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**Article**

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# Cross-platform network migration of airline business model: A Signal of the "new game" hybrid model

## Evidence from Air Berlin's performance metrics

### Abstract

The shift in airline industry competitive landscape provides a *fit* in analyzing firm level performance. The industry traditional structure has been dominated by two contesting business models: Full Service Network Carriers and the Low Cost Carriers. The level of *contestability* among the existing business models has pushed carriers to seek new level of operational efficiency by migrating the current business model. For this reason, this paper attempts to explore this strategic shift by drawing the imperative from Air Berlin's business performance as it attempts to define its footprint as a *hybrid* carrier. Evidence presented in the paper explores the core characteristics that have underpinned a troubled industry and evidently presents the metric indicators of Air Berlin. The findings clearly indicates that airline business models are no longer sustainable in their current forms, hence there is a need to adopt a cross-platform migration in order to capture a new level of operational efficiency.

# 1 Introduction

The airline industry presents a paradox (Doganis, 2006). Over time the industry has witnessed a surge in competition along many dimensions such as air fares, passenger load factors and route networks. As a result the industry's competitive landscape is being redefined by the emergence of "hybrid" business models, depicting a low cost- long haul carrier network. Will this change the industry equilibrium that will result in the end game of the full service network carrier (FSNC)? The resurgence of Air Berlin as a hybrid carrier has certainly changed the game dynamics of the airline industry. The airline industry is a "*perfect fit*" to analyze the dynamic effects that influence firm performance. It allows us to measure productivity without controlling for production technology which often is difficult for outsiders to observe (Caves, *et al.*, p.242, 1988). This paper will attempt to demonstrate the extent of Air Berlin's performance outcome as low cost carrier, paving way to the argument whether the business model is sustainable in its current form.

## 1.1 The scope of the airline industry

The financial performance of the world's airlines taken as a whole has been very marginal, even in the years when the industry was highly regulated and largely protected from internal competition and the industry was dominated by state-owned airlines, called "national flag carriers" or "legacy carriers". The traditional measure of profitability, namely the rate of return on assets (RROA) employed, cannot be applied to the airline industry as whole. This is because of the difficulty of estimating real asset values with varied depreciation policies, using varying proportions of leased equipment and often receiving indirect or direct subsidy in a variety of forms (Doganis, 2002).

The transformation of the airline landscape has clearly demarcated structural changes in airline competition as FSNCs attempt to develop strategic options designed to capture returns in the market for budget air travel dominated by LCCs. The evolution of the airline business can be considered as driven by supply side factors like technological development that laid the base for new regulations, these alone lead to a change of business rules and subsequently to strategic success factors in the industry. With increased dynamic changes in the aviation industry, business models have emerged. This evolution of business models is the result of indispensable realignment of resources after consolidation (Franke, 2007) and of the limits to organic growth (de Wit & Zuidberg, 2013) business model is the description of the way in which a company, corporate system or an industry creates value on the market (Bieger T.; Doring T.H. & Laesser C.H., 2002). However, business models which are traditionally capsuled by airlines dyadic actors

have been based on LCC or FSNC network models. Gassman *et al.*, (2014) argues that the recent scope of competitive dynamics in the air transport sector has been based on business models seeking opportunities for innovation and differentiation. Lohmann and Koo (2013) indicate that airlines are no longer easily labelled as either LCCs or FSNCs and therefore airlines are better represented along a continuum rather than discrete categories that allow the possibility of positioning hybrid and regional airlines along an LCC-FSNC spectrum.

The airline industry appears to be *cyclical* and this inevitably impacts on dynamic growth rates from year to year. Nevertheless, the underlying trend has been one of declining but consistently good growth in demand. Most industries or businesses faced with continued and high growth of demand for their products will be basking in substantial profits. Not so the airlines. Airlines have comparatively low marginal cost (cost of putting an additional passenger on plane consist of slightly increase expense on fuel, cost of meal and ground handling of this passenger) and large fixed cost (even an empty plane requires considerable amount of fuel; it needs technical service before and after the flight). Crew salary, costs of using airport facilities (e. g. runways) and air navigation systems are also substantial. Besides, there are certain sunk costs of introducing a new flight: (1) marketing expenses and (2) signalling costs.<sup>3</sup> Due to this cost structure airlines have to charge above marginal cost (MC) for their services.

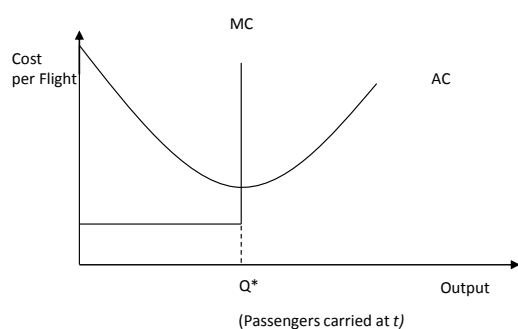


Figure 1: Airlines cost structure

In Figure 1 the tentative airline cost structure of a flight is illustrated. Marginal Costs (MC) are low up to the plane's capacity  $Q^*$  (Quantity) and infinitely larger after that, average costs are decreasing all the way to  $Q^*$ . As planes are rarely filled up completely, airlines operate on the downward sloping segment of AC (Average Cost).

<sup>3</sup> Airlines usually charge low promotional (non-profitable) fares for the first several months a new flight is operated in order to signal that they are going to stay in this market for a long time and to attract passengers. During this time airlines try to establish long-term relations with passengers in order to create future demand for their services.

Thus, the airline industry may often have achieved high rates of traffic growth, but this has not generally been accompanied by high rates of profitability, quite the opposite. Airline profit margins have been well below average compared with firms in other industries, and in some years they have been some heavy losses indeed (Brueckner & Spiller, p. 385, 2007).

But to understand the emerging strategic interactions and outcomes of airlines, one must appreciate that in this industry business strategies are necessarily tied to the network choices and for this reason two contesting models of carrier operations have emerged: hub and spoke system vs. point to point system, each network choices being defined by a different strategic pattern. Business models traditionally adopted by airlines, based on the strategies of low cost or full service, are insufficient to relate to new market reality (Pereira & Caetano, p. 76, 2015).

## 2 Airline network structure

The airline industry is characterized by an oligopoly market structure, a form of imperfect competition in which a limited number of firms dominate the industry.<sup>4</sup> A critical characteristic of many oligopolies is the requirement of high capital investment to build capacity which results in high fixed costs. This is clearly the case of the airline industry with approximately 2/3 of the cost structure as fixed costs (Air Transport Association, p.102, 2012). Fixed costs in the airline industry are generally composed of flying operations (operational costs). Airlines cannot constantly produce sufficient revenues to cover fixed costs. Given the large fixed capital requirements and flight volumes, the number of passengers (PAX) can be increased at nominal marginal costs for each flight decreasing average costs and this provides substantial incentives for airlines to fill up every seat. In fact, airline seats are perishable goods once the flight departs.

### 2.1 Full Service Network Carrier model

The goal of the network carriers has been to provide global air transport networks with complete service chains, seamless customer care with a comprehensive network and lounges all around the world. Integrated loyalty program systems are important parts of these concepts as well. Hub and Spoke networks have been studied extensively in the recent literature (see e.g. Brueckner & Spiller, 1992; Zhange & Wie, 1993; Nero, 1996 and Brueckner, 1997)<sup>5</sup>. In a hub and

<sup>4</sup> While the author recognizes the multiplicity of oligopoly models (Cournot, Bertrand, Stackleberg, dominant firm, game theories, Nash equilibrium etc.), to explain the complexities of small group interaction, delineation of these various models is beyond the scope of and objectives of this paper.

<sup>5</sup> All these studies use linear marginal cost functions ( $MC = 1 - \theta Q$ ) and symmetric demand functions ( $P = \alpha - Q/2$ ) where  $\alpha$  is a measure of market size), relying on the returns to density parameter  $\theta$  to guarantee optimality of the hub and spoke network.

spoke system, flights are concentrated to and from a limited number of airports that are used as collection distribution centres for passengers. These airports are called *hubs* and the routes that channel passengers to hubs are referred to as *spokes*. Unless they travel between two hubs, passengers travel to their final destination via a hub. In principle hub and spoke networks have allowed carriers to increase traffic levels on all routes. This has been widely interpreted as demonstrating the existence of *economies of scope* in route networks and therefore, virtues of large-scale airline operations (Borestein, 1989).

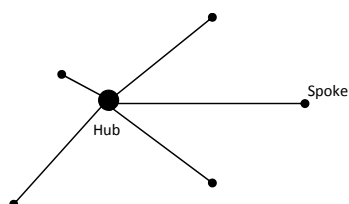


Figure 2: Hub and spoke network

The above simple network structure (Figure 2) illustrates the possibilities of how carriers can set up different networks, each linked to a specific business model (Gillen *et al.*, p. 168, 2005)<sup>6</sup>.

