the output. Non-aviation revenue is the key figure which needs to be purified and made comparable for effective benchmarking.

We would also like to criticize the typical evaluation of non-aviation performance. Most analysis is often too simplistic by ignoring the complexity of this important revenue stream. Simplification may lead to misinterpretation and missed opportunities. This section will therefore raise some questions regarding to how data is analyzed and how a specific figure for non-aviation is derived regardless of the definitional issue mentioned above.

## ***4.2 Non-Aviation Revenue per Passenger***

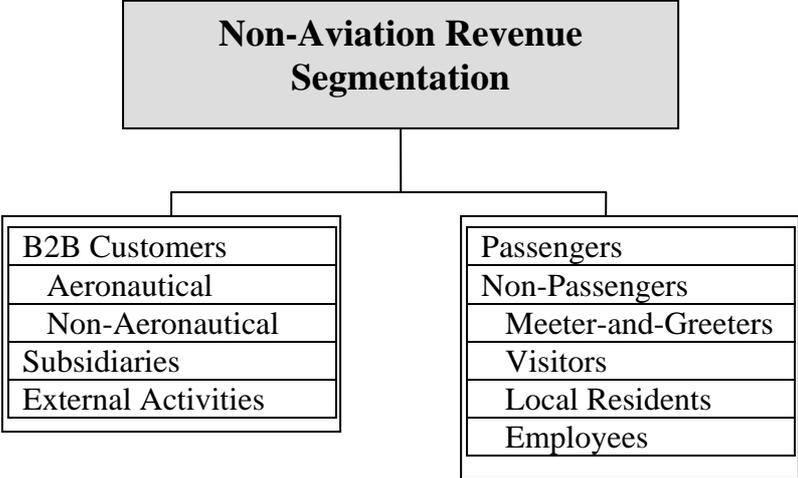
Non-aviation revenue per passenger is an indicator which is often referred to when measuring the success of an airport's activity. Certainly, passengers are a major source of revenue, but not all revenue originates from the passenger. So what is the purpose of this figure? Passengers account for revenue coming from concessions or rents from retail and service providers as well as parking. Therefore, the nominator should be replaced by revenue streams which are associated with the passenger. This too has its limits, as revenue can also originate from other customer segments at an airport, which must be considered by management. By focusing too much on the passenger the potential of other revenue streams may not be fully utilized. As mentioned above, modern airports can also pursue business opportunities and market themselves as an independent business entity, depending on their location and infrastructure attributes. An airport is frequented by a variety of people who have potential for creating revenue for the airport. Clearly, it is the amount of passengers which sets the threshold for a certain variety and quality of commercial activity for passenger dependent revenue, as other subsequent customer segments are dependent on them.<sup>15</sup> Figure 1 provides

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<sup>15</sup> The volume of meeter-and-greeter as well as employees will be strongly dependent on passenger numbers. In addition air transport enthusiasts will only be attracted by the amount of flight operation.

an overview of non-aviation revenue sources. The figure illustrates that the passenger is not the direct source of all revenue.

**Figure 1: Non-Aviation Revenue Sources**



**4.2.2 Segments directly related to the passenger**

Segments directly related to the passenger can be subdivided into passenger itself and non-passenger segments. Customer profiles of passengers have significantly changed in the past years. As air travel has become affordable to a larger segment of society, passengers have altered from a rather homogenous group of business and high-income travellers, to a more heterogeneous group representing a wider spectrum of society. In addition, identifiable sub segments of passengers related to the destination/airline composition include: domestic vs. long haul, scheduled vs. charter, business vs. tourism, intra EU vs. non-intra EU.<sup>16</sup>

All other revenue sub-segments have indirect or direct links to passengers. The larger the passenger volume is, the larger the airport, the larger the average aircraft size and the larger the number of Air Traffic Movements (ATM). Consequently more passengers need to be brought and picked up, more employees are needed to dispatch and service the passengers. Since the setting is usually more spectacular at larger airports, the airport will also be more attractive for visitors with no travel in mind. The local segment of visitors to the airport will allow it to also develop certain non-aviation revenue sources independent of its aviation business, but that is of course dependent on the overall non-aviation service offering.

