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What is a low cost carrier?

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ABSTRACT

Meaningful definitions of and distinctions between airline business models are not easily formulated, particularly when one considers the extremely dynamic nature of the industry. The paper outlines and discusses common business model descriptors that are applied to airlines. We outline a *product and organizational architecture* (POA) approach to classifying and relating key elements of airline business models. Using indices to create benchmark metrics, the POA model is used to examine and compare six European airlines. The analysis shows that there are important differences in the business models of airlines who are all commonly referred to as 'low cost carriers'. Our paper demonstrates how differences in the business models adopted by the different airlines contribute to their relative profitability.

Keywords: Low cost carrier; product and organizational architecture; airline business models.

1. Introduction

In 1979, Southwest Airlines developed the first alternative business model to successfully compete with the hub-and-spoke network carriers in the US domestic market. However it was not until after 1996, when the Irish airline Ryanair reinvented itself as a European version of Southwest that the term 'low-cost carrier' (LCC) emerged and became embedded in academic literature and popular culture.¹

Aviation and network carriers² in particular have suffered an unprecedented series of negative demand shocks in recent years: the macroeconomic slump in 2000, 9-11, SARS, the Iraq conflict, the war on terror and oil price hikes. Yet, the industry was already in the midst of an evolution in its structure by the turn of the century. Deregulation of air travel in Europe in the late 1990's and globalization more generally contributed to the emergence of an increasing number of airlines with business models that seem to fundamentally differ from those of network carrier incumbents. To the extent that the business strategies of these airlines have been viewed as derivative of the Southwest Airlines model, they have become known under the common rubric '*low cost carrier*' (LCC). For example, Ito and Lee (2002) assign US airlines to either be a LCC or a "major network carrier"³ but do not define what an LCC is. The airlines they include as LCCs are Southwest; JetBlue; Frontier; ATA and Air Tran (combined with ValueJet), while the airlines classified as major network carriers are Alaska; America West; American; Continental; Delta; Northwest; TWA; United and US Airways.

More recently other terms have been used such as 'low fares airlines' and 'value-based airlines' however there seems to be no consistent vision of how the elements of airline business models usefully distinguish one airline from another. Is there in fact a single business model or set of strategies that are well described by the term 'low-cost carrier'? Without the means to unambiguously describe what it is that airlines are doing, we are positioned poorly to obtain insights into questions of market structure and competition, efficiency, and government regulation. In this paper we unravel how the various elements of airline business models interrelate to define an overall strategy, using the *product and organizational architecture* (POA) model developed in Morrison and Mason (2007). Section 2 provides a discussion of some potential descriptors of air carriers and the implied elements of business strategy that follow from them. In section 3, we

¹ Other airlines often referred to as 'low-cost carriers' include but are not limited to; Westjet in Canada; Virgin Blue in Australia; Hapag Lloyd and German Wings in Germany; Flybe and BMIbaby in the UK.

² In this paper we take „network“ carriers to be airlines that tend to have large hub and spoke networks, and fly a combination of short haul and long haul domestic and international routes, e.g. BA, American Airlines, Air France-KLM, etc.

³ Ito and Lee p3.

outline POA analysis and its application to airline business models, then in section 4, we examine business strategies of six airlines (all commonly referred to as 'low cost carriers'), using publicly available data to construct indices that relate to the components of the POA model. A brief conclusion is offered in section 5.

2. Airline business model descriptors

Consider the following airline business model designations:

- 1. Non-network carrier:** *Any airline that is not a traditional 'network' carrier.*
- 2. Low-cost carrier:** *A carrier for which the single most important objective is the attainment of the lowest possible cost structure.*
- 3. Low-fare airline:** *A carrier that attempts to systematically offer lower fares by offering less convenience (through use of secondary airports) than network carriers.*
- 4. Value-based airline:** *A carrier that has a low-cost structure and a pricing structure aimed at competing in markets where demand supports a premium for convenience (through use of primary airports).*

Descriptor1 indirectly defines an airline business model by stating what it is not and this may be appropriate if the only goal is to distinguish airlines that have deviated from the traditional strategy and structure of network carriers. However, this creates another question: what exactly is a network carrier? Network carriers (NCs) are usually characterized as large airline companies that fly both domestic and international routes combining short-haul (feeder) and long-haul (connector) links in a hub-and-spoke network. The network structure enables NCs to take advantage of economies of density and to charge for the provision of a service bundle that includes the provision of connectivity through their hubs and the provision of convenience elements such as baggage transfers to connecting flights. NCs have also traditionally utilized complex yield management systems and historically sold the bulk of their tickets through travel agencies. Finally, NCs are usually characterized as creating different service bundles within each flight and have designed their services to capture the preferences and willingness-to-pay of business travellers.

The problem with descriptor1 is that it does not weight the elements of the NC definition in terms of importance in the business model. If an airline adopts all except one element of the NC model, should it be viewed as an NC or as a non-network carrier? To be analytically useful, a business model definition should apply to a stable set of characteristics.

Another problem is that many 'network carriers' appear to be in the process of evolving towards the business models of non-network carriers, a point emphasized in a recent US aviation competition brief:

"...the service quality differential between low fare carriers and legacy [network] carriers has narrowed as certain low-fare carriers have, to various degrees, improved their product by flying newer planes, installing premium cabins, initiating or improving frequent flyer programs, offering improved in-flight amenities such as live television, offering less restrictive rules for changing tickets and increasing both the density or scope of their networks. Meanwhile, in their efforts to reduce their costs, many legacy [network] carriers have cut back on some of the features that have traditionally differentiated them from low-fare carriers, such as eliminating complementary food service, reducing capacity and frequency thereby narrowing the convenience differential they offer travelers, and substituting smaller regional jet aircraft for larger mainline aircraft."⁴

Rather than a stable set of business model characteristics, the quote suggests that a dynamic evolution is underway – one in which both NC and Non-NC models are changing and in some ways becoming more similar. Is it possible that NC and NNC models will eventually converge on a single (dominant) organizational structure and business strategy?

Focusing on costs

Rather than defining carriers in terms of what they are not, a more natural focus would be to define them in terms of what they *are*, and descriptor 2 suggests a focus (perhaps relative to NCs) on achieving low costs. This approach is evident in a recent Economist magazine article, which describes the emergence of low cost carriers (LCCs) in the following way:

"When low-cost airlines were first launched in Europe after the liberalization of Europe's domestic airline market was completed in 1997, Ryanair and easyJet, the pioneers, explicitly and expertly mimicked American budget airlines such as Southwest and ValuJet (now Air Tran). The essential elements of the business model were: a single-type fleet of planes; fast turn-rounds; use of cheap secondary airports; no frills—definitely no moisturizer in the toilets; and enticingly low fares that rose only as a flight filled up."⁵

The underlying notion of descriptor2 is that when an airline makes as its central objective the attainment of the lowest possible cost structure, other aspects of the business model (pricing, product development, finance, marketing, strategy etc.) are formed as a consequence. One might argue that this most closely describes the approach taken by Ryanair. Indeed, Ryanair CEO Michael O'Leary states in Ryanair's 2002 financial statements:

"Ryanair's immediate success in Germany highlights yet again the consumer behaviour law already established by Southwest Airlines and

⁴ Office of Aviation and International Affairs (2002), P1

⁵ Economist (2004).

Wal-Mart, namely that customers will flock to out of town secondary locations in order to avail of lower prices and avoid congestion. This is as true for airports as it has always been for supermarkets..."

The business model espoused by Michael O'Leary seems straightforward: use less congested, out-of-the-way airports; have the lowest possible costs and generate profits with high volumes and the spin-off revenues they generate. Ryanair seems to embody the term 'low-cost carrier', but do all so-called LCCs have the same business model as Ryanair?

A description of Easyjet business model can be found on its website, which states:⁶

"Easyjet keeps costs low by eliminating the unnecessary costs and 'frills' which characterize 'traditional' airlines. This is done in a number of ways:

- Use of the Internet to reduce distribution costs
- Maximize the utilization of each aircraft significantly reduces unit costs.
- Ticketless travel
- Elimination of unnecessary, complex-to-manage and costly services:
- (No free catering on-board, pre-assigned seats, interline connections with other airlines or cargo/freight carriage).
- Efficient use of airports
- (Progressive landing charges agreements with the airports).
- Paperless operations."