Figure 3 outlines the scope of the hub and spoke business model reflecting the complexity associated with model.

<sup>6</sup> According to Gillen *et al.* (2005), the linkages will depend on how business models differ with respect to the integration of  $\theta_3$  demand conditions, fixed and variable cost and network organization. The three nodes  $\{\theta_1, \theta_2, \theta_3; (0, 0), (0, 1), (1, 0)\}$  form the corner coordinates of an isosceles triangle. The nodes and sides of the triangle may thus represent a simple linear travel network that defines two "short-haul" travel links  $[(\theta_1, \theta_2) (\theta_1, \theta_3)]$  and one "long-haul" link  $(\theta_2, \theta_3)$ . In this travel network, the nodes represents points of entry and exit to/from the network, thus if the network is assumed to be an air travel market, the nodes represent airports rather than cities.

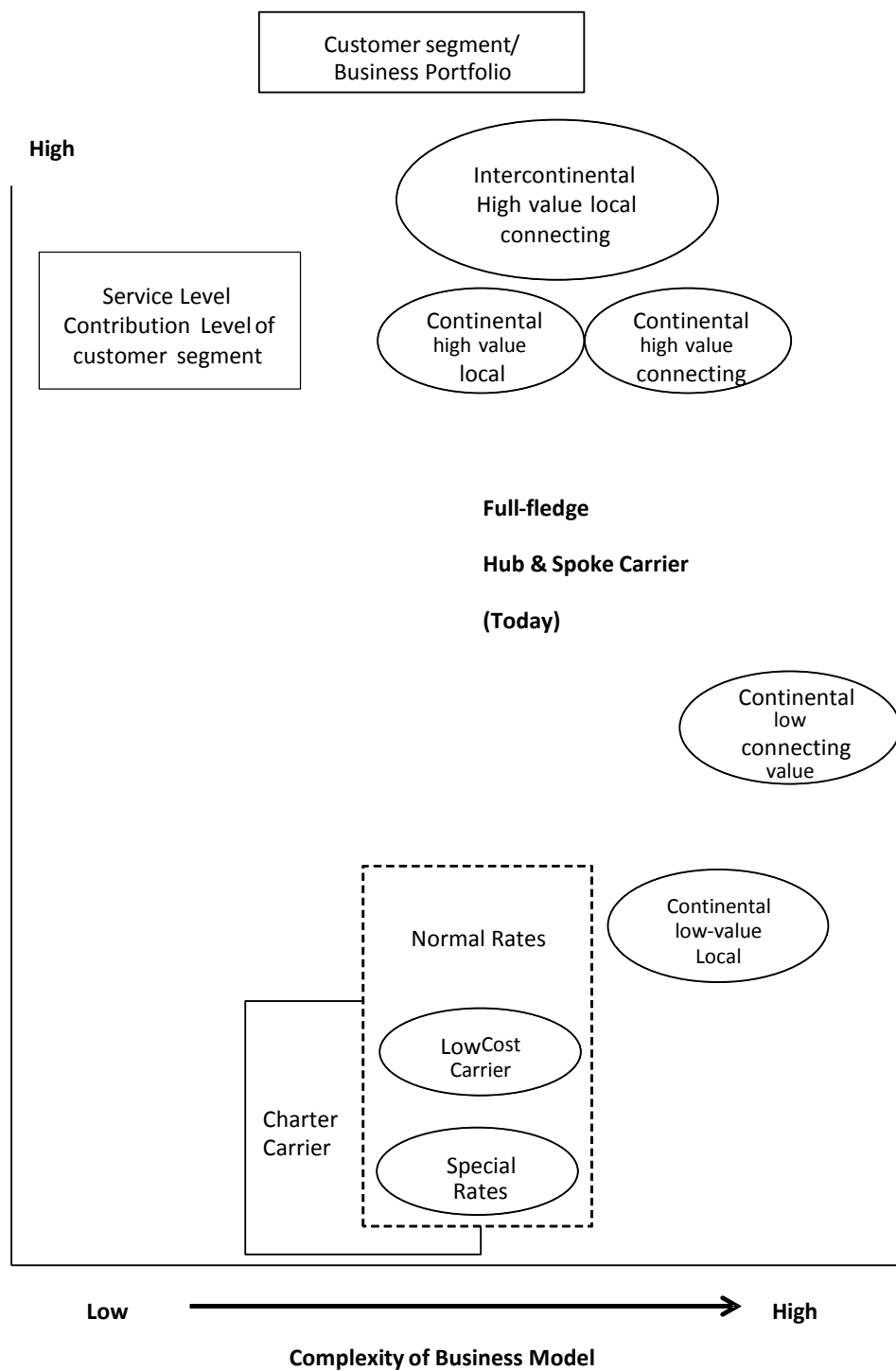


Figure 3: Current Hub and Spoke Model  
Source: Franke, 2004

The key to the explanation lies in the level of density of economies. Thus, comparing hub and spoke network and point to point network, they find that hub and spoke network is preferred when marginal costs ( $MC$ ) are high and demand is low but given some fixed costs and intermediate values of variable costs, point to point network may be preferred. Further arguments were echoed by Shy (2001) when he showed that profit levels on a full connected carrier are higher than hub and spoke when variable flight costs are relatively low and passenger disutility with connections at hubs is high (Shy, 2001). What had not been spelled out explicitly until Pels, Nijkamp & Rietveld (2000) is the relative value of market size to achieve lower costs per available seat mile (ASM) versus economies of density.<sup>7</sup>

## 2.2 Regional airline model

A second important group is the regional airlines. In a way it is not a group for itself, because very often they are linked by agreements to the major alliances and serve as a kind of feeder carrier for the main carriers of the alliance. Nevertheless, more and more regional airlines serve their own point to point routes and sometimes, like the former Crossair, even operate their own regional hub. Thereby rely on specific strategic success factors that define their own business model (Zhang, 2006).

Most importantly, regional carriers serve niche markets. Very often they are the only airline serving a certain airport such as Bolzano by Tyrolean. They have to be flexible in their corporation; they have to maintain a tight cost structure and have to be dynamic in search for new niche markets.

## 2.3 Low cost carrier model

The rapid expansion of the LCC model worldwide has further threatened the underlining competitive boundaries of an industry which was traditionally dominated by the FSNCs. The industry has faced up to and resolved many of its inherent cost efficiencies. For the FSNCs these “uncontrollable” factors were compounded by the LCCs which continued to grow in size and consequently increasingly dictating airfare levels especially in those city-pair markets that exhibited high passenger density. In the US and Europe, the rapid growth of LCCs has further increased a downward pressure on air fares, and for this reason the airline’s traditional landscape is being

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<sup>7</sup> In their study, Pels et al. explored the optimality of airline networks using linear marginal cost functions and linear, symmetric demand functions;  $MC = 1 - \beta q$  and  $P = \alpha - Q/2$  where  $\beta$  is a returns to density parameter and  $\alpha$  is measure of market size. The Pels model demonstrates the importance of fixed costs determining the dominance of one network structure over another in terms of optimal profitability.



radically transformed and this has further enhanced the interest raised in this study (Airline Business 2014).

Evidently, the European aviation industry has indeed entered a critical phase of reorganization with the economic integration of Europe. At times of regulation, airlines competed mainly through services and after deregulation it was abandoned, although fares fell, service competition though reduced stayed in place (Borestein, p. 360, 1992). Because of the impossibility of arbitrage (tickets are personal documents) airlines can easily price discriminate and consumers can self-select themselves choosing between different bundles services attached to a flight.<sup>8</sup> However, deregulation had a rapid effect on the industry overall, particularly on the relaxation entry and exit controls which gave an impetus on the emergence of new additional scheduled service carriers, alliance networks and the rise of LCCs. LCCs or value based carriers follow a specific business model, which is characterized mainly by a complete abandonment of the use of network effects. They just serve point to point routes, starting very often from secondary airports. Short turnaround times (often less than 20 minutes) and low distribution cost (e-ticketing, Internet distribution) are important elements.

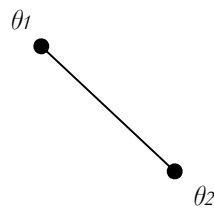


Figure 4: Point to point network

The above simple network structure (Figure 4) illustrates the possibilities of how carriers can set up different networks, each linked to a specific business model (Gillen *et al.*, p. 168, 2005)<sup>9</sup>. LCCs

<sup>8</sup> All kind of discounts (tourist, student, family fare etc.) are used by the full service network carriers to capture passengers with some elastic demand or those who can spend more time searching for better price (value-based price sensitive consumers). Thus, price discrimination is used as an instrument of competition. See Holmes (1989) for an explicit formal model of price discrimination under duopoly and Borestein & Rose (1994) for a quantitative estimate variation of airline fares. In their study they found expected average difference between two passengers' fares to be 36% of the average ticket price. Measuring price dispersion with Gini coefficient, they found increasing price dispersion on more competitive routes. Two types of price discrimination are also identified in this study: *monopoly-type* (pricing according to the consumers' valuation of basic service) and *competition type*, price discrimination based on consumer valuation of "brands" (reputation, class of an airline and additional service offered).

