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Airport Surface Access in the UK: a management perspective

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Abstract

Air passenger traffic in the UK has increased significantly over the last 30 years, and is forecast to continue to grow for the foreseeable future. This has clear implications for airport capacity in the UK, and is expected to pose a number of important challenges for UK airports. A key challenge is likely to involve the management of airport surface access.

Currently, airport surface access in the UK is heavily reliant on trips by private car. Growing demand for air travel has generated increasing volumes of surface traffic at UK airports, which has resulted in congestion on local road networks and raised levels of pollution from vehicle emissions. It is likely that surface access issues will become even more acute in the future, given the dominance of the private car as the preferred mode of choice and the forecast growth in UK air travel.

The paper aims to offer an airport management perspective on airport surface access in the UK. Semi-structured interviews with key personnel responsible for surface access management at 14 UK airports revealed a wide variety of surface access issues and management policies. The need to reduce the share of journeys made by private car is identified as a key issue, with a particular focus on reducing 'kiss-and-fly' journeys for passengers. While reducing private car journeys may yield environmental benefits, such strategies are largely at odds with substantial commercial pressures to maximise the revenue potential of airport parking.

Key Words

Surface access; airport; management; aviation; environment.

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1. Introduction

Air passenger traffic in the UK has increased significantly over the last 30 years, and is forecast to continue to grow for the foreseeable future despite the current economic downturn (DfT, 2009a). In 2009 nearly 220 million passengers passed through UK airports (CAA, 2010a). By 2030 it is predicted that this number will rise to around 455 million passengers per year (DfT, 2009a). This has clear implications for airport capacity in the UK, and is expected to pose a number of important economic and environmental challenges for UK airports. A key challenge is likely to involve the management of airport surface access.

Worldwide, airport surface access is heavily reliant on the private car for the majority of trips (Coogan, 2008). In Europe, for example, it is estimated that 65% of surface access journeys to major airports are undertaken by private car and as much as 99% at smaller secondary or regional airports (Reynolds-Feighan and Button, 1999). These figures are consistent with UK airports (CAA, 2010b). With demand for UK air travel forecast to grow for the foreseeable future (Dft, 2009a), it is likely that this will lead to increased congestion on airport road networks (Caves and Gosling, 1999) and raised levels of vehicle emissions (Graham, 2008; Hooper et al, 2003).

This is as much an issue in terms of employee access as it is for passengers. Employee trips typically account for around one third of all access journeys to an airport (Humphreys and Ison, 2005), but may be higher if the airport acts as the headquarters for a large aviation company or as the base for engineering or maintenance facilities (Graham, 2008; Gosling, 1996). Employees are even more reliant on their private cars than passengers (Humphreys et al, 2005), given that they may be travelling at unsociable hours due to the nature of shift working, live across a wide area and work in parts of the airport well away from the passenger terminal, where the majority of public transport networks converge (Wells and Young, 2003).

In recent years political pressure to reduce the share of private trips, combined with growing land constraints, has caused airports to focus more attention on increasing the share of journeys by public transport and high occupancy modes (de Neufville and Odoni, 2003). In addition, airport expansion projects are increasingly approved on the condition that airports implement strategies that address the impacts of surface access traffic (Coogan, 2008; de Neufville and Odoni, 2003). Strategies for increasing the share of trips by public transport, however, are largely at odds with commercial necessities associated with maximising the revenue potential of passenger car parking (Ison et al, 2008).

Surface access is a complex and demanding issue for airport managers, and there are a number of important issues that must be accounted for. This paper aims to provide insights into these important issues via interviews with key personnel responsible for surface access management at UK airports.

Initially a review of the literature is provided as an introduction to the main surface access issues. These issues relate to the varying requirements and characteristics of airport users, car parking, working with stakeholders, environmental concerns and the growth of low-cost carriers. After outlining methodological details, this paper

presents the findings from a number of semi-structured interviews with key personnel responsible for surface access management at UK airports.

2. The surface access problem

Airports are major trip generators in a region (Mandle et al, 2000). It is estimated that an airport handling 45 million passengers annually can generate up to 5 million vehicle miles of surface access per day (Coogan, 2008). These trips are split between the three main groups of airport users; passengers, employees and visitors (Ashford et al, 1997). While the relative split between each group varies according to a range of airport specific factors, it is estimated that at any one time each group constitutes at least 20% of total access trips to an airport (de Neufville and Odoni, 2003).