The Easyjet website goes on to describe the airline's organizational structure as:

"...an informal company culture with a very flat management structure, which eliminates unnecessary and wasteful layers of management. All office-based employees are encouraged to dress casually. Ties are banned - except for pilots! Remote working and 'hot-desking' have been characteristics of Easyjet since the beginning."

Thus it would appear that Easyjet is following the LCC business model implied by descriptor2. Yet a comparison of operating revenues and profits published in Ryanair's financial statements (as shown in table 1) suggest there may be important differences between the two airlines. In particular, Easyjet's average fare in 2006 was 48.4% higher than that of Ryanair while its revenues were 40.3% higher. However Ryanair's profit before tax was 98.5% higher than that of Easyjet, indicating that Ryanair is offering significantly lower fares than Easyjet but has significantly lower costs.

	Easyjet (Year to 30/9/06)	Ryanair (Year to 31/3/06)
Passenger numbers	33.0m	32.2m
Average fare	£49	£33
Revenues	£1,620m	£1,154m
Profit before tax	£129m	£256m

Source: Ryanair and EasyJet financial statements, 2006.

Table 1
Selected financial indicators for EasyJet and Ryanair, 2006.

⁶ The description that appears in this paper paraphrases the content on the easyJet website. For the complete unabridged version, see: <http://www.easyjet.com/en/About/Information/index.html>

One interpretation of this data is that Easyjet has not been as successful in implementing an LCC strategy as Ryanair; however another interpretation is that Easyjet is following a *different* business model in which costs are a focus but not the driver of their overall strategy. In one interpretation, both airlines are LCCs, in the other Ryanair is an LCC but Easyjet is not.

Low fares

Descriptor3 shifts the emphasis from low costs to low fares. The term ‘low fare carrier’ or ‘low fare airline’ appears to have become the definition of choice for airlines often referred to as LCCs. This could be a strategic choice designed to avoid a possible association of low costs with ‘cutting corners’ and low quality in the minds of travellers or policy-makers. Nevertheless, the formation of the European Low Fares Airline Association (ELFAA) as a lobby group in Brussels has created a self-selection mechanism through which members of ELFAA are airlines who wish to be regarded as ‘low fare’ carriers. Table 2 indicates the current airline members of ELFAA.

Of course, the ability to sustain lower average fares relative to NCs is in part related to an airline’s costs, which suggests that cost efficiency is a necessary condition for a business strategy based on low fares. What is the ‘low fares model’? An ELFAA position paper (2004) states that the low fare model consists of the following seven elements:

1. Operating from mostly secondary underutilized regional airports.
2. Fast turnarounds.
3. Direct point-to-point flights, no transfers, short-haul routes.
4. Standardized fleet (only one aircraft type) with higher seating density
5. Distribution primarily through direct channels (internet, call centres).
6. No frills, extras paid for (e.g. catering excess baggage).
7. Highly incentivised workforce (variable portion of salary up to 40%).⁷

ELFAA Members	
EasyJet (United Kingdom)	Sky Europe (Slovakia)
Flybe (United Kingdom)	Sterling (Denmark)
Myair.com (Italy)	Sverige Flyg (Sweden)
Norwegian Air Shuttle (Norway)	transavia.com (The Netherlands)
Ryanair (Ireland)	Wizz Air (Hungary)

Source: <http://www.elfaa.com>

Table 2
Members of the European Low Fares Airline Association, August 2007

⁷ ELFFAA (2004), p

Value-based Airlines

One important differentiating factor between airlines is the desire to either use or avoid the use of primary airports. Easyjet offers direct flights between London Gatwick and Toulouse Blagnac Airport (which is a fifteen minute drive from downtown Toulouse) in direct competition with British Airways. If Easyjet prices are lower than those of British Airways between London and Toulouse, this might seem to qualify the airline as a low fares carrier, when measured by relative prices. By comparison, Ryanair's service between London and the Toulouse area connects London Stansted with Carcassonne – a town that is some 90 km south-east of Toulouse at fares that are lower than those of Easyjet's flights to Blagnac. Thus, if using subsidiary airports is a necessary condition of being a low-fares airline, Easyjet may be more appropriately described as a 'value-based carrier' as defined by descriptor 4. The term 'value-based carrier' appears to have originated in Australia in papers and submissions prepared by the consulting group NECG. Ergas and Findlay (2004) state that value-based airlines (VBAs):

“...differ in the extent to which they seek to attract high yielding business travelers. VBAs typically adopt different business and marketing strategies relative to a rival FSC, including with respect to frequencies and lounge facilities, for whom attracting business travellers is particularly crucial. This is not to imply that VBAs do not target business travellers: they must to be viable. But the approach they use to doing so can and usually does differ from that employed by full service airlines.”

More specifically, Ergas and Findlay argue that VBAs focus on offering a smaller bundle of core 'standard feature' services compared with traditional NCs. Thus Easyjet may charge a price premium by servicing Toulouse Blagnac, and although its cost strategy may be focused upon the attainment of cost efficiencies, it may pay more in airport charges in order to offer convenience.

Can NC's become LCCs?

Descriptors 2-4 do not explicitly exclude the possibility of a network carrier being a low cost or low fare carrier. Consequently, a question arises as to whether this is possible – Are low cost, low fare or value-based models the exclusive domain of non-network carriers?

Consider the service offered by *Air France* and Easyjet between Toulouse Blagnac (TLS) and Paris Orly (ORY); a flight commonly referred to in France as the 'navette' or shuttle. Table 3 provides a comparison of the service offered by Easyjet and Air France on this city pair market, for a return flight booked on August 18th 2007, departing TLS on September 19th and returning on September 26th. Since the possibilities of connecting flights beyond Orly exists are limited this city pair is essentially a short-haul, point-to-point market.⁸ Both airlines utilize similar aircraft and since Toulouse airport is not

⁸ The vast majority *Air France* connecting flights are operated from Paris CDG or Amsterdam Schiphol.

congested, the average turnaround times for either Air France or Easyjet in Toulouse is approximately 25 minutes. Each airline has similar punctuality records for 'navette' short-haul flights and it is likely that their punctuality records in the TLS-ORY market are even closer.

Both airlines sell fares for this flight directly on their website using secure credit card payment and electronic ticketing. As table 3 indicates, a passenger looking for the cheapest economy class fare with a preference for some choice over seat allocation and two pieces of hold baggage faces similar prices from each airline with the Air France price just €13.77 higher than Easyjet.

	Easyjet	Air France
Airfare	Economy: €97.98 ⁹ Business: not offered	€111.75 ¹⁰ €476.75
Turnaround time at TLS	25mins	25mins
Punctuality (on time within 15 mins) ¹¹	77% (August 2007)	84.4% (July 2007, for 'Navette' flights)
Equipment	A319 ¹²	A319/A320
Seating configuration	Economy: 156 Business: 0	Economy: 96 Business: 46
Pre-assigned seats	No	Yes
Flights per day	4	17
Complementary on-board services	No	Yes
Frequent flier program	No	Yes

Table 3
Service from TLS to ORY for Easyjet and Air France, August 2007.

Based on the definition provided by ELFAA, one could argue that Air France has adopted elements 1, 2, 3, and 5 of the 'low fares model'. One could also argue that while *Air France* employs a mixed fleet over its entire network, it exclusively employs Airbus A319/A320 equipment in this market and therefore have also adopted element 4 of the low fares model. Table 3 also indicates some important differences in the service offerings of these competitors. Air France offers complementary newspapers plus a

⁹ This price is calculated on the assumption that the booking made using a credit card and that the passenger wishes to check two pieces of baggage in the hold. Passengers willing to be called last for boarding and checking only one piece of hold baggage would pay the lower price of €77.48.

¹⁰ This price includes booking charges and allowance for two pieces of hold baggage.