<sup>9</sup> According to Gillen *et al.* (2005), the linkages will depend on how business models differ with respect to the integration of  $\vartheta_3$  demand conditions, fixed and variable cost and network organization. The three nodes  $\{\vartheta_1, \vartheta_2, \vartheta_3; (0, 0), (0, 1), (1, 0)\}$  form the corner coordinates of an isosceles triangle. The nodes and sides of the triangle may thus represent a simple linear travel network that defines two "short-haul" travel links  $[(\vartheta_1, \vartheta_2), (\vartheta_1, \vartheta_3)]$  and one "long-

or no-frills carriers followed an entirely different network strategy following US deregulation in 1978 (Button, 2002). Instead of the long-haul, high-yield and transfer markets, they concentrated on high-volume routes by using non-hub and secondary airports and offering very low priced, no-frills tickets. They preferred serving the Origin and Destination (O&D) city pair markets with a point-to-point network structure than to serving the transfer markets with hub and spoke networks. This type of operation makes it possible for LCCs to keep their operational costs low, expand by entering new markets and increase their share of profits. Offering point to point services also lets airlines schedule their services at the right time of the day to compete with other airlines without being subject to the imperatives of a connecting wave-system. That is, hubbing can have significant negative ramifications in terms of network economics (Doganis, 2013).

However, the unbundling of fares is one of the characteristics of the LCC business model. Fare unbundling strategy is aimed at attracting price sensitive passengers and competing on base ticket fares. This unbundling strategy is rapidly changing and currently an increasing number of LCCs are providing a fare category system in order to introduce bundles of different services that used to be sold as independent ancillary products (Daft & Albers, p. 51, 2012).

Evidently, the LCCs carry more than one third of their scheduled passenger traffic within Europe and their market share exceeds 50% on some large intra-European markets (Klophaus, Conrad & Fichert, p. 55, 2012).

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haul" link  $(\vartheta_2, \vartheta_3)$ . In this travel network, the nodes represent points of entry and exit to/from the network, thus if the network is assumed to be an air travel market, the nodes represent airports rather than cities.

Table 1: Cost advantages of low cost carriers

Source: Pearce &amp; Smyth, p. 12, 2012

	Cost saving by Low Cost Carriers Seat/Km (%)	Cost per Seat Kilometre
Cost per Seat Km for FSNCS		6.96
Cost per Seat Km for LCCs		4.52
Highest seat density	0.40 (5.7%)	6.53
Aircraft ownership / Fuel	0.47 (6.8%)	6.06
Lower salary expense	0.20 (2.9%)	5.86
Infrastructure	0.47 (6.8%)	5.39
Product distribution / overhead	<b>0.87 (12.5%)</b>	<b>5.22</b>

Full service network carrier: American Airlines, United Airlines and Delta Airlines

Low cost carriers: Southwest, AirTran and JetBlue.

Notes: The lower seat density used by network airlines is equivalent to adding 0.4 cents to total unit costs for each ASK (i.e. the difference between 6.96 cents and 6.53 cents).

The Cost Gap between the network airlines and low cost carriers in 2012 is spread across a range of different categories. Table 1 indicates the major operational areas where low cost carriers achieved their savings. Data for this Table 1 was collected from the IATA study “Airline Cost Performance” (2012). As shown in Table 1 distribution, passenger service and other related costs account for the largest share of the cost gap (12.5%). These savings are achieved by increasing direct sales, efficient design of route network (point to point service) and through a reduction in overhead costs.

The second biggest cost saving is achieved in the area of aircraft ownership and fuel costs (6.8%). The low cost carriers have a lower average fleet age (fuel efficient aircraft) and higher rates of aircraft utilization (in terms of hours flown per day) than average for the full service network carriers. Low cost carriers also use only one type of aircraft, which also reduces operational, maintenance and training costs.

Infrastructure is as important a source of cost saving – ownership /fuel (6.8%). Most of the saving in this area is achieved through utilizing secondary airports with lower landing fees. Some saving is also captured by increasing seat density (5.7%). The lowest savings is achieved in the area of salary/expenses (2.9%). This largely reflects differences in labour productivity rather than basic wage rates.

## 2.4 Hybrid Model

Business models traditionally adopted by airlines, based on the strategies of low cost or full service, are insufficient to relate to the new market reality. Gassmann *et al.* (p. 24, 2014) argue that the recent approach to competition has been based on business models seeing opportunities for innovation and differentiation. Airlines are searching for ways to operate efficiently by delivering value to their customer (O'Connell & Williams, 2005). Arguably, as airlines seek operational efficiencies, the boundaries of defining LCCs are beginning to blur as a new hybrid model emerges, conceptualizing some of the characteristics of FSNCs and LCCs (Franke & John, 2011; p. 22; Klophaus *et al.*, p. 56, 2012). Table 2 gives a comparative picture between the main practices of LCCs and the hybrid business model.

**Table 2:** *Low cost carrier business model vs. Hybrid business model*  
**Source:** *Author's own interpretation based on Mason & Morrison (2008), Klophaus et al., (2012) and Doganis (2013)*

	<b>Traditional LCC</b>	<b>Hybrid</b>
<b>Fleet</b>	Single type	Single type mix
<b>Aircraft type</b>	Narrow body	Narrow body and wide body for long haul
<b>Type of airport</b>	Secondary and / or primary	Primary
<b>Code sharing</b>	No	Can provide code-sharing
<b>Transfer between flights and feeding services</b>	No	Can provide transfer between flights
<b>Member of global alliance</b>	No	Can be a member
<b>Sector length</b>	Ideally from 500 to 1,500 km	Can be longer than 2,000 km
<b>Long-haul flights</b>	No	Can be long haul
<b>Single class cabin</b>	Yes	Yes
<b>Fare bundling</b>	No	Yes, different fare bundles offering different levels of service
<b>Sale distribution</b>	Mostly internet	Mostly internet, but also GDS
<b>Frequent flyer programme</b>	No	Can offer FFP
<b>Frills*</b>	No frills	Depending on fare bundle

\*Frills may include, among others: complimentary in-flight services, free checked baggage, room reserved on the aircraft for hand baggage, food on board, free flight changes, exclusive check-in service desks etc.

AirBerlin established in as an LCC in 1979 has now transformed its operations into long haul and fomented an equity partnership with Etihad Airways and engaging as a member of Oneworld alliance. Casadesus-Masanell and Ricart (2010) argue that firms that innovate in their business models compete differently. In practice, the LCC business model is blurring (Franke & John,

2011; Taneja, 2010). Diverging market strategies can be observed among the group of airlines usually categorized as LCCs and Air Berlin falls into this category of migration of business models. (See Figure 5)

The emergence of the hybrid model is being characterised by massive investment in technology in particular IT systems. This model has become more prevalent and airlines like Air Berlin, EasyJet and Flybe have adopted similar business models. Thus, in addition to offering low cost, low fares, they are beginning to offer networks and connecting flights. Code sharing agreements are being practised with network partners and fixed quotas are also being negotiated with tour operators. The hybrid carrier model reflects an adoption of characteristics from both LCC and FSNC to broaden their target demand and survive increasing competition (Lawton & Solomko, 2005). To remain competitive over long term, carriers employing either traditional LCC model or FSNC operation are at strategic crossroads. In many cases, the choice is to reinvent themselves as hybrid carriers or to implement large scale changes aimed at dramatically reducing base fares or to double down on experiential enhancements. While champions have emerged for each business model, the superior aggregate financial performance of the LCC and hybrid carriers has enabled these operators to flourish in a market where the FSNCs have historically dominated (See Figure 6). As a result LCCs and hybrids have grown from 18% of global traffic in 2003 to over 24% today (Thomas, p. 27, 2015). Airline Business (2014) projects that LCCs and hybrids growth share will increase to 43% in the next decade putting the FSNC carrier under enormous pressure to restructure and achieve a new level of operating efficiency (see Figure 7).

