

JYVÄSKYLÄN YLIOPISTO

Taloustieteiden tiedekunta

**COST LEADERSHIP AS AN AIRLINE STRATEGY:
The European model – theory and implementation**

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Tiivistelmä <p>Vuonna 1997 Euroopan yhdentymisen myötä lentoliikenne vapautui kilpailulle ja tämän myötä uusia lentoyhtiöitä ilmestyi markkinoille. Monet näistä lentoyhtiöistä ovat perustaneet kilpailustrategiansa kustannusjohtajuudelle. Kustannusjohtajan tulee pystyä tuottamaan palvelunsa kilpailijoitaan halvemmalla, jotta se pitkällä aikavälillä pystyy pitämään hinnat halpoina.</p> <p>Lentoyhtiölle kustannusjohtajuus tarkoittaa rajoitettua palvelutasoa, ei ruokaa koneessa ei lounge palveluita. Nykyaikaiset halpalentoyhtiöt hyödyntävät uudet jakelukanavaratkaisut, kuten internet, tehokkaasti laskien samalla omia kustannuksiaan, mutta samalla parantaen ja tehostaen palvelutasoaan kun lentoliput voidaan varata interneistä.</p> <p>Kustannusjohtajuus edellyttää kuitenkin tietyn tyypistä reittiverkostoa. Yhtiön tulee pystyä lentämään riittävän lyhyttä reittipituutta jotta se voi saavuttaa korkean päivittäisen käyttöasteen. Oikein rakennettuna kustannusjohtaja lentoyhtiö pystyy tuottamaan palvelunsa puolta halvemmalla kuin sen kilpailijat. Halpalentoyhtiö eivät kuitenkaan ole hyväntekijöitä. Ne hyödyntävät tehokkaasti kysynnän vaihtelut ja hintataso saattaa vaihdella halvimman ja kalleimman hinnan välillä jopa 20-kertaiseksi. Eurooppalainen halpalentoyhtiömalli noudattaa voimakkaasti Amerikkalaista Southwest Airlinesin strategiamallia, ja tämä malli on osoittautunut tehokkaaksi myös täällä Euroopassa.</p>	
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Author Ari Kalevi Soinola	
Title Cost leadership as an airline strategy: the European model – theory and implementation	
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Abstract <p>Deregulation of the airlines business started in the Europe in year 1997. After that new airlines started their operations and many of those based their competitive strategy on cost leadership. Cost leader must be able to produce it's products more cheaper that it's rivals in the long terms perspective to keep the prices down. In the airline business cost leadership means limited service, no food in the aircraft, no lounge services. Modern low cost airlines uses latest technology like internet effectively in order to lower the costs, but also to upgrade the service level. It for the both the airlines and for the consumer to buy the tickets through internet. Cost leadership requires effective network structure. The trip length must be short , turnarounds at the airport fast and that is how the high daily utilization of an aircraft is gained. If done correctly low cost airlines can gain cost advantage up to half to it's competitors. Low cost airlines take advantage of the cyclicity of the demand and the prices can vary from the cheapest price up to 20-times higher price. The European low cost model is based on the Southwest Airlines Strategy model and this model has proven to be effective also here in Europe.</p>	
Key words: cost leadership, airline strategies, value chain analysis, cost management, network efficiency	
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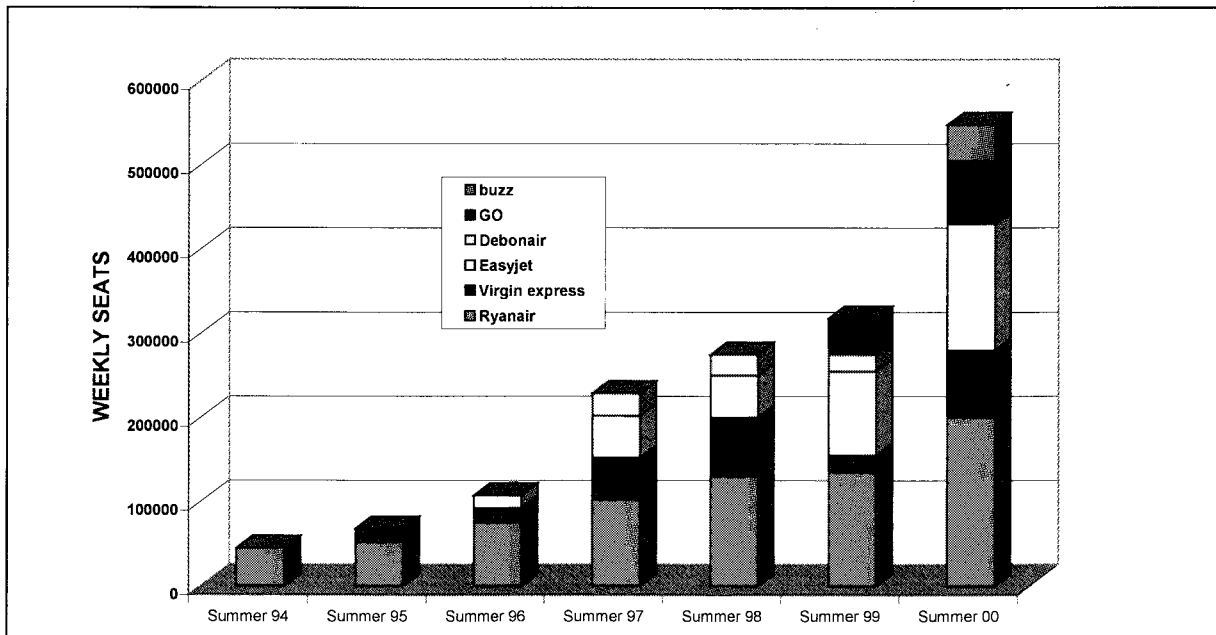
1 Introduction

European Union has changed many things in our society. Capital, goods, services and labour are free to move within most parts of Europe. This has increased competition and air transportation is no different. Deregulation started in Europe year 1997 and that made it possible for anyone to start their own airline business. Before deregulation only state-owned airlines were allowed to operate between European countries and traffic rights were bilateral and only between undersigned countries. It was common that within European countries in domestic air transportation environment there were competition, but deregulation opened also international air transportation for competition.

Europe follows United States of American 20 years behind. Air transportation was deregulated in USA at the end of the 70's and after that first low cost carriers started their operations. One of the first carriers was Southwest Airlines, which clearly based its competitive strategy on cost leadership. From those days Southwest has grown to be the fourth largest airline in US.

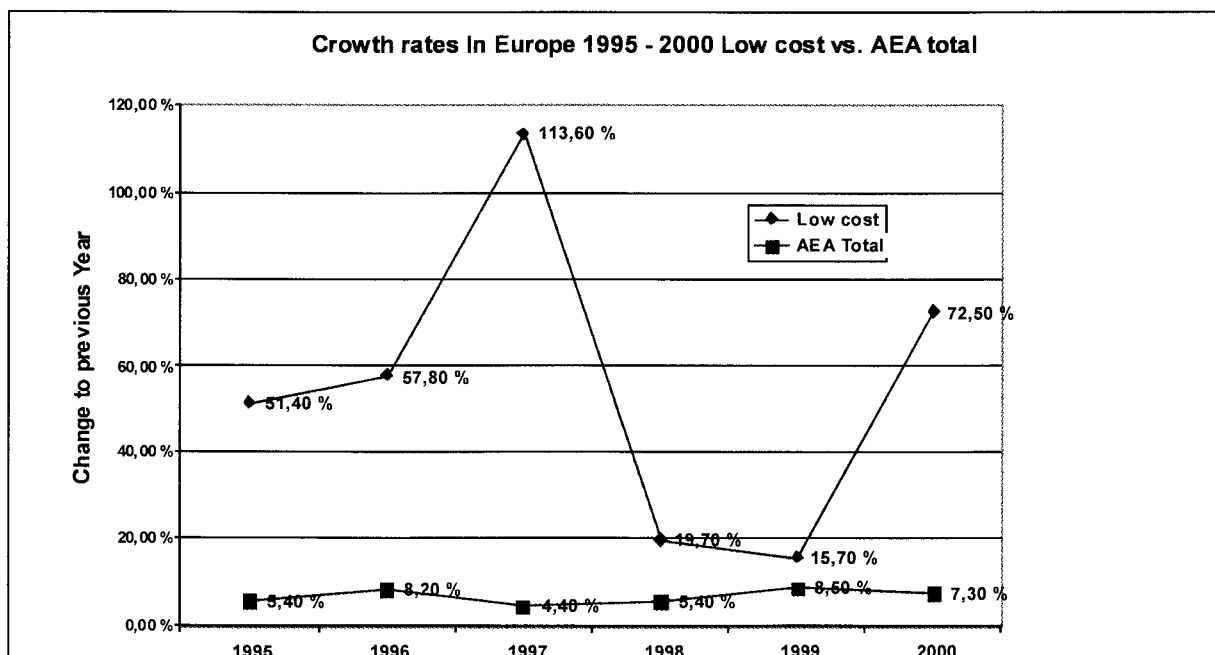
Competition development in the Europe after deregulation has been similar to the development in the United States. New airlines appeared to market and many of those based their competitive strategy on cost leadership. At first these airlines were independent airlines, without connections to state-owned airlines, which tried to copy Southwest way to do business. Some airlines copied Southwest model to do business better than others and one of the best airlines to do that was Ryanair. Ryanair was founded year 1985 and operated within British Isles, but after deregulation started to expand to other parts of Europe. Now year 2002 Ryanair has grown to be major player and one of the most profitable airlines in Europe. Last three years has shown that not only start up airlines are interested in cost leadership model to do business. Year 1998 British Airways started its own low cost affiliate, which it named GO and year after Royal Dutch airlines KLM started also a low cost carrier, which was named Buzz. With Buzz Finnish consumers got their share of deregulation when Buzz started to fly between London Stansted and Helsinki March 2000.

TABLE 1 European low cost carrier's available seats in a week 1996 – 2000



As can be seen in TABLE 1 low cost carriers growth after deregulation has been significant. In six years they have grown to be six times larger than they were. To get perspective how significant this growth has been this must be compared to other airlines. TABLE 2 indicates this.

Table 2 Low cost airlines growth vs. AEA carriers in average



In the TABLE 2 low cost carriers are compared to AEA carriers. AEA is an organization, which represents all major European airlines, but not the low cost airlines. As can be seen low cost airlines growth has been remarkably higher than the AEA airlines growth, in average low cost carriers grew in a 55% between 1996 – 2000 and traditional carriers grew 6.5%. This thesis approaches that phenomena.

2 Research questions

One of the main competitive advantages of a low cost carrier is the price. It must build it's cost structure so that it can produce services with lower cost level than it's competitors. On the other hand, costs can be reduced to minimum, but what is consumers opinion about that. In this this thesis's there are three research questions, and in the first there are two sub-questions. These questions are as follows:

- source of cost advantage for the low cost carriers
 - changes in the route network
 - changes in the low cost carriers value chain
- low cost pricing strategy
- low cost carrier from the consumer point of view: the airline value chain; low cost vs. flag carrier

First question is from the airline's management perspective and the focus is to get answers and measures how to build a low cost airline. The last research questions are from the consumer perspective and how consumer sees the low cost carrier value chain. In the first and the last questions low cost carriers are compared to major carriers. This gives more perspective to this thesis, because low cost carriers are compared to their competitors. This thesis is not trying to find the absolute truth about low cost strategy, more important is to find the framework for the European low cost model.

2.1 Previous studies

Seristö has studied airline industry and his main study focus has been strategies for airlines after deregulation and means for cost reduction for airlines. His studies are very important backbone for this study. Michael E Porter has made a strategy map

for Southwest, pointing out the critical success factors in Southwest's low cost strategy. Porter's strategy map is also very important for this study, keeping in mind that he is the inventor of the three generic competitive strategies and one of those strategies is the cost leadership.

2.2 Limitations of the study

The airline industry is very complex business and there are many factors behind airline's cost structure. In this study the main focus is to concentrate to operational efficiency and therefore the following elements are not included:

- Aircraft ownership – airlines can own their aircrafts or aircrafts can be leased. Capital costs and lease costs are important elements for airlines to control costs, but in this study they are left out because the focus would be too wide.
- Fuel hedging – aircraft fuel plays also important part in airline's cost. Airlines use hedging to prevent the inflation in oil price, which has risen a lot for the past few year, but in this thesis fuel hedging is ignored tool for cost management.
- Exchange rates - and their movement (mainly of the US-dollar) can be very affective to airlines economic performance, but in this thesis they are excluded.

In this study words low cost, cost leadership and no frills are synonyms and can be used as replacements for each other, as well as the words flag carrier, traditional airline and major airlines can be used to replace each other. Geographically this thesis is cropped to European low cost airlines and American low cost and traditional carriers are only used in the theoretical part of this thesis. The number of low cost airlines in Europe are increasing, but in this thesis only three low cost airlines were selected to find answer to the first research question. These low cost airlines are Ryanair, Easyjet and Virgin Express. These airlines are elected because they represent the low cost strategy at it's purest form in Europe. After deregulation low cost airlines were founded to compete against traditional airlines and therefore to me as researcher low cost airlines that are formed by flag carriers are countermove and therefore those are excluded. As for the thirs research question answers are gathered from the consumers from route Helsinki-London. This route is operated by Finnair, British Airways and Buzz.

3 Strategy

The word strategy has been around for a long time. Managers now use it both freely and fondly. It is also considered to be high point of managerial activity. For their part, academics have studied strategy extensively for about two decades now, while business schools usually have as their final required capstone a course in strategic management. The word strategy is so influential. But what does it really mean? (Mintzberg, 1998, 9) Näsi refers to Alfred Chandler's definition in which strategy can be seen as the determination of the objectives of an enterprise and the adoption of courses of action and the allocation of resources necessary for carrying out these goals. (Näsi, 1991, 29) He continues with Andrew's definition in which strategy is seen as "corporate strategy is the pattern of objectives, purposes and goals and major policies and plans for achieving these goals, stated in such a way as to define what business the company is in or is to be and the kind of company is or is to be". (Näsi, 1991, 29) According to Mintzberg a strategy is the pattern or plan that integrates an organization's major goals policies and action sequences into a cohesive whole. A well-formulated strategy helps to marshal and allocate an organization's resources into a unique and viable posture based on its relative internal competencies and shortcomings, anticipated changes in the environment, and contingent moves by intelligent opponents. (Mintzberg, 1988, 3)

3.1 Five Ps for strategy

Mintzberg (1998) has analysed strategies and what kind of features strategy can include. He has summarised his findings into five Ps. They are as follows.

Plan: ask someone to define strategy and you will likely be told that strategy is a plan, or something equivalent – direction, a guide of course of action into the future, a path to get from here to there. Then ask that person to describe the strategy that his or her own organization or that of a competitor actually pursued over the past five years – not what they intended to do but what they really did. You will find that most people are perfectly happy to answer that question, oblivious to the fact that doing so differs from their very own definition of the term. (Mintzberg, 1998, 9)

Pattern: it turns out that strategy is one of these words that we inevitably define in one way yet often also use in another. Strategy is a pattern, that is consistency in behaviors over time. A company that perpetually markets the most expensive products in its industry pursues what is commonly called a high-end strategy, just as a person who always accepts the most challenging of jobs may be described as pursuing a high-risk strategy. (Mintzberg, 1998, 11)

Position: to some people, strategy is a position, namely the locating of particular products in particular markets. As Michael Porter reiterated “strategy is the creation of a unique and valuable position, involving a different set of activities” (Mintzberg, 1998, 12)

Perspective: to others, strategy is a perspective, namely an organization’s fundamental way of doing things. (Mintzberg, 1998, 13)

Ploy: strategy is a ploy, that is, a specific “maneuver” intended to outwit an opponent or competitor. A kid may hop over a fence to draw a bully into his yard, where his Doberman Pinscher waits for intruders. Likewise, a corporation may buy land to give the impression it plans to expand its capacity, in order to discourage a competitor from building a new plant. (Mintzberg, 1998, 14)

3.2 Generic competitive strategies

According to Mintzberg strategy can be seen as a position. Michael E Porter’s three generic competitive strategies are the best known example of strategy as a position. The three generic competitive strategies are: overall cost leadership, differentiation and focus. (Porter, 1980, 35)

3.2.1 Overall cost leadership

The first strategy is to achieve overall cost leadership in an industry through a set of functional policies aimed at this basic objective. Cost leadership requires aggressive construction of efficient –scale facilities, vigorous pursuit of cost reductions from experience, tight cost and overhead control, avoidance of marginal customer

accounts and cost minimization on areas like R&D, service, sales force, advertising and so on. A great deal of managerial attention to cost control is necessary to achieve these aims. Low cost relative to competitors becomes the theme running through the entire strategy, though quality, service and other areas cannot be ignored. Having a low-cost position yields the firm above-average returns in its industry despite the presence of strong competitive forces. Its cost position gives the firm a defence against rivalry from competitors, because its lower costs mean that it can still earn returns after its competitors have competed away their profits through rivalry. A low-cost position defends against powerful buyers because can exert power only to drive down prices to the level of the next most efficient competitor. Low cost provides a defence against powerful suppliers by providing more flexibility to cope with input cost increases. The factors that lead to a low-cost position usually also provide substantial entry barriers in terms of scale economies or cost advantages. Finally, a low cost position usually places the firm in a favorable position vis-à-vis substitutes relative to its competitors in the industry. Thus a low-cost position protects the firm against competitive forces because bargaining can only continue to erode profits until those of the next most efficient competitors are eliminated, and because the less efficient competitors will suffer in the face of the competitive pressure.