Different airport users vary with regard to their surface access requirements and characteristics, and may base their mode choice decisions on a different range of factors (Kazda and Caves, 2008). Mode choice has important implications for a wide range of airport planning and operational management issues, including development of landside facilities, revenue from car parking and other surface transportation services, and strategies to reduce the share of journeys by private car (Gosling, 2008). Understanding the factors that determine mode choice decisions is subsequently of key importance to airports managers.

Research indicates that journey time and cost (Pels et al, 2003; Harvey, 1986), journey distance (Psaraki and Abacoumkin, 2002) and ease of baggage handling (Kazda and Caves, 2008, Bolland et al, 1992) are key factors in passenger mode choice. The purpose of a passenger's trip has also been shown to be a key determinant of mode choice. Business passengers typically place a higher value on their time than leisure passengers (Pels et al, 2003, Windle and Dresner, 1995), but a lower value on the cost of their trip (Coogan, 2000), as typically business trips are subsidized by the employer in question. Unlike business passengers, who may travel from the airport regularly, leisure passengers may be unfamiliar with local transportation networks or may be tired, anxious and unfamiliar with the local language (Coogan, 2008). Furthermore, leisure passengers are more likely to be encumbered with heavy luggage than business passengers (Brilha, 2008). Passenger journeys may be concentrated into several peak periods during the day, typically in the early morning and evening, as airline schedules are often set to coincide with the 8 hour working day (Ashford et al, 1997).

Employees may base their mode choice decisions on a different set of factors than passengers. It is common for employees to work to set shift patterns. At Heathrow Airport, for example, is estimated that 75% of staff work shifts (Humphreys and Ison, 2002). This may require staff to access the airport at times outside the normal operating hours of public transport networks (Ricondo and Associates et al, 2010). As such, employees may have little option than to use their car. Public transport networks may also be inadequate in serving employee trip origins, which may be spread over a wide area (Humphreys and Ison, 2005).

Passenger and employee car use is typically very high, as overwhelmingly the car is perceived to offer greater comfort, convenience and reliability than other modes (Kazda and Caves, 2008; Ashford et al, 1997). At major European airports it is estimated that 65% of all surface access journeys are undertaken by private car, and as much as 99% at smaller regional and secondary airports (Reynolds-Feighan and Button, 1999). These figures are consistent with UK airports (CAA, 2010a).

The continued dominance of the private car as the preferred mode of choice has clear implications in terms of airport car parking. Passenger parking is a vital source of revenue for airports, and is commonly the largest source of non-aeronautical income at an airport (Maise, 1997; Jacobs Consultancy et al, 2010). Land constraints at many airports mean that the scope for increasing car parking capacity if often limited. It is therefore important that managers formulate strategies that maximise capacity utilisation and revenue generation of this valuable resource (Ison et al, 2008). Parking strategies can impact on the financial resources of an airport, the number of trips generated (and the associated environmental impacts of these trips) as well as the parking customer's perceived level of service at the airport (Ricondo and Associates et al, 2010). Car parking is a challenging management issue, however, as it necessitates the need to balance the many tensions and trade-offs related to competing demand, airport revenues, employee relations and environmental degradation.

There are competing pressures to provide parking spaces for passengers and employees. Demand for passenger parking may be seasonal and highest around traditional holiday periods (Ison et al, 2008). Employee parking provision typically ranges from 25-45% of the total number of employees (de Neufville and Odoni, 2003). Unlike passengers, employees typically receive their parking for free for reasons of staff recruitment and retention (Aldridge et al, 2006). While limiting space dedicated to employee parking may be an attractive option for commercial reasons (given that a passenger space is 7-10 times more profitable than the same space dedicated for employee use), airports may be unwilling to risk straining employee and tenant relations in this way (Humphreys and Ison, 2005; Ison et al, 2007). It may also be difficult for airports to exercise much control over employee travel behaviour, as it is estimated that as much as 90% of airport staff are employed by third party tenant companies and not by the airport itself (Ison et al, 2008).