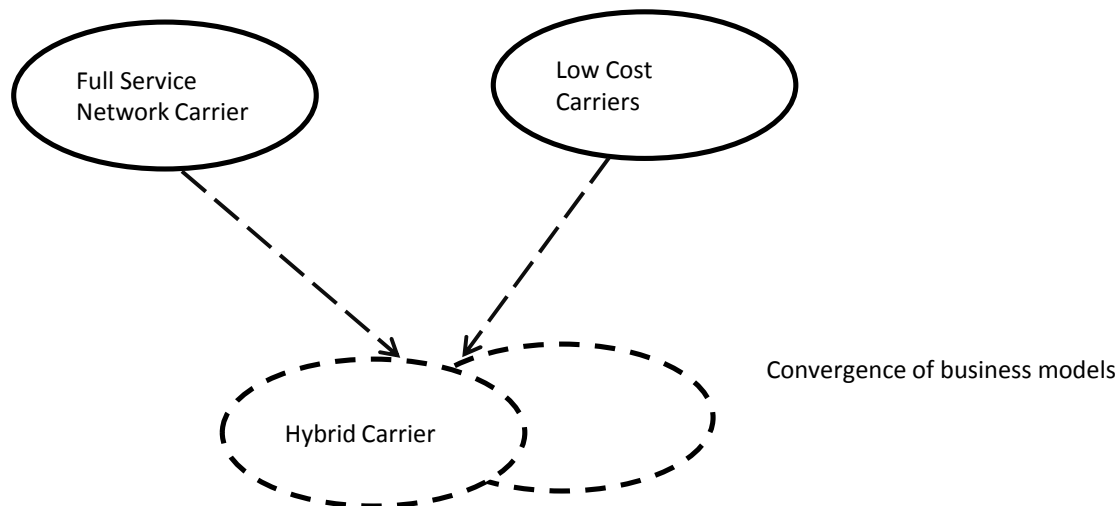


Figure 5: Migration of Business Models  
Source: Author's own interpretation

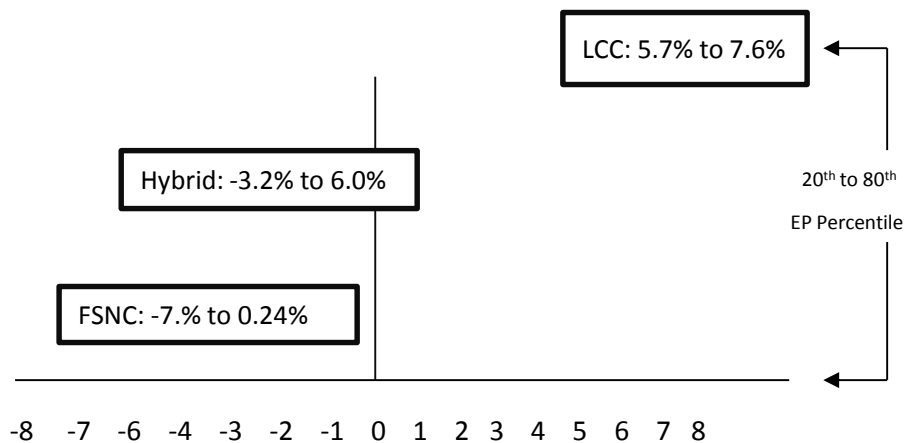


Figure 6: Economic Profit by Carrier Model (2008-2013)  
Source: Thomas & Brett, p. 12, 2014

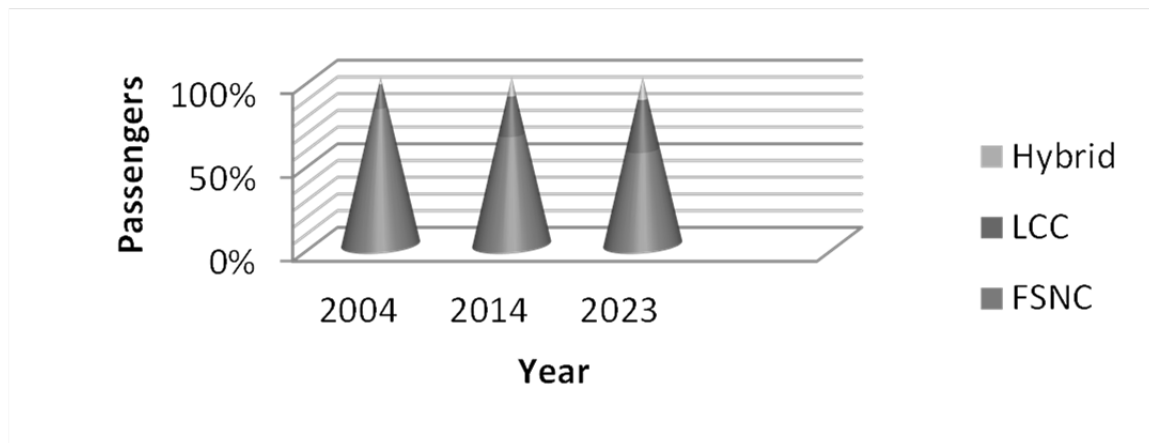


Figure 7: 150 Carrier Capacity by Carrier Type (2004-2023) to edit the number of seats  
Source: Adapted from Thomas & Brett, p.14, 2015

On a regional basis, the steady ascent of hybrid carriers is evident across virtually all geographies with the model already commanding roughly 20%-40% market share (less Africa) (Airline Business, 2015). Air Berlin continues to deliver strong customer value proposition by offering low fares and quality service. Henceforth, the airline continues strategically align with network partners (OneWorld) and developing pioneering product solutions (e. g. seating, entertainment, ground service etc.)

### 3 Methodology and Operationalization of Variables

#### 3.1 Data Collection

In this study, the author uses a set of financial performance indicators such as yields as a function of load factors, (Dai *et al.*, p. 88, 2005). Net Revenues, EBIT, productivity in terms of passenger per employee, and codesharing partnerships. The dataset was extrapolated from Air Berlin's Reports between 2004 and 2013 which gave the study a 10 year period to run regressions. The main data source for OD analysis was provided by Eurostat. The data was collected in order to determine whether Air Berlin's model is sustainable in its current form.

#### 3.2 Operationalization of Variables

One of the most important outcomes of the organizational assessment is the organization's level of performance. Organizations have employed various methods of accurately measure performance, with some focus on financial indicators to estimate airline performance (Wang, 2008; Flouris & Walker, 2005), whilst other have dealt only with non-financial indicators (Piga & Gaggero; Devriendt *et al.*, 2009). Operational performance in airline industry has always presented a multitude of challenges due to the fact that assessment of airlines from published financial information is difficult because most airlines lease a substantial fraction of their aircraft and also due to different taxation regimes across markets (Scheffczyk, 1993). However, a very common indicator of airline productivity is the passenger load factor, which measures how many revenue kilometres an airline can optimally generate per each available passenger kilometre (Scheffczyk, 1993).

In this study operational performance is measured by using both exogenous and endogenous statistical variables such as: Earnings Before Interest and Tax (EBIT); Net Revenues, Code Sharing agreements and Passenger Load Factors denoted by the following formula:

$$\frac{\sum_{i=1}^r (\text{Number of carried passengers} \times \text{distance}) \times 100}{\text{Available Seats}}$$

Formula 1: Passenger Load Factors

Regression analysis was employed to identify load factors as a function of a number of passengers carried based on OD and AirBerlin being the carrier under observation. I employed the fol-

lowing linear regression:  $y_1x_1$ ;  $y=a+bx$ . For the other operations, yield/per kilometre as a function of number of passengers carried  $y_2(x_1)$ ; OD average fare as a function of a number of passengers  $y_3(x_1)$ ; Segmentation average fare as a function of number of passengers  $y_4(x_1)$ ; yield/kilometre as a function of load factor  $y_2(y_1)$ . Hence, regression as  $r_e(x,y)$

Longitudinal data analysis is adopted in order to observe multiple phenomena of Air Berlin's operational performance and a general regression model was adopted, so  $b$  is the gradient: if  $b>0$  the trend is rising, if  $b<0$  – falling.

$$y = a + bx + e_i$$

$$a = \frac{\sum_{i=1}^n X_i^2 \sum_{i=1}^n Y_i - \sum_{i=1}^n Y_i - \sum_{i=1}^n X_i \sum_{i=1}^n X_i Y_i}{n \sum_{i=1}^n X_i^2 - (\sum_{i=1}^n X_i^2)}$$

$$b = \frac{n \sum_{i=1}^n X_i Y_i - \sum_{i=1}^n X_i \sum_{i=1}^n Y_i}{n \sum_{i=1}^n X_i^2 - (\sum_{i=1}^n X_i)^2}$$

Formula 2: Unobservable random variable

## 4 Research Findings:

The growth of LCCs continues to rise sharply and the expected CAGR of 10.42 percent over the period 2014-2019 (Air Berlin, p. 17, 2015). LCCs are migrating their models into leisure destinations where traditional charters had a significant “seat only” volume. Findings in this paper also indicate that Air Berlin has also increased its frequency on leisure routes which could mean there would be a cut back on the number of departure airports. Thus, dynamic market shifts have resulted in the emergence of the hybrid model with very profound cross-over of characteristics, such as low cost service, Introduction of Frequent Flyer Programs (FFP), Operating from multi hubs (AirBerlin – Dusseldorf, Berlin, Palma de Mallorca).