(Porter, 1980, 35)

3.2.2 Differentiation

The second generic strategy is one of differentiation the product or service offering of the firm, creating something that is perceived industrywide as being unique. Approaches to differentiating can take many forms: design or brand image, technology, customer service or other dimensions. Ideally, the firm differentiates itself along several dimensions. Differentiation, if achieved, is a viable strategy for earning above-average returns in an industry because it creates a defensible position for coping with the five competitive forces, albeit in a different way than cost leadership. Differentiation provides insulation against competitive rivalry because of brand loyalty by customers and resulting lower sensitivity to price. (Porter, 1980, 37)

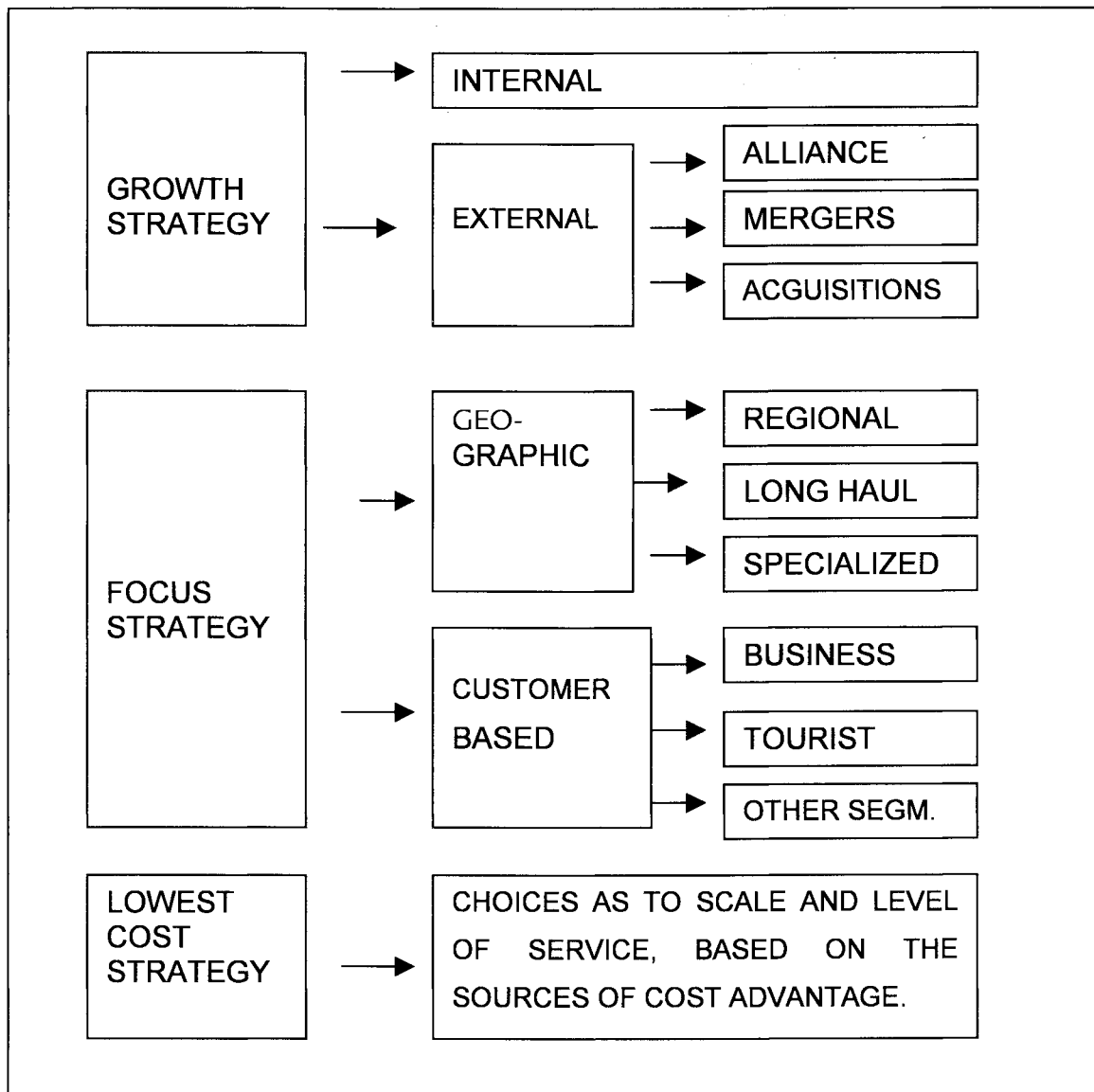
3.2.3 Focus

The final generic strategy is focusing on a particular buyer group, segment of the product line or geographic market; as with and differentiation, focus may take many forms. Although the low cost and differentiation strategies are aimed at achieving their objectives industry wide, the entire focus strategy is built around serving a particular target very well, and each functional policy is developed with this in mind. The strategy rests on the premise that the firm is thus able to serve its narrow strategic target more effectively or efficiently than competitors who are competing more broadly. As a result, the firm achieves either differentiation from better meeting the needs of the particular target, or lower costs in serving this target, or both. Even though the focus strategy does not achieve low cost or differentiation from the perspective of the market as a whole, it does achieve one or both these positions vis-à-vis its narrow market target. (Porter, 1980, 38)

3.3 Strategies for European airlines

Seristö (1993) has studied airline strategies in Europe. His main findings were that there are three base strategies to choose from. These three variables are growth strategy, lowest cost strategy and focus strategy. (Seristö, 1993, 162) These base strategies can be pursued in various ways. Growth can be sought internally and externally. Internal growth means more or less organic growth and external growth can be achieved through alliances, acquisitions and mergers. Cost leadership leaves less room for variation than growth strategy does. Pursuing the strategy of lowest costs requires tight cost control in all areas of operation and may require some up-front investments so that efficient scale is achieved. Focus strategy is airline business can be pursued through two basic focusing approaches: an airline can focus either on a particular geographic area or on certain customer segment. As to the geographic focus there are three choices. Firstly, an airline can provide regional services or secondly, an airline can provide only long-haul services (and possibly use only certain type of wide-body aircraft). The third mode of focus strategy is concentrate on some geographic area where it has specific advantages. (Seristö, 1993, 162) The strategic options for European airlines are summarized in FIGURE 1

FIGURE 1 strategic options for European airlines



In every strategy there are strategic guidelines which airlines can pursue. These are demonstrated in the TABLE 3. (Seristö, 1993, 165)

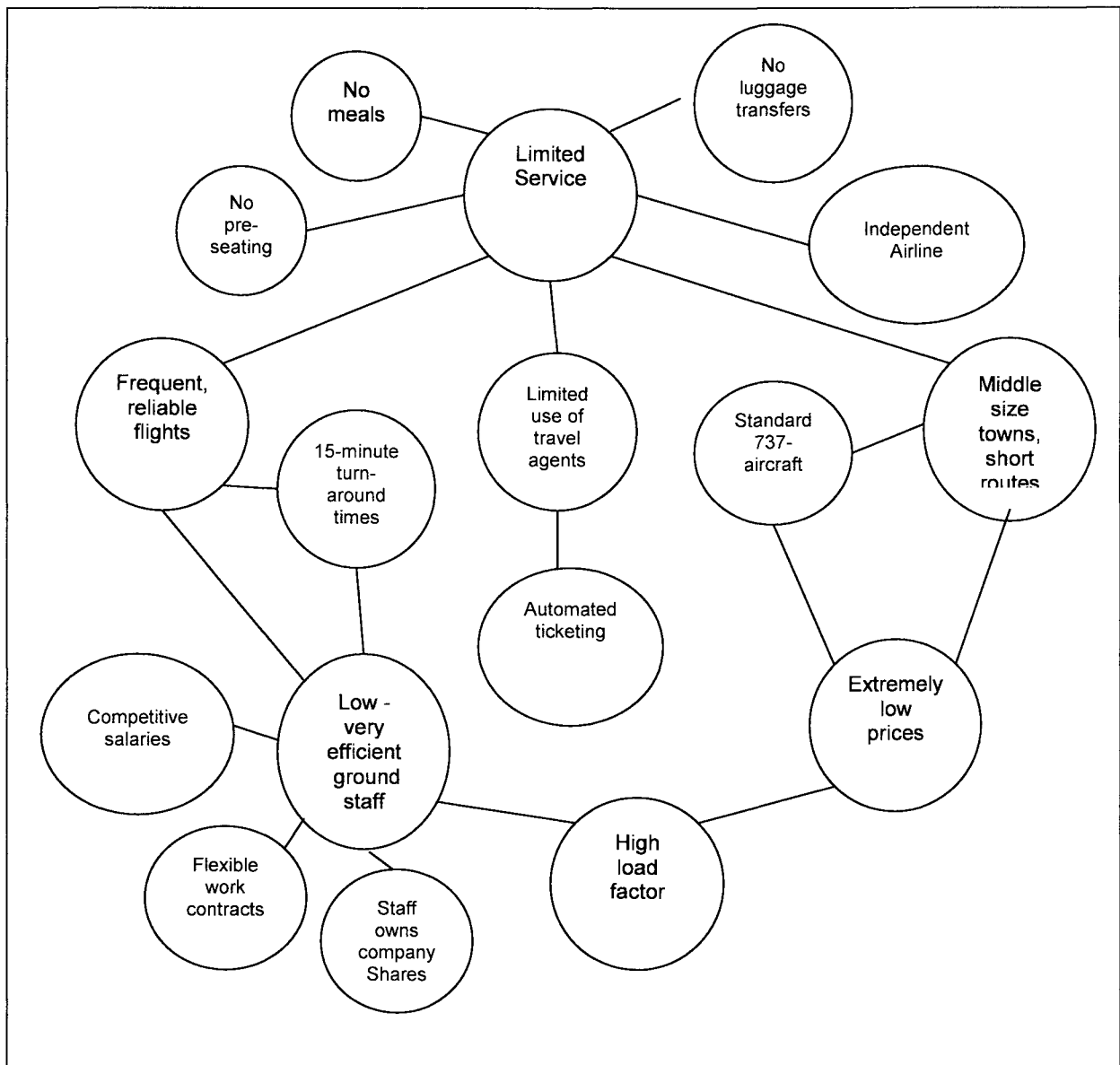
TABLE 3 strategic guidelines for different base strategies

<p>Growth strategy</p> <ul style="list-style-type: none"> • Seek growth only in the core business, and do not diversify overly. • Build alliances in order to grow and to eliminate competition. • Enhance market power through innovation and investment in marketing and distribution. • Aim at dominating your hubs • Respond to challenges by smaller competitors promptly and show commitment to growth. • Strive constantly for lower overall costs. • Beware of excessive leverage in financing growth.
<p>Lowest cost strategy</p> <ul style="list-style-type: none"> • Strive constantly for lower overall costs. • Keep low profile, i.e. do not challenge the larger competitors in their terms. • Focus on segments that may seem less tempting for larger competitors. • Stick to your own strength area; resist the temptation of growing too rapidly.
<p>Focus strategy</p> <p>Based on customer segment</p> <ul style="list-style-type: none"> • Focus your efforts on a segment that is willing to pay premium for the differentiated product. • Strive constantly for being the leader in differentiation and invest accordingly. • Utilize vertical integration in differentiation.
<p>Based on geography</p> <ul style="list-style-type: none"> • Strive for domination in your region. • Enter new routes selectively, and with large capacity from the start. • Find markets where larger competitors are not present.

3.4 Cost leadership – Southwest Airlines' Activity System

It is clearly stated that cost leadership is also one of the base strategies in the airline business. In TABLE 3 some guidelines were given to understand what cost leadership means. Porter has analyzed Southwest airlines and based this analyze he has drawn a strategic map for Southwest. (Porter,2001, 22)

FIGURE 2 Strategic map for Southwest airlines



According to his studies these elements presented in FIGURE 2 have made it possible to Southwest to pursue cost leadership strategy. As the figure shows there are no easy answer to define what cost leadership is – it is a combination of several

elements. In order to offer low prices Southwest must be able to have lower cost level than it's competitors. According to FIGURE 2 lower cost level is achieved by limited service, by low and efficient ground staff, by a certain route structure and by frequent and reliable flights. These elements has also sub-elements behind them. To get more structured view about the strategy map it must be brake up with value chain analysis.

3.5 The value chain

The various functions of an airline can be arranged in different formats in order to define the business process of value chain in the airline industry. For the purpose of assisting management decesion-making, there are two basic approaches that are presented here. The first approach takes the perspective of a consumer, reflecting a consumer's contacts with the various components in airline service. The following figure illustrates an airline value chain from consumer's perspective.

(Seristö, 1995, 25)

FIGURE 3 An airline value chain from consumer's perspective

MARKE- TING	RESER- VATION	AIRPORT	FLIGHT	RELATED SERVICES
CONSUMER CONTACT:				
Marketing, sales Product planning Scheduling	Reservations CRS Ticketing	Ground transport Lounges Check-in Baggage Handling Security	Aircraft Cabin crew Entertain- ment Food, drink On-board sales	Tour services Car rental Credit cards

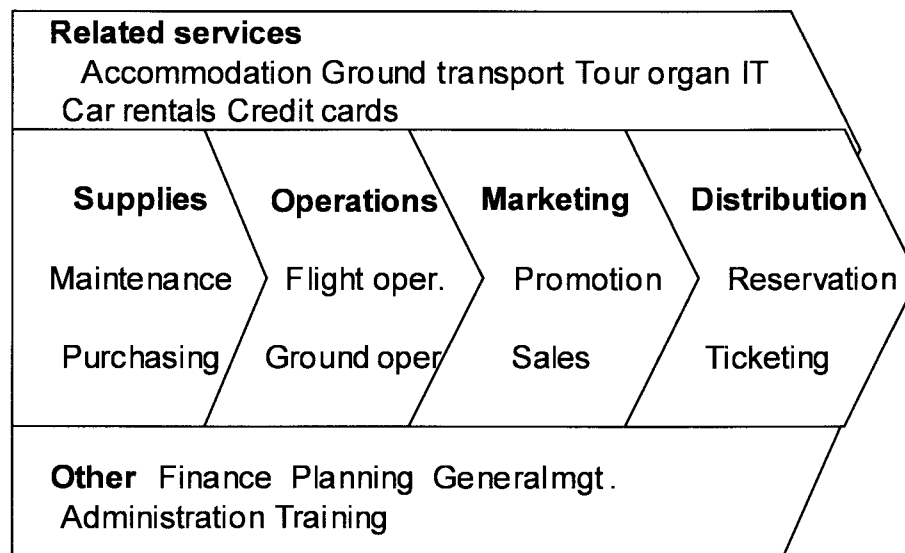
The second approach is the definition of various functional components in airline business. The following FIGURE 4 illustrates this approach.

FIGURE 4 Airline value chain as business functions

MARKE- TING	RESERVA- TION	AIRPORT	FLIGHT	RELATED SERVICES
FUNCTIONAL COMPONENTS:				
Marketing, sales Product planning Scheduling Fares GSAs FFPs	Reservations CRS GSAs Ticketing	Pax handling Baggage Handling A/C handling Catering Cleaning Security Maintenance Crew Management Compensations	Flight crew Cabin crew Catering Entertainm. Sales	Accommod. Tour organisat. Car rentals Credit cards IT Data services

Another way to look at airline operations is to build a business process of different functions. This is meant to help to define the main activities and supplemental activities in airline business. It is important to determine what really is the essential core of airline business if significant measures of cost reduction are to be taken in airlines. FIGURE 5 illustrates the airlines business process in a compact format. (Seristö, 1995, 25)

Figure 5 Airline business process

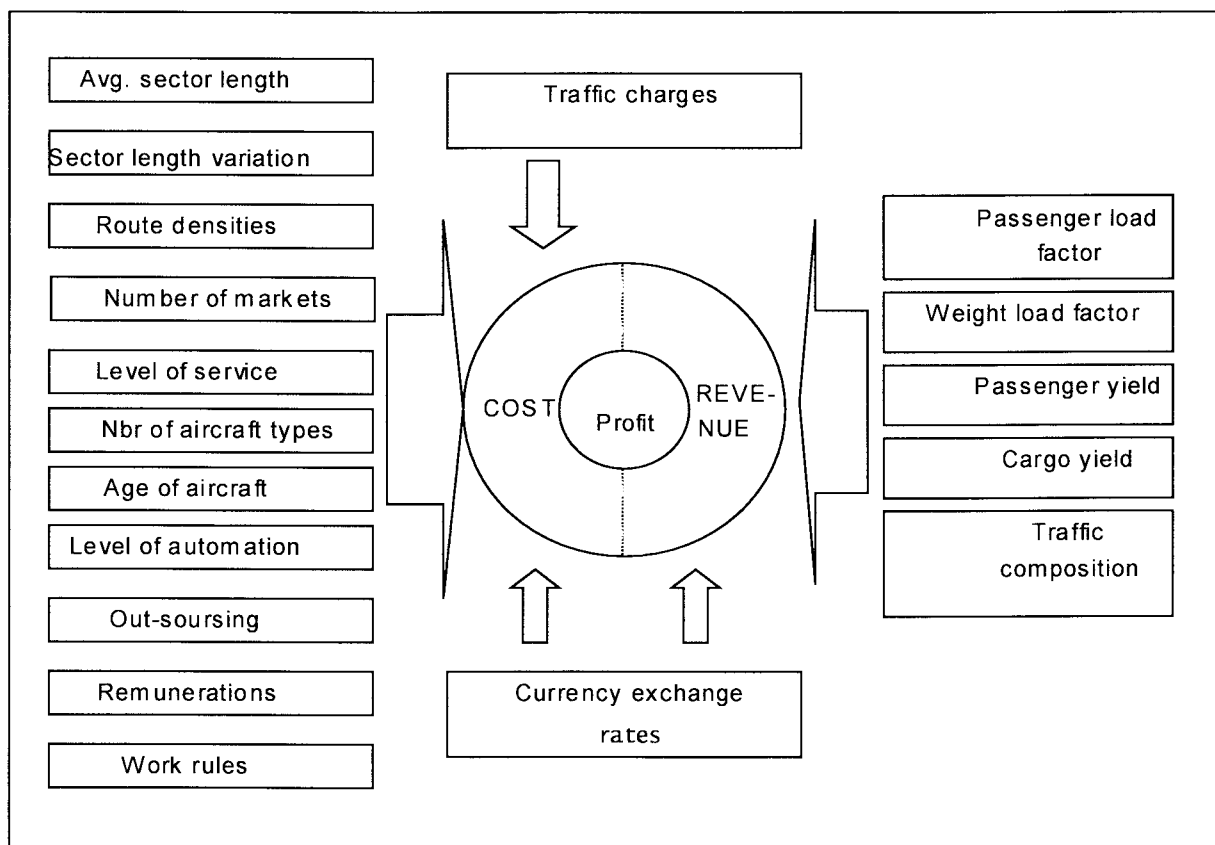


The cost behaviour of every activity in an airline's value chain will depend upon one or more separate cost drivers and it is these that in aggregate determine the carriers's cost position relative to competitors. An airline with a relative cost problem can do of the two things. It can reconfigure its value chain (i.e. re-engineer its service management and delivery processes – change what is done and / or how it is done, or it can gain a better understanding of, and control over, the cost drivers underlying these activities. (Holloway, 1999, 189)

3.6 Cost and revenue drivers in airline operations

The value chain gives an overall picture about the airline business and different elements in it. But get more detailed picture we must study what elements are behind an airline cost and revenue structure. In the FIGURE 6 is shown all the elements what forms airlines profit. On the cost side there are same elements which was also in Southwest's strategy map and also in the revenue side there are same elements also (e.g. level of service and passenger load factor).

FIGURE 6 Airline's cost and revenue factors



3.7 Airline cost structure

How an airline's costs are broken down and categorized depends on the purpose for which they are being used. No single cost categorization is capable of simultaneously satisfying all management or policy analysis requirements. As a result, most airlines break down their costs in various ways in order to use them for different aspects of management. A common practice is to divide airline accounts into operating and non-operating cost categories. The former can be further subdivided into direct operating and indirect operating costs. In practice, however, distinctions between direct and indirect operating costs are not clear cut. Certain cost items are categorized as direct costs by some airlines, but as indirect costs by others (Oum, 1998, 127) The Following TABLE X is based on Doganis (1991, 111) definition.

TABLE 5 An airline's direct and indirect costs

DIRECT OPERATING COSTS (DOC)	
1.	Flight operations
•	Flight crew salaries and expenses
•	Fuel and oil
•	Airport and en route charges
•	Aircraft insurance
•	Rental and lease of flight equipment/crews
2.	Maintenance and overhaul
•	Engineering staff costs
•	Spare parts consumed
•	Maintenance administration (could be IOC)
3.	Depreciation and amortization
•	Flight equipment
•	Group equipment and property (could be IOC)
•	Extra depreciation (in excess of historic costs)
•	Amortization of development costs and crew training
INDIRECT OPERATING COSTS (IOC)	
4.	Station and ground expenses
•	Ground staff
•	Buildings, equipment, transport
•	Handling fees paid to others
5.	Passengers services
•	Cabin crew salaries and expenses (could be DOC)
•	Other passenger service costs
•	Passenger insurance
6.	Ticketing, sales and promotion
7.	General and administration
8.	Other operating costs

3.8 Distribution of direct and indirect operating costs

How significant is a one single cost element given in TABLE 6? Holloway (1999, 179) has build up the following TABLE x, which demonstrates every cost items share per ATK. These figures are from IATA and the year is 1995.