¹¹ Source: airline websites

¹² Easyjet also operates B737 aircraft which have a slightly lower capacity of 149 seats.

complementary drink and snack, and has a frequent flier program. By comparison, Easyjet does not have a loyalty program, does not offer newspapers and sells beverages and snacks for an additional charge. In addition Air France offers a much greater frequency of flights between Toulouse and Paris, with at least 16 flights per day compared with four flights for Easyjet. In addition the seating configuration for Air France shows a focus on attracting business travellers with a approximately one third of its cabin allocated to business class seats, at a fare which is 426% higher than the lowest cost economy fare. If one expands the comparison beyond a single city pair market to the entire operations of an airline the distinction in business focus between Air France and Easyjet become more acute, since Air France overall has a large mixed fleet and operates a complex hub-and-spoke network, offering connectivity between many cities in both short and long-haul markets.

Consider another price comparison between airlines Ryanair and *SN Brussels*. *SN Brussels* operates a flight from Toulouse Blagnac to Brussels Zaventem Airport, while Ryanair operates a flight between Carcassonne, France and Charleroi Sud, Belgium. Table 4 presents details of trips booked with each airline, via the internet on September 19 2007 for a round-trip flight departing October 17th (evening) or 18th (morning) and returning October 26. As already stated, Carcassonne is located approximately 90km from Toulouse, while Charleroi is located approximately 46KM from Brussels.

Total trip cost components	Airline: Ryanair CCF-CRL	Airline: SN Brussels TLS-BRU
Flights per day	1	3
Airfare (1 adult) Includes: taxes, online booking fee Excludes: cancellation/travel insurance	€65.74 Flight duration = 1:35	€163.08 Flight duration = 1:45
Ground transportation from Toulouse (city) to airport (return)	€36.60 Trip duration = 1:25	€6.00 Trip duration = 0:20.
Ground transportation from airport to downtown Brussels (return)	€20.00 Bus trip duration – 1:00	€4.80 Train trip duration = 20 min.
Hold baggage charge (1 bag)	€12.00 (1 checked bag @32kg)	€0.00 (1 bag checked @20kg)
Total trip cost	€134.34	€173.88
Total travel time (flight +ground transportation duration)	4:00	2:25

Table 4
Travel from Toulouse to Brussels:
Comparing Ryanair and SN Brussels: September 2007.

If one only compares the airfare price of each airline, the Ryanair price is €97.34 cheaper than the SN Brussels price. However a traveller located in the city of Toulouse must compare the money and time costs involved in getting to the less convenient secondary airports served by Ryanair. The estimated cost of travelling by train between Toulouse and Carcassonne, combined with an airport shuttle (from Carcassonne train station to the airport) is €36.60 (roundtrip).¹³ By comparison the airport shuttle from Toulouse city to Toulouse (Blagnac) Airport costs €6.00 roundtrip.

Similarly, if the traveller's final destination is in the City of Brussels, an additional charge has to be incurred for transportation from the airport. For SN Brussels travellers who must take a 20 minute train ride to the city this means an additional charge of €4.80. By comparison, Ryanair's destination is Charleroi Sud which is much further from the City of Brussels. Ryanair's passengers bound for Brussels must then pay an additional €20.00 (roundtrip) for an airport shuttle bus. These additional ground transportation charges at each airport pair brings the total money price of travel between Toulouse and Brussels to €173.88 with SN Brussels and €134.34 with Ryanair – a difference of €39.54. While the money price offered by Ryanair is still significantly cheaper, the traveller must be willing to spend an additional 1:35 at least in travel time in order to save €39.54. If one uses a conservative estimate of €20 as the money value of time, then the time-adjusted differential between Ryanair and SN Brussels prices is reduced to around €9.00.¹⁴ Note also that this measure of travel time duration shown does not include the extra travel time required as a result of bus and rail schedules to ensure arrival in good time for a flight.

In addition to travel time there is the frequency of flights to consider. The only Ryanair CCF-CRL flight leaves Carcassonne in the evening (at approximately 7pm) so that any Ryanair traveller with an appointment during the day in Brussels would have to consider the additional cost of overnight accommodation. Furthermore, any traveller who misses the flight will have to wait until the following evening for the next flight. By increasing the downside risk of delays in ground transfers and connections, traveller are likely to spend even more time ensuring that they do not arrive late at the airport.¹⁵

¹³ The lowest SNCF train fare published on Sep 19th 2007 for Toulouse-Carcassonne was €26.60. The airport shuttle from Carcassonne to the airport is €10.00 roundtrip. Taking a taxi rather than the shuttle would add another €14.00 to the cost while reducing the trip time duration.

¹⁴ Eurostat data suggests that the average hourly cost of labour in France and Belgium to be approximately €30 in 2006, of which around 67% represents wages and salaries.

¹⁵ Note that this when Ryanair customers are willing to make this travel time-ticket price trade-off, it helps to maintain fast turnarounds and high fleet utilization which translate in cost efficiencies for the airline, by providing strong incentives for punctuality at check-in and at the departure gate.

The above example illustrates that if we use a delivered (total travel cost) price rather than a more narrowly defined airfare, we can observe two airlines with similar *delivered* prices but different focus in terms of the types of airports they serve. If SN Brussels has a similar delivered price to Ryanair, should *SN Brussels* which operates a mixed fleet - flying regional jets between Brussels and Toulouse and larger wide body aircraft on long haul flights - be classified as a low fares airline or a value-based airline?

It seems clear from the above discussion of airline business model definitions that no single descriptor seems to adequately capture the common and differentiating elements in the structure, focus and strategies of airline business models. However the product and organizational architecture (POA) model developed in Morrison and Mason (2007) offers a potentially consistent way of measuring and comparing airline business models. The next section provides a brief overview of the POA conceptual model and provides an illustration of how the model can be empirically applied using publicly available airline data.

3. Product and organizational architecture

Synthesizing complex airline business models requires identification of key stylized components of product architecture – the service quality elements that define the product relative to consumer preferences, and organizational architecture – the vertical structure, production and distribution choices of the airline. This product and organizational architecture (POA) approach as developed in Morrison and Mason (2007) can be applied directly to airline business models. Figure 1 illustrates the general POA approach to defining a firm's business model and competitive environment. On the one hand, product architecture gives rise to a core product bundle that positions the firm in terms of consumer preferences (benefit drivers) and the competitive environment (as defined by the market structure). On the other hand, the product design also implies a choice set for inputs and possible organizational structures (cost drivers) which define the firm's cost position. Taken together, both product and organizational architecture contribute to the creation and sustainability of profits.

Applying the POA model to airlines

Figure 2 shows an application of the POA approach to airline business models. Product architecture is separated into three elements of service quality: **connectivity**, **convenience** and **comfort**. These three elements have the property that they follow a general ordering with respect to the degree with which costs are fixed or 'avoidable'. In

particular, **connectivity** implies a choice of network design that distinguishes hub-and-spoke (airline-supplied connectivity) from point-to-point (passenger-supplied) networks. This is perhaps the most important core element that can distinguish between different airline business models.

