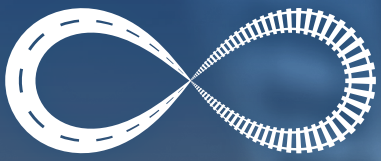

CETRA 2018

5th International Conference on Road and Rail Infrastructure
17–19 May 2018, Zadar, Croatia

Road and Rail Infrastructure V

Stjepan Lakušić – EDITOR

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INNOVATIVE BAGGAGE DROP OFF FOR INTERMODAL AIR-RAIL TRIPS

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Abstract

Supported through the increasingly extended high-speed railway network in Europe, there are a wide range of considerations for replacing intra-European air traffic to a large extent with the railway. In short-haul traffic, the railway can thereby replace the whole of air traffic as well as play an essential role in feeder traffic on medium- and long-haul flights. In order to create a corresponding demand, the railway must be highly attractive and operate within the framework of an overall airport-feeder system. The following essay deals, from the point of view of travellers, with the basics that should produce a corresponding attractiveness and thus acceptance.

1 Introduction

In order to reach the EU international community of nations demand for a limitation in temperature rise by 2050 in the EU, greenhouse gas emissions in the transport sector must be lowered by at least 60 % compared with 1990 and around 70 % compared with 2008. By 2030 a reduction of about 20 % below the level of 2008 is required.1 Taking into account the assumption that mobility will continue to increase and as a result the volume of traffic will increase, a reduction in greenhouse gases can only be achieved by an increased use of environmental- and resource-conserving modes of transport. For this purpose, the European Commission has defined ten objectives for the transport sector in a White Paper titled "Roadmap to a Single European Transport Area – Towards a Competitively Oriented and Resource-Conserving Transport System". One of these objectives targets long-haul passenger traffic and proposes the following measures:

- Completion of a European high-speed railway network by 2050
- Tripling the length of the existing network by 2030 and maintenance of a dense rail network in all member states
- By 2050 the majority of passenger transport over middle distances should be allotted to the railway.

In order to be able to meet these objectives as much as possible, one feasible approach is to shift to the train (ultra) short-haul flights, which usually have a feeder function to medium- and long-haul flights. In this regard, there are a variety of cooperation possibilities between the aviation and railway sectors.
Parallel to this, the political objectives in the field of air traffic are formulated in "FlightPath 2050" published by the European Commission in 2011. In this strategy paper, in addition to societal objectives (for 90 % of EU citizens a door-to-door four hour connection should be possible by 2050), environmental protection measures are also formulated (reduction of emissions despite projected growth in the aviation industry). This is a subject of discussion by

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European industrial leadership who also demand preservation of the already very high safety level in Europe despite the increase in air traffic. These objectives are currently being processed and implemented within the framework of European research programmes (such as JTI CleanSky – fuel efficiency and noise reduction and SESAR – "common" European airspace).

2 Intermodal cooperation concepts between train and aircraft

A good transport connection is an important attractive feature for airports. At present, around 130 of all airports worldwide have rail connections, with further railway connections being planned. Originally, rail connection played only a limited role, which mostly involved only local transport and primarily connected city centres and the surrounding areas with airports. It has only been in the past few years that concepts have been implemented to connect city centres to airports, which have made rapid connections possible (e.g. Heathrow Express in London), and in some cases also connections providing service functions such as check-in or luggage check-in (e.g. the CAT in Vienna).
With the advent of high-speed rail transport, new opportunities for trains were created with regard to their competitive relationship to aircraft. The shorter travel times allowed the train to compete directly with aircraft at distances between 350 km and 750 km. From this competition situation, cooperation comprised of a combined offer between train and aircraft also developed to some extent. A distinction is made in the literature between the following forms of the relationship between train and aircraft:
Competition, Cooperation and Integration:
The two points "cooperation" and "integration" are the forms of intermodal traffic between train and aircraft which are relevant for airport connections. Different forms of cooperation between railway companies (RCs) and airlines are being developed, which are intended to provide passenger-aligned services. This can include, for example, the area of luggage transport, check-in, ticketing, information and security services. Depending on the degree of cooperation, the offers may be classified as follows:

- low: This type of cooperation is intended to provide travellers with a fast and congestion-free arrival to or departure from the airport. This includes, for example, the sale of train tickets by the airline (e.g. Rail&Fly – Germany).
- moderate: This form of integration usually involves codeshare agreements between the RC and the airline. In addition to the train number, the respective train is assigned its own flight number and is distributed by both parties. The advantage for the traveller is that in case of late arrivals, the necessary measures such as rebooking are carried out by the airline or the RC (e.g. tgvair – France).
- high: A higher form of integration in addition to the aforementioned points also includes luggage transport or separate areas in the train for business- and first-class passengers (e.g. AIRail – Germany, up to 2007).