Table 3: *Air Berlin Financial and Operational Data*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>AB-EY</b>	0	0	0	0	61	929	1436	1456	990	513	47997	58963	77992
<b>AB-BA</b>	8	50	59	154	140	214	387	332	306	4554	5709	3507	5755
<b>AB-IB</b>	185	689	784	1345	1099	747	223	140	232	743	2051	3823	5475
<b>AB-AF</b>	0	12	5	19	161	645	501	499	989	3449	935	269	540
<b>AB-EK</b>	0	5	9	15	59	1979	2591	2420	3354	4254	4232	3891	3890
<b>AB-AZ</b>	0	102	677	1135	757	1461	617	792	1091	1001	759	926	1911
<b>AB-QR</b>	0	0	3	2	1	99	192	139	103	192	283	469	1357
<b>AB-AA</b>	0	45	63	74	74	89	713	222	120	12193	16623	37323	35383

In Table 3, Air Berlin shows unprofitable growth – there is a small statistical relationship between revenue and loss growth. Moreover, productivity measured in passengers/employee went down as the business model changed from being largely oriented at tourist/leisure destination to the hybrid model of low cost/long-haul/tourist/domestic traffic. This raises key inherent flaws that are undermining Air Berlin's business model due to its lackluster performance.

Air Berlin's operating results (EBIT) as regressed in Figure 8 indicates relatively negative weaker earnings due to high restructuring costs and in particular in the 2014 fiscal year. Allowing for expenses of €85 -€110 million, which were incurred for turnaround, the preliminary adjusted EBIT stands at -€193.3 million. Restructuring measures include inter alia, additional expenses associated with fleet harmonization and work-force related activities, among other things.

Moreover, productivity measured in passengers/employee went down as the business model changed from being largely oriented at tourist/leisure destination to the hybrid model of low cost/long-haul/tourist/domestic traffic (see Figure 8 and 9).

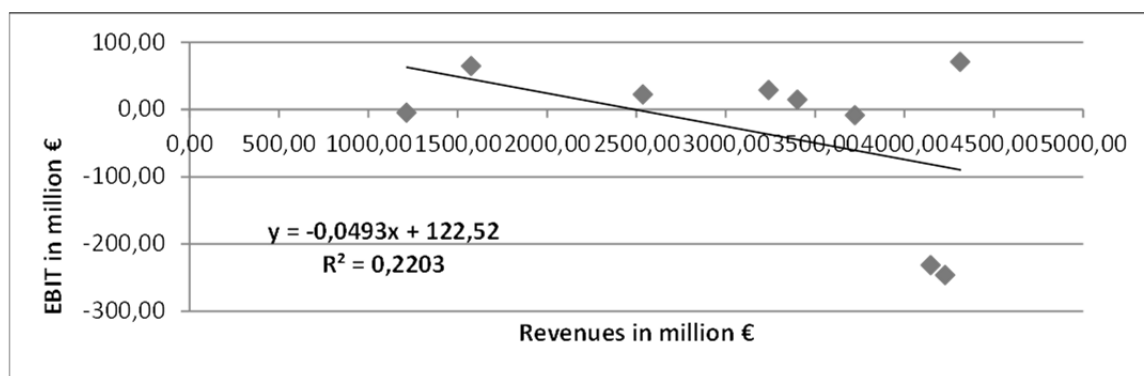


Figure 8: Linear Regression – EBIT depending on revenues 2005-2013

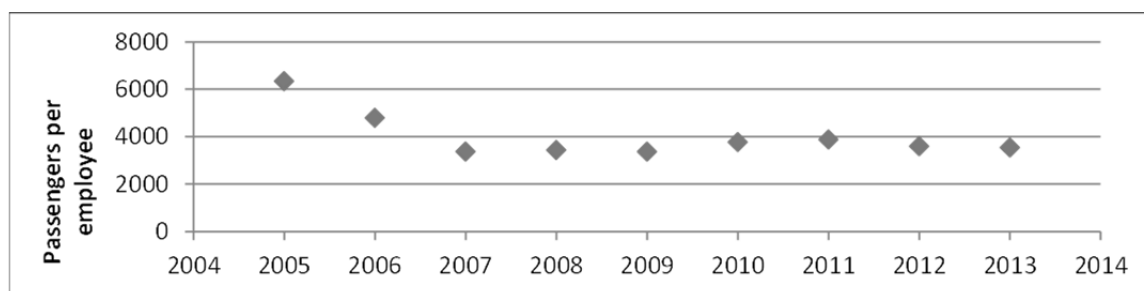


Figure 9: Productivity – Passenger per Employee

Table 4: Change of Business model - Share of Passengers by Route Type (passengers with departure from Germany, flights operated under AB code)

Route-Type	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Domestic	456345	720920	1260061	768293	2199595	6569597	9405168	9651349	10678924	9251047	8224785	7832709	7632434
Tourist	3137481	3549927	5206485	1049737	6346180	6903756	7856941	7652296	9395246	6809561	10500502	10548708	10655180
City	293215	1820945	3340213	1995888	5413433	6303264	6808152	6649477	8672158	8134197	7638531	7742909	7705314
Long-haul	0	0	0	0	0	0	118320	28359	79108	810651	1566290	1702909	1842395
Total	3889043	6093795	9808763	3815923	13961214	19778624	24190589	23983490	28827446	25007467	27932120	27829248	27837337

Route-Type	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Domestic	11,7%	11,8%	12,8%	20,1%	15,8%	33,2%	38,9%	40,2%	37,0%	37,0%	29,4%	28,1%	27,4%
Tourist	80,7%	58,3%	53,1%	27,5%	45,5%	34,9%	32,5%	31,9%	32,6%	27,2%	37,6%	37,9%	38,3%
City	7,5%	29,9%	34,1%	52,3%	38,8%	31,9%	28,1%	27,7%	30,1%	32,5%	27,3%	27,8%	27,7%
Long-haul	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,5%	0,1%	0,3%	3,2%	5,6%	6,1%	6,6%
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Historically, Air Berlin's core business was leisure/charter/tourism market. After the takeover of DBA, Air Berlin's major field of business became domestic traffic, with up to 40% of passenger traffic. With the strong competition in the low cost market, city and domestic routes declined recently and the tourism sector again became once again most important segment (See Figure 10). This contraction in passenger traffic on domestic routes indicates a fundamental change in its business model as more strategic effort is now geared towards the long haul route networks. Air Berlin's long haul operations continue to exhibit strong growth capsuled by its increasing international network partnerships.

This contraction in passenger traffic on domestic routes indicates a fundamental change in its business model as more strategic effort is now geared towards the long haul route networks. Air Berlin's long haul operations continue to exhibit strong growth capsuled by its increasing international network partnerships. Again, this reflects the fundamental weakness threatening the carrier's revenue streams.

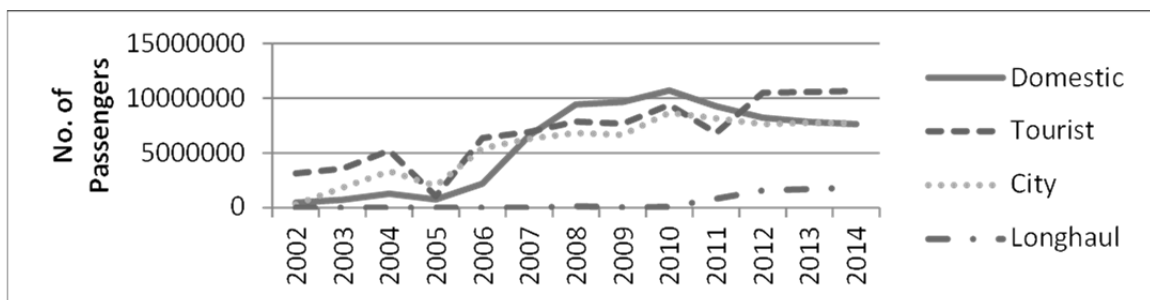


Figure 10: Number of passengers by route type

Evidently, Air Berlin's passenger numbers have shown strong growth in particular the touristic route networks (Figure 10). Domestic load factors have also been fairly strong although be-

tween 2010 and 2012 there was significant drop in passenger number due to an increase in route fare competition among some of Europe's low cost carriers. Long-haul passenger numbers have shown positive signs of growth as result of Air Berlin's low cost, long haul strategy that has been galvanized by its collaborative alliance partnerships with Etihad, American Airlines and British Airways giving the airline access to a global flight route network. Results indicate strong growth in ASKs and RPKs especially to Abu Dhabi and the Caribbean. However, flight capitalization which is plagued by strong competition on domestic routes has caused the decrease in city route markets.