TABLE 6 Distribution of direct and indirect operating costs 1995 (IATA)

	% of Total Operating Costs
Fuel and oil	10,9%
Maintenance and overhaul	9,5%
Depreciation of flight equipment	8,1%
Flight deck crew	7,3%
Landing charges	5,2%
En route charges	4,1
Rentals	4,0
Flight equipment insurance	0,5
DIRECT OPERATING COSTS	49,6
Ticketing, sales and promotion	18,0%
Station and ground	12,4%
Cabin attendants	7,2%
Passenger service	6,5%
General and administrative	6,3%
INDIRECT OPERATING COSTS	50,4%
TOTAL OPERATING COSTS	100%

As can be seen from the TABLE 6 the biggest individual cost element is ticketing and sales, or in other words distribution, it's share of costs are 18%. The second largest cost element is Station and ground costs (12,4%) and third largest individual cost element is fuel and oil (10,9%). As can also be seen most of the cost elements are labour intensive. Roughly 2/3 of all costs are labour related and only 1/3 costs are not labour related, biggest single cost item being fuel and oil, which during past couple of years has risen very rapidly.

4 Means for cost reduction

Seristö has made his doctoral thesis about cost reductions for major airline and in the following chapter we shall see what kind of methods he has suggested for cost reduction and to what part of the value chain those elements belong to and how the cost reduction can be measured. Newly formed low cost carriers are in a different position when it comes to cost management. That is mainly because those companies can take all the benefit from the new inventions (internet sales) without historic ballast to old systems (travel agent sales). (Seristö, 1995, 123 - 149)

Seristö has analysed the means for airlines for cost reduction. In his study he came up with following list to reduce cost:

- Chances in route network
- Fleet composition rationalization
- Out-sourcing:
 - Maintenance
 - Flight operations
 - Marketing
 - Ground handling
 - In-flight catering
 - Aircraft
 - Flight crews and cabin crews
- Relocation of functions
- New technology and automation
- Cuts in salaries and benefits

Next we shall take a look at these elements one at the time and try to find out why those are so important, how much they can reduce costs and how to measure to benefit.

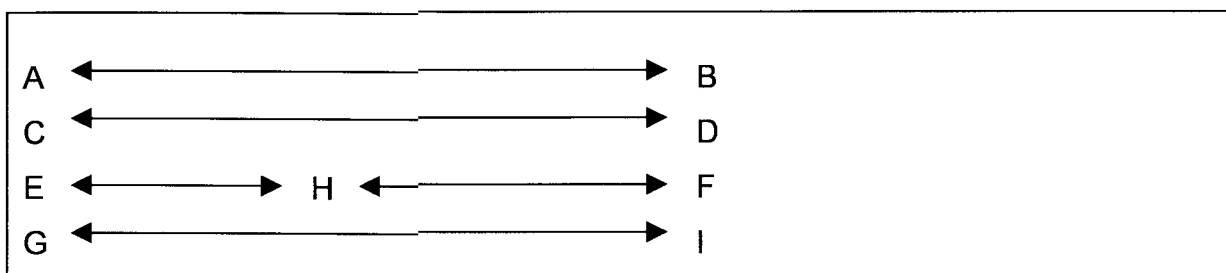
4.1 Route network

Route network of an airline is the integration of separate routes into a unified geographical pattern. The way an airline links various routes (spatial dimension) and co-ordinates schedules (temporal dimension) defines the airline's network. Network can be seen as the physical manifestation of an airline's production plan. Airlines have different configuration for their networks; they range from a simple point-to-point route to a vast network of hundreds of cities (hub and spoke-system) (Seristö, 1995, 123)

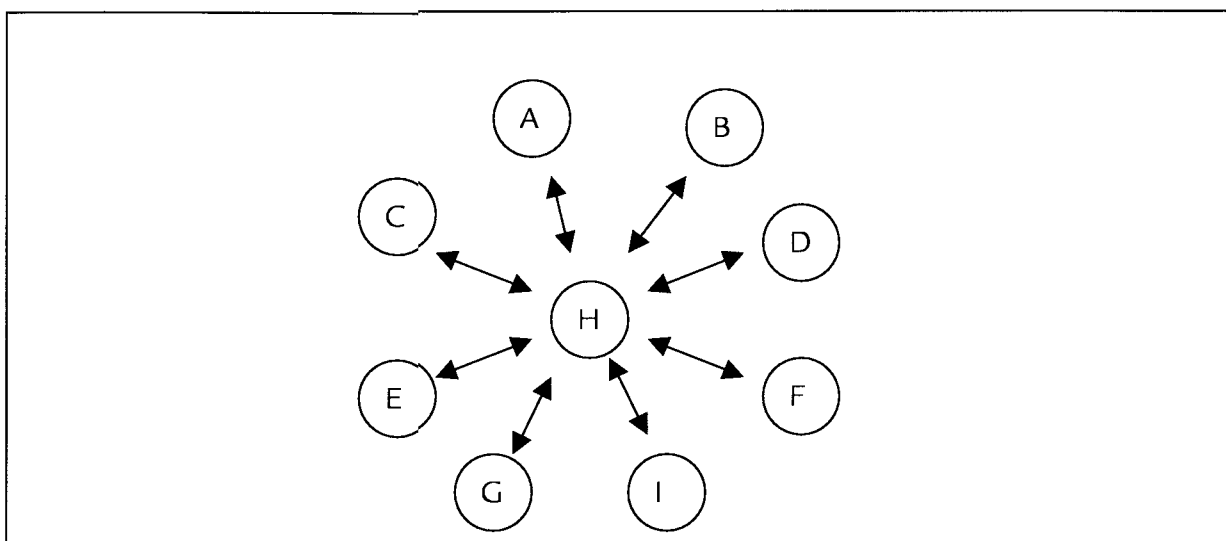
4.1.1 Types of networks

There are two main strategies for airline to build network; point-to-point model and hub-and-spoke model. (Dempsey, 1997, 207)

Point-to-Point (6 City-Pairs)



Hub – And – Spoke Network (36 city-pairs)



Linear networks carry origin-destination (O and D) traffic non-stop routes, and both through and local O and D traffic on multi-stop routings. They remain widespread, particularly amongst international carriers. Some online traffic might be fed over the airlines's home base, but what distinguishes this radial form from true hub-and-spoke networks is that there is very little online feed as a proportions of total traffic flows; interline feed at either end may or may not be significant. (Holloway, 1999, 250)

Point-to-point services on a linear network could, for example, be:

- Primary (airport) -to- primary (airport): perhaps intended to exploit the economies of density available from serving O and D traffic flowing between major nodes;
- Secondary (airport) -to- primary (airport): this type of route is most commonly found in hub-and-spoke networks, but point-to-point flows between such centres might be significant in their own right and they are also increasingly encountered in a hub-bypass context; or
- Secondary (airport) -to- secondary (airport): likely to be a hub-bypass route, this type of point-to-point service is becoming common in some short-haul markets, notably in Europe.

Hub-and-spoke networks

These are formed by routes radiating from a hub. Their essence is the timing of banks of arriving flights to permit onward transfer of passengers to banks of departing flights; tightly integrated banks of arriving and departing flights from discrete peaks or "waves", the primary purpose of which is to maximize the number of feasible connections for incoming passengers whilst keeping their connecting times within defined and acceptable limit. Short-haul spokes are usually, although not inevitably, non-stop; medium- and long-haul spokes are more likely to be one-stop or even multi-stop, but here also there is strong market pressure in favour of non-stops. (Holloway, 1999, 250)

There are several advantages of hubbing:

First - travellers have to make fewer stops than in the so-called sequential system, where cities are connected in sequence. Naturally the number is smallest in the direct-flight configuration, but each direct flight might not have adequate demand base for economically justified operations. (Seristö, 1995, 123)

- Secondly – the airline can consolidate its maintenance and ground functions at the central (hub) location.
- Third – the airline can offer a wider range of destinations with a smaller investment in flight time.
- Fourth – building a strong hub puts the airline in a virtual monopoly status at the hub airport and its hinterland, because it has the control of gates and slots for departures and landings.

Route Selection

In selecting routes, a potential entrant into a city-pair market must assess the nature of competition in that market – the size, type and cost structure of its rivals – as well as how well the city-pair integrates with its existing route structure. A carrier with a hub system will evaluate a route in the basis of interdependence with its network so as to strengthen the exchange complexes – what traffic can be expected from a candidate route, and how well will that traffic can be expected from of contemplated hub connecting network. A linear route point-to-point carrier will tend to focus on dense markets with sufficient O&D traffic to sustain non-stop operations. Traffic density (the quantity of passengers or other traffic in a market) is an important ingredient of route selection, as in the mix of O&D versus connecting passengers, and the mix versus leisure passengers in the market. Demand must be adequate to provide adequate load factors for the equipment and frequencies to be flown in the market. Stage length can be important from a cost and revenue perspective. As a rule of thumb, an aircraft enjoys lower ASK costs the longer the stage length, since takeoff and landing burns additional fuel and consumes additional time vis-à-vis the cruise altitude portion of the journey. But the longer the stage length, the more connecting competitive airline alternatives a consumer will have, and carriers willing

to sell a seat at a small premium above variable costs. Because of the dearth of competition, yields tend to be higher for trips of less than 1000 miles. However, every short-haul trips compete with surface modes of transport, including the automobile. (Dempsey, 1997, 213)

When talking of airline efficiency, the role of route structure is of great significance. The question of economies of scale in airline operations was studied by Caves (1984), which Seristö refers in his study Caves's conclusion was that there is little economy to be gained in expanding the geographical scale of an airline. However, study suggested that increasing the number of seats available on traffic dense routes the airline can reduce the unit costs of production; the capacity increase can be done either by increasing flight frequency or by allocating larger aircraft to the route. (Seristö, 1995, 124) As to economics of each sector, the basic rule is that the operating unit costs decrease as the sector distance increases. This applies, of course, within each particular aircraft type's performance restrictions, and reaches at some point a limit where payload has to be decreased in order to carry the required extra fuel. The decrease in unit costs with the increasing sector length, naturally, is due to the fact that fixed costs are then spread over a larger number of output units. Also, the cruise phase of a flight sector burns relatively speaking much less fuel than the climb and descent phase; hence, the longer the cruise phase, the smaller the average fuel burn per output unit for the flight sector. (Seristö, 1995, 125) Route structure affects operating costs mainly through aircraft and crew utilization. An optimal network is such that enables an airline to keep both aircraft and flying personnel flying as much as possible. Generally speaking, high aircraft utilization rate in scheduled traffic requires longer sectors within the performance range of its aircraft types, and fly such sectors where a relatively high frequency is warranted by sufficient demand. The high frequency criteria is relevant on such sectors where the maximum working hour limits of crews are reached – creating thus a need for crew stop-overs. (Seristö, 1995, 126)

How to measure network structure efficiency?

Hub and spoke network can serve more destinations, but essential part of the system is timing, every incoming flight to hub must offer customers connecting flights in order

to efficient. On the other hand by concentrating all major activities (i.e. maintenance) in one hub an airline use it's resources more effectively. As Seristö suggested economies of scale (efficiency) can be gained by adding more frequencies. Therefore the most effective form of network structure is to have a hub from which an airline flies as many frequencies as it can. Destinations offered are only from hub to a certain destination without transfer. Network efficiency can be measured as mixture of the numbers of destinations served / aircraft in service, the stage length and how many hours a day the airline is using it's aircrafts. (block hours /day) It this study those measures are used to measure network efficiency.

Fleet composition rationalization

A large number of different aircraft types tends to drive costs up. This is mainly due to the diseconomies of scale if flight operations and, possibly, in maintenance. Fleet commonality can reduce in following cases.

1. Flight crew utilization rate is affected by the number of different aircraft types. If an airline operates aircraft that are of the same type, or share the same cockpit, the flight crew rotation can be organized without type-rating restrictions. Consequently the number of crews per aircraft can be lower, which naturally saves money. However, it appears that the crew utilization economies cease improving markedly once the number of aircraft of a particular type reaches about 10 to 12 aircraft. Cabin crews typically can work in all aircraft types of an airline, i.e. there are no exclusive type rating for cabin personnel.
2. Also very important are the training needs due to different aircraft types. If an airline operates only one aircraft type, normal changes in flight crew seniority – due to retirement, for instance – cause very little need of training for new type ratings. However, if the fleet consists of several different types, the costs of retraining for new aircraft types can be significant. Some training related investments can be significant, too; if an airline trains its pilots itself, it needs to have simulator for each aircraft type.
3. A small number of different aircraft types evidently provides savings in the maintenance function. Personnel costs form a significant part of the overall costs in maintenance; the larger number of aircraft types, the more there are people

who have skills and ratings that are aircraft-type related. For example, in the engineering department there are usually specific project engineers and type-engineers for each aircraft type. Likewise, in power plant department there are type-related power plant inspectors, product planners, different supervisors, purchasers, superintendents and power plant technicians for each power plant type. Just as in flight operations, training is very expensive in engineering, and the potential cost savings through a smaller number of aircraft types is significant.

4. An important cost item is spare parts support, which is very capital intensive, and naturally the cost of spares per aircraft depends on the number of aircraft of each type. However, savings from common spare parts are likely to be much smaller than savings from e.g. multiple aircraft pilot-qualification. Particularly important cost item is the inventory related to engine maintenance; here it is to be remembered that aircraft of the same type can have different engines, and – on the other hand – aircraft of different type can share the same engine type. (Seristö, 1995, 130)

How to measure fleet commonality?

As Seristö pointed out the more different kinds of aircrafts an airline has the more uneconomical that is. In this study the number of aircraft types is the measure for fleet efficiency.

4.2 Out-sourcing

The essential core of airline business is very limited, comprising only corporate planning, product planning, marketing planning, flight operations and financing, in the extreme case. However, turning airlines into such lean organizations may be nearly an impossible task, at least in Europe. Nevertheless, there are many possibilities to make airlines leaner by getting rid of non-essential functions from outside an airline. (Seristö, 1995, 138)

4.2.1 Maintenance

Maintenance is the function that probably has the most of potential for cost reductions through out-sourcing. Maintenance as such is very labor-intensive activity,

and it also requires certain critical manning levels so that major works can be done in as short a time as possible; viz. a major cost of maintenance is in fact that an aircraft is out of revenue-earning service for the period in maintenance. For example a Boeing 757 can lose about 30000\$ in revenue per day when it is out of its European service. Also, the workforce has to be large enough to cope with the peaks of workload. Due to the critical manning levels the scale of maintenance operations has significant economic implications. (Seristö, 1995, 138)

4.2.2 Pilot training

Within Flight operations pilot training is something that can be bought from outside. In-house pilot training requires that an airline assigns some pilots to training work, taking them in effect away from the revenue-generating line operations. Also investments in simulators can be significant. (Seristö, 1995, 141)

4.2.3 Marketing

Marketing, including ticketing is already out-sourced to a large extent through travel agents. Reservations are handled mostly through Computer Reservation Systems (CRS), provided by specialized companies that are joint ventures formed by a group of airlines; so in essence the distribution is already out-sourced but airlines still have a tight control of reservations through their input into the systems and through participation in CRS companies. (Seristö, 1995, 142)

4.2.4 Ground handling

Ground handling is often out-sourced at airlines's non-base foreign stations. At the home base, domestic stations and sometimes at the largest foreign stations airlines usually undertake ground handling tasks themselves. Ground handling comprises the following services:

1. Passenger services
2. Ticketing, check-in, security screening, lounge services, baggage facilities and boarding

3. Ramp services
 4. Baggage handling, cargo handling, aircraft handling, de-icing, fuelling, load control, load control, and aircraft interior cleaning
 5. Other ground services
 6. Customs service, immigration services and security and safety services
- (Seristö, 1995, 142)

4.2.5 In-flight catering

In-flight catering is very often out-sourced; however, the kitchens of airlines or their subsidiaries dominate the market. Airlines have often separated catering from the parent airline as a profit center of a subsidiary; examples of large catering firms where airlines are in effect the owners include Servair (Air France and Gate Gourme (Swissair) (Seristö, 1995, 144)

4.2.6 Aircraft

Aircraft do not have to be owned by an airline they can be in effect be out-sourced using leasing arrangements. Aircraft can be leased basically either through financial leases or through operating leases; operating leases then may include flight crews, too, in so-called wet-leases. Financial leases are provided by bank consortiums or by specialized leasing companies. The arguments for leasing are that, first, the lessee can benefit from the buying power of the large leasing company, which usually buys as least tens of aircraft at one time. Secondly, the lessee may get lower interest rates for the financing through a leasing company than it could by itself from a financing institution. Thirdly, an airline does not have to bear the risk of potential drops in residual values of aircraft. Moreover airlines can often acquire aircraft more rapidly through leasing companies than by purchasing directly from the aircraft manufacturer. (Seristö, 1995, 144)

4.2.7 Flight crews and cabin crews

Flight crews and cabin crews can be included in leases, in case the leasing company is another airline. Such leasing may not be feasible in the long term, but gives in the

short term very much flexibility for the lessee. As already upon in the discussion on fleet structure, training costs can be significant in airlines. There are several institutions that are specialized in training flight crews and cabin crews. When an airline operates in a rather small scale, it may be economic to buy training services from such institutions instead of undertaking the training task within the airline. (Seristö, 1995, 145)

How to measure out-sourcing benefits?

In the previous chapters was listed airline functions that could save costs by out-sourcing these functions, but how can out-sourcing benefits be measured? Most of the suggested out-sourcing functions belong to support activities in airline's value chain and therefore those are very hard to measure and to find comparative values. One answer to measure and compare out-sourcing benefits is to compare financial reports between low cost carriers and major airlines and compare how much each function listed above forms costs and how much is the low cost's carriers cost advantage. This is the method in this thesis to measure out-sourcing efficiency.

4.2.8 Relocation of functions

There are two basic ways to seek cost reduction through relocation of functions. First, a function can be relocated so that personnel is hired locally in a low-cost country (an example of this is hiring accounting personnel in India). Secondly, existing staff of an airline can be relocated to a country of area where cost of living is lower, taxation is lighter and social charges lower (an example could be the relocation of flying personnel from Japan to the United States). (Seristö, 1995, 146)

4.2.9 New technology and automation

New technology and automation can help to reduce costs in most functions of an airline. Office automation reduces the need for secretaries and accounting personnel, automated baggage handling belts reduce the need for manual labour in baggage loading and unloading and numerous computer-based appliances reduce the need

for technicians in aircraft inspection and maintenance just to give some examples. There is a function in the air transport value chain where there appears to be inefficiency and room for cost reduction through the introduction of new technology and more automation. Namely the passenger handling sequence from sales of tickets until the boarding an aircraft appears to be very labour-intensive and expensive for airlines. The sequence comprises today four separate tasks, which all are usually performed by human beings. From consumers's perspective these tasks are:

- purchasing tickets, usually by visiting an airline sales office or travel agent
- reservation on seats, either by visiting an airline sales office or travel agent, or by telephoning one of the two
- checking in at the airport check-in counters
- checking in at the boarding gate
-

All these tasks must be performed, of course, but considering the fact that only a small share of travellers today are inexperienced in air travel or are computer illiterate, there must be possibilities for condensing in this chain of four tasks. (Seristö, 1995, 147)

4.2.10 Cuts in salaries and other benefits

Generally speaking, flying personnel in major airlines worldwide are very well paid. Also, a range of benefits for the flying personnel is significant. However, it seems that the overall remunerations have risen to levels that are unsustainable in the competitive environment of today and the foreseeable future. Therefore there would seem to be a need and room, for actually cutting the remunerations. This, of course, is easier said than done, and proposing such remuneration cuts would undoubtedly put an airline at risk of meeting strike. (Seristö, 1995, 151)

4.3 Other means for cost reduction

Seristö's point of view in his study was from the major airlines management and he tried to expose those elements which an major airline's management could do in

order to reduce cost. As most of the low cost carriers are new formed airlines, they do not have the same historic "cost ballast" as the old flag carriers have. In this chapter I try to find those cost elements that a low cost carrier can avoid compared to major carriers.