Table 1 Measuring results provides an overview of the forms of cooperation and the respective characteristics

Level of cooperation	Type	Example	Participating companies	Range of services
low	Interlining-agreement	Rail&Fly	DB with 70+ airlines on 5000+ routes	Sale of tickets
moderate	Codeshare-agreement	tgvair	SNCF with 10+ airlines	Assignment of own train- and flight number; ev. Integration of IT-systems
high	Joint-Venture	AIRail	Lufthansa with DB between Frankfurt – Cologne and Frankfurt – Stuttgart	Coordination of luggage transport (up to 2007) and other service features; separate areas and catering service in the train

There are different cooperation models between airline and railway operators worldwide. In the following, four concrete examples are described in more detail, each of which have a different degree of cooperation.

Table 2 shows a comparison of the included service features of the described models.

Intermodal offer	Train ticket sales by airlines	Codeshare -agreement (own flight number for train)	Check-in at departure train station	Luggage check-in at departure train station	Guarantee in case of late arrival	Separate area in the train and catering
Rail&Fly (DB)	•					
Fly Rail Baggage und Check-in at the train station (SBB)			•	•		
tgvair (SNCF)		•	•[1]		•	
AIRail (DB)		•	•	○[2]	•	•

[1] just for a view airlines; [2] Service was offered till 2007.

3 Influence of luggage on the choice of transport mode

The transport of luggage is an essential decision-making criterion for the choice of transport mode. Despite increasing costs in the area of motor vehicle traffic or increasing traffic problems, the auto still enjoys unwavering popularity, with feeder traffic to the airport as well, above all due to luggage transport when travelling. The reason is that compared to all other elasticities, elasticity with luggage is highly valued (see Table 3) (Rüger, 2005).

Table 3 Travel elasticity in Austrian holiday travel traffic – comparison

Luggage	0.685
Mobility to destination	0.655
Travel cost	0.630
Transfer	0.469
Travel time	0.386

The thereto by comparison lower cost and travel time elasticity presupposes that changes in travel cost whether these are: cost increases for passenger-car traffic, cost reductions for train traffic as well as alterations in travel time, prolongation with passenger-car traffic or expediting measures with public transport; in all cases of travel in which luggage is transported, these have a correspondingly lower effect than measures relating to luggage transport. Thus, for example, for 82 % of winter holidaymakers travelling by auto in Austria, travel luggage is a major reason for the choice of the auto during holiday travel, whereas for only 55 % the cost and for 40 % the travel time have a decisive influence.24 These findings apply analogously in feeder traffic to airports.

In the case of air travel, the luggage for example, strongly influences the choice of transport mode for arrival at the airport. Above all in the case of transport of larger and heavier pieces of luggage, airport taxi services or private autos are chosen depending on the distance to the airport. The train is then preferred if little or no luggage is taken. Conversely, travellers in intermodal traffic (rail- air-traffic) are prepared to pay the most for luggage transport services compared to all other services.

4 Wishes for airport feeder trains

In the research projects “Gepäcklos” and “TerminalAufSchiene”, among other things, the wishes and needs of AlRail passengers for appropriate feeder trains were compiled separately.