Commercial pressures to maximise the revenue potential of airport parking are largely at odds with growing public and political pressure to reduce the share of private car journeys (Ison et al, 2008). While limiting car parking supply may seem like a logical step to help reduce private car journeys, it has been shown that this leads to increased use of passenger pick-up and drop-off modes at a higher rate than to increased use of public transport (Ricondo and Associates et al, 2010). At Boston's Logan Airport in the US, for example, in an attempt to reduce the share of journeys made by private car the airport reduced the capacity of their parking lots. This did not have the desired effect, however, as instead of increasing the share of journeys by public transport, it dramatically increased the number of passengers being dropped off at the airport by friends and family or by taxi (de Neufville and Odoni, 2003). These journeys are both environmentally detrimental, as four vehicle trips are generated instead of two had the passenger driven themselves and parked at the airport, and commercially damaging, as costs are incurred through

infrastructure construction, maintenance and policing but are not recouped via car parking charges. It is therefore important that the implications of airport parking strategies are carefully considered before they are put into operation.

From a customer service perspective it is important that the airport access experience is as easy and convenient as possible for passengers, as it is recognised that ease of access is a key determinant of airport choice in the UK (DfT, 2009b). The availability and use of a range of access modes increases the perceived accessibility of an airport, and thus may place it at a competitive advantage (Gosling, 2008). Similarly, an airport with poor surface access (either perceived or real) may place the airport at a competitive disadvantage. It is therefore important that airport managers build productive working relationships with a wide variety of stakeholders, such as public transport operators and owners of key infrastructure, to ensure that passengers are able to access the airport easily and conveniently. This is a key challenge for airports, however, as the commercial interests of these stakeholders may not necessarily align with those of the airport. To a degree airport managers must rely on a system they have little direct control over.

The environmental impacts of aviation have come under increased scrutiny in recent years. In terms of surface access, environmental impacts typically relate to atmospheric pollution from vehicle emissions as well as localised noise and visual intrusion (Ashford et al, 1997; Humphreys et al, 2005). Unsurprisingly, road-based trips (especially private car trips) generate the greatest share of surface access emissions. In 2005, road-based journeys accounted for 91% of airport access emissions in the UK (Dft, 2009a). This has lead to increased political pressure for airports to reduce the share of journeys by private car and increase access by public transport. In 1998 a Government White Paper entitled ‘A New Deal for Transport’ tasked the majority of airports in the UK with creating Airport Surface Access Strategies (ASAS). These documents were to have the explicit goal of increasing public transport access to UK airports (DETR, 1998).

The growth of the ‘low-cost’ airline sector has had a significant impact on the aviation sector in the UK (Francis et al, 2004). Like the rest of Europe, the growth of low-cost carriers in the UK has been characterised by the preference of low-cost carriers to choose to operate from previously underused regional or secondary airports, as opposed to larger hub airports (Humphreys et al, 2006). These airports typically originated as either small provincial facilities or military aerodromes. These airports were cited primarily according to their ability to accommodate aircraft, and not necessarily for the ease of access by surface transport (Kazda and Caves, 2008). These airports may subsequently be located away from large urban populations, where road networks and public transport services are typically more advanced. These airports have also not traditionally possessed the passenger throughput necessary to sustain extensive public transport links (Dennis, 2007; Dobruszkes, 2006).

The growth of low-cost carriers has also had an impact on the nature and structure of airport catchment areas (Pantazis and Liefner, 2006). By offering lower air fares, low-cost carriers give clear price incentives to passengers to use certain airports over others. As noted, there has been an increase in the ability of passengers to *“discriminate on a geographic level between and among fares and service levels,*

and correspondingly airports, for their travel requirements" (Fuellhart, 2007). It is suggested that passengers flying on low-cost carriers may be willing to compromise a longer surface access journey to more distant airports for the promise of lower air fares (Dennis, 2004).

This paper aims to build on the research detailed in the preceding section by providing important insights into key surface access issues in the UK. Although this study has the UK as its focus, many of the findings provide a basis for transferability to surface access management at airports worldwide.

3. Method

Key personnel responsible for surface access management were contacted at the 25 busiest airports in the UK (in terms of passenger numbers) and invited to conduct an interview either in person or by phone. The 25 airports were selected because they accounted for 98.6% of total UK air passengers in 2009, which was considered to be a representative sample (CAA, 2010b). Subsequently, semi-structured interviews were undertaken with 10 personnel, who were responsible for surface access management at 14 UK airports (three participants were responsible for more than one airport). The 14 airports constituted 5 large airports, 4 medium sized airports and 5 small airports located from across the UK. It was deemed desirable to sample a range of airport sizes to help determine to what extent the nature of surface access issues varied between airports of varying sizes. Each participant had significant experience of managing surface access issues, and consisted of a mix of airport planners, surface access managers and environmental managers. Typically, participants were responsible for at least two of these areas.