4.3.1 Internet sales and ticketless travelling

Distribution is a single biggest cost element in an airline's cost structure. It represent about 18% of total operating cost. (see TABLE 6) As Seristö mention in his cost reduction methods the new technology can provide new methods to save cost. Internet as a distribution channel is one those methods. In the following TABLE 7 Doganis (2001, 168) has analyzed the elements of which distribution cost forms and how much cost saving can be gained throughout internet sales.

TABLE 7 Distribution costs via internet sales compared to current sales outlets

Costs	Current cost of distribution %	Estimated cost changes if all sales through own website %	
Net commissions	42,8%	all costs saved	-42,8%
Reservation and ticketing	31,0%	much lower	-20,0%
Advertising and promotion	12,5%	higher	+5,0%
Computer reservation system (CDS) fees	7,1%	all costs saved	-7,0%
Credit card commissions	4,0%	higher	+2,0%
Frequent flyer programs	2, 1%	unchanged	2,1%
Other	0,5%	unchanged	0,5%
Cost savings			-62,9%
Total distribution cost	100%		37,1%

As TABLE 7 indicates if all airline's sales comes via internet approximately 2/3 of distribution costs can be saved and in a traditional airlines situation this means

around 12% savings in operating costs. In this study amount of internet sales of an airline is one of the variables studied and to be measured as cost advantage.

4.3.2 No FFP-programs

Major airlines has provided frequent flyer programs (FFP) for their customers and those programs are build to add more loyalty towards the airline and also to get competitive advantage against other airlines. From the customer point of view by gathering points via certain FFP the customer could get free tickets if he or she reaches certain amount of points of point level. As the TABLE x indicates FFP's cost to airlines about 2% of total operating costs. If an airline does not offer these programs to it's customers it can save those 2% - therefore in this study absence of FFP's is interpreted as measure of cost advantage.

4.3.3 Use of secondary airports

This thesis not about airport strategy therefore airport revenue structure and airport strategies are not covered very extensively, but keeping in mind the TABLE 6 which indicated that landing fees are about 4% of total costs of a traditional airline's costs, the choice of the operated airport can be source of cost savings. In this study preliminary airports are considered to be those airports that are home bases of a nation's flag carrier and secondary airport are those which are not. Giving an example of this matter Helsinki-Vantaa in Finland is regarded as preliminary airport and Helsinki-Malmi is a secondary airport. (if Helsinki-Malmi could be operated by large commercial aircrafts) In this study the use of secondary airports are interpreted as measure of cost advantage.

4.4 Low cost carriers cost advantage – in theory

It is difficult to compare the cost of low-cost carriers with those of most conventional scheduled carriers or even charter airlines because there are so many differences between them. However, British midland does appear comparable to Easyjet in several respects. Like Easyjet, British Midland flies aircraft with, on average, fewer than 150 seats. They both operate domestic and short-haul international services out of the UK. But British Midland's average sector distances in 1998 were somewhat shorter than those of Easyjet – 529km as opposed to 764km. This would have pushed up unit costs for British Midland. On the other hand, the mainline carrier had several factors in its favour and is much larger than Easyjet. In 1998 in terms of available seat kilometres (ASKs), British Midland was three times the size of Easyjet, and in 1999 it was still two-and-a-half times as large. British Midland should also benefit from some economies of scale partially to offset its shorter sectors. Costs also should be depressed because almost 25% of its output have been on charter flights. Despite all of those factors, British Midland's seat costs came in at 9,86 pence per ASK for the financial year. That was more than twice as high as Easyjet's at 4.17pence. Interestingly, GO's unit cost in its first year 1998-1999 were around 4.00 pence per ASK, a little below the Easyjet figure. (Airline Business, 01/2001, 63)

The low cost carriers have two initial advantages arising from the very nature of their operation, namely higher seating density and higher daily aircraft utilisation. By doing away with business class, by reducing or removing galleys, and by cutting the seat pitch, low cost carriers can significantly increase the number of seats available on their aircraft. On its Boeing 737-300s, Easyjet packs in 148 seats. British Midland has 132 seats for the same type, but six abreast seating is converted to five abreast to cater for business class. With an average configuration of say eight business class rows, British Midland's seat capacity on its Boeing 737-300 aircraft drops from 132 to 124, compared to Easyjet's 148. If all their operating costs were similar, the fact that easyjet has 24 more seats in aircraft would result in its seat cost being 16% lower than British Midland's when operating identical aircraft. (Doganis, 2000, 143)

Low-cost carriers are also able to schedule for and achieve much faster turnaround of their aircraft. The factors are straightforward: use of uncongested secondary airports (wherever possible); reduced cleaning time required due to the lack of catering; more rapid embarkation as a result of free seating; and the absence of freight to load or off-load. This - plus the longer stage lengths-in turn helps them to push up daily utilization achieved by their aircraft. Thus in 1999 while Easyjet flew its 737-300s on average for 10.2 block hours per day, British Midland managed only 8.5h for the same aircraft. The following figure illustrates the difference between Easyjet and British Midland. (Airline Business 01/2001, 64)

TABLE 8 Easyjet cost structure vs. British Midland

Direct operating costs	EasyJet	British Midland	
	Pence per seat-km		(%)
Cabin/flight crew salaries and expenses	0,43	0,92	9,4
Fuel	0,35	0,55	5,6
Airport charges	0,55	1,20	12,1
En-route	0,39	0,41	4,1
Maintenance	0,58	0,75	7,6
Depreciation	0,02	0,26	2,6
Aircraft rentals	0,8	1,23	12,4
Insurance	-	0,02	0,2
Total Direct	3,14	5,34	54,2
Indirect operating costs			
Station costs	0,01	1,36	13,8
Handling	0,31	0,40	4,1
Passenger services	0,04	0,63	6,4
Sales/reservations	0,18	0,47	4,7
Commission	0,01	0,78	7,9
Advertising/promotion	0,27	0,31	3,1
General and administration	0,17	0,44	4,4
Other	0,06	0,14	1,4
Total indirect	1,05	4,52	45,8
Total operating costs	4,19	9,86	100

5 Airline revenues

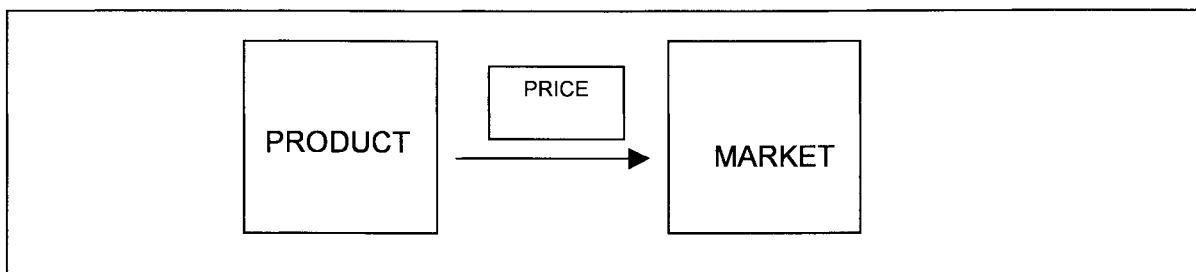
In the previous chapters the other side of airline economics were introduced, the cost side. In the following chapters the other side is introduced, the revenues side. First is price and pricing strategies introduced and the revenue and yield management is covered.

5.1 Pricing and market segmentation

5.1.1 Uniform pricing

Figure 7 illustrates a uniform pricing situation where in every buyer pays the same price for a given product. Although simple and apparently equitable, it is rarely a feasible pricing strategy. Assuming first that the single price is relatively high, it is likely to leave some consumers still paying less than they would relatively pay. That is, paying lower amount than the value they place on the air transport service bought, and large number of other, more price-sensitive travellers excluded from the market altogether.

Figure 7 Uniform pricing

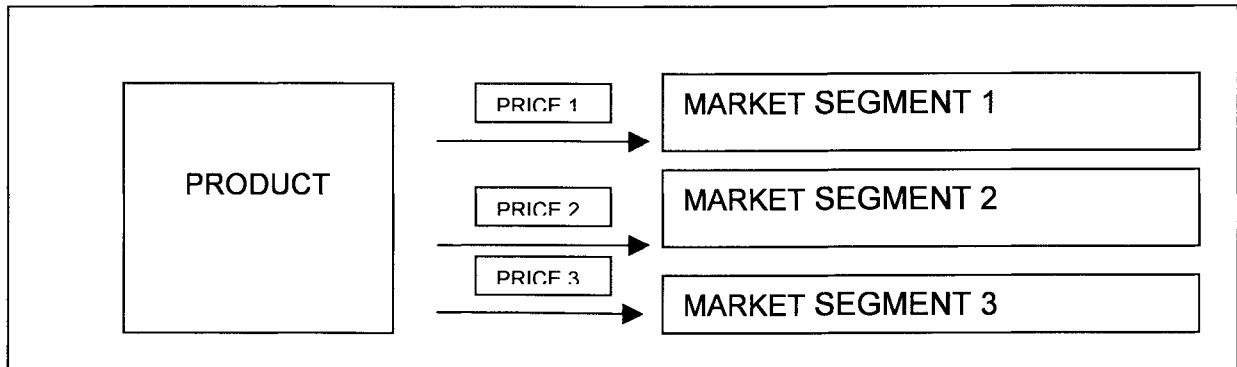


When this happens, economies of density are reduced below what they might otherwise have been had more demand been able to come forward, with the result that unit costs will be higher. This is because of having to operate smaller aircraft with less attractive seat-kilometre costs, for example, this is likely to cause those who do travel to face higher fares. Furthermore, the high frequencies and wide network coverage particularly valued by the business travellers who will probably constitute a large proportion of those remaining in any market served at a high uniform price might be difficult to support on the basis of the lower level of demand attracted by that single price. Much depends upon what that single price is. If it is low enough,

substantial traffic might indeed be carried. In this case, however, an even higher proportion of passengers would probably be travelling at fares significantly below the value they place on the service, and unless the airline concerned has its production costs well under control profits might also prove elusive. (Holloway, 1997, 354)

5.1.2 Price discrimination

Figure 8 Price discrimination



A more subtle approach to pricing is to cluster consumers into multiple segments and price the product in line with their willingness to pay, so exploiting the different price elasticities of each segment. Figure 8 illustrates this approach.

The idea is to increase revenues by bringing as much demand forward as possible using a range of different prices, at the same time lowering unit costs by generating more output over which the fixed costs of existing capacity can be spread. Consider the following facts:

- air transport services cannot be inventoried after production
- passengers have to be physically present to benefit from the service
- passengers present themselves unevenly over time, and
- capacity-driven fixed costs are a high proportion of total costs in most service industries, particularly so in the airline business.

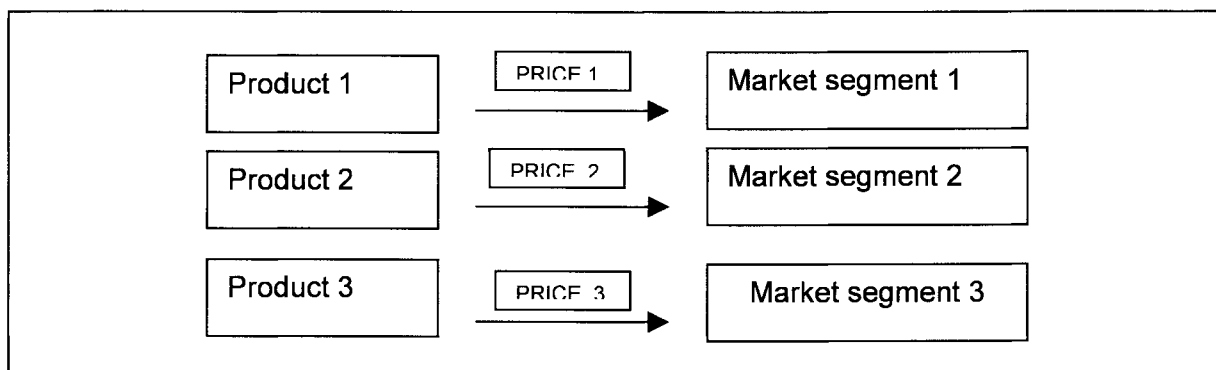
Given these facts it is unsurprising that airlines use pricing to influence demand with two particular purposes in mind: first, to move a proportion of existing customers from peak to peak-off periods; and, second, to create demand for travel in off-peak periods from people who would otherwise not travel at all. Price discrimination is used to achieve this, its specific objectives being to increase revenues by exploiting different

price elasticities amongst identifiable segments of demand and to increase both aircraft utilization and load factors. (Holloway, 1997, 355)

5.1.3 Differential pricing

Market segmentation might lead not simply to price discrimination but instead to product differentiation. Figure 9 illustrates this.

Figure 9 Market segmentation and product differentiation



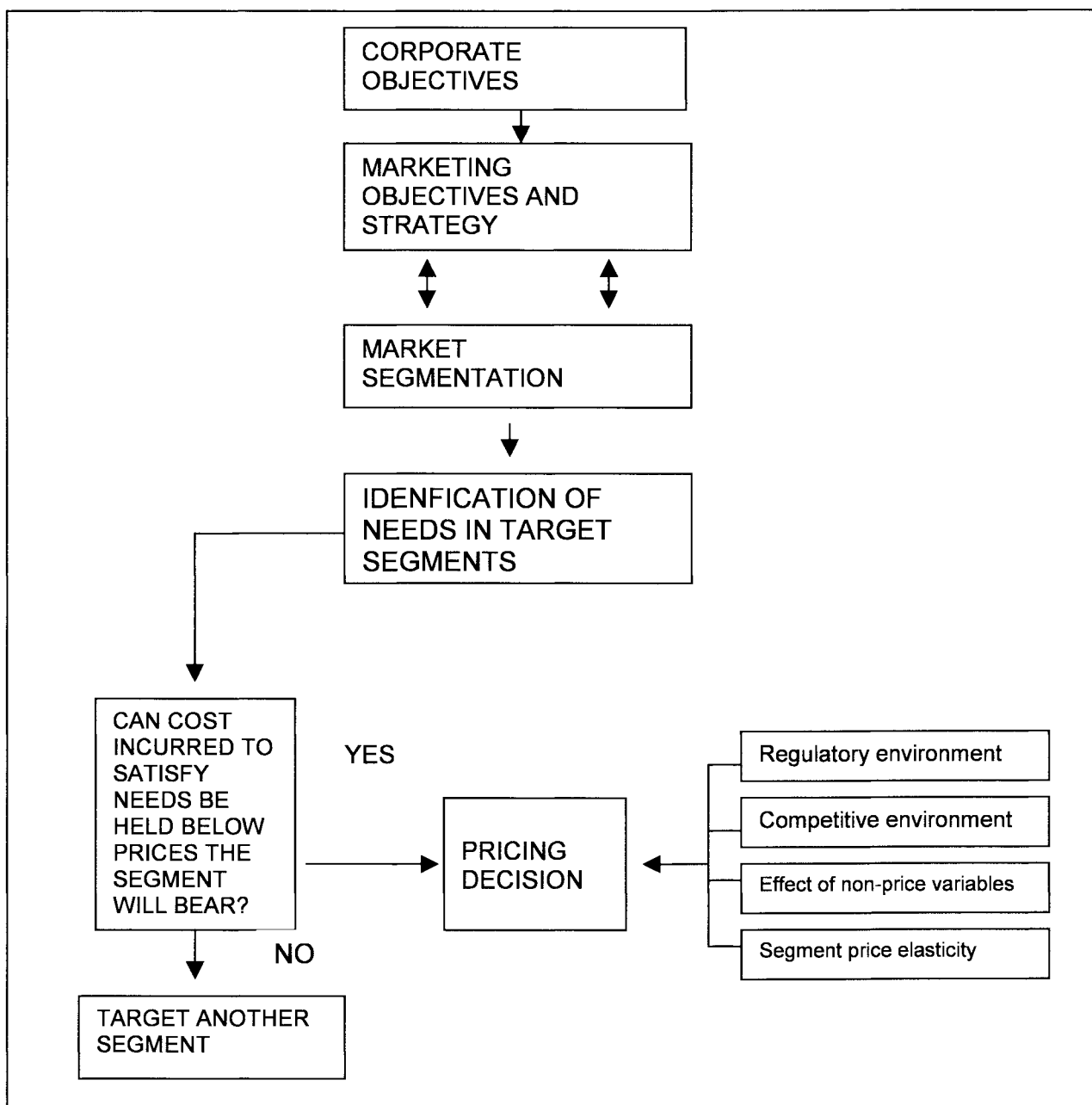
In this case, aggregate demand is being influenced by supplying different product attributes into separate segments as well as by exploiting their price elasticities. Differential prices can be charged based on these product attributes. Thus, we find the common situation where an airline offers first, business and economy class products, and as well the price differentials which separate these there is also price discrimination within each segment based on further sub-segmentation. Such price discrimination has traditionally been most evident in the coach / economy cabin, but some markets in recent years have seen a growth if discriminatory pricing in the premium cabins. (Holloway, 1997, 356)

5.2 Price as a strategic variable

Revenue increases can come from a growth in one or more of the overall market, an individual airline's share, or its yield. Which of these is being most heavily relied upon will in large measure be a function of the corporate strategy that management chooses to pursue. The most sophisticated approach to the formulation of a pricing

strategy is to examine the range of potential service-price offers which could be made to available markets, then deliver those which fit the corporate mission, goals and objectives of the airline concerned. The issue is then not whether a particular pricing strategy is good or bad in any absolute sense, but whether it is rational in terms of both the objectives of the airline and the competitive environment in which it operates. FIGURE 10 illustrates the process involved. (Holloway, 1997, 385)

Figure 10 Idealized strategic pricing process



At their most simple, the objectives of a pricing strategy should be to guide efficient allocation of existing resources and investment in new resources and to generate revenues which exceed costs. The fact is, though, that there are many alternatives – but not all mutually exclusive – strategic pricing objectives, tied closely in most cases to aspects of overall corporate strategy. For example:

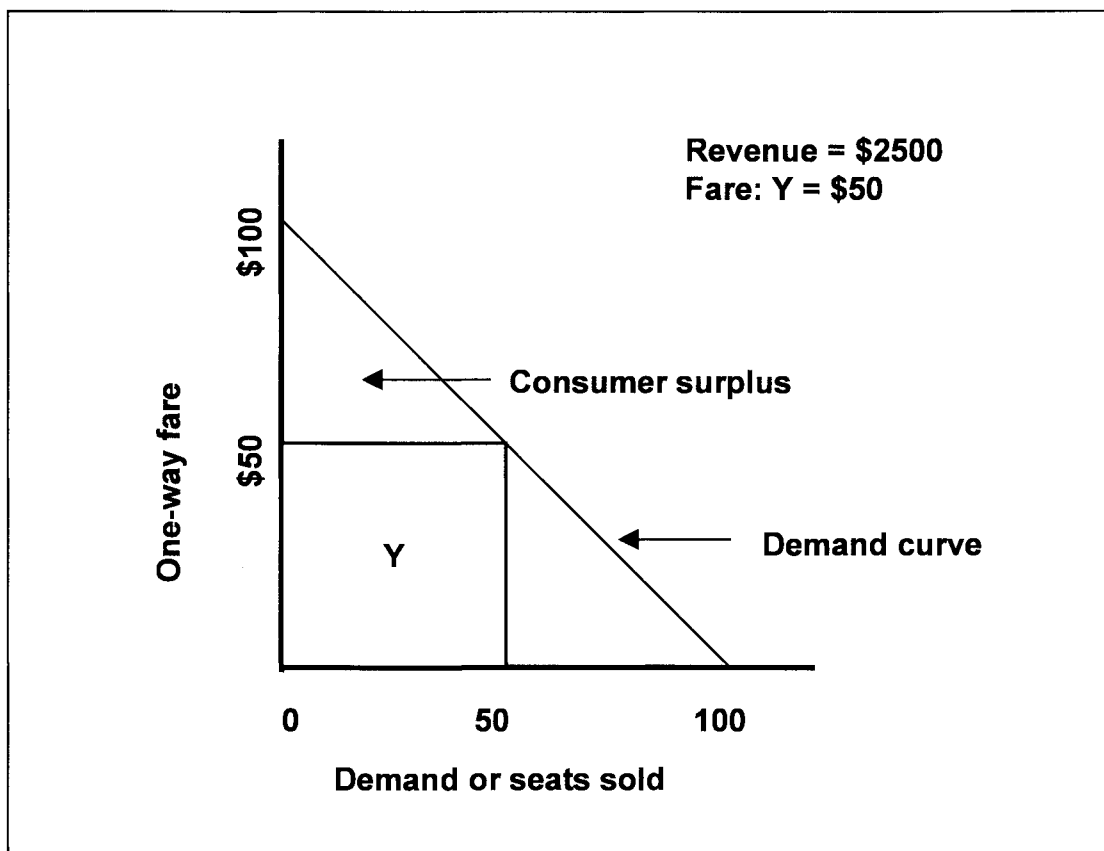
- profit maximization, and in particular maximization of long term returns on shareholder equity;
- expansion of market share to increase market entry;
- ensuring market stability by avoiding fare wars;
- generation of cash, with little or no regard to profitability;
- earning of foreign exchange for the country's treasury;
- support for a vital national tourist industry;
- maintenance of politically, socially or economically important communication links;
- achievement of a targeted load factor, representing a chosen balance between traffic carried and output produced;
- establishment and/or reinforcement of the positioning of an airlines's product in their markets.