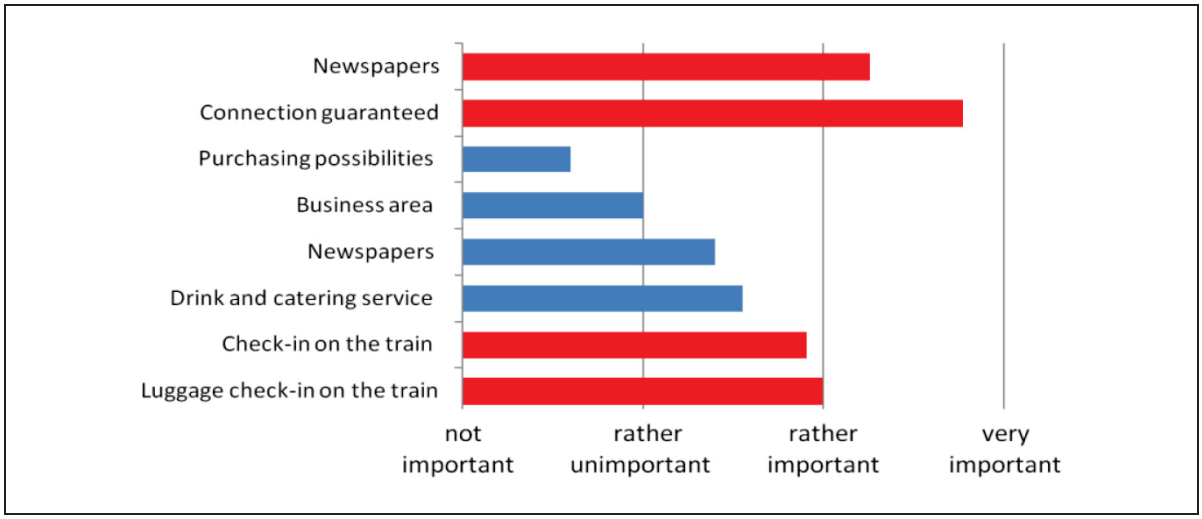

Figure 1 Importance of diverse product features for airport feeder trains (Albl, 2015)

In addition to the connection guarantee in the sense of assurance of connections or travel alternatives, which are offered in the above-mentioned cooperation and integration systems, above all the factors: “short travel time”, “check-in on the train” and “luggage check-in on the train” play an important role in regard to the attractiveness and increased choice of the train in feeder traffic to airports. All three criteria are evaluated on average as “rather important”, with an average score of 2.9 to 3.3 on a scale from 1 (not important) to 4 (very important) (see Figure 1) (Albl, 2015).
For approx. 70 % of travellers arriving at the airport, the possibilities for handing over luggage and at the same time checking in on the train are important (for 40 % of them even “very” important) and would therefore be a significant reason for the decision to choose the train as a mode of transport to the airport. For over 80 % of travellers the shorter travel time is correspondingly important (see Figure 2).

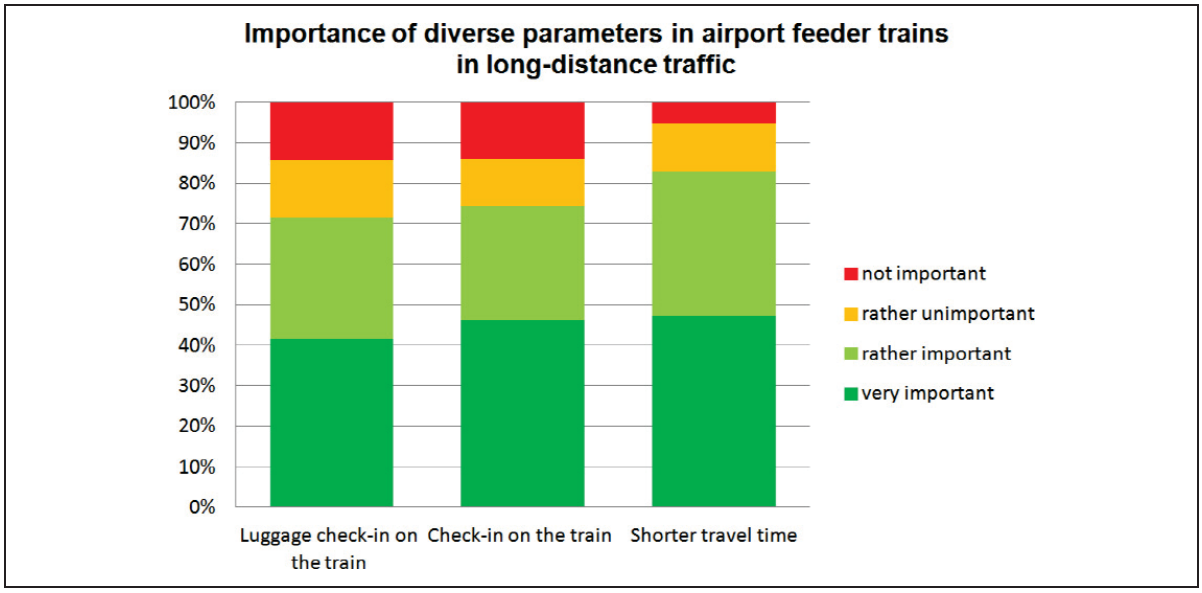

Figure 2 Importance of luggage drop off and check-in on the train (Albl, 2015)