The interviews were conducted between July and October 2010, with each interview lasting between 45 minutes to 1 hour. The content of the interviews was based on the general theme of 'surface access issues', and consisted of mostly open ended questions on key themes identified from the literature.

(1) The varying requirements and characteristics of airport users
(2) Car parking
(3) Working with stakeholders
(4) Environmental concerns
(5) The growth of low-cost carriers
(6) Future challenges

The varying requirements and characteristics of airport users (1) is a key theme identified in the literature. Typically this refers to the varying (and sometimes competing) demands of passengers and employees. Questions were included to provide an insight into pertinent issues as well as to highlight possible management strategies.

Car parking is a key issue for airport managers, as strategies must balance substantial commercial, operational and environmental pressures and considerations with the needs of passengers and employees. Questions were thus used (2) to provide a more detailed understanding of this complex issue.

Working effectively with stakeholders has become an increasingly important component of surface access management. Questions on this (3) sought to elicit the specific issues this poses for airport managers.

With regard to (4), environmental concerns surrounding surface access have typically focussed around the role of private car trips. Questions were included on this to ascertain to what extent managers shared this view.

While the growth of low-cost carriers is well documented, less so are the impacts of this on surface access. Questions (5) were thus included on this to gain an understanding of the surface access impacts of the growth of low-cost carriers, such as whether low-cost passengers are more prepared to travel further to their departure airport.

With surface access likely to remain a key issue, participants were finally asked to describe what they thought the key surface access issues would be in the next 10-15 years (6).

The following section discusses the findings from the interviews, based on the six key themes outlined above.

4. Findings from the interviews

The varying requirements and characteristics of airport users

As noted in the literature, passengers and employees typically vary with regard to their surface access requirements and characteristics. As such, the nature and scale of issues posed by passengers may vary considerably from those posed by employees. Airport managers thus have a significant task in successfully balancing these various considerations.

Identifying and understanding the factors that influence modal choice decisions is seen as an important factor in developing successful strategies to increase the share of journeys by public transport. For passengers, ease of carrying luggage is a key factor in mode choice. Passengers travelling to so called 'sun' and 'beach' destinations on holiday, for example, were considered especially likely to access the airport by car as these passengers are typically carrying heavy luggage with them, and may thus view public transport as less of an attractive option. Specifically, it was noted that passengers travelling on trains or local buses may find carrying luggage difficult as there is often only limited provision for transporting luggage on these modes.

> *"Think about a family with two adults and two children and how viable it is for them to use public transport, with all the luggage and various interchanges that would entail. Unless they live in the city centre, it makes it quite unviable".*
>
> - *Large airport*

Similarly, it was noted that business passengers were generally more likely to use public transport than leisure passengers, as they are typically not encumbered with heavy luggage.

Journey time reliability is also a key determining factor in passenger mode choice given the strict time requirements of air travel, and the financial penalties associated with failing to meet them. Passengers generally feel they have greater control over their journey when driving their car than when using public transport. This may help explain the high private car use by passengers at the majority of UK airports.

Passenger mode choice may also be culturally driven, at one airport it was suggested that the relatively high proportion of passengers accessing the airport by taxi was likely the result of a general culture of high taxi use in the region.
Increasing the share of passenger journeys by public transport is a top priority for airport managers, not least because of growing environmental concerns, but also because it was considered a prerequisite for approval of future airport expansion projects.

> *"If we weren't to hit those targets [public transport mode share targets], the difficulties for us would be in terms of public relations, and also in terms of future planning aspirations. That is not to be underestimated of course, because we have to ask the local authorities, or at least consult with them. And*

if we're not seen to be delivering, then we'll struggle to gain consent for these things"

Airport managers are also increasingly aware of the role of surface access in issue of airport competition. As one interviewee stated, *"surface access is not just a 'tree hugger' issue, it's a business issue. It's a fundamental part of our business and it affects our ability to be successful".* Maintaining high levels of customer service is perceived to be a key priority for airport managers, and was subsequently a key consideration in surface access planning decisions.

"The most important thing in my opinion about surface access is you have to think of it as part of the wider customer service package. If you can't get to an airport by the mode of choice you choose, in a way that you feel comfortable, then that's going to have an impact on repeat business."