(Holloway, 1999, 385)

5.3 Yield management

Yield management is based on the simple economic concept of utility as expressed through the demand curve. There is a maximum price, which each consumer is willing to pay for a good or service. That price is equivalent to the utility or benefit they get from consuming it. They will happily pay less for it, but will not pay more. Different consumers gain varying levels of utility from a particular good or service and therefore each will buy it only if the price is no greater than that utility or benefit. For air services as for most products, the lower a service at different price levels we can draw a demand curve. On a simple diagram showing air fare on the vertical axis and seats demanded on the horizontal axis, one could draw the demand curve for an air service between two cities. This has been done for a hypothetical route in FIGURE 11. It shows a downward-sloping demand curve, indicating the number of seats, which would be bought at different fares.

Figure 11 One fare and revenue gained



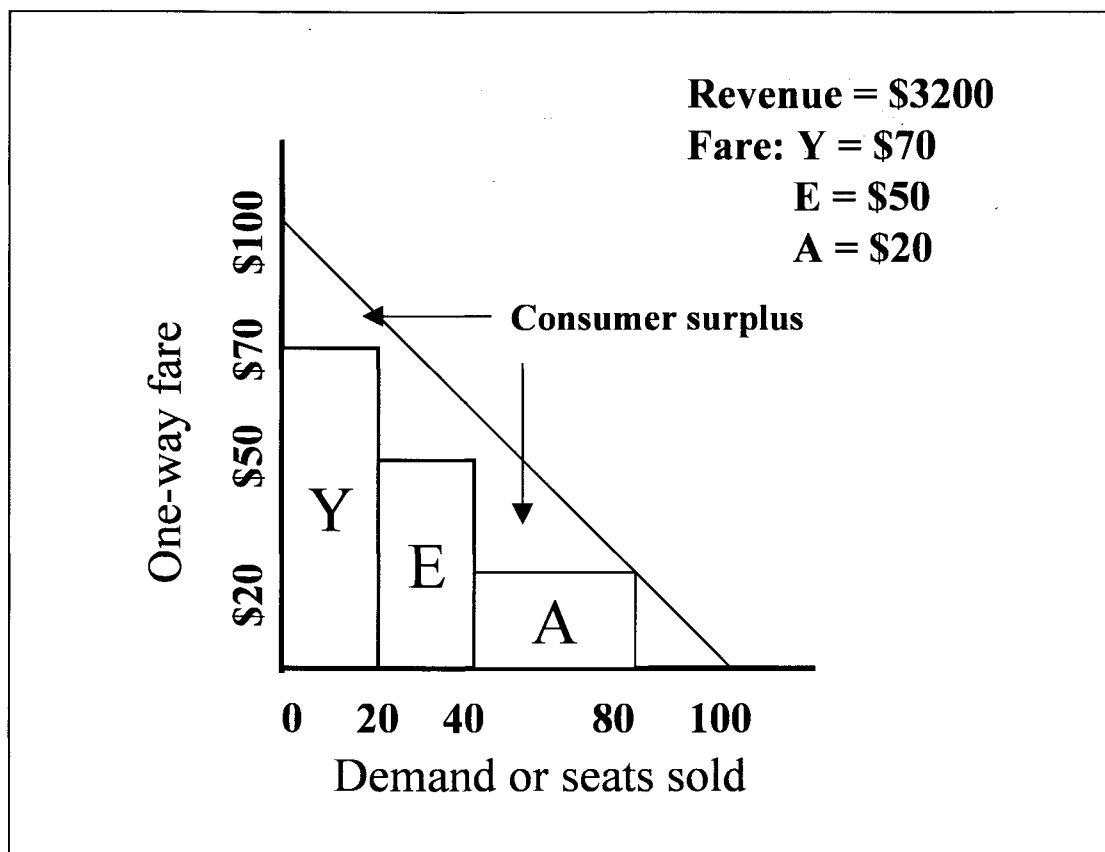
An airline wishing to provide this service with a 100-seater aircraft has estimated a one-way total operating cost of \$3500. It sets a target seat factor of 70%, which means carrying 70 passenger. If pricing was purely cost based, then the airline would charge a \$50 one-way economy fare. At that fare the demand curve tells us that the airline would get only 50 passengers, thereby generating an income of only 2500\$, which would result in a substantial loss. (FIGURE 11) The load factor achieved would be 50% not 70%.

The demand curve also tells us that many passengers who paid \$50 would have been willing to pay more. They are getting a good deal. The utility or benefit they get from using the service is greater than the price paid. The difference between the \$50 fare and the utility they enjoy is called the "consumer surplus" and is measured by the upper triangle-area in FIGURE 11. One aim of yield management is to maximize revenue by transferring some of the consumers's surplus to producers, that is, the airlines.

The demand curve also shows us one more important fact: half the seats are empty if the fare is \$50, but there are people who would fly at fares below \$50. The airline, aware both of the consumers surplus issue and the need to fill up empty seats, now decides to introduce a three part tariff: a full economy fare of \$70, an excursion fare of \$50 and an advance purchase APEX fare of \$20. There are various conditions attached, notably that the APEX fare must be bought in advance. In practice, because of the ability to buy cheap seats in advance, many passengers opt for the APEX fare and sales boom. However, in the end too many seats (40) are sold at this cheap fare, leaving insufficient seats, later. The outcome is shown in figure 12.

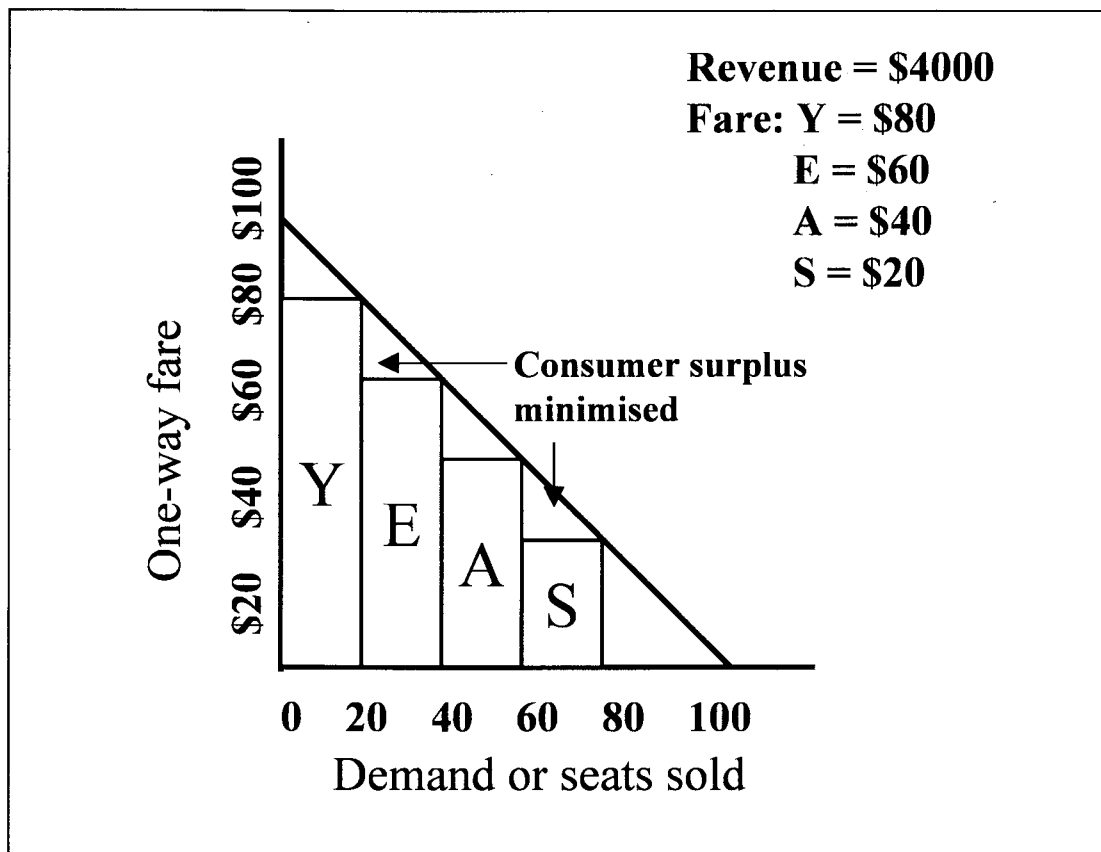
The seat factor has shot up to 80%, but though revenue has also increased to \$3200 it is still inadequate to cover costs. Moreover, since many passenger are still paying less than they would be prepared to pay, the airline is still failing to capture for itself an adequate share of the consumer surplus. (Doganis, 1991, 303)

Figure 12 Three fare and revenue



In theory, to maximize revenues and capture the consumer surplus the airline should sell each seat at the maximum that each passenger is prepared to pay, from \$100 down to 1\$ for the 100th passenger. But to try and maximize revenue more realistically, it might introduce four separate fares: a full economy fare of \$80, an excursion fare of \$60, an APEX fare of \$40 and a Super APEX of \$20. If it could sell 20 seats at each of these fares, its total revenue would be \$4000 per flight producing a profit of \$500 with a seat factor of 80% (Doganis, 1991, 304) (FIGURE 13)

Figure 13 Five fares and revenue

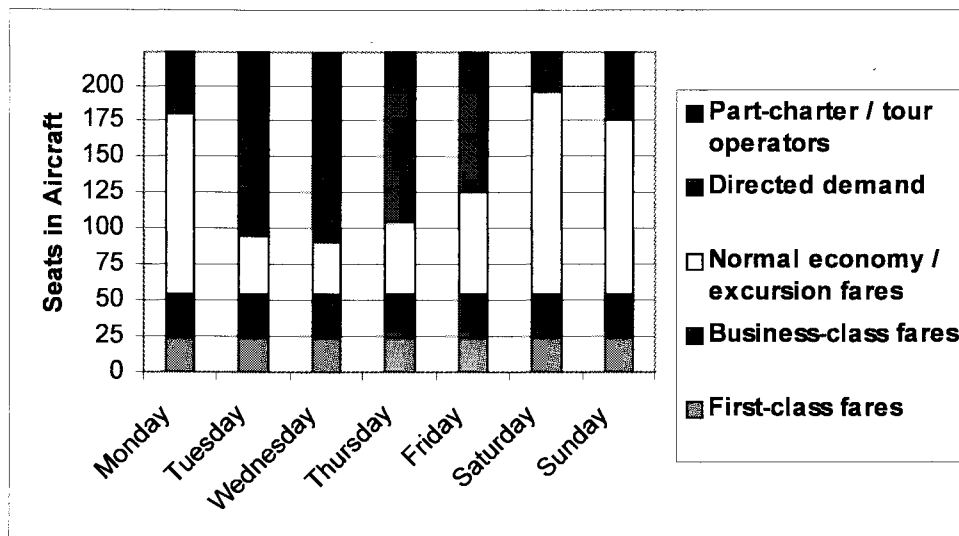


The fundamental problem is how to ensure that 20 seats are sold at each fare and more especially how to avoid the earlier situation where too many seats were being sold at the lowest \$20 fare. This is the function of yield management. It is the day-to-day monitoring and control of seat availability in each fare group on each flight to ensure that revenue is maximized. This is done by highly trained staff using the constantly updated information on sales and other key data in the reservations computer. Booking conditions attached to different fares and seat availability are the tools used to channel seats to the passengers paying the higher fares. The tariff conditions or "fences" should separate the demand for particular fare types into discrete segments, which have different booking characteristics. The control of seats available for sale should then direct that demand onto flights where it is needed to maximize revenues. (Doganis, 1991, 305)

Some of the current tariff strategies can be understood by reference to FIGURE 14. This shows the demand on a long-haul route for a daily DC-10 flight with a three-cabin configuration. The figure shows the demand expected in a particular week and

its based on the airlines's forecast of traffic and its knowledge of the distribution of traffic during the week.

Figure 14 Forecasted demand of DC-10



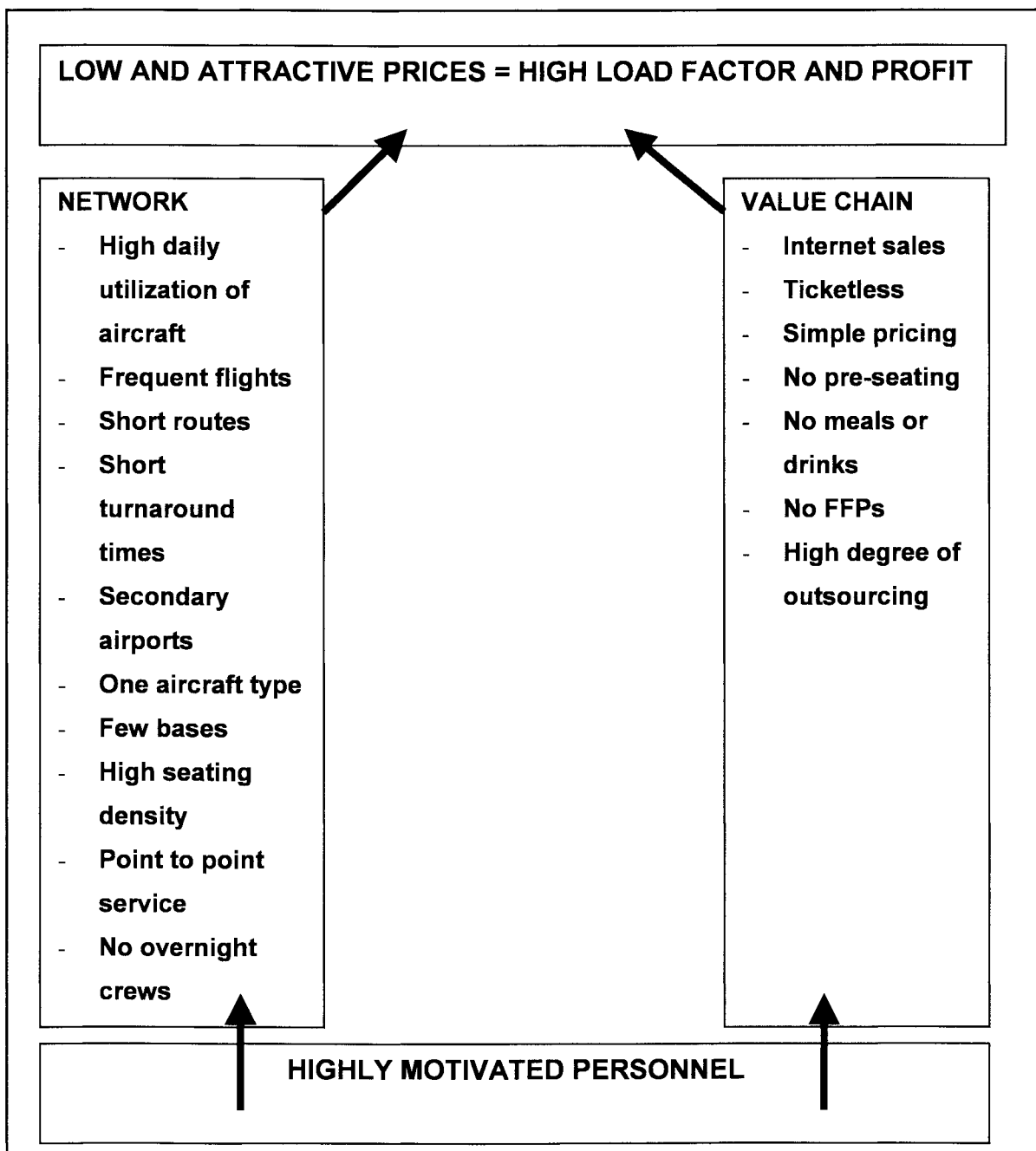
At the front of the aircraft, 24 first-class seats are blocked off and sold at first-class fares and 31 seats are sold at business-class fares. There will be daily variations in demand for these two classes, but the airline has based the two tariffs on achieving relatively low average load factors of 50% in first and 60% in business. These give enough scope for meeting weekly peaks.

In the economy-class cabin, where there are 168, projected demand at economy or similar fares peaks on Saturdays and Mondays but is relatively low on other days, especially mid-week. The airline expects to find itself with a great deal of spare capacity in the economy cabin on all days of the week except Saturday. At existing fares, which are cost based, it cannot generate more demand. So the fares must be reduced in order to stimulate new market segments. This might be done in a number of ways. One partial solution would be to sell a block of seats to one or more tour operators or travel agents on a part-charter basis or some other basis which enables them to package the seats into inclusive holidays or to sell them some other way. Ideally these seats should be sold at low prices and well in advance and the tour operators should be committed to pay for the seats contracted weather or not they are eventually resold by them. No part-charter or tour-based seats would be contracted for on Saturdays, since normal demand is sufficiently high. (Doganis, 1991, 292)

6 Cost leadership as an airline strategy – the elements

In this chapter all the previous theory is summarized in to a one framework so that the cost leadership as an airline strategy can be presented. First of all, the low cost airlines' cost advantage is based on two factors, which must be kept apart so that it is easier to understand. The first source of cost advantage is effective network, which enables economies of scale. The second source is then build on that network and that is the effective value chain, which uses latest technology. The following FIGURE 15 illustrates this.

Figure 15 Cost leadership as an airline strategy - the elements



6.1 Low cost value chain

From the consumer perspective the low cost airlines' value chain differs from the conventional value chain in the following cases. Sales and distribution is made through the internet and no flight ticket is published, reservation number or ID-card is only needed, which confirms that the right person is at the check-in counter. As the name "No-frills" tells us, low cost airlines' service has been cut down to the minimum and no free meals or drinks are served, nor on-board sales. Those are the elements, what the consumer can see, that differs from conventional airlines. Behind in the airline's value chain there are a lot more. All the functions, which are not that relevant to airline are out-sourced. Maintenance can be bought outside as well as the IT-services. Aircraft ground handling can be out-sourced also and training services. All this leads to very small organization, which takes care of only the main functions of the airline.