<sup>16</sup> Freathy, P. (2004, p. 194). The commercialization of European airports: successful strategies in a decade of turbulence?, *Journal of Air Transport Management*, 10.3 pp.191-197

**Table 4: Customer Segments Landside Hamburg Airport 2006 in million**

Segment	Volume	Share <sup>17</sup>
Passengers	10,7	58,8%
Meeter and Greeters	3,6	19,8%
Locals	1,5	8,2%
Visitors	1,3	7,1%
Employees	1,1	6,0%
Total	18,2	100%

**Source: ???**

Customer segments at an airport will depend on the airport's classification and what kind of non-aviation activity can be implemented.<sup>18</sup> Table 4 shows that at Hamburg Airport the passenger represents the most important customer segment for the landside. Naturally, one can expect that passengers are the dominant segment for the airside, however, for the landside other customer segments add up to 41,2% of the total landside volume. By focusing too much on the passenger airports may lose out on revenue opportunities for the non-passenger segments.

#### **4.1.2 Diversification**

Airports can be very attractive locations for a variety of companies. Being near the airport and benefiting directly from its operation can attract further corporate customers which can benefit by locating in the vicinity of the airport. For example, such a business location will generally benefit from a well-developed infrastructure leading to the airport and can thereby minimize the commute of its customers (e.g. conference centres). On the other hand there are companies that benefit from the associated traffic volume. Their operations, therefore, become not only easily accessible but also highly visible, since few locations have as many signs leading to them from various directions as an airport does. Airports can also attract companies just looking for space for industrial development independent from the airport itself, just like any other commercially used real estate, given its infrastructure access. Some of these corporate customers mentioned in the list below will be more directly dependent on

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<sup>17</sup> Total share does not add up to 100% due to rounding.

<sup>18</sup> It should however be kept in mind that the revenue the airport generates may not directly come from one of the above customer segments. This would only be the case if the airport operates services such as retail, food & beverage or parking itself rather than sourcing this activity out to a third party. In this case the airport's revenue would be generated through a B2B relationship

the airport’s operation, referring to ATMs and passenger volume, whereas others are less dependent on it.<sup>19</sup>

Table 5 provides a few examples of how airports can diversify revenue with B2B customers. Items can be aeronautical related, meaning they are dependent on the airport’s flight operation or non-aeronautical related, where the actual flight operation is not as important. Strong performance in this segment is a good indicator of diversification of the airports’ activity, allowing for additional revenue which may otherwise not be generated. In combination with the traditional non-aviation business, successful diversification may be an indicator for optimization of non-aviation revenue streams by including previously unutilized business segments. In how far an airport can successfully diversify will depend on a variety of parameters which will be introduced below.

**Table 5: Examples of Potential Passenger Independent Business Options at Commercial Airports**

Aeronautical Related	Non-Aeronautical Related
Independent charter companies/flight schools	Hotels
Freight haulers <sup>20</sup>	Conference centres
General Aviation	Business parks
Consulting	Commercial Development
	Event management <sup>21</sup>

Airports will also have the opportunity to generate additional revenue through subsidiaries or other external activities. Activity in this segment will allow an airport to further diversify and become increase revenue which is generated on the premise of the airport’s operation itself.

**4.2 Non-Aviation Revenue as Percent of Total Revenue**

**4.2.1 Indicators for Benchmarking Studies**

Naturally, non-aviation revenue will often be compared to total revenue. As seen above this measure has some shortfalls and using financial reports as a benchmark may be misleading. It will be no surprise that studies dealing with airports have taken different approaches in attempting to provide insight. Most notably the annual studies Airport Transport Research Society (ATRS) and Transport Research Laboratory (TRL) make an effort to comprise and

<sup>19</sup> This could be measured by employing an elasticity approach. Inelasticity in this segment would mean that it is passenger independent. However, this is not relevant to the current discussion, but should be kept in mind.