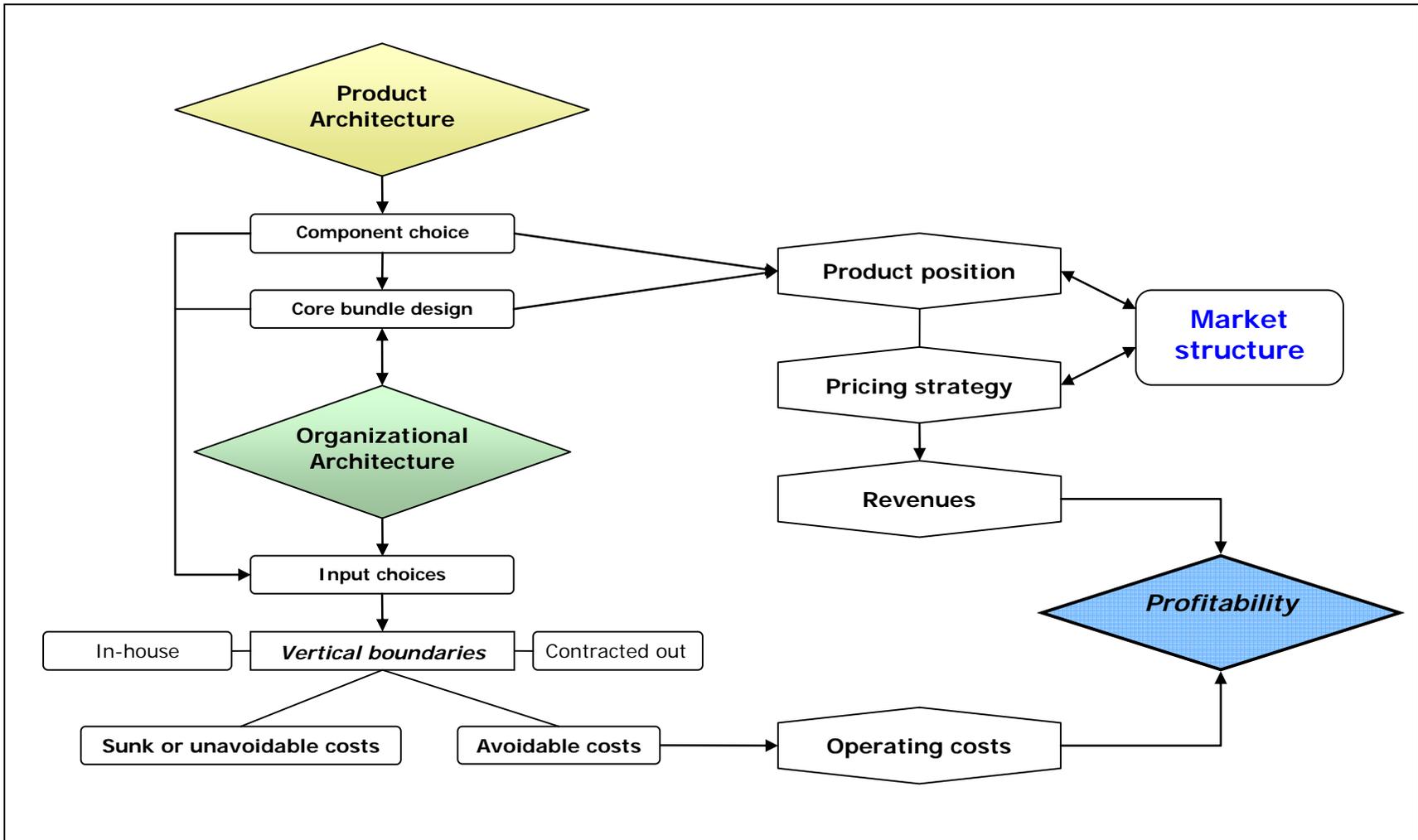
Some of the elements of **convenience** are linked to network structure decisions, but nevertheless imply a lesser degree of fixed investment for some airlines. In particular, use of primary airports and 'checked-through' baggage services tend to follow from the choice of a hub-and-spoke network, however an airline operating a point-point network may also choose to offer convenience through use of a primary airport.

Elements of **comfort** in determining the quality of service are to some degree more variable than the other two categories, yet these elements will vary in importance for the overall architecture of the product. In some markets elements of comfort might be regarded as 'frills' while in other markets the same elements could be regarded as more essential; the offering of in-flight meals on short haul versus long-haul flights for example. The 3Cs thus define the product in relation to consumer preferences, which impacts market demand within the competitive environment. However the 3Cs also impact the magnitude and avoidability of production costs which in turn affects pricing flexibility and the airline's competitive position.

Organizational architecture

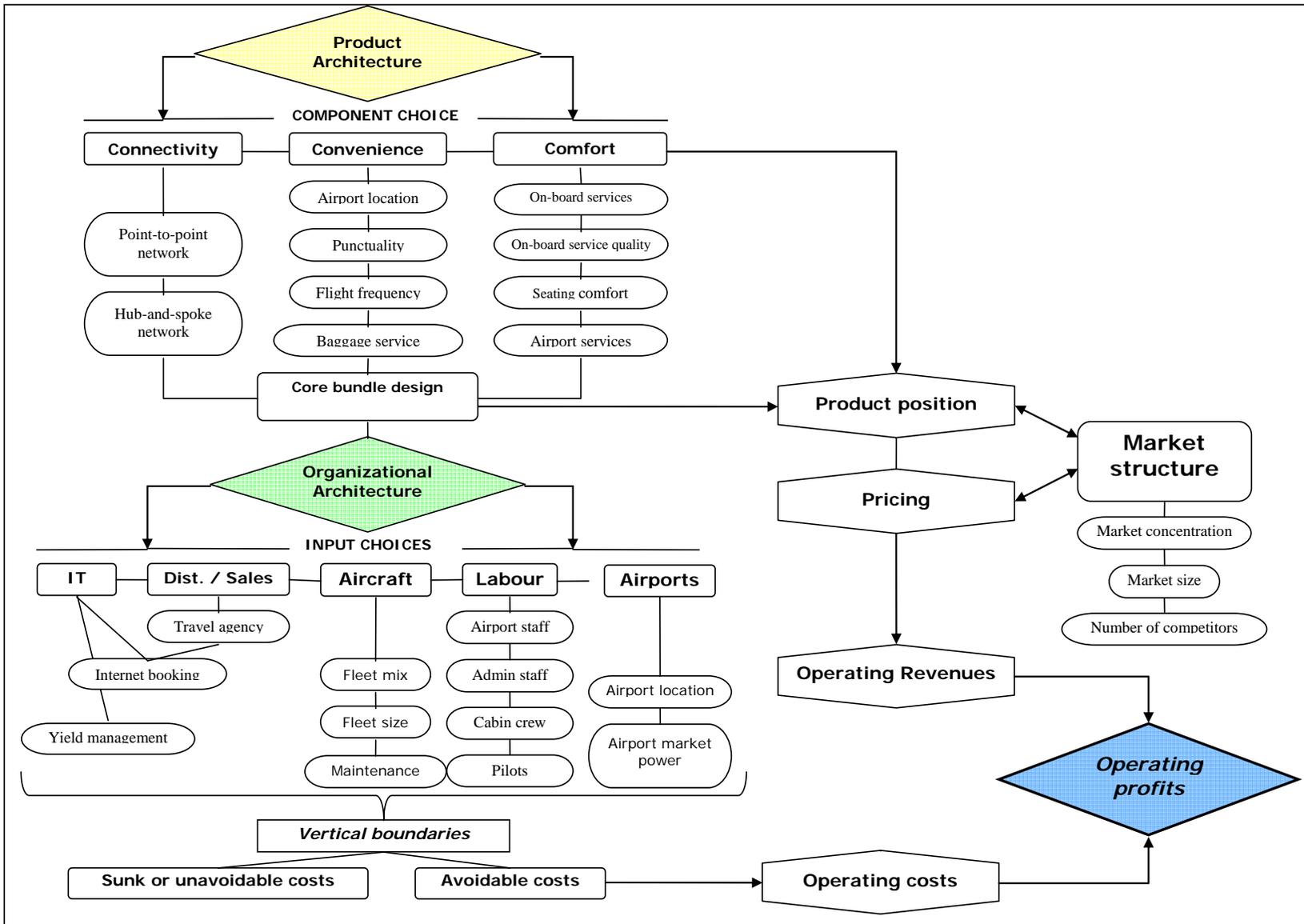
Within the organizational architecture the size and composition of the fleet along with the organizational design are elements that follow on primarily from the product architecture. In particular, the decision over network structure is key because the complexity of operating a hub-and-spoke network requires certain functions relating to coordination, yield management etc which implies a more vertically integrated organization. In contrast, an airline operating a point-to-point network has relatively more opportunities to form a 'nexus of contracts' organizational structure in which many functions are contracted out.

In terms of carriage, all airlines now take advantage of internet based booking systems, yet even here point-to-point network carriers can offer more simplicity in the process with implications for both cost and benefit drivers



Source: Morrison and Mason (2007)

Figure 1
General product and organizational architecture of a firm



Source: Morrison and Mason (2007)

Figure 2
Schemata of Product and Organizational Architecture of Airlines

Using indices to form benchmark metrics in the POA model¹⁶

To apply the POA model to the elements of airline business models identified in figure 2, a number of separate indices have been developed and then formed into more aggregate indexes. By constructing indices in this way, the interaction between the different elements in the business model and their importance to the overall performance of an airline can be more easily identified.