6.2 Low cost's route network

Low cost airlines network is build around one of few bases, where it flies short or medium length routes frequently. It uses secondary airports to keep the en-route, landing and parking fees to minimum. Secondary airports have less traffic and therefore not so exposed to flight delays and the fast turnaround is possible. Even tough the daily utilization has been taken to the maximum, by the end of the day all the flights returns to home base and that saves crews hotel- and overtime costs. Pilots and cabin crews are the most expensive part of the personnel and therefore it is important that there are only type of aircraft, which all are trained to use. Crew planning is easier, when you do not have to think about A/C-type certifications.

All these elements leads to a attractive, low prices compared to competitors. One of the most important elements of this strategy is the personnel, which eventually implements all of the above.

7 Methodology

7.1 Qualitative vs. quantitative research

There are two different methods to be used when conducting a research: qualitative or quantitative method, both of which have the same objective of creating a better understanding of the society we are living in. The choice made depends on the purpose of the study. Research is qualitative, when research material is in verbal form (or visual) and quantitative when research material can be presented in numeric form. (Uusitalo, 1996, 79)

7.2 Research strategy

Yin lists five qualitative research strategies in the social sciences, which are given in TABLE 9. These include experiments, surveys, archival analysis, histories and case analysis. The distinction between them emerges from three conditions: what is the type of research question posed? To what extent does the investigator have control over the actual behavioural events? To what degree is the study focused on contemporary as opposed to historical events? When answering these questions, the researcher can obtain a clearer view on which of the strategy / strategies are most appropriate for the study. (Yin, 1994, 6)

Experiments, history and case studies are strategies that answer how and why forms of research question. Survey and archival analysis answer questions who, what, where, how many and how much. Only experiments require control over behavioural events and on the other hand history is the only one that does not look at the contemporary events. (Yin, 1994, 6)

TABLE 9 Relevant situations for different research strategies

Strategy	Form of research Question	Requires control over behavioural events?	Focuses on contemporary events?
Experiment	How, why	Yes	Yes
Survey	Who, what, where, how many, how much	No	Yes
Archival analysis	Who, what, where, how many, how much	No	Yes/No
History	How, why	No	No
Case study	How, why	No	Yes

7.3 Case study

The tradition of a case study belongs to a qualitative research tradition and forms a special research strategy and approach. A case study is a commonly used method among business economics when studying firms and organizational behaviour. The studied cases are simple ones and they are studied in their own special environment. The model can be considered as idiographic. The case data can be either longitudinal or cross-sectional. It is important that the setting for research is connected to the previous theories, which form a foundation for the analyses and interpretations in the conclusions. A researcher and a research object interact constantly with each other in a case study, and maintaining the mutual trust is, therefore, a part of the research process. In the results the objective is to understand and interpret thoroughly the individual cases in their own special context, and to find information concerning the dynamics and the processes. A case study may also produce hypotheses and research ideas for further studies. (www.metodix.com)

7.4 Research objectives

According to Yin (1994, 4) there are three reasons to case study: To explore, describe and explain.

- The research is *exploratory* when the researcher is dealing with a new topic on which little research has been done previously, and it is difficult to state the research problem clearly.
- The purpose of *descriptive research* is to provide a description of various phenomena connected to individuals, situations or happenings that occur. Descriptive research presents a complete description of a phenomena within its context.
- *Explanatory* research is used when the focus is on cause-effect relationships, explaining which causes produced which effects. It is also conducted to answer the question by using theories and knowledge already gained.

Based on Yin's definition this study is both exploratory and descriptive. Exploratory, in a way because the matter has no been studied before and in this research is tried to gather as information about low cost strategy and it's implementation. On the other hand this research is also descriptive, because it tries to describe what kind of is the European low cost model.

7.5 Data Collection Methods

Yin (1994) proposes six different sources of evidence when collecting data, which are documentation, archival records, interviews, direct observations, participant observation and physical artefacts. None of these sources have an advantage over the others, on the contrary, the six various sources are highly complementary, since they all possess different strengths and weaknesses and a good case study should therefore use as many sources as possible (see TABLE 10). (Yin, 1994, 80)

TABLE 10 Six sources of evidence: strengths and weaknesses

Sources of evidence	Strengths	Weaknesses
Documentation	<ul style="list-style-type: none"> • Stable (can be reviewed repeatedly) • Unobtrusive (not created as a result of the case study) • Exact (contains exact names, references and details of an evident) • Broad coverage (long span of time, many events, and many settings) 	<ul style="list-style-type: none"> • Retrievability (can be low) • Biased selectivity, if collection is incomplete • Reporting bias (reflects (unknown) bias of author) • Access (may be deliberately blocked)
Archival records	<ul style="list-style-type: none"> • (Same as above for documentation) • Precise and quantitative 	<ul style="list-style-type: none"> • (Same as above for documentation) • Accessibility due to privacy reasons
Interviews	<ul style="list-style-type: none"> • Targeted (focuses directly on case study topic) • Insightful (provides perceived causal inferences) 	<ul style="list-style-type: none"> • Bias due to poorly constructed questions • Response bias • Inaccuracies due to poor recall • Reflexivity (interviewee gives what interviewer want to hear)
Direct observations	<ul style="list-style-type: none"> • Reality (covers events in real time) • Contextual (covers context of events) 	<ul style="list-style-type: none"> • Time consuming • Selectivity (unless broad coverage) • Reflexivity (event may proceed differently because it is being observed) • Cost (hours needed by human observers)
Participant observation	<ul style="list-style-type: none"> • (Same as above for direct observation) • Insightful into interpersonal behaviour and motives 	<ul style="list-style-type: none"> • (Same as above for direct observation) • Bias due to investigator's manipulation of events
Physical artefacts	<ul style="list-style-type: none"> • Insightful into cultural features • Insightful into technical operations 	<ul style="list-style-type: none"> • Selectivity • Availability

Qualitative data can be gathered not only as texts but also as pictures or through participatory observation. Interviews, especially the methodics of a thematic interview, are the most common data gathering method of a case study. Using several different methods enables also a triangulation, i.e. the information received from different data can be compared with each other, which increases the validity. It is also possible to use a quantitative data alongside the qualitative one in case studies. (metodix.com) This case study uses many sources of evidence; financial data, consumer interviews, industry statistics and direct observation to get as much information about the case study objects.

Experimental research, quantitative survey study, and qualitative field study or the variable tradition of participatory observation as a more heterogeneous class are often separated as their own individual research strategies. This thesis can be classified also as a quantitative survey study as it uses quantitative data, but the data is not interpreted with quantitative methods. A lot of tables and figures are used, because it helps to form a picture about the low cost strategy and its implementation.

The approach is a holistic – begins from an entity – and an inductive one – moves from the general towards the individual – rather than a deductive one, i.e. moving from the individual towards the general. Case data can be either longitudinal or cross-sectional. Longitudinal data is used in examining change, the 'life-circle' or history of a unit. The data may consist of one or several cases. If there are several studied cases then the setting for research can be a comparison of these units on a selected dimensions. On the other hand, if you are studying only one single case, the object of the study can consist of history, changes on some measurable dimensions, or you can e.g. explain a phenomenon, such as economic returns, with its internal features. A thorough case study is not, however, merely a description of a data but a logical approach, which relies on interpretations and analyses. Finding its roots in the theoretical frame is, therefore, a special challenge for a case study: a clear conceptual frame forms a foundation for interpreting the results of a case study. (www.Metodix.com)

This thesis studies three to four case study companies (three when network structure and cost structure are studied plus one company, when the consumer opinion is studied), so this is several case study research, which uses cross-sectional data, which are based on theoretical measures, to explain the low cost phenomena in Europe. Triangulation is used to form a realistic picture about the phenomena (data gathering methods are explained later).

7.6 Case study companies

Ryanair

Ryanair began operations back in 1985 with the launch of a daily flight on a 15 seater aircraft between Waterford Airport in the South East of Ireland and London Gatwick. The company had a commitment to low fare air travel and making air travel affordable for everybody. In the company's first year, its 57 employees carried just over 5,000 passengers on its one route. In 1986, Ryanair broke the high fare cartel which was then operated by the two state airlines Aer Lingus and British Airways on the Dublin-London route. The Dublin-London route had stagnated at about 1 million passengers per annum between 1975 and 1985, and was then characterised by some of the highest air fares in Europe. Ryanair was the first European airline specifically set up to offer low fares on short-haul intra-European routes. In our second full year of operation, our 120 people carried just over 82,000 passengers on two routes. By 1994, Ryanair was employing over 500 people, carrying over 1.5 million passengers per annum and had recorded its fourth continuous year of profitability. 1997 was a milestone year for Ryanair. Thanks to the full EU air transport deregulation, the airline was free for the first time to open up new routes to Continental Europe. Year 1997 also saw Ryanair Holdings plc float on the Dublin and New York (Nasdaq) Stock Exchanges enabling all of its then 700 people to become shareholders in the airline. Now, at the year 2002 the constant expansion of Ryanair's route network has made Ryanair the second largest airline in the UK, and by far and away Europe's largest low fares airline, bringing the total network to over 45 routes across 11 countries served with a fleet of 31 aircraft and 1,400 people. In the current 12 months Ryanair expects to carry over 7 million passengers.

Easyjet

EasyJet is one of Europe's leading low-cost airlines. Since its first flight in November 1995, the airline has grown from a Luton base offering two routes from Luton to Glasgow and Edinburgh, served by two Boeing 737 aircraft, to an airline offering 44 routes from 17 European destinations and flying 30 (as at February 2002) 737 series aircraft. During the financial year to 30 September 2001, the company reported pre-tax profits of £40 million on a turnover of £357 million and carried 7.7 million passengers. The airline's share were formally admitted to the London Stock Exchange on 22 November 2000 at a price of 310 pence per ordinary share. EasyJet is majority owned by the Haji-loannou family. Stelios Haji-loannou also controls other separate easyGroup companies such as easyInternetCafe, easyCar.com, easyMoney, and easyValue. There are no "cross-shareholdings" between easyJet and these other easyGroup companies, although some "cross-marketing" agreements do exist. EasyJet currently has four main operating bases - London Luton, Liverpool, Geneva, and Amsterdam. EasyJet, which employs almost 1,600 people, currently has 18 Boeing 737-300 aircraft and 12 Boeing Next Generation 737-700s (as at February 2002). In March 2000, easyJet placed an order for 17 brand new Boeing 737-700 aircraft for delivery by the end of 2004. This was in addition to an existing order for 15 of the same kind of aircraft. The first aircraft of this type was delivered in October 2000. By 2004, allowing for some retirements, the airline will have a total of 48 aircraft and price protection rights on a further 30. By this time the average age of the aircraft in the fleet will be less than four years, making it one of the youngest in the world.

Virgin Express

Virgin express is part of virgin family (the third most recognised brand in Britain) other parts of the family are trains, finance, soft drinks, music, mobile phones, holidays, cars, wines, publishing and bridal wear. All together the Virgin corporation owns over 200 companies worldwide, employing over 25,000 people. Total revenues around the world in 1999 exceeded £3 billion (us\$5 billion). Virgin Express started operations 1996 and it has base in Brussels. At the moment Virgin Express flies to eight destination is Europe and it is going through a restructuring of it's business structure.

Year 2001 it reduced the number of fleet to 11 from 22 and it also closed down three destinations. The restructuring was result of unsatisfactory financial performance. The company made lost of 65€ million 2001 and the year before the lost was 7€ million. Virgin Express also withdraw from the charter business and now focusing it's resources only to the low cost sector. The charter business was significant part of the Virgin business generating almost half of the company's revenues, but obviously it was not very profitable.

British Airways

British Airways was formed in 1939 and is today the largest international passenger airline in the world. The company's service network is one of the world's largest, with 255 individual destinations in 102 countries. Through its alliances, British Airways covers 650 destinations in over 135 countries. During 1998-99, British Airways showed a profit before tax of 225 million pounds. The British Airways group, which includes Deutsche BA and Air Libert , flew 45 million passengers in 1998-99. The British Airways Group's fleet of aircraft is one of the largest in Western Europe, numbering 335. British Airways is one of two airlines that fly with Concorde - the world's only supersonic passenger aircraft. The airline has its head office outside London, in Waterside, near Heathrow. British Airways serves both Heathrow and Gatwick airports in London. About 64,000 people were employed in the British Airways group during 1998-99. Unlike other large airlines, British Airways is entirely privately owned, by a total of 230,000 shareholders.

Air Lingus

In April 1936, Aer Lingus Teoranta was registered as a private airline company by the Irish government. The name, an anglicisation of aer loingeas', means "air fleet". Aer lingus started the operations with only one aircraft. From those days Aer lingus has grown to be esteemed member of the oneworld alliance. During the year 2000 company generated revenue of almost 1,4€ billion out of which the operating profit was 80€ million. The revenue was formed by the 6,9 million passengers that it carried the same year with 38 aircrafts.

KLM

KLM Royal Dutch Airlines was founded on October the 7, 1919. It has continued to operate under the same name to this day, making it the oldest scheduled airline in the world with a continuous history. The carrier's first scheduled flight, on May 17, 1920, connected Amsterdam and London. By the end of that year the company had carried 345 passengers, 22 tons of cargo and three tons of mail. In the fiscal year ended March 31, 2000, KLM carried 15,742 million passengers and 621,000 tons of cargo and mail. KLM ranks seventh among the International Air Transport Association's more than 200 member airlines in terms of international revenue ton kilometers. The route network operated by KLM and partner airlines connects 145 cities in 67 countries on six continents. KLM employed a global work force of more than 30,000 people on March 31, 2000, approximately 4,000 of them employed outside KLM's home country, the Netherlands. KLM operates a modern fleet of 125 aircraft, including those operated by regional subsidiary KLM cityhopper. The fleet is one of the youngest in the airline industry with an average age of eight years.

KLM achieved a net income for fiscal 1999/2000 of NLG 13,875 million (EUR 6,296 million). Around 13 percent of this total was earned through work for third parties, including aircraft maintenance and leasing, flight handling, catering, and flight and ground employee training. The State of the Netherlands owns 14.1 percent of the voting shares in KLM, including cumulative preference shares.

Buzz

Buzz was founded in 1999 by KLM's affiliate KLM uk. Buzz along with British Airways's GO are the first low cost carriers founded by flag carrier in the Europe. At the moment Buzz flies to 21 destinations with 8 aircrafts. Buzz has base in London Standsted and it's the only low cost carrier that flies to Finland. As Buzz is a part of the KLM group no financial data is available, but it is estimated that the first years the company was making lost, but now it has improved financial performance.

7.7 Sample selection

First, to find empirical evidence for the first research question, the three case study companies; Easyjet, Ryanair and Virgin Express are compared to their closest rivals. British Airways, Air lingus, British midland, Sabena and KLM represents the flag carries. In low cost carriers case these three companies were selected because those are independent airlines and that means they publish their annual reports. In Europe there are some low cost carriers more, but most of them are affiliates of flag carriers and no annual reports or other financial data is offered to the public. The flag carrier are selected because they represents the main competitor for each low cost carrier – Air lingus for Ryanair, British Airways for Easyjet and KLM for Virgin Express. The most appropriate counterpart for Virgin Express would have been Sabena, but data for Sabena is no longer available because of the company's bankruptcy by the end of the year 2001, so only that material is used what is available. British Midland is also part of a SAS & Lufthansa consortium and financial data is not available, but the company is in the comparison when ever that is possible. The main source of evidence are annual reports, AEA statistics and company's own statistics. Low cost airlines are also compared to AEA averages when ever possible.

The second research question was from the consumer perspective and the data is gathered by comparing prices low cost airlines prices through internet. Three city pairs were studied in order to form picture about the pricing strategies of the companies. How much data should have been gathered in order to form reliable data for the question? In this case the decision was easy. The pricing model of the airlines are quite simple and therefore the point of saturation was reached relatively fast and no further data collection was need after three data collection times. The data are one way prices for the next week (28 days) and it reveals the pricing structure or the low cost airlines. The presented figures are daily averages and the more detailed data can be found from the attachments.

As for the third research question the data is gathered with two consumer interviews. Passengers on route Helsinki – London were interviewed before and after the flight in Helsinki. The passengers were both of Finnair / British Airways and Buzz. The both

passenger groups were asked the same questions (the questionnaires can be found from the attachments). The first interview has conducted in May 2000 and all together 208 passengers were interviewed, which 80 were Buzz passengers and 128 were Finnair / British Airways passengers. The second interview was conducted in December 2000 and the sampling in this interview was 150 passengers and all of the interview passengers were Buzz passengers. The questions in the interview were planned by the researcher in co-operation with Finnish CAA (mainly to cut down the costs, and that's why it also other question), but the interview were conducted by Suomen Lentoasemalvelut Oy and Qualitem Oy. This was mainly due two reasons. Before and after the flight there are about 5 – 10 minutes time to make the interviews per passenger and one interview takes about 2 to 3 minutes. In order to have sampling of 208 and 150 it would have taken too long time, if the interviews were done by the researcher. That is why out side help were needed to have people enough to make the interviews in a reasonable period of time. Now the material for the study was gathered in one week in both cases. The other reason is that the researcher is employed by the Finnair, and therefore it is unethical to make interviews about competitors passengers opinions and that is the other reason why out side help was needed. Interviews were done by an outsider, but the interpretation of the results were done by the researcher.

7.8 Reliability

Reliability of a research is how much can be trusted on the study results. In this case the data for the first research question comes from the most reliable sources (annual reports, AEA statistics) and therefore the reliability is very high. The data for the second question is based on narrow sampling, but gives a good picture about the pricing model, because the different companies model and time discrimination supports each other and therefore can be treated quite reliable. The interviews for the third question covered 358 passengers and most of the answers were close to each other, which can be interpreted that the reliability is high.

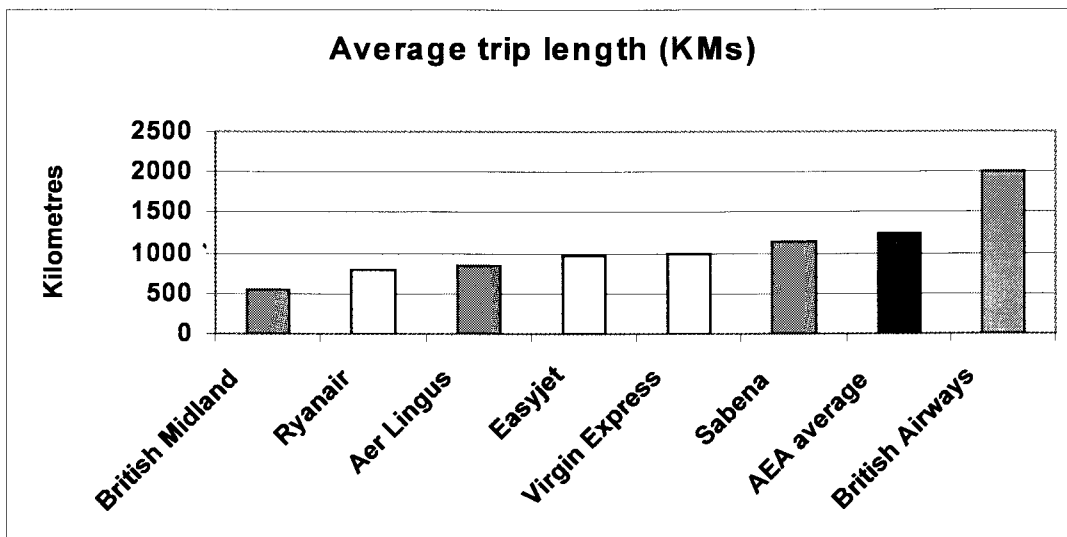
7.9 Validity

Validity of a research is about are the right questions asked? One of the main purposes of the study is to build the European low cost model and therefore quite a lot of time was used to build the theoretical framework. That framework's purpose is to find the right measures for the low cost airline and by doing so increase validity.