<sup>20</sup> Revenue streams originating from these sources may or may not be considered as non-aviation. Much will depend on the definition in place as well as the exact source of the revenue.

<sup>21</sup> Event management refers to the provision of space for lifestyle events such as the form of the Munich Airport Center (MAC)

analyze international airports using financial performance indicators. Both studies include a large number of airports worldwide, 50 (TRL) and 116 (ATRS). Consequently, the scope of these studies is very challenging and in order to obtain data, compromises in data quality have to be made. But even when only looking at German airports vast differences become apparent as can be seen in Table 6.

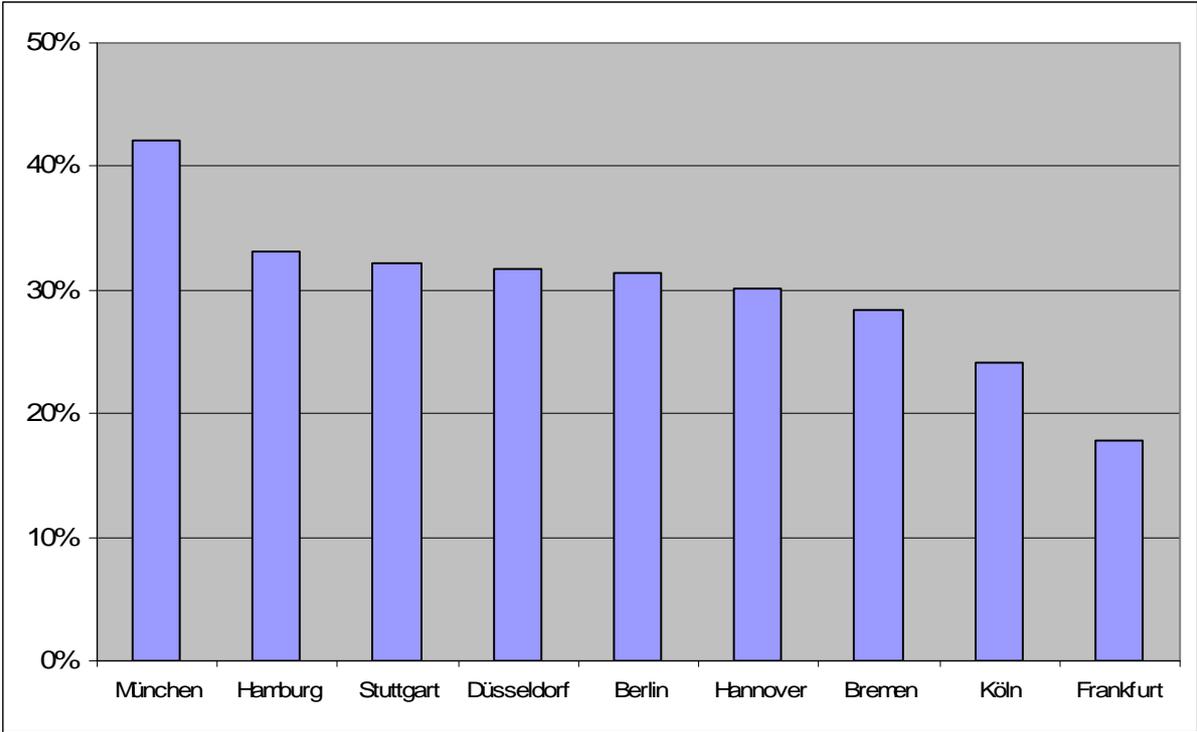
**Table 6: Overview of Non-Aviation Revenue Shares to Total Revenue for Selected German Airports used in financial reports and benchmarking studies, 2003<sup>22</sup>**

	Annual Report	ATRS	TRL
<b>FRA</b>	20.1%	54.0%	26.1%
<b>BER</b>	40.0%	43.0%	36.3%
<b>MUC</b>	42.6%	67.0%	32.7%

Source: Annual reports 2003, ATRS 2005 and TRL 2005

Referring to Figure 2 below one should ask what percentage is to be considered successful, but a single aggregated non-aviation figure does not reflect the complexity, according to definition different figures can be derived.