-Large airport

The surface access issues posed by employees may vary considerably from those posed by passengers. While private car trips have traditionally dominated the modal split of access journeys for both passengers and employees, employees may base their mode choice decisions on a different set of factors than passengers. The nature of shift working necessitates the need for employees to access and egress the airport at times of the day that fall outside the operating hours of public transport networks. Subsequently, staff may have little choice than to use their cars to access the airport. This is a major barrier to increasing the share of employee journeys by public transport, and subsequently a key issue for airport managers.

Employees are more likely to use local buses to access the airport than trains, as the former are better at serving employee trip origins, which can be spread over a wide area. The convenience and availability of the private car, however, means that employee car use is typically very high.

"I think that, as we all know, people just like the convenience of just stepping out of their front door, jumping into their car, going to work and parking in a car park pretty much outside the front door".

–Medium sized airport

Like passengers, employees are also time sensitive with regards to their access journey. While passengers may incur financial penalties for missing their flight, an employee's job may depend on getting to the airport reliably to start work on time. Journey time reliability is subsequently a key determinant of employee mode choice.

"For passengers, if the service doesn't run they may take their bat and ball and go to another airport, an employee may find himself out of work. Everyone needs a reliable service, but for employees if it's not reliable, they might lose their job".

–Large airport

In terms of surface access management strategies for employees, a range of schemes were discussed. These were predominantly targeted at reducing the share of private car journeys, such as commuter car sharing schemes or interest free loans for purchasing public transport season tickets. At one airport trials were taking place for an on-demand door-to-door minibus service for employees. Once staff had registered their times of travel (both to and from the airport) and their resident location on a dedicated website, trips of similar characteristics were grouped together and a vehicle (usually a minibus) was assigned to each group of employees to take them to and from the airport. While the trial was still in its early stage, it was reported that usage of the scheme was encouraging. It may be difficult for airports to exert much influence over staff travel behaviour, however, as the majority of staff may be employed by third party tenant companies whom the airport has little direct control over. Airport operators may be wary of straining relations with employees and tenant companies and as a result, management of employee surface access has predominantly relied on incentive measures (carrots) than market-based disincentives (sticks).

> *"I've always been of the opinion that it's easier and better if you can use carrots and incentives, as sticks carry with them difficult issues. We know that if we accelerated the charges for staff car parking and made the staff pay, yes, it might have an impact on bus usage, but there are some wider industrial relation issues that we have to contemplate. So you tend to shy away from them. But I'm sure one day, we will have to not only wrestle with them [sticks], but tackle them."*
>
> *–Medium sized airport*

Car parking

Passenger parking is a vital source of revenue for airports, and maximising this important resource is a top priority of airport managers. Parking revenues are commonly reinvested into surface access projects, such as to help subsidise public transport services.

> *"Car parking revenues are essential from a revenue perspective as they directly support bus routes. Without car parking revenues I don't have a budget".*
>
> *-Medium sized airport*

Effective enforcement and policing of passenger parking areas can be a challenging issue for airports. Like UK local authorities, airports are responsible for enforcement of parking regulations on the airport site. Unlike local authorities, however, airports typically do not receive revenues accrued from fines and other charges imposed on motorists who violate parking regulations; instead this money goes straight to the Treasury. Airports are currently in a situation where they must provide extensive parking enforcement often at a considerable financial cost.

> *"When the last traffic act came into existence, what they didn't include was a clause to allow airports, who are also traffic authorities, to decriminalise. So we're currently in the position where we pay privately for the police and traffic*

wardens. So we pay for them, but any fines which are taken don't come back to the airport to offset the cost, they go straight to the Treasury".
-Large airport

Typically local authorities will ring fence such revenues for investment in other areas of transport. For airports, such funds could be used for re-investment in surface access projects.

A further issue regarding passenger parking relates to the development of unlicensed off-site car parking facilities. Off-site parking facilities are fairly common at UK airports. Typically, the car park operator will apply for a licence to operate to the airport and will be charged a license fee. Unlicensed off-site parking facilities, however, where the company in question deliberately avoids paying the airport a licence fee, are a growing concern for airports as these facilities can have both negative environmental and commercial implications. As these sites are typically located some distance away from the airport site, airports may have little control over their development, and must rely on local authorities and councils to monitor and control them. For smaller airports especially, the associated loss of revenue can be particularly damaging.