Overall, share of passenger share by route type (see Figure 11) shows a fairly sustainable level of performance since Air Berlin started embracing its hybrid strategy. Increased market participation by rival carriers on the most contested routes reflects the slight changes in city, domestic for AirBerlin indicating the pressure to shift strategy towards hybrid (see Figure 11). However, the tourist passenger numbers continue to show strong growth and the research findings indicate that AirBerlin has increased its flight frequency to key tourist destinations for example, Greece, coastal resorts, Canary Islands and the US is a key strategic growth market.

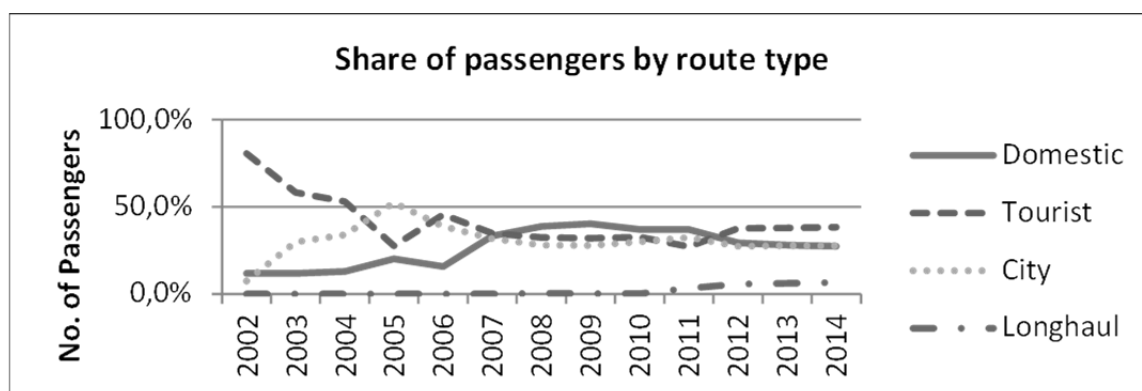


Figure 11: Share of passengers by route type

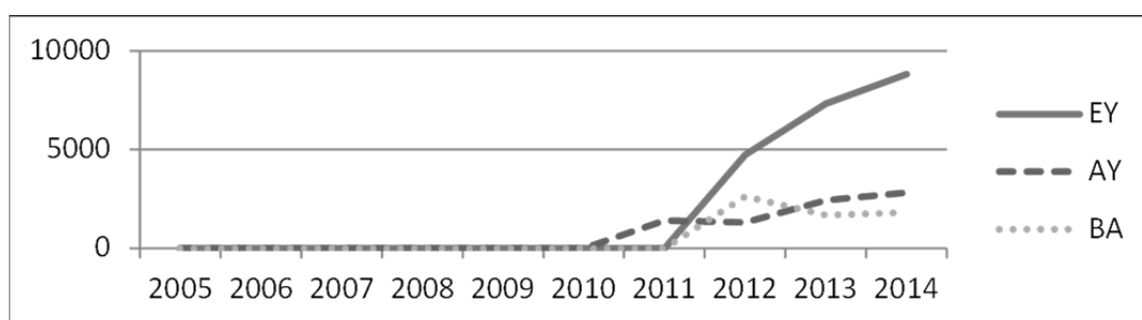


Figure 12: Number of Codesharing Flights (Month of May) Air Berlin as Operating Partner

Since 2005, Air Berlin's has continued to increase its collaborative arrangements with some of the network carriers, namely British Airways (BA) and Etihad (EY) (see Figure 12). This has evidently resulted in passenger share increase on a number of city-pair markets but, the long haul market has shown significant growth rising to 8 percent in 2014. Due to its expansion through global network partnerships and hub utilization via Etihad's hub in Abu Dhabi, Air Berlin gives access to its passengers to over 250 destinations allowing passengers to make connections to Asia, Australia, the Arab world and Seychelles. This network strategy has given a sharp rise in the overall total code sharing flights in particular the month of May (see Figure 12).

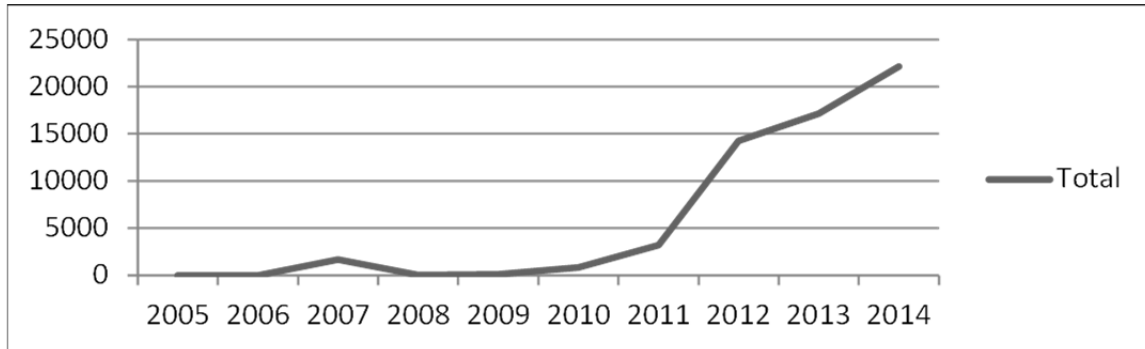


Figure 13: Total Number of Codesharing Flights (Month of May) Air Berlin as Operating Carrier

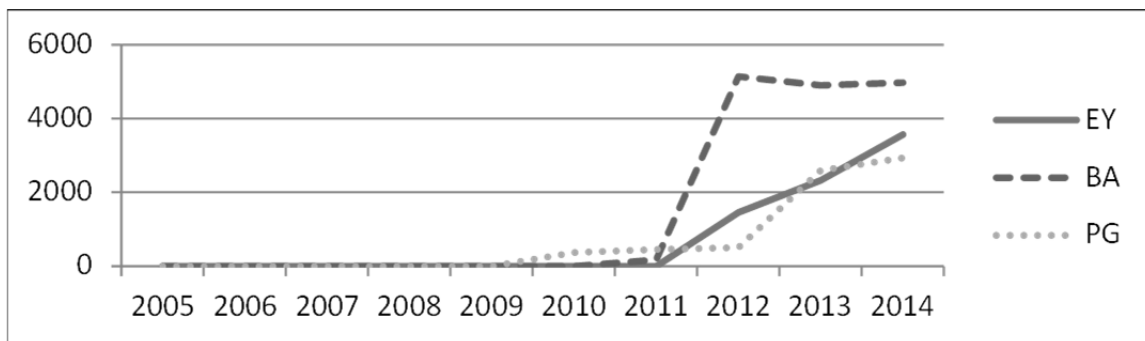


Figure 14: Number of Codesharing Flights (Month of May) Air Berlin as Marketing Carrier

Through collaborative networks and joint marketing efforts, results indicate a significant rise in Air Berlin's partnerships along the dimensions of its value chain (Figures 13 and 14).

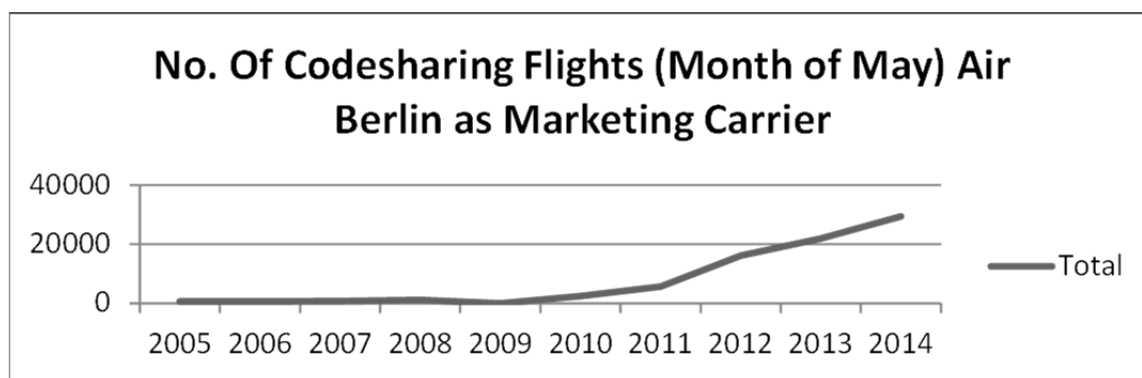


Figure 15: Total Number of Codesharing Flights (Month of May) Air Berlin as Marketing Carrier

The research findings reveal that strategic network partnerships of Air Berlin have varied performance outcomes and passenger welfare gains have been achieved through the FFPs benefits.. At least partnership with Etihad brings significant passenger numbers (See Figure 16).