8 Changes in the network

The first research question was has, what are the elements in the network structure that makes it possible to a low cost carrier to offer lower prices compared to a major airlines. In the theoretical part of this study was concluded that the following items in the network structure are the main sources of efficiency: short to medium length routes, high daily usage of A/C and frequent flights. Trip length is one of the variables used to measure network efficiency. The following TABLE 11 demonstrates the average trip length of the low cost carriers compared to their competitors and to the AEA average.

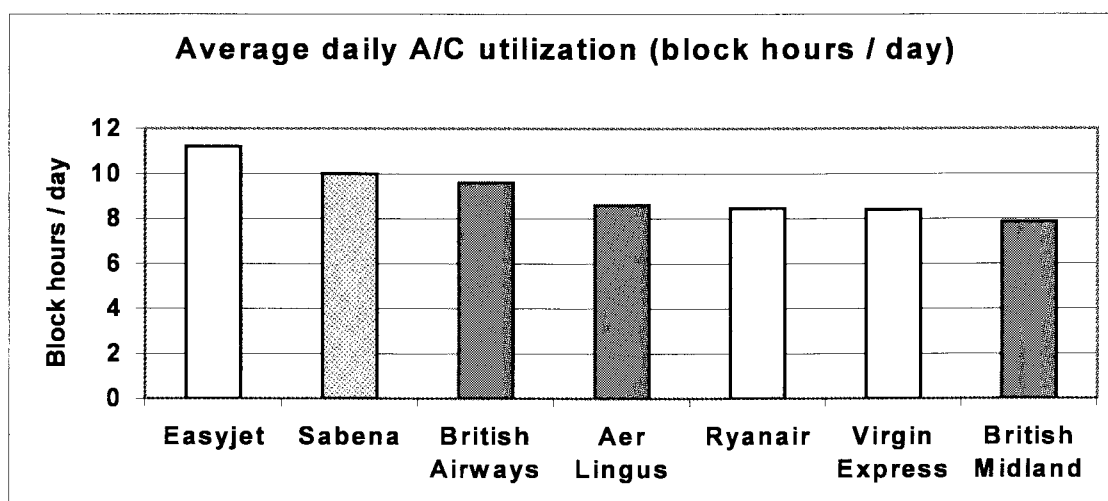
TABLE 11 Average trip length in Europe



The scale is between British Airways average of 2000 kilometres and British Midland little over 550 kilometres. British Airways sector length is much higher, because it flies also transcontinental routes and that has significant impact on the average sector length. Ryanair and Aer Lingus have very similar route distance and that is very natural because of the same origin. Virgin Express's average route length is about 200 kilometres less than its competitor Sabena. That is because Virgin flies only 12 routes compared to Sabena, which served a larger range of city pairs. EasyJet's average trip length is 966 KMs and that is almost 23% less than the AEA average of 1248 KMs. Virgin Express's trip length is 21% less than AEA average and Ryanair average trip is 39% less than AEA. Trip length can not be intrinsic value,

which must be pursued at all costs, but short to medium length sector helps the airline to utilize the daily flying. Shorter routes means shorter flight time, which means more flights per day and that means higher daily utilization. In the following TABLE 12 the daily utilization is presented.

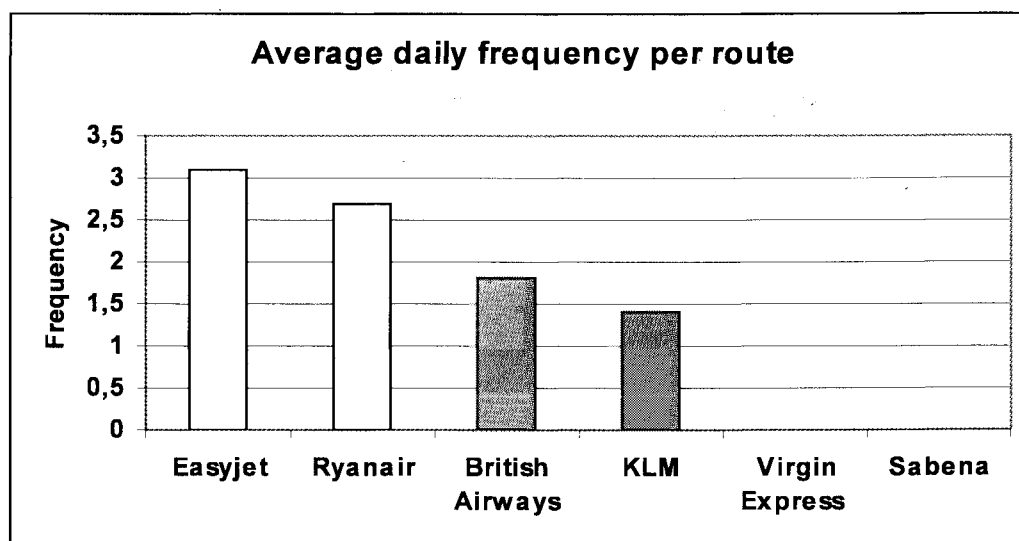
TABLE 12 Average daily block hours



Easyjet uses its aircrafts the most in the Europe in this study. During the year 2000 Easyjet's aircraft were flying an average of 11,2 hours a day and the daily utilization is even higher year 2001 (11,6 hrs/day), but because of material for the year 2001 from the other airlines weren't available the year 2000 were used. Reliable fleet size data for Sabena was not available and therefore the Sabena figure is an estimation. Ryanair's route length was shorter than the other low cost airlines, and the daily utilization is smaller than Easyjet's and at the same level with the Virgin Express. Even tough Ryanair flies almost as many frequencies per day as Easyjet (see TABLE 13) the daily utilization is average if compared to other airlines and that is a result of the shorter route length. Easyjet on the other hand has longer trip length and high daily frequencies and that can be seen in the high daily utilization of A/C.

The last network efficiency measure was the frequencies per route.

TABLE 13 Average daily frequencies per route



Data for the Virgin Express and Sabena was not available, but as can be seen Easyjet and Ryanair offers almost two times more frequencies to it's destinations than KLM and British Airways.

8.1 Changes in the low cost airlines network compared to flag carriers

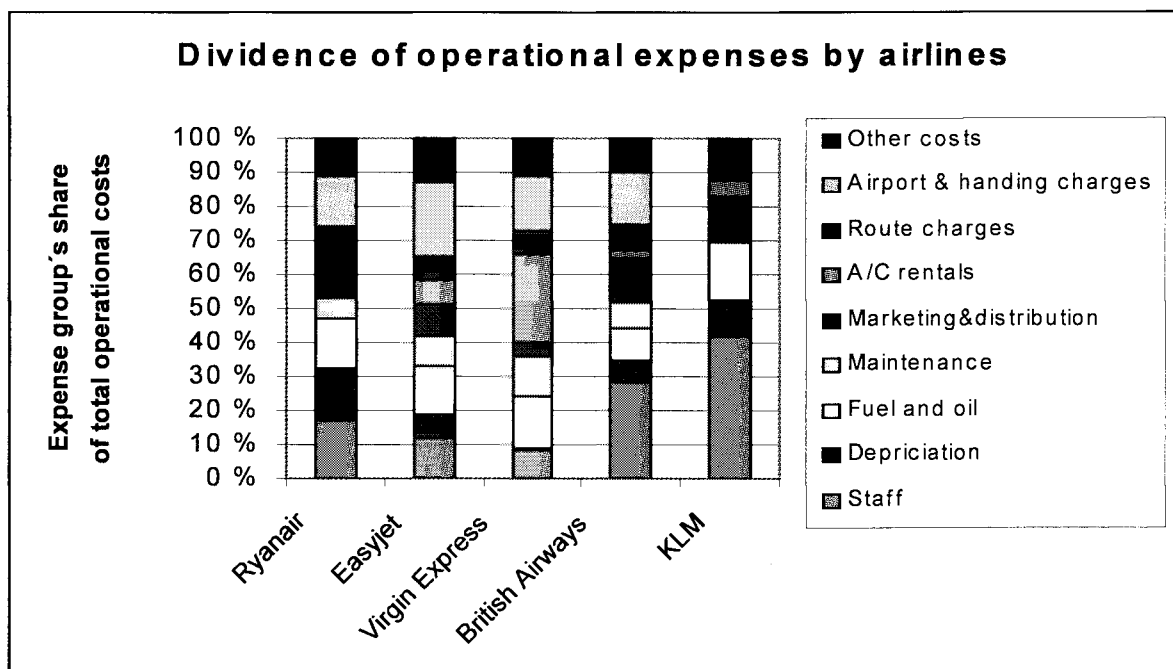
Low cost airlines in the Europe differs from the conventional airlines with given measures in the theory. The average trip length is about 20% to 40% less than the average AEA carriers trip length. The daily utilization is higher only with the Easyjet, which is a result of longer trip length compared to daily frequencies. Daily frequencies per city pair are up to two times higher than the conventional carriers. High daily utilization means more landing and parking fees and that's why cheaper airports are used in some of the cases. Data for Virgin Express was not available and there fore these conclusion are based on the Ryanair and Easyjet results.

High daily utilization is not rational without sufficient demand and the demand is a result of low prices and the low prices are result of low cost strucure. Changes in the network structure is one of the elements which makes the cost structure relatively cheaper. The other ones are the chances in the value chain.

9 Chances is the value chain – low cost vs. flag carrier

In the previous chapter network efficiency was measured. In this chapter the other sources of cost advantage is studied. In the theoretical part was argued that main sources of cost saving sources are the new distribution channel (internet), catering and no FFPs. This was the changes the consumer could see. Behind the value chain in the supportive activities more savings could be gained by outsourcing the activities not relevant to core business. The get some scope how much those savings could be Doganis made his estimates in the TABLE 8. In the following TABLE 14 low cost airlines are compared to British Airways and KLM. Those airlines were the only one that presented their cost structure in a way that the comparison was able to make. Also some of the KLM data could not be divided so the relatively good comparison can be made between the low costs and British Airways.

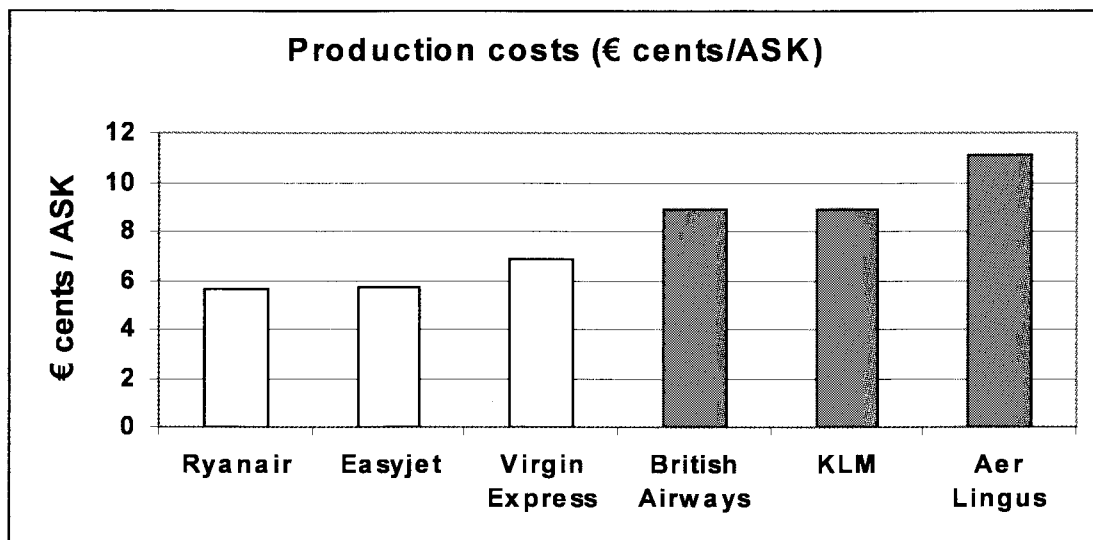
Share of airlines cost element to total cost



In some of the elements the comparison is very unambiguous. Staff costs are almost twice with the flag carries as it is with the low cost airlines. Fuel and oil costs are on the same level as is airport & landing fees + en route charges. Even though the secondary airports are cheaper, the high daily frequencies boost that cost element compared t major airlies, which use more expensive airports, but not as frequently as

the low cost airlines. Ryanair maintenance is remarkably small compared to other airlines and that is probably result of out-sourcing, but as not data was presented in their annual report that is just a speculation. Share of “other costs” varies between airlines and it is hard say how the chances in the value chain eventually can benefit the low cost carriers. To get more scope to cost comparison the total cost are divided

TABLE 15 Production costs (€ cents / ASK)



with the total yearly production (ASK). The results are presented in the TABEL X. One seat costs about 11 € cents for Aer lingus to carry and for the Ryanair the seat costs little under 6 € cents. This comparison gives good picture about the total costs relative to production. Doganis estimation in the TABLE 8 was relatively close if compared to this result.

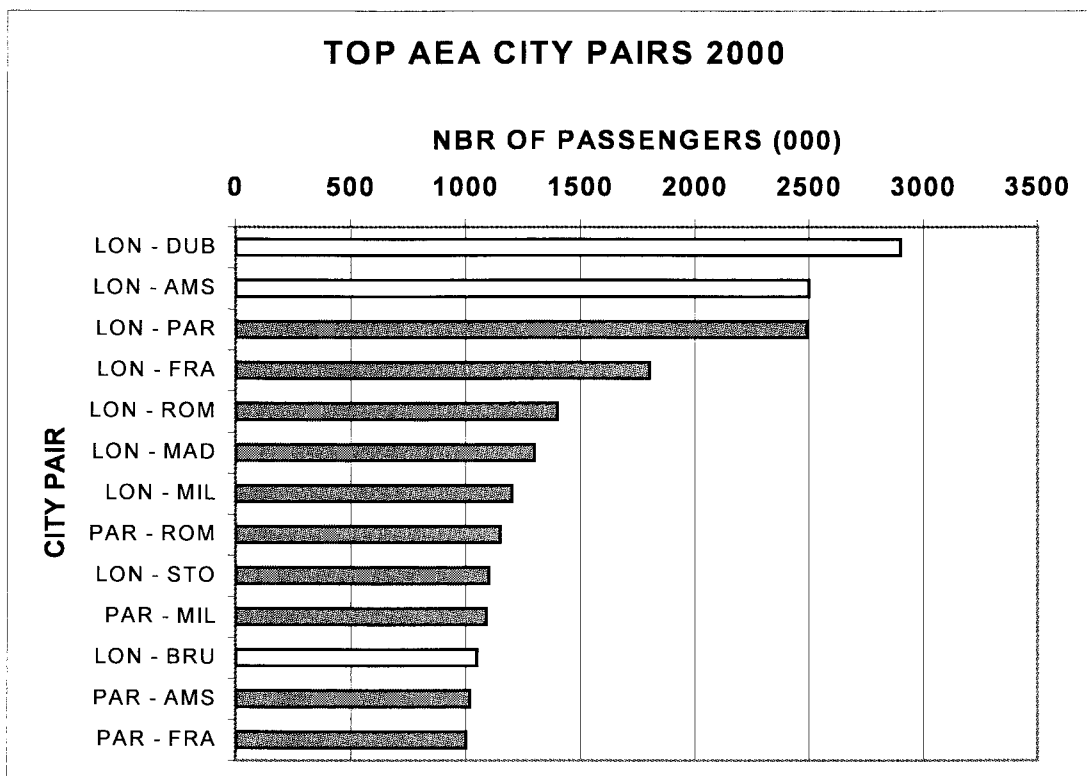
9.1 Chances in the low cost airlines's value chain compared to flag carriers

Due to different accounting and financial report publication policies it is difficult to compare different parts of the value chain with each other. The comparison of the total costs divided with the production gives the answer needed and it also combines the chances in the network structure. The low cost airlines's production costs are about 40% to 100% less than conventional airlines!

10 Low cost airline's pricing

The low cost airlines attracts consumers with very low prices in the advertisements. Ryanair is advertising airfares starting from 9€, but not all seats are filled at the price. This part of the thesis is trying to reveal the low cost pricing and yield management strategy. Pricing is usually more aggressive, when the airline is in a tight competitive situation. The following TABLE 16 demonstrates the most busiest routes in the Europe.

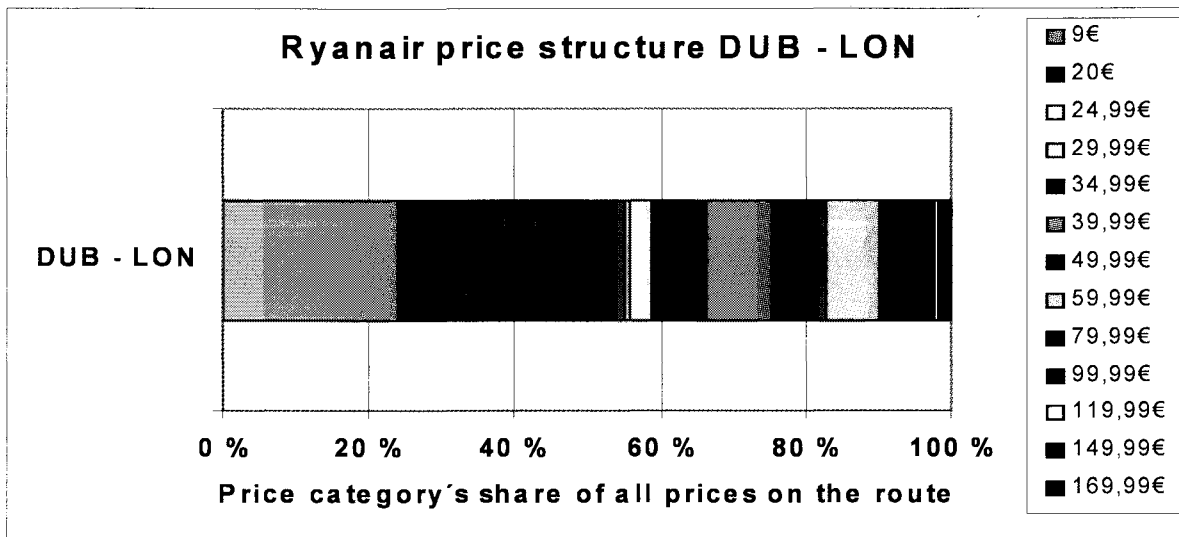
TABLE 16 AEA top city pairs year 2000



The first city pair (LON- DUB) is one of the Ryanair's main routes. Easyjet on the other hand is flying the second busiest route LON – AMS and Virgin Express is one of the players on the LON – BRU route. In this chapter low cost airlines's pricing is studied on these highly competitive routes

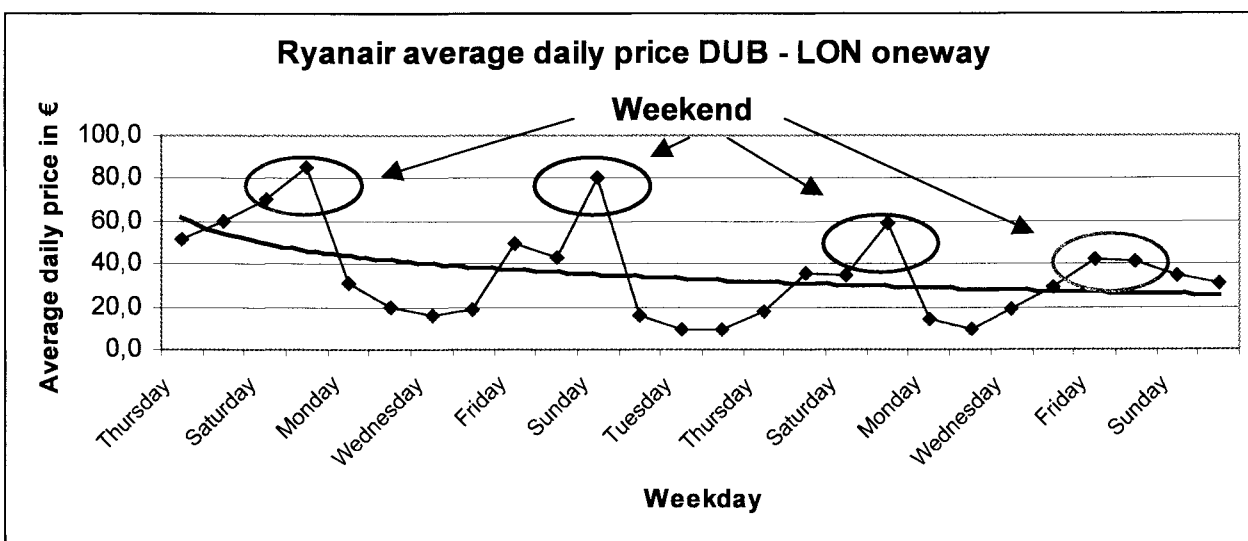
First is studied the busiest route in Europe LON – DUB and how Ryanair has planned it's pricing. The following TABLE 17 demonstrates the Ryanair's pricing structure that route.