Indices were developed for each of the following areas:

- Profitability
- Cost drivers
- Revenue achievement
- Connectivity
- Convenience
- Comfort
- Distribution/Sales
- Aircraft productivity
- Labour productivity
- Airports Attractiveness
- Market Structure

Profitability, costs and revenues.

A profitability index was constructed by simply using the operating ratio of the carriers in the benchmark group. While profitability identifies the overall success of the business, an airline's unit cost [operating cost per average seat kilometer (ASK)] summarizes the various organizational architecture decisions made. It summarises the key cost values for the airline. This index is therefore a summary of the carriers' strategies with respect of IT, distribution and sales, aircraft, labour, and the airports served. Each of these items (with the exception of IT¹⁷) is treated with a separate index as detailed below.

The revenue index incorporates a number of benchmarks. The prime measure is yield per RPK. Also included is operating revenue per sector (GBP). This will highlight differences between the large aircraft/high density aircraft and the smaller aircraft/higher yield operators. The final benchmark item included here is a simple measure of average fare paid per passenger (this incorporates ancillary revenues where these are reported separately).

¹⁶ A more complete discussion of the methodology used to develop our indices and the interrelationship between the individual indexes can be found in Morrison and Mason (2007).

¹⁷ The IT infrastructure within an airline can have significant influence over that business' costs. Unfortunately, IT costs are not routinely reported in airline annual reports and therefore a separate IT index has not been possible to construct.

Connectivity, convenience and comfort

While some low cost airlines seem to pursue a strategy of serving a large number of small markets, others seek to usurp the short haul networks of traditional network carriers. Also, while some airlines have quite a dense network from their main base, the coverage of the network elsewhere may be quite limited and therefore the number of departure per airport per day indicates the coverage of the network. Therefore, the connectivity index seeks to account for network density. It is calculated from four benchmark statistics: the number of departures per airport per day; the average frequencies per route per week; the number of routes offered and the total number of destinations available at the airport.

Along with network density some airlines have positioned themselves to provide a more convenient service by offering a higher frequency, using airports either better located or with better surface transport links than those offered by secondary airports, also a punctual service, and offering improved baggage services. Consequently the following benchmarks were used to create a convenience index; the average weekly frequency per route¹⁸, the weighted average distance of the airport served to the city centre; the proportion of flights offered from primary airports, the proportion of flights departed on within 15 minutes, and the Skytrax¹⁹ baggage score.

The comfort index is composed of measures for seat pitch and width for each airline along with the average number of passengers per flight (fewer passengers per flight are assumed to be more comfortable than more)²⁰. The final variable included in the comfort index is the number of passengers per cabin crew member.

Distribution and Sales

Low cost airlines have been at the forefront of using the internet to reduce their distribution costs. Two variables are included in this index; the percentage of sales made via the airline's online reservation system; and the airline's cost per passenger of ticketing, sales and promotion (TSP).

Aircraft and Labour Productivity

Low cost carriers tend to work their aircraft assets hard to spread the cost of the aircraft across as wide a number of passengers as possible. Therefore the aircraft productivity

¹⁸ While this benchmark statistic is also included in the connectivity index it is also a clear measure of convenience.

¹⁹ Skytrax ratings for baggage handling for General handling, on-board baggage policy, excess baggage policy were aggregated and used for his rating.

²⁰ Although it is recognised that, depending on the type of aircraft equipment, smaller aircraft are not necessarily more comfortable for passengers than larger aircraft.

index captures both the daily utilisation of the aircraft and also the number of sectors each aircraft operates a day. While average sector length will affect each airline's ability to improve utilisation and the number of sectors performed a day per aircraft it is not included in this index as it can then be used to assess sector length impacts on the various performance indices. The uniformity of the fleet has often been highlighted as one of the key cost saving items for low cost airlines. A third variable in this index is then the percentage that the most populous aircraft type/mark accounts for in the fleet.

The labour productivity index has several components and summarises the airline's employees productivity in relation to the number of passengers carried and ASKs along with the cost of personnel per ASK. One area where low cost carriers have been able to reduce costs is in the reduction of non-flying employees so a higher proportion of flying employees is likely to increase employee productivity and this ratio is also included in this index. To recognize and try to reflect the effect of outsourcing that might otherwise inflate the employees productivity ratings, the passengers per employee ratio has been deflated by the percentage of total costs are accounted for by employee costs. This proportion may be considered a proxy measure for amount of outsourcing that a company does. If the proportion of employee costs over total costs is small then it is more likely that the airline outsourced operational activities, whereas an airline with a higher proportion of employee costs over total costs are likely to have undertaken more operational activities in-house. While we recognize the potential flaws using this ratio to adjust the benchmark labour productivity variable (i.e. one airline pays considerably lower wages), we would also argue that outsourcing is a significant part of the low cost model. Yet the degree to which an airline outsources is very difficult to measure from published sources, therefore we are left with this proxy for outsourcing as a deflator on labour productivity.

Airport Attractiveness

One of the key sources of lower costs for some LCCs has been in airport charges. This index attempts to rate the airlines' success at managing this cost item. Four benchmark variables are included. Firstly the airport/en-route costs per passenger is calculated. Secondly, smaller airports are likely to offer lower landing fees and thus a variable is included for the weighted average annual passengers at the airport. Where an LCC operates to an airport with higher number of network carriers present the opportunity to negotiate lower fares is reduced, and thus the third variable included is the weighted average number of network carriers at the airports served. Finally the percent of city pair routes that are monopolies for the LCC indicates provides a measure of how important the airline is to the airport and thus a measure of negotiating power.

Market Structure

The final index provides a measure of the market structures that each airline operates within. The median and average HHI scores are calculated across each airline's network. This index also incorporates the average number of competitors per route each airline faces, the average city size served and the average share of capacity (by seats) per route.

4. What is a (successful) low cost carrier?

The original concept for this research was to highlight the point that for airlines often referred to as "low cost carriers", the 'low cost' rubric is potentially misleading given that a number of different business models are actually being practiced. However, the POA approach can also give an indication as to whether any one model is more successful than any other.

Using the indices as defined in the previous section, we have developed a dataset of benchmark metrics for six airlines. The airlines considered were; EasyJet, Ryanair, Norwegian, Flybe, SkyEurope and Air Berlin for both fiscal years 2005 and 2006. The airlines in the sample represent a range of business models and inclusion of a two year's of data for each airline means that changes in business model or performance can be identified. Where possible the items in the conceptual model were included in the analysis. As the benchmarks are calculated using published data sources (generally the annual reports of the various airlines in question and Air Transport Intelligence²¹), not every item in the conceptual model could be mapped directly by the benchmarks. However, every attempt has been made to construct a benchmark dataset that as closely reflects the items in the conceptual model.

Of the airlines in the benchmark panel Ryanair and EasyJet were both profitable in both selected years. Newly established Sky Europe is some way off being profitable. Recently established Norwegian and FlyBe (which changed its operation from regional services to low cost carrier in 2002), are profitable in one of the two years. Air Berlin that is the third largest carrier of the group behind Ryanair and EasyJet has moved into a profitable position in 2006 after beginning to refocus its operations in the low cost sector over the past couple of years. Ex-regional carrier, FlyBe is the only one of the carriers that operates a number of different aircraft and does not have either B737 or A320 type aircraft in its fleet.

²¹ www.rati.com

The figures 3 and 4 illustrate index profiles of the six airlines in 2006. The further a carrier is toward the outermost point on a spoke the closer they are to being the *best in class* for that particular index. A score of 10 for any index means the airline is the best in class. We can see that Ryanair has a profile that is best in six of the eleven indexes (and as such it is also included in the second chart for reference). They are best for profitability, cost, distribution, labour, airports, and market structure. They are second best for aircraft productivity.

It would seem therefore that, in this benchmarking exercise, Ryanair is best in delivering an organizational architecture that attains the best profitability. Part of that success leads to and derives from, a market structure where they dominate the small markets that they serve. It is in the product architecture area where Ryanair is not the best in class. In fact it is worst in class for Revenue, Comfort and Convenience. It would seem that the carriers that pursue revenues backed by additional comfort and convenience are those that have failed to achieve good profitability suggesting that in general such a model is less successful in the 'low cost' sector. It also suggests that perhaps that there is room for only one *lowest-cost* carrier.