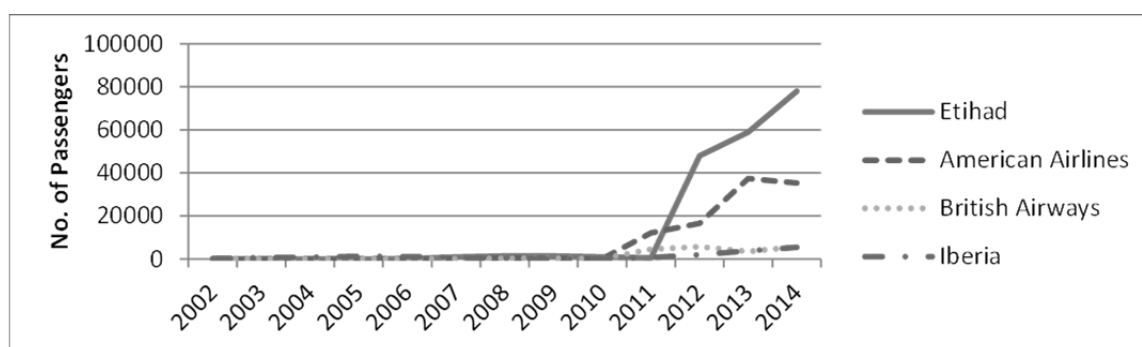


Figure 16: Passenger on Codeshare/Interline Connections from Germany

Interlining partnerships shows strength with Air Berlin's strategic partner Etihad and prospects of growth for passenger connectivity using Abu Dhabi as a hub point in particular with American Airlines. The last 4 years have shown significant growth with its major network partners (see Figure 16).

Air Berlin's average yield dropped to €120.1 in 2013 down from €121.0 the previous year. However, Air Berlin has increased capacity utilization, revenue per available seat kilometre (RASK) and revenue passenger. Overall, the findings indicate fair revenue per available seat kilometre (RASK) increased by 4.8 % to 7.20 US cents. This reflects a sharp improvement in seat occupancy pushing the average yield up as a function of the load factor (Figure 17).

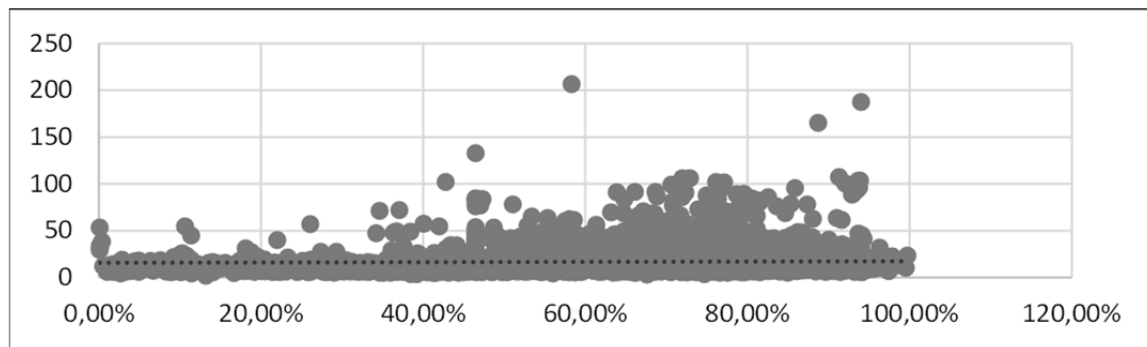


Figure 17: Yield-US-Cent/Kilometre as a function of the Load Factor

The average yield has dropped marginally due to increased level of competitive rivalry at fare level on intra- European market segments (Figure 18). However, markets like Germany, Spain and Greece shows positive average yields and the results indicate city pair markets like Dusseldorf – Munich – Dusseldorf being particularly strong domestic routes, and in Spain the Dusseldorf – Madrid – Dusseldorf also showed strong yields.

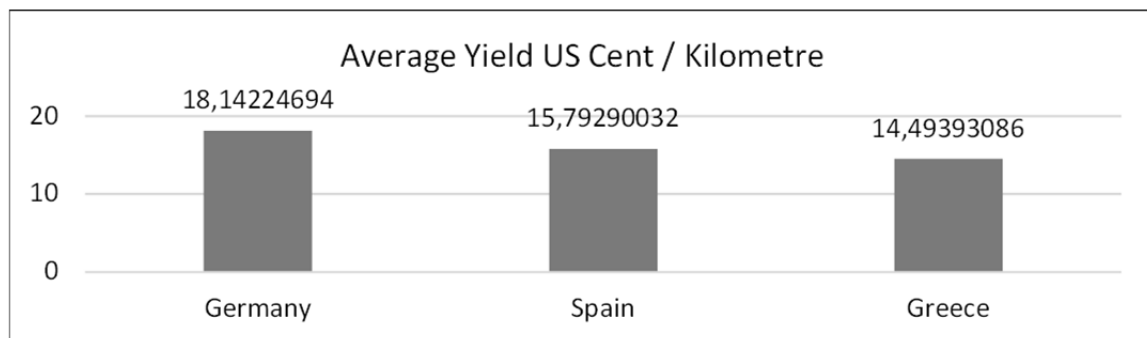


Figure 18: Average Yield US Cent / Mile

Finally, Greece due to the large volume of tourist passenger numbers, the overall perspective of average yield is also relatively strong. Overall, Germany, Spain and Greece, the average passenger yields remain relatively positive due to the large volume of tourist passenger load factor (Figure 19).

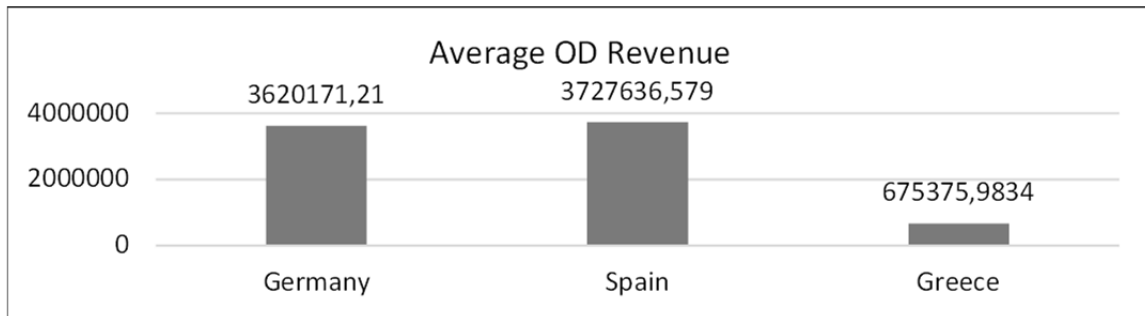


Figure 19: Average OD Revenue

Average OD over the period under study indicates revenue earning was particularly weak in the early parts of 2013 due to under capacity utilization of some of its fleet which was also culminated by a weak demand pattern on domestic routes. The booking data reflecting OD also indicates that Spain in particular is a relevant strong market for Air Berlin's tourist destinations (Figures, 19, 20).

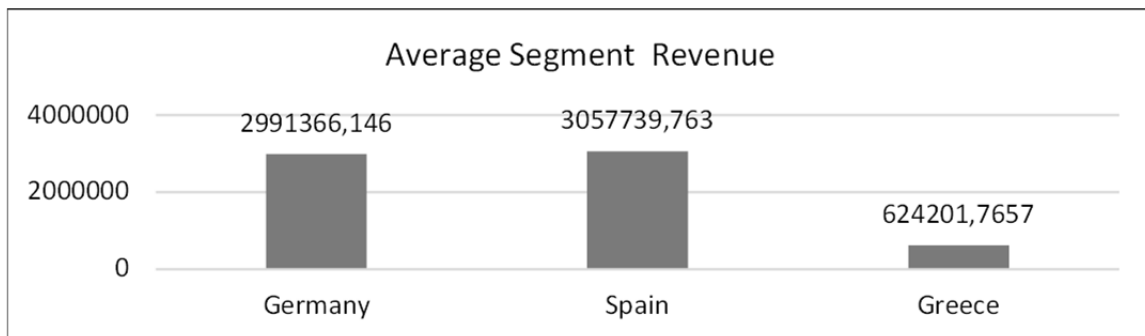


Figure 20: Average Segment Revenue

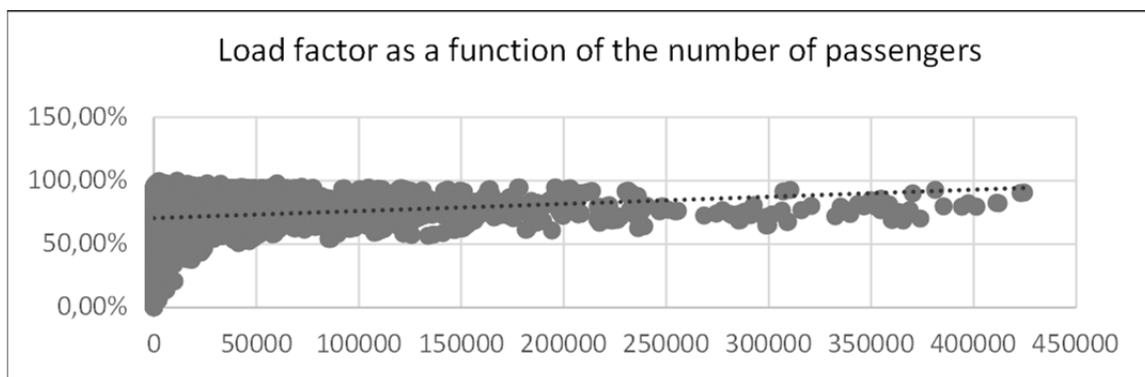


Figure 21: Load factor as a function of the number of passengers



The load factor as a function of passenger number is significant since it indicates the increase in number of routes offered by Air Berlin in particular on key tourist market destinations and overall results indicate that this increase in load factor is attributed to consistent capacity utilization (Figure 21).