"We rely on the council to close it down, which isn't always necessarily straightforward as it's often a site away from anybody, it's not affecting anybody. Unless it's in the greenbelt, councils are loathe to spend the time and effort. But it has a big effect in terms of meeting targets, because those people are still driving to the airport. Their final mode may be a shuttle bus but they're still coming into the vicinity. And also we don't get the revenue, so if we were in a position where we wanted to subsidise a service, then that's undermining our ability to subsidise the service because we're not getting as much revenue".

-Small airport

Car parking issues for employees may vary considerably from those for passengers. Unlike passengers, employees typically receive their parking for free. Permits are normally sold to tenant companies who distribute them amongst their employees. Many companies choose not to pass the costs on to their employees, however, for reasons of staff recruitment and retention. Free or highly subsidized staff car parking is a major barrier to increasing the share of employee journeys by public transport. Talking from an employee perspective, one interviewee asked rhetorically "*Why would you get the bus when you could park at the airport for free"?* Charging employees directly for parking or limiting demand in other ways was not considered desirable by airport managers, however, for fear of straining employee and tenant relations.

"*If we were to say "employees can't park or they've got to pay £50 a week to park", we'd have a mutiny on our hands and probably no employees"!*

-Medium sized airport

Reducing the land used for employee parking may be desirable from a commercial standpoint as the land can be converted to more profitable uses, namely retail.

"We've closed staff car parks and not re-opened them. So we've actually reduced the amount of space that we have available for staff car parking…we can then use it for commercial reasons and not something that just saps land."

-Large airport

Working with stakeholders

The success of an airports surface access network relies significantly on the ability of airport managers to build effective, mutually beneficial working relationships with a variety of different stakeholders. Airports are in an unusual and potentially vulnerable situation with regard to surface access, as they must rely on something they typically have little direct control over.

"We're not in control of it [surface access] as a company, but it has a huge impact on us. The roads are owned by the Highways Agency and local authorities. The train companies operate the train services, Network Rail look after the infrastructure, the bus and coach companies provide the bus services. So, how they do this and how we network and work with them is of vital importance".

–Large airport

Marrying the often conflicting commercial agendas and priorities of a wide range of stakeholders for the overall benefit of the airport constitutes a major challenge for airport managers.

"You're dealing with a group of people whose agendas are driven by central government and a group of people whose agendas are purely driven by commercial interests. So the relationships are different but we have to weld those together to deliver the kind of services we would like to see delivered by the airport."

–Large airport

Failing to build productive relationships with stakeholders may have serious implications for airport competition. At one airport the interviewee noted that significant efforts had been made to improve the quality of the rolling stock on one of the main rail links into the airport, as customer feedback had been very negative. The train operator, however, refused to upgrade their rolling stock as it was not deemed a worthy investment on their part. Subsequently, several major airlines decided against commencing operations from the airport and cited the poor quality of this particular rail service as the key reason for their decision.

It is also important that surface access managers communicate the importance of surface access issues internally with stakeholders at the airport.

"It's a challenge for me to communicate to the rest of the business why surface access is important. Because that's what you need to think about as well, most of the people running an airport are concerned with day to day operations. It's about getting planes in, people in, planes out, people out. They don't

understand why surface access is important, why you get things done, how you get things done and why it takes so long."

-Large airport

Due to the highly competitive nature of the airport sector in the UK, airport operators may be focussed on the short term nature of their business. As a result, surface access may have to compete for funding and resources with other areas of the airport business, such as retail. While the latter typically yields relatively quick, easily quantifiable financial benefits, the merits of implementing surface access projects may be harder to measure and only felt after a longer period of time. As one interviewee put it *"You don't ostensibly make money from a road in the same way that you do from a car park or a hotel".*

Environmental concerns

Minimising levels of local air pollution around the airport site is a key focus for airport managers. Unsurprisingly, private car trips were considered the most environmentally damaging mode of access. Reducing the number of private car trips and increasing the share of journeys by public transport was generally considered to be the most effective way of reducing levels of local air pollution and the environmental impacts of surface access in general.

So called kiss-and-fly trips, where a passenger is dropped off by a friend or relative in a car and then collected again on their return were noted as being especially environmentally intensive, as four vehicle trips are generated to the airport rather than two had the passenger driven themselves and parked. These journeys also put extra pressure on airport roads and curb space, which can lead to increased congestion and raised levels of emissions. Kiss-and-fly trips generate a disproportionate level of emissions from surface access. At one large airport it was noted that they account for 42% of the airports controllable carbon emissions, but only 20% of the total number of access journeys to the airport.