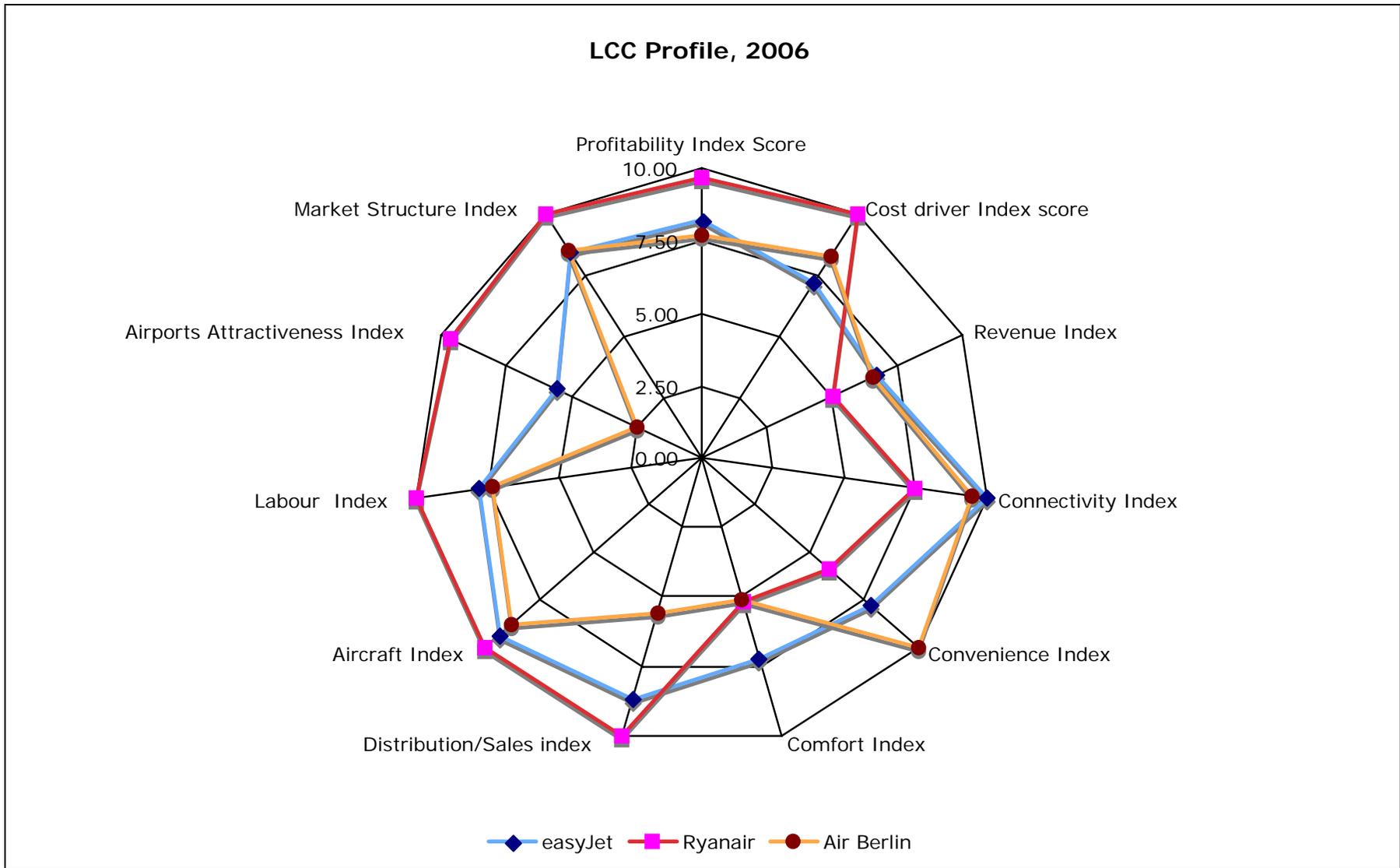


Figure 3
Comparing Air Berlin, Easyjet and Ryanair

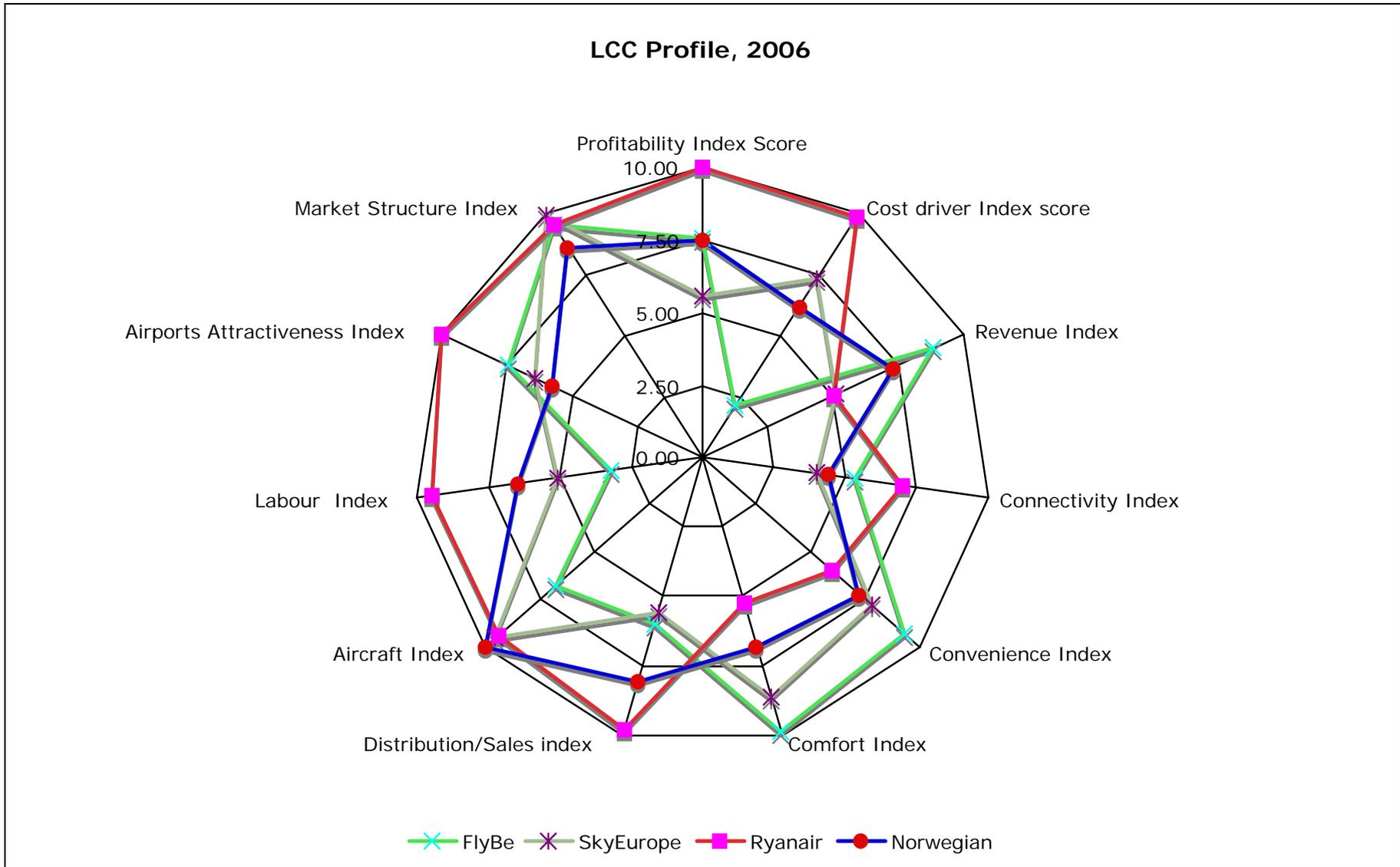


Figure 4
Comparing Flybe, SkyEurope, Norwegian and Ryanair

Connectivity and profits

Connectivity remains the index that does not have a clear outcome, as indicated by figure 5, which relates connectivity to profitability.