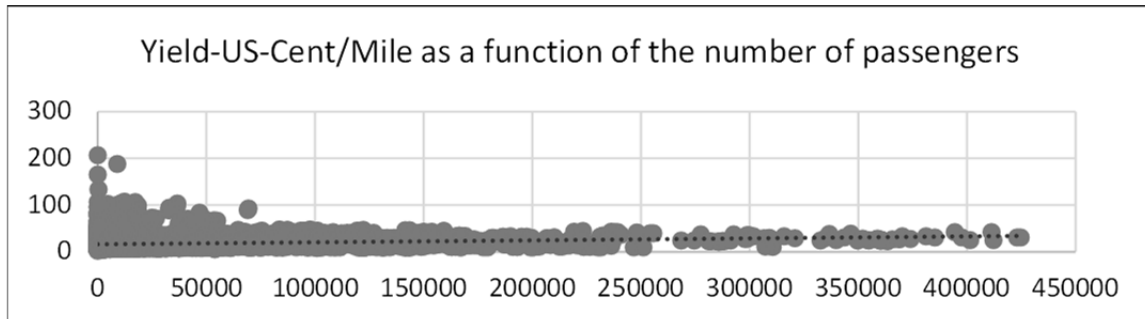


Figure 22: *Yield-US-Cent/Kilometre as a function of the number of passengers*

Achievement of high load factors is deemed essential for airline's profitability. The yield/per kilometre ratio also indicates significant level of performance even though there was a sharp-drop from 2013 (see Figure 23) and yields as a function of load factor remains relatively flat in the early parts of 2014.

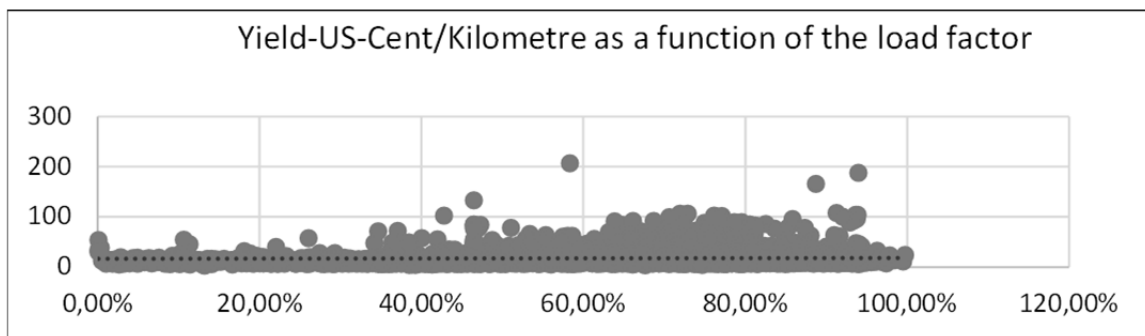


Figure 23: *Yield-US-Cent/Kilometre as a function of the load factor*

The yield results showed higher peak during the high season giving Air Berlin strong competitive position in particular on tourist destinations and its long haul markets. The findings also shows that Air Berlin revealed double digit revenue per ASK in 2009 which was significant as the airline absorbed a large volume of passengers on its short haul destinations.

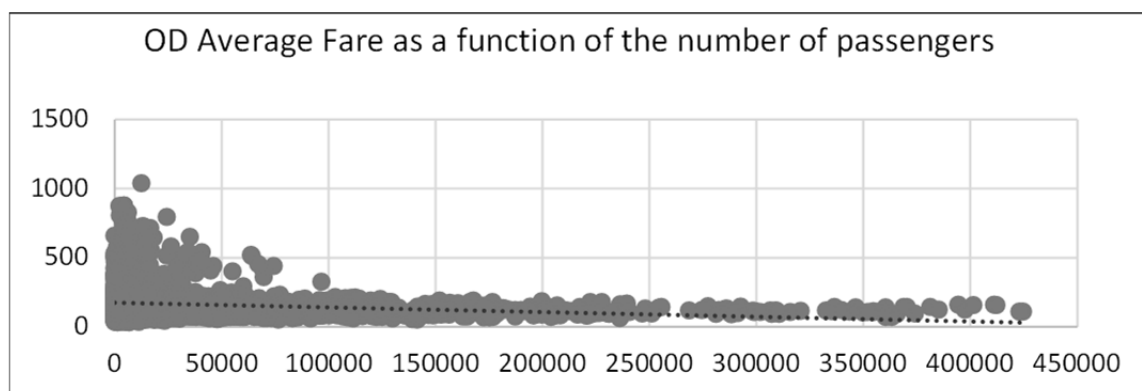


Figure 24: OD Average Fare as a function of the number of passengers

Figure 25 plots the OD average fare as function of number of passengers. A curvilinear relationship is displayed indicating that longer trips tend to have lower fare per kilometre or yield because the fixed costs associated with each flight can be spread over a large number of kilometres. This also explains why the larger volume of Air Berlin's passenger numbers are generated on its long haul route networks. This indicates a statistically significant competitive effect that overall the OD average fare for Air Berlin.

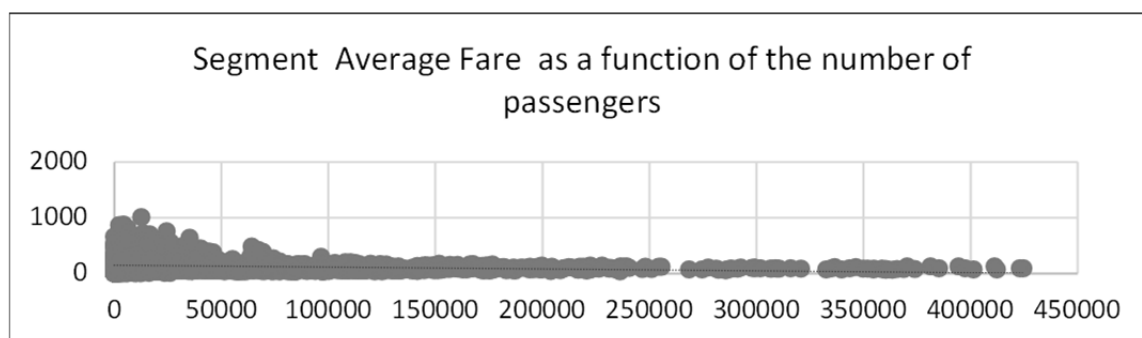


Figure 25: Segment Average Fare as a function of the number of passengers

Overall, the research findings provide empirical support to existing presumptions of the general airline business model structure. Evidently, the Air Berlin's business model clearly signals a change in the industry competitive landscape in particular at fare level. In retrospect, the regressed average yields as a function of load factors shows that Air Berlin continues to perform relatively strong in its key long haul markets due to an increased volume of passengers utilizing the Abu Dhabi hub to connect to other international destinations through its global network carrier partnerships.

## 5 Discussion of Results and Remarks

The paper has made an attempt to evaluate performance drivers at Air Berlin by examining the key indicators that reflect airline performance. The significant migration of the business model has reflected a mixed picture on the overall performance in particular the passenger traffic, yields as a percentage of passenger numbers and its network collaborative partnerships. The potential for Air Berlin to expand its global network operations by further strengthening its relationships with Oneworld carriers will certainly increase its market penetration and route network optimization. For the future, Air Berlin has to position itself as a European multi-hub carrier with a strong market position in attractive catchment areas and competitive advantages such as lower unit costs, higher system integration of tour operator for its key markets. However, the high restructuring costs have certainly impacted Air Berlin's 2014 earnings.

These performance indicators can be enhanced by further fleet harmonization as part of restructuring into a sustainable model. This observation provides empirical support that migration of the low cost carrier business model has made significant gains increasing passenger traffic capacity on certain route networks, but Air Berlin's collaborative arrangement with OneWorld alliance will continue to show signs of passenger growth as the company realign its overall strategy to meet new market pressures to compete.

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