"Our big problem is the kiss-and-fly journey to the airport. We've probably got the highest modal share for kiss-and-fly and, for our size, the highest volume as well. So that's our dominant issue, managing and switching that into either public transport or car parking".

-Large airport

Due to the higher traffic levels, the need to actively manage kiss-and-fly journeys is more acute at larger airports. Some airports have introduced a fee for passengers wishing to be dropped off at the airport. While these charges may ease traffic congestion and boost revenues, they have proved largely unpopular with passengers. One interviewee reported that he had personally received a letter from a passenger who accused the airport of *"demonising their passengers"* by putting in place such measures. At another airport a marketing campaign specifically targeted at reducing the share of kiss-and-fly journeys had been conducted. The campaign was targeted at areas served by one of the main rail links to the airport, and consisted of posters containing various slogans discouraging kiss-and-fly trips.

In addition, new security directives restricting private vehicle access to the front of terminal buildings may have important implications for managing kiss-and-fly trips. These new security directives were implemented as a result of the terrorist attack at Glasgow Airport in 2007, and as a result many airports have relocated passenger drop-off zones to car parks situated away from the front of the terminal. As well as potentially yielding local air quality benefits, in some cases it has allowed airports to better prioritise public transport access to the front of the terminal. This may have a dual benefit of increasing the relative attractiveness of public transport access, and freeing up capacity for the development of public transport links to the airport in the future.

> *"It [the new security directive] is a negative thing in the first place but it's positive in the sense that it has allowed us, or partly allowed us, to prioritise public transport and also it's freed up capacity on the forecourt such that we can accommodate more public transport services if required."*
> *-Large airport*

The growth of low-cost carriers

The growth of low-cost carriers in the UK may have important implications for surface access management. Generally, it was perceived that passengers travelling on low-cost carriers exhibited a greater propensity for using public transport than passengers flying on other types of carriers.

Passengers flying on low-cost carriers, almost by definition, are typically travelling on a budget, and may thus be motivated to minimise the cost of their trip as much as possible, including the surface access portion of their trip. They may also be more likely to be travelling alone or in very small groups, and as such public transport may represent a more attractive financial option that paying for airport parking.

> *"Now clearly budget is important to you so you'll be saying "Well, I want to keep the surface access element of getting to the airport cheap". So you will use other forms of surface access. You won't use your car necessarily. You will look to use the train, you will look to use the bus and coach to get to the airport, and there's evidence of that".*

-Large airport

Low-cost carriers are used commonly by people visiting friends and family or taking short city breaks. The nature of these trips does not typically require carrying heavy luggage. In addition, it is common for low-cost carriers to charge passengers for checking in hold baggage. This provides a clear incentive for these passengers to attempt to minimise the size and number of bags they carry with them. As a result, passengers travelling on low-cost carriers may be less encumbered with heavy luggage than passengers flying on other types of carrier, and public transport may subsequently become more of an attractive option for them.

Passengers flying on low-cost carriers may also be less likely to have access to a private car than other passengers. Low-cost carriers are commonly used by inbound

tourists and foreign nationals working in the UK. It was noted that these groups typically do not have access to a car in the UK, and are thus more likely to rely on public transport to access the airport.

Low-cost carriers may also have financial agreements with public transport companies whereby the airline sells tickets on board the aircraft or via their website, and then receives commission from any sales generated. Special offers or other incentives for using a particular public transport company may be advertised in the airline's in-flight magazine, as well as providing descriptions of available public transport links at the airports the airline flies to. It was suggested that these factors have had a positive impact on passenger use of public transport.

> "*If you look at every one of their [the airlines] magazines when you're on the plane they will talk about how to get to and from the airport. And not only that they will talk about every airport, they'll show where they fly to and they'll talk about every airport and say "this is how you travel". If you think about it they're actually promoting their airline and the airport because of its accessibility. What you tend to find is that they will have agreements with surface transport, which they obviously get commercial return on, and that influences behaviour".*
>
> *-Large airport*

Low-cost carriers may subsequently present airports with an opportunity to increase the share of journeys made by public transport. This may especially be the case at larger airports, which may be located close to a large urban population, already have established public transport links and have sufficient passenger throughput to sustain regular public transport services.