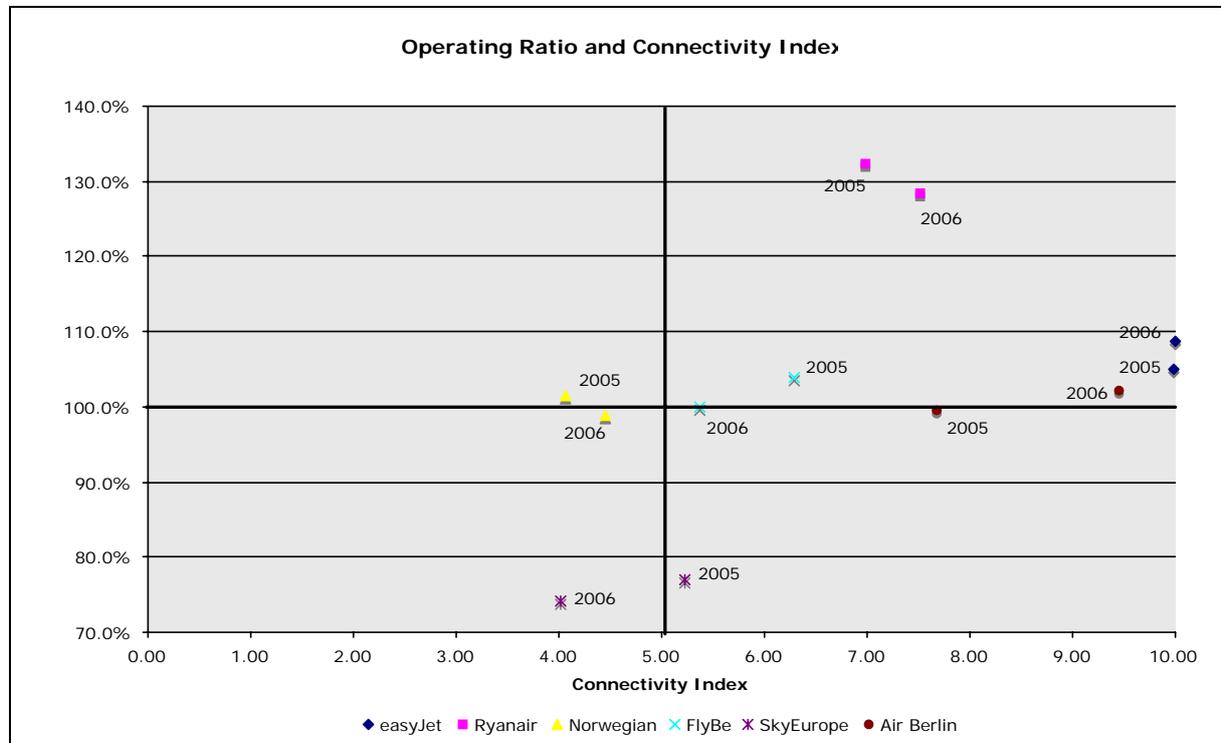


Figure 5

Ryanair scores more highly than Flybe, Norwegian and SkyEurope on account of its significantly higher number of routes. EasyJet has the best connectivity index scores due to its higher network density, higher frequencies, and tendency to serve larger airports that have more available destinations. However, easyJet’s network density has fallen consistently since 2003 when it had 12 departures per airport per day and an average weekly flight frequency of 32.6 per route. In 2006 the airline had reduced its number of departures per airport per day to 9.4 and reduced its weekly average frequency per route to 18.6 – still the highest in the benchmark panel but a significant change in strategy. As new European countries entered the EU, both Ryanair and EasyJet have been looking to extend their network and increase the number of routes offered. Ryanair, with its already low density strategy, has done so without further thinning its network density, however, easyJet’s new strategy of network expansion has been at the cost of its route density and flight frequency. During this period of new opportunities, first mover advantage would seem to have been important. However, it is still not clear at this time whether network connectivity is vital to the success of a LCC and it will be a couple of more year’s before this becomes clear.

Service quality and costs

Figure 6 provides a nice illustration of the cost implications of product design by relating the cost and comfort indexes of the airlines. The figure shows that Ryanair display low levels of comfort but enjoying the best cost index in the benchmark panel. In contrast Sky Europe with high crew to passenger ratios and lower average passengers per flight and FlyBe with the advantage of smaller aircraft have the best comfort index values but low cost index scores.

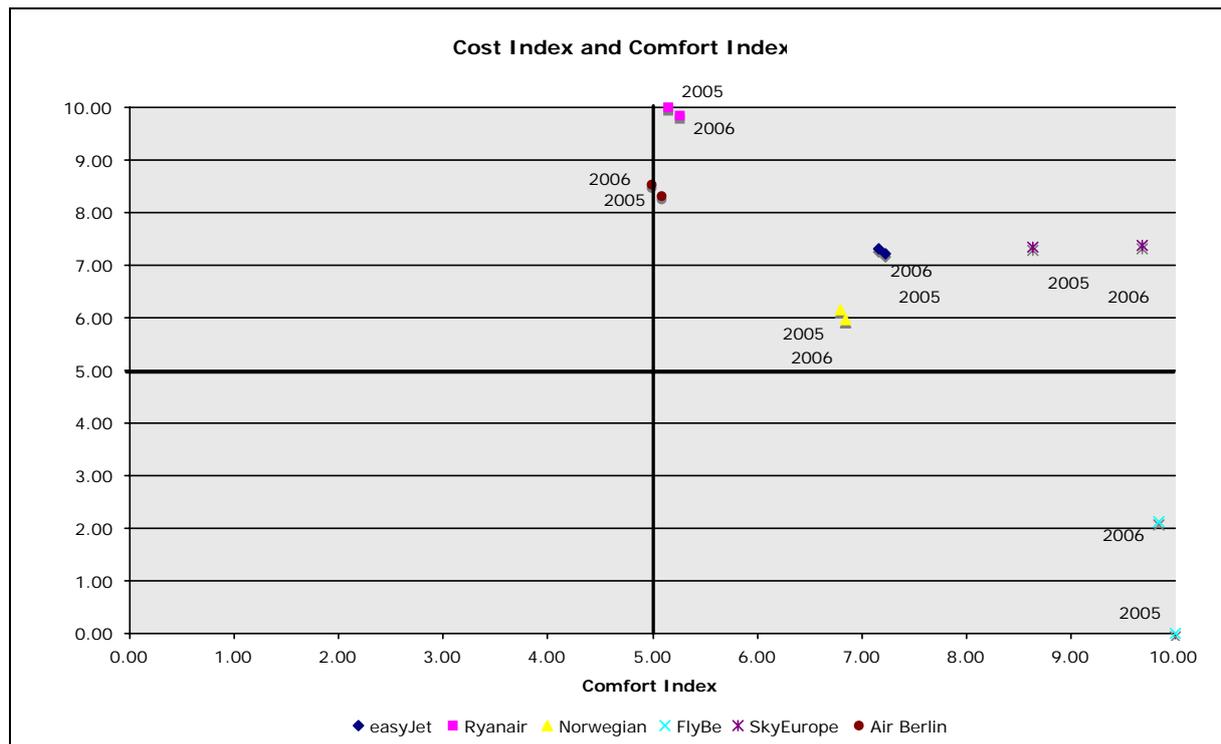


Figure 6

Sector distance and profitability

Regarding sector length, most of the carriers in the benchmark panel have average stage lengths of between 800 and 1,100 km (see figure 7). With the inclusion of newly purchased Deutsche BA in its figures, Air Berlin has significantly changed its operating pattern in 2006 and joins all other benchmark airlines with the exception of FlyBe in the central range of average sector lengths.²² As a previously regional carrier offering very short sectors FlyBe offer a different model to those offered by the rest of the benchmark group. Its marginal profitability suggests that its model is not particularly successful however its performance is no worse than Norwegian or Air Berlin that follow the normal low cost model more closely.

²² Formerly, British Airways owned Deutsche BA.