**Figure 2: Revenue share of non-aviation of selected German airports, 2005**



Source: Own calculations based on annual reports 2005

<sup>22</sup> The 2005 reports of TRL and ATRS base their analyses on 2003 financial data, therefore the relevant annual reports are considered. Adjustments are based on assumptions and an own definition of what is considered non-aviation

Without critical analyses one could come to the conclusion that Munich is the most successful airport and Frankfurt is the least successful. This is somewhat surprising as Frankfurt and Munich have similar parameters. Do Munich and other airports really utilize non-aviation to a larger degree as Frankfurt or are there other explanatory factors? Unfortunately, the supposedly most successful German airport in terms of non-aviation performance does not provide disaggregated data making any explanation highly speculative, underlining the difficulties for benchmarking non-aviation performance of airports. According to the 2005 annual report non-aviation includes revenue from rents and leases as well as parking and supply services which are all similar positions found in the disaggregated data provided by Fraport AG.<sup>23</sup> Nonetheless, Munich can brag itself as performing successfully in regards to non-aviation. If in fact this is true or not remains in the blue. This example provides insight into how difficult it is to conduct inter-airport comparisons due to the lack of any reliable industry wide data.<sup>24</sup>

#### ***4.2 Possible Determinants of Non-aviation Revenues***

Once non-aviation revenue streams are identified, which we would like to refer to as the primary indicator, a second indicator becomes important. This is less quantifiable, but regarding the unique nature of airports we believe this must also be taken into consideration. The key to useful benchmarking is that like must be compared with like. In our view airports are individual and unique in setting and certain variables need to be taken into consideration to correctly evaluate the airport's performance. Therefore, different factors influence a realistic non-aviation share to total revenue ratio and hence management possibilities. Currently it is not feasible to judge an airport's success in non-aviation by comparing it with figures from other airports. A wide variety of parameters can influence the scope and importance of possible non-aviation activity. At this point we would only like to introduce this idea by providing some of the parameters which are summarized in Table 7:

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<sup>23</sup> In more detail it is also stated that revenue comes from a Hotel as well as that €10.7 million were generated by energy supply.

<sup>24</sup> Graham, A. (2003, p.157). *Managing Airports – An International Perspective*, Butterworth-Heinemann

**Table 7: Factors Affecting Non-Aviation Performance**

<b>Passenger &amp; Airline Structure</b>	<b>Infrastructure</b>	<b>Regional Factors</b>
a. Share of international Passengers	a. Airport Architecture	a. Economic Development
b. Share of LCC Passengers	b. Available commercial Real Estate	b. Regional Infrastructure
c. Share of Transfer Passengers	c. Transportation Infrastructure	c. Purchasing Power
d. Destination Composition		d. Population Density

Passenger and airline composition will influence spending potential of many revenue streams as different passenger segments have a different elasticity for non-aviation revenue. A study conducted by Hamburg Airport has concluded that the elasticity of non-aviation revenue for domestic and European passengers is 0.29 while international passengers’ elasticity is 0.59 which means that an increase in international passengers contributes more to non-aviation revenue than an increase in domestic or European passengers.<sup>25</sup> This example shows that not all passengers behave alike and therefore their composition will have implications on potential non-aviation revenues.

An airport’s infrastructure may as well have an influence. Modern airports which have taken non-aviation into consideration during their initial design will have better opportunities to benefit from non-aviation revenue.<sup>26</sup> In addition, good transportation infrastructure with highway accessibility, rail and bus access and the distance to the city may further influence non-aviation potential.