It has been suggested in the research that passengers flying on low-cost carriers may be prepared to travel further to their departure airport for the promise of lower air fares. This was not a view shared by the interviewees however. While this may have been the case in the past where low-cost operations were limited to only a small number of airports, the growth of low-cost carriers in the UK means that a much larger number of airports now have low-cost operations, and passengers subsequently do not have to travel so far to access low fares.

Future challenges

Surface access will remain an important management issue for airport managers for the foreseeable future. While specific issues will vary from airport to airport, a number of general challenges were indentified in the interviews.

Firstly, it is expected that environmental pressures to reduce the share of journeys by private car will continue and intensify in the future, especially if the forecasted growth in UK air passenger traffic materialises. A key aspect of reducing the environmental impacts of surface access will be continuing to work successfully with a wide range of stakeholders.

> *"The airports that will be successful in the future are the ones that work with their partners and stakeholders. If you decide it's all somebody else's fault then*

that group will take a pretty dim view of you. In my opinion you should be working with your partners to ensure that you drive environmental mitigation in the right direction."

- *Large airport*

In response to growing environmental concerns, airports must formulate strategies for effectively reducing the share of kiss-and-fly journeys and transferring these passengers to high occupancy modes. In the longer term, management of issues like kiss-and-fly may have to rely more heavily on harder market-based measures rather than softer incentive measures. One interviewee suggested that a 'glass ceiling' currently exists regarding the use of incentives for increasing public transport modal share. In other words, there is a limit to the effectiveness of softer incentives before harder market based measures, or the construction of new infrastructure, is necessary. Such measures have largely proved unpopular with passengers, however, and implementing them in such a way that is acceptable to passengers constitutes a key challenge for airports.

Perhaps the greatest challenge for surface access managers however, especially with regard to increasing the share of journeys by public transport, is successfully initiating behavioural change of airport users.

"*Actually getting people to use a service and change what they've always done and their ancestors have done is probably the biggest challenge. How do you get your customer base and your employees to do something different to what they've always done and what their instincts tell them to do?"*

- *Large airport*

5. Conclusions

This paper has aimed to build on previous research by providing an important management perspective on the key surface access issues in the UK. While this study has focussed specifically on the UK experience, it raises a number of important issues that may be relevant to airport managers worldwide.

It is clear that surface access is a complex and demanding issue. The nature and scale of surface access issues can vary considerably between airports, and as a result there is certainly no 'one size fits all' solution. Managers must instead formulate strategies that are tailored to the specific characteristics of the airport in question. In addition, these strategies must satisfy the varying requirements of airport users, who place different demands on the system.

Reducing the share of journeys by private car is a top priority for airport managers. Yet there exists a clear conflict of interests between desires to reduce private car trips for environmental reasons on the one hand, and substantial commercial pressures to maximise the potential of car parking revenues on the other. Successfully reconciling these conflicting interests is a significant issue for airport managers.

To date, surface access managers have relied predominantly on softer incentive measures rather than harder market based measures for fear of straining passenger,

employee or tenant relations. Increasingly, however, airport managers must consider the use of these harder market based measures, as incentive measures alone seem limited in their ability to yield significant benefits. The need for this shift in emphasis is perhaps most pertinent with regards to reducing employee car use, as current strategies have been met with only limited success. A major reason for this is that employee parking at UK airports is normally free, and there is subsequently little incentive for employees to switch to public transport.

The highly competitive nature of the airport sector in the UK forces airport operators to focus on the short term nature of their business. Surface access may have to compete for funding and resources with other areas of the business, such as retail. With airport managers concerned about the day to day running of their business, surface access strategies may subsequently become less of a priority.

Regarding the future, there is a need for airports to reduce the share of kiss-and-fly trips, considering that these journeys have both significant negative commercial and environmental impacts. This is especially the case at larger airports, where high traffic levels have a greater potential for causing congestion on airport roads. While market based measures such as drop off charges have largely proved unpopular with passengers, more forceful management of kiss-and-fly is perhaps necessary considering the disproportionate environmental and commercial impact of these journeys.

Surface access managers are reliant on a variety of external stakeholders, whom the airport has little direct control over. Whilst in many cases the airport-stakeholder relationship is mutually beneficial, airports are still in somewhat of a vulnerable position. Building stable working relationships with third party stakeholders is subsequently of great importance to airport managers, and will likely remain so for the foreseeable future.

This paper has raised a number of opportunities for future research. In particular, research should focus on the impact of low-cost carriers on passenger surface access, as they may pose an opportunity for airports to increase the share of journeys by public transport.

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