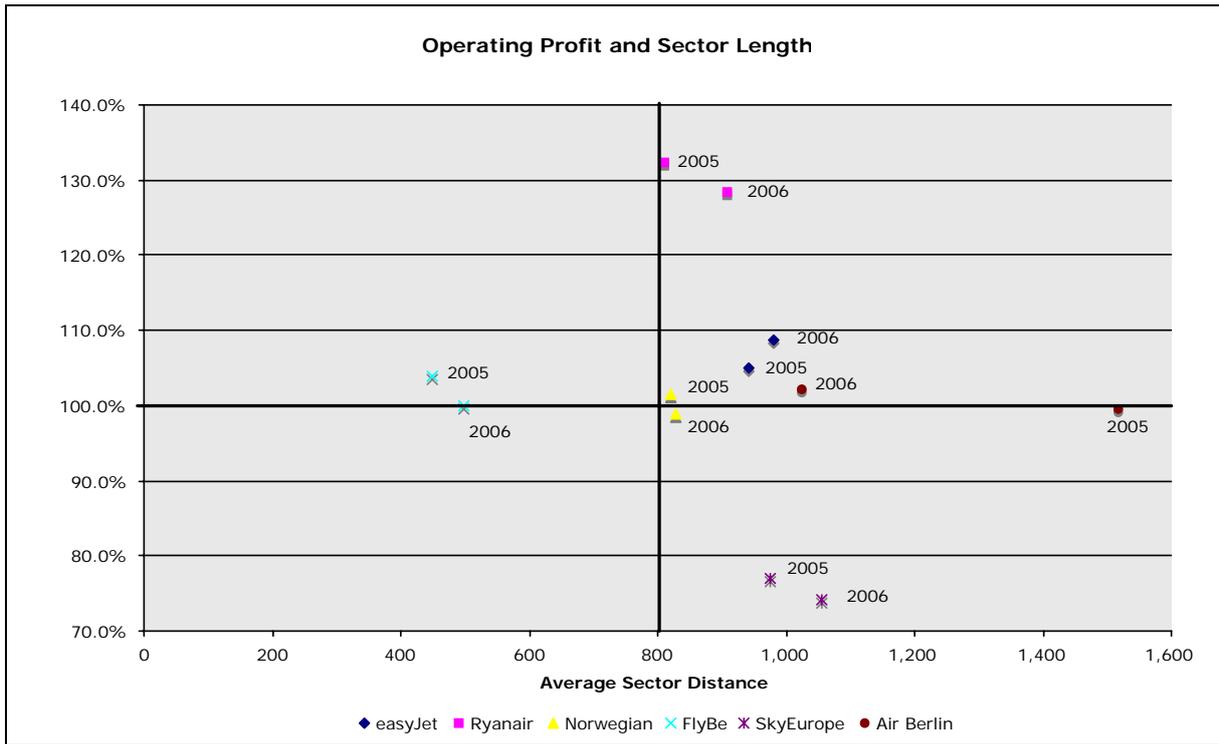


Figure 7

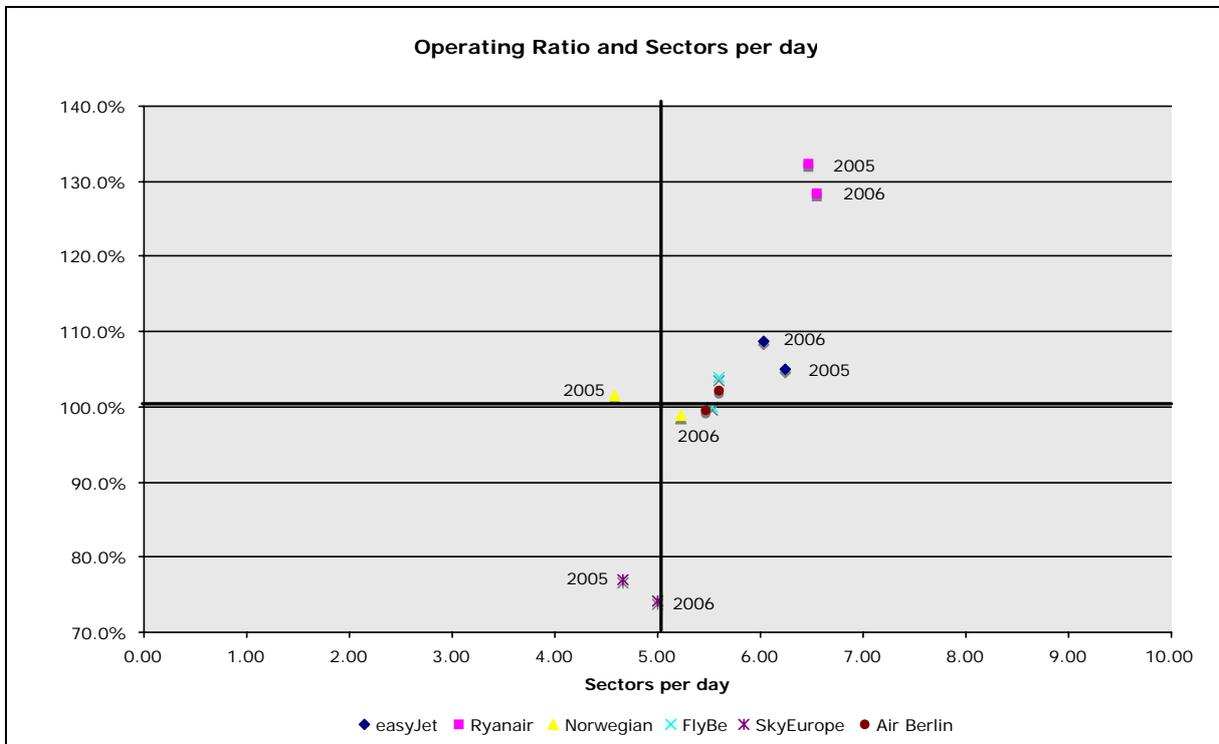


Figure 8

Aircraft utilization and profitability

While there most carriers in the benchmark group have similar average stage lengths, one important part of the low cost model is the effective use of aircraft assets. The two leading carriers, Ryanair and EasyJet both get more flights per day out of their aircraft assets than the other carriers in the panel (see figure 8). Additional flights per day mean more opportunities to share the cost of aircraft ownership and overhead cost over a larger number of passengers. Given their significantly shorter sector lengths it flies, Flybe may be able to increase the number of sectors it operates per day and thereby, possibly, contribute to making its model a success.

5. Conclusion

We have argued in this paper that meaningful definitions of and distinctions between airline business models are not easily formulated, particularly when one considers the extremely dynamic nature of the industry. In order to provide a more coherent and consistent understanding of airline competition and strategy, we have applied a *product and organizational architecture* (POA) approach to classifying and relating key elements of airline business models.

The application of the POA model to six European airlines has shown that there are important differences in the business models of airlines who are all commonly referred to as 'low cost carriers'. Our paper demonstrates how differences in the business models adopted by the different airlines contribute to their profitability. More specifically, amongst the sample airlines examined, our analysis suggests that the positioning of some airlines to offer increased comfort and convenience in a bid to achieve higher yields is marginally successful but is not as profitable as the pure low cost approach practised by Ryanair.

There may well be a first mover advantage enjoyed by Ryanair and EasyJet. Certainly size and market power are shown to contribute to the POA strategy of both airlines. Yet, we can see that even between these two airlines, Ryanair stands alone as the *lowest-cost* carrier, providing some indication that strategically, when one airline establishes a lowest cost position in its product and organizational architecture, competitors are forced to choose a different POA strategy. Casual support for this is provided by recent marketing efforts by Easyjet, aimed at driving up the proportion of traffic that is business related. The direct objective of targeting this market is to drive up yield, but there is also strategic value adjusting their POA strategy thereby avoiding head-to-head direct competition with their lowest-cost competitor.

The analysis can be extended in two ways. First by continuing to collect data covering a larger number of years, we can investigate how the POA of airlines in the sample have evolved over time. Secondly, the POA model can usefully be applied to analyse other airline models (subject to availability of data) – network carriers, premium only cabin carriers, long haul low cost carriers – and between carriers in similar sectors in different regions – low cost airlines in North America, Europe and Asia.

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