Lastly, the regional economic development is an additional factor. Airports in affluent, industrial well developed areas have different potential than ones which are located in more rural areas. It will influence the share of the various customer segments next to the passenger. These three factors can either contribute or limit non-aviation activity at an airport. They are a result of the airports environment and location. Once benchmarking using primary indicators has been performed, secondary indicators can be used to explain differences or to classify airports in order to compare like with like and then to analyze further, which variables management can influence. Our key point here is that airports have very unique operations and that secondary factors could contribute to gaining a better understanding of how airports are performing and what role management can play in the process. An airport which scores

<sup>25</sup> Gillen, D. and Hinsch, H (2001, p.14). Measuring the Impact of Liberalization of International Aviation on Hamburg Airport. Journal of Transport Management, Volume 7, Number 1, January, pp. 25-34

<sup>26</sup> For example older airports like Berlin-Tegel have considerable problems to generate revenue from the different customer segments due to its architectural design. Meeters-and Greeters can easily drop off or pick-up the passenger in front of the gate and the passenger can enter the aircraft after approximately 20m.

high on the secondary indicators would expect to outperform an airport with a low score in terms of non-aviation share to revenue, reflecting the potential of non-aviation.

#### **4.4 Diversification and the measurement of non-aviation revenue**

With the changing nature of the value-chain airports have already realized the potential of looking beyond the borders of their traditional business. Retail and other passenger related concepts have become a substantial part of operation. As mentioned above diversification can considerably shift away from the passenger and other airline related revenue sources. Though this may come with a considerably higher degree of risk, it has been perused by several airports. Commercial activity has become central to airports' activities and vital for the continued success.<sup>27</sup> Airports have recognized this fact and have become active monitoring non-aviation performance. However as much as the importance is stressed by the industry and academics alike, data availability remains poor and the focus still remains on retail activity. While much focus has been put on retail benchmarking and the subsequent performance of airports, much less has been done to gain deeper insight into the entire complexity of non-aviation and hence the benchmarking of airports' entire scope of non-aviation activity.

We believe that the various traditional view of aviation currently in place do not accurately provide a clear picture of non-aviation revenue streams. First of all, certain items need to be disentangled from aviation as there are overlaps in income from rents or utility charges to name a few. Not all revenue from e.g. rents or utilities originates from non-aviation sources, as the FAA approach nicely demonstrates. Second, it is not enough to focus on retail and real estate, although it has to be admitted that these account for the largest shares, as the non-aviation sector is now also diversifying<sup>28</sup> and encompassing a greater variety of revenue sources. In order to have an understanding of the degree of diversification a more detailed understanding of this process is necessary.

Several of these aspects are reflected in our presented definitions and the understanding of the increasing complexity of non-aviation. Building on them we would like to call for a standardized definition, hoping to add precision to the topic, because the analysis of non-aviation revenue is more complex than often shown. Without clear standards significant

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<sup>27</sup> Freathy, P. (2004, p. 195). The commercialization of European airports: successful strategies in a decade of turbulence?, *Journal of Air Transport Management*, 10.3 pp.191-197

<sup>28</sup> When talking about the degree of diversification we refer to the share of non-aviation revenue which is contributed through *passenger dependent* and *passenger independent* revenue.

performance measurement is impossible. In addition we would like to contribute some improvements in the performance measurement of primary indicators (as explained above).

Our key suggestions for a more precise picture are:

1. Data needs to be disaggregated in more detail to reflect the complexity.
2. The degree of diversification as mentioned above, distinguishing between passenger dependent and independent revenue streams needs to become apparent.
3. Aviation and non-aviation components need to be clearly disentangled.
4. Revenues from subsidiaries should be displayed in terms of their non-aviation contribution to show their true revenue potential.