For a short travel time, in addition to high travel speed and short stop-over time, an efficiently used travel time is also important. This can be achieved by relocating activities at the airport (e.g. check-in and luggage check-in) to the train. For this, an appropriate interior design in an airport feeder train is necessary. With regard to check-in service, it must be taken into account that through the use of new media, the classic check-in at the counter is being increasingly replaced by web check-in or mobile check-in. It is to be assumed that check-in at the counter is predominantly used in connection with luggage check-in. However, the possibility of check-in on the train is rated as similarly important to the possibility of luggage check-in on the train. Regarding the influencing criteria: whether in the future appropriate airport feeder trains in long-haul transport will be chosen, 65 % of travellers indicate that the possibility of luggage check-in on the train would have an influence on behaviour in the choice of transport mode. For more than 25 % this possibility would have a great influence. In terms of travel time, over 80 % of travellers say that a shorter travel time would have an influence on the future choice of the transport mode for arrival to flights and for 45 % travel time for arrival would have a large influence (see Figure 3). It is important to take into account that travel time for arrival is not the only travel time to the airport, but is to be considered as a whole-time requirement for door-to-door mobility.

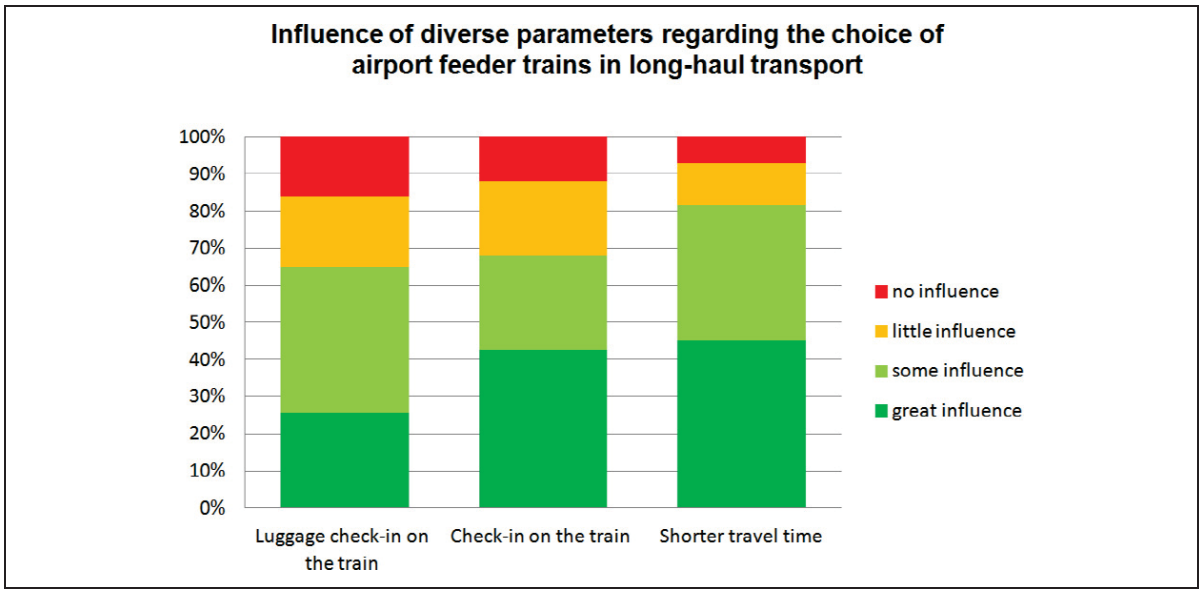

Figure 3 Influence of diverse criteria on the choice of transport mode for airport feeder traffic (Albl, 2015)

5 Conclusion

The studies show that there is a great interest among air travellers in using the train for arrival to the airport. Attractive service features tailored to air travellers are essential for the acceptance of the train. These include: on the one hand, already known services and in many cases services that have already been implemented by many providers in the area of “connection guarantees”. On the other hand, it is clear that above all luggage transport has a major influence on the choice of the transport mode, also in terms of airport arrival behaviour. In this area, there are to date few or no suitable service concepts that ensure the attractiveness of the train to a sufficient degree. At the same time, it is clear that from today’s point of view, effective innovative concepts such as luggage check-in during train travel to the airport would create corresponding interest and acceptance by air travellers and would have a deciding influence on the choice of transport mode. If the aim is to transfer a large part of intra-European short-haul air-feeder traffic as well as the airport-feeder traffic overall to the train, it is essential to develop innovative service concepts that are from the traveller’s point of view, highly attractive and go beyond what is offered today.

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