Building on these findings we would like to make clear what our understanding of non-aviation revenue is:

*Any revenue which is not directly or indirectly associated with the handling of aircraft as well as getting anything (passengers, fuel, cargo) to and from the aircraft including any indirectly received revenue originating from providing necessary infrastructure and services for any kind of flight operation. Most notably all commercial activity within the perimeters of the airport as well as services to other external companies, as long as they are not part of the operational activity at the relevant airport (e.g. FBOs), are to be considered as non-aviation.*

## **5. Conclusion**

We have illustrated some problems regarding data availability as well as significant variations in the definition of non-aviation when trying to assess currently available benchmarks. The large deviations in empirical results encourage us to raise some questions regarding the current use of performance measurement of non-aviation and its explanatory power for airports success. Airports' value chain and business has been changing but this fact, while acknowledged and implemented by managers to some degree, is not reflected in reporting. As a result industry insight is vastly limited, leaving many traps on the road to analyze non-aviation activity properly. Based on our findings we derive the following conclusions.

First, the starting point for any good analysis in regard to benchmarking is adequate and comparable data. Annual reports have several shortcomings in accomplishing this necessity and attempts to adjust the data also seem complicated. Attempting to force the available data in one's definition is prone to deliver questionable results and data quality might be compromised in this endeavor. Consequently, the highest degree of quality can only be achieved by collaboration with the industry which means that airports would need to provide

access to data which goes beyond the published figures. A detailed disaggregation certainly is a very challenging obstacle taking into account the sensitivity of the data, but any conclusions using adjusted annual report figures without a close collaboration must be viewed with great caution. Alternatively, stricter regulations in financial reporting standards are necessary to adequately reflect the industries complexities.

Second, there are variations regarding the exact definition of which components make up non-aviation. We have mentioned some grey areas which are considered to be aviation by some while others regard them as non-aviation. In our definition we have attempted to set some limits and advocate a disentanglement of certain areas, such as real estate, as not all data originates from purely non-aviation related sources. Just because it is income from real estate activity, to stay with this example, does not necessarily imply that it is non-aviation. Non-aviation revenue could be further purified. Although we attempt to provide our own definition, drawing from already existing ones, we acknowledge that no definition can be regarded as the one and only definition. Instead it is a subjective opinion and does not have to be accepted by all, leaving room for many variations. Therefore, stricter government guidelines could again be helpful. Airports operate in a quasi monopolistic environment and aviation charges are regulated by the government making a clear distinction of aviation and non-aviation related revenues (and costs) necessary. In light of proper aviation charges, it is from a regulatory perspective already desirable to have a clear and precise distinction. This would then also contribute to better data availability for analysts and academics.

Third, applying a single definition may not seem acceptable to all, but we believe that regardless of any adjustments, it must be obvious how the number which was used to calculate the non-aviation share to total revenue was generated if we are to derive management conclusions. By only representing a figure without showing how this was done, it is difficult to follow or even comprehend the meaning of the figure. A theoretical definition and the actual implementation could be far apart. This simple measure would allow more transparency in the applied definition and would very quickly allow a judgment on the validity in regard to ones own definition.

Fourth, once the above issues are resolved, performance measurement could be improved to allow for a clearer picture of an airport's performance. We see room for improvement regarding precision and comparability. Non-aviation revenue is a complex issue and it is not dependent on a single component. The importance and weight of certain variables may vary depending on the airport and its operational environment. A key prerequisite for benchmarking is that like needs to be compared with like. However, airports are unique in

nature creating a major obstacle for comparisons. We therefore argue that once preliminary analysis has been conducted, secondary parameters, reflecting an airport's uniqueness, must be taken into consideration in order to attempt to put findings in perspective and to ensure that the goal to compare like with like is achieved as much as possible.

As mentioned before the sensitivity of the data is a major obstacle and also due to the regulated aviation charges and the ongoing single/dual till debate will airports be hesitant to do so. However, this is necessary to measure an airports performance. It would enable to gain a better judgement as to how well its non-aviation segment is performing in comparison and if the non-aviation potential is being utilized in an optimal way. This would allow a better understanding as to identifying areas where other airports have been successful and if these could be implemented as well. Most airports are only in limited competition to another and would have more to gain than to loose. It could also help management to put their non-aviation performance in perspective. Having a high or low figure based on current reporting may not be very meaningful.

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