TABLE 17 Ryanair's pricing structure on DUB – LON route



As can be seen about 25% of all the seats are sold at 9€ price and the highest price is almost 20 times more than the advertised price (9€ vs. 169,99€). The lowest prices are available only 2 to 3 weeks before the scheduled departure and only at the beginning of the week. The price goes higher more closer the departure day is and towards the weekends. TABLE 18 demonstrates this.

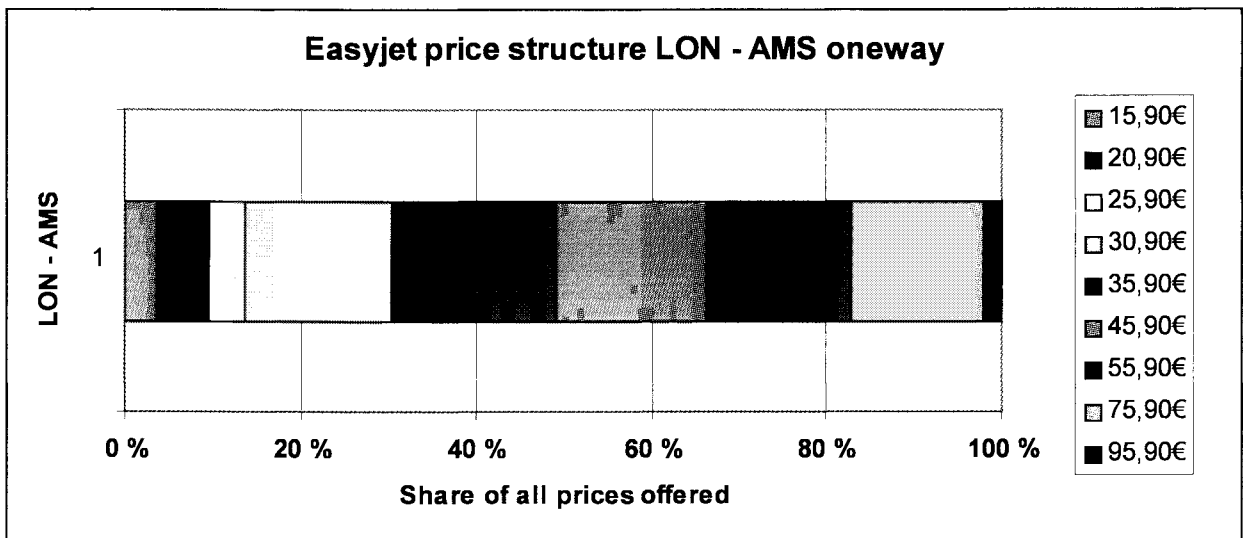
TABLE 18 Ryanair's average daily price



Ryanair's pricing is very time discriminating. Towards the weekend the price is higher than at the beginning of the week. The advertised low prices are only available two weeks before the departure and never during weekend.

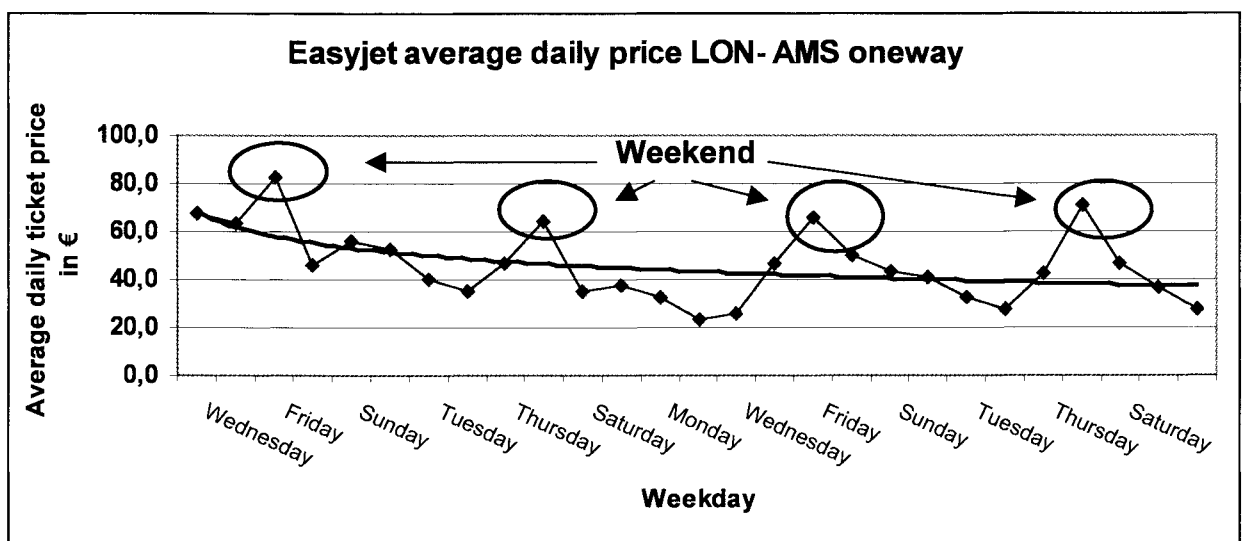
EasyJet's pricing is very similar than Ryanair's. The following TABLE 19 demonstrates the pricing of Easyjet's route LON – AMS.

TABLE 19 Easyjet's price structure LON – AMS one way



Only small share of all prices are sold at the lowest 15,90€ price. Easyjet's pricing is not so aggressive as Ryanair's but still highest price of 95,90€ is six times more than the lowest 15,90€. Easyjet's time discrimination is similar with the Ryanair's

TABLE 20 Easyjet's average daily price

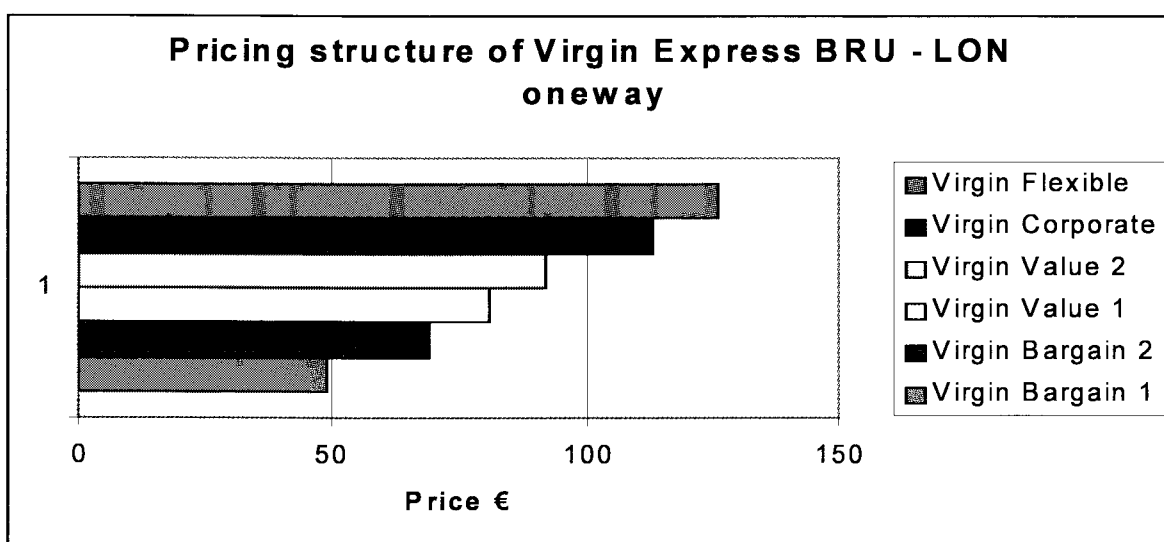


On their internet site Easyjet openly informs their pricing policy.

“Our booking system reviews bookings every day for all future flights and tries to predict how popular each flight is likely to be. If the rate at which seats are selling is higher than normal, then the price would go up. This way we avoid the undesirable situation of selling out popular flights months in advance. That gives you the flexibility to decide last minute and still get a better deal than if you flew with other airlines at the same time for the same journey.”

Virgin Express is different in its pricing policy. Instead of offering one product as Ryanair and Easyjet, Virgin Express has 6 different products, which all have different features. On the route BRU – LON Virgin Express offers the following products.

TABLE 21 Virgin Express pricing structure BRU – LON



The cheapest ticket is the Virgin Bargain 1 which is 49 € and Wirgin Flexible costs 126 € oneway. Because of the Virgin pricing policy, it's impossible to make similar demand driven price curve as it was in the Ryanair's and Easyjet's case.

Pricing policy of the Ryanair's and Easyjet's follows the theory given in FIGURE 8. One product and the price is the elements which segments the consumers, those willing to pay less travels during the week days and those who are willing to pay more will use their weekends for flying. Virgin on the other hand offers 6 different products segmented beforehand, on the basis of flexibility and price.

11 Low cost airlines's value chain – the customer perspective

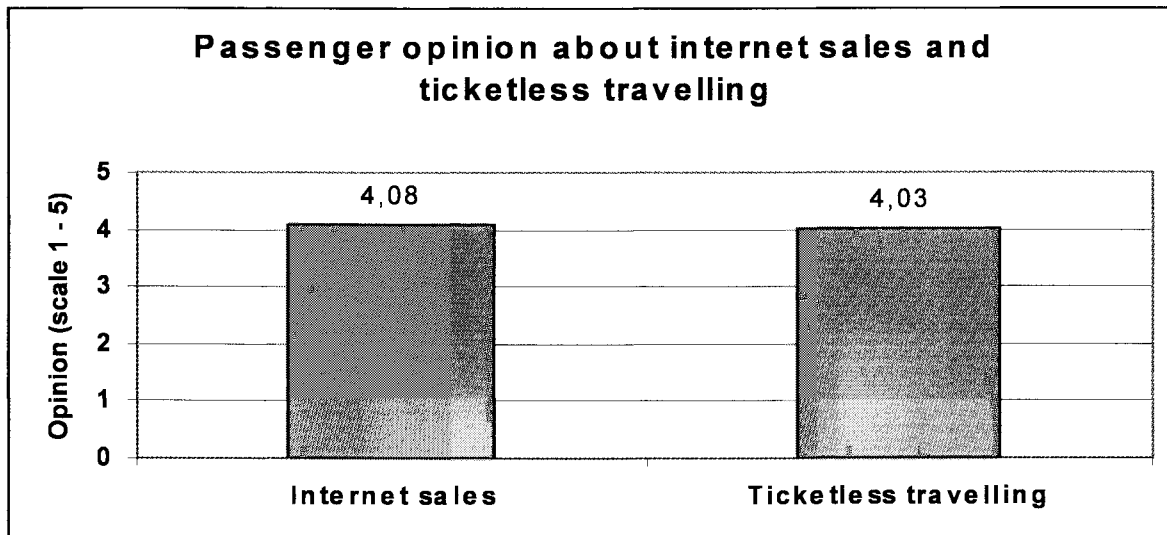
The third research question was how the consumer sees the low cost carrier's value chain. To find answers for this question total of 358 passengers were interviewed at the Helsinki-Vantaa airport. These interviewed persons were both passengers of Buzz and Finnair / British Airways (208 passengers) in the first interview in May and in the second interview in December they were only Buzz passengers (150 passengers).

From the consumer point of view the first contact to airlines value chain is the marketing and the sales functions and also the reservation, the functions that a passenger do before he or she arrives to the airport. In the old system a passenger made the reservation to a flight form the travel agents and also picked the flight ticket from a travel agent. The difference in the low cost value chain is that the passenger makes the reservation directly to the airline and do not use the travel agents any more. The direct sales is made through telephone sales or internet. Being a ticketless airline the low cost carriers customer do not have to pick up ticket any more, because the ticket is no longer needed – only the reservation number is needed and that can be given on the telephone or it can be displayed in the internet after the reservation.

When asked from the passengers, about the reservation system they have used, 58% of all Buzz passengers said that they have made the reservation via internet and 24% said that they have made the reservation through telephone sales. All together 82% of all the Buzz passengers have used direct sales. The rest of the passengers did not know what the reservation channel had been, because someone else had made the reservation. That is because they were business passengers and personally not responsible of the reservations. In the Finnair / British Airways case 80% had made the reservation through a travel agent, and the rest of the passengers had contacted airlines sales office or they did know who had made the reservation. This has shown that reservation and sales are totally different in the low cost carriers value chain compared to traditional airlines value chain. When asked from the Buzz passengers their opinion (plusses and minuses) about the internet reservations the large majority of all passengers found the internet sales very easy and quick way to make the reservation. Most passengers felt that in most cases all the needed information was easily available. Some critics were presented, that the total price

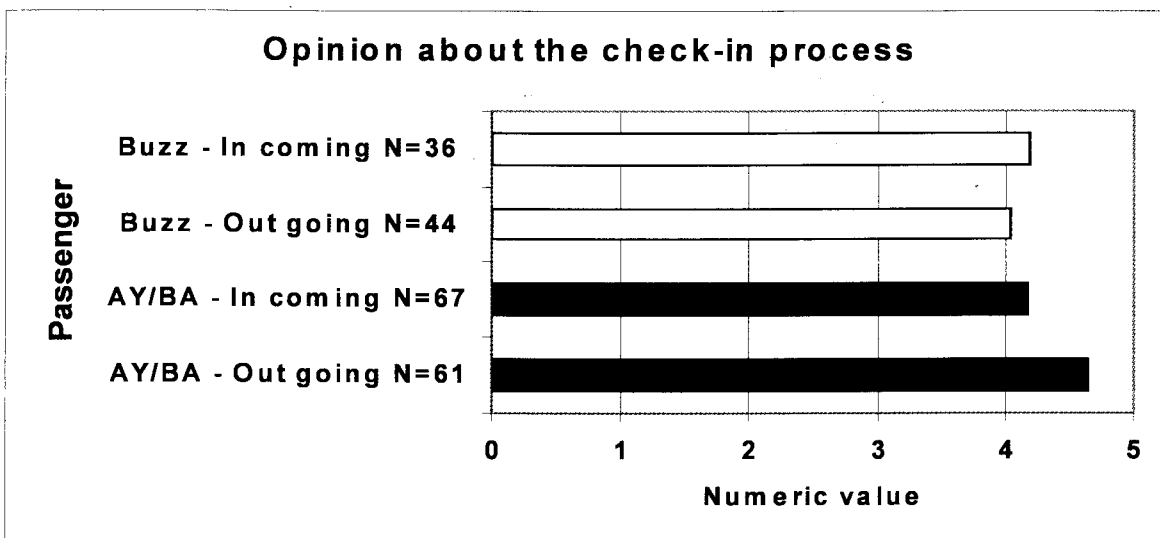
came too late to show in the reservation process and also some of the finish speaking customers showed some critics about the language, which was during that time only in english. In general the Buzz customers felt that the internet sales was a good thing. The other main change in low cost carriers value chain is the ticketless traveling. This means that there is no tangible ticket and the check-in is done by the reservation number and if you have lost that reservation number the same information can be gained with the passport / ID-card information. When asked from the Buzz passengers their opinion about the ticketless travelling the large majority answered that it is very good thing. There are two main reasons for their opinion. First thing was that, the passengers felt that there is one thing less to remember before the flight and second is the fact that it can not be lost. Not all felt that the ticketless is purely a good thing. Some passengers felt that they could not trust to airline systems and the tangible ticket is some kind of "insurance" for their flight. Passengers also gave a numeric value for the internet sales and ticketless travelling. The scale was from 1 to 5, 1 representing very bad and 5 representing very good.

TABLE 22 Passenger opinion about internet sales and ticketless travelling



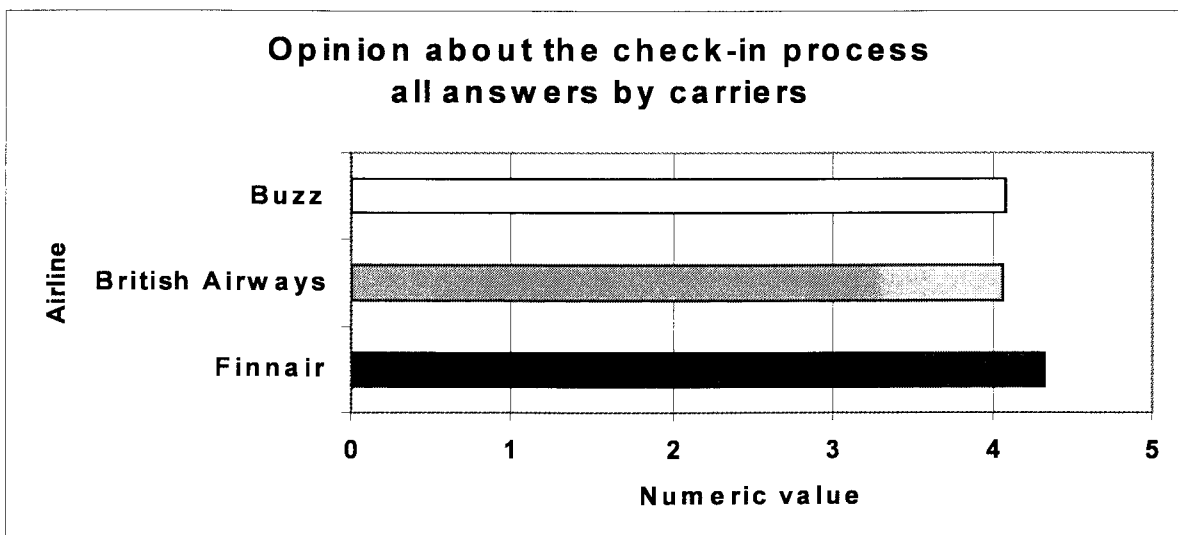
Passengers were also asked to give numeric value for the check-in service. To that question both Buzz and Finnair /British Airways answered. The results are given in TABLE 23

TABLE 23 Passenger opinion about the airline’s check-in process



As can be seen the in coming passengers have gave in average better results about the check-in process. The difference is not remarkable between the out going passengers. Reasons for this is hard say, but one of the reasons might be that in coming passengers are from the different airports. Finnair / British Airways passengers are from the Heathrow airport and the Buzz passengers are from the Standsted airport. London Heathrow is one of the largest airports in the world and the service capabilities are known to be sometimes limited and that might affect to the results given to Finnair / British Airways. Stansted airport on the other hand is small compared to Heathrow and because of the size and passenger’s check-in handling can be more effective. In the TABLE 23 Buzz was compared to Finnair and British Airways in general, but in the following TABLE 24 Finnair and British Airways values are presented individually and the numeric values are presented as total values.

TABLE 24 Customer opinion about the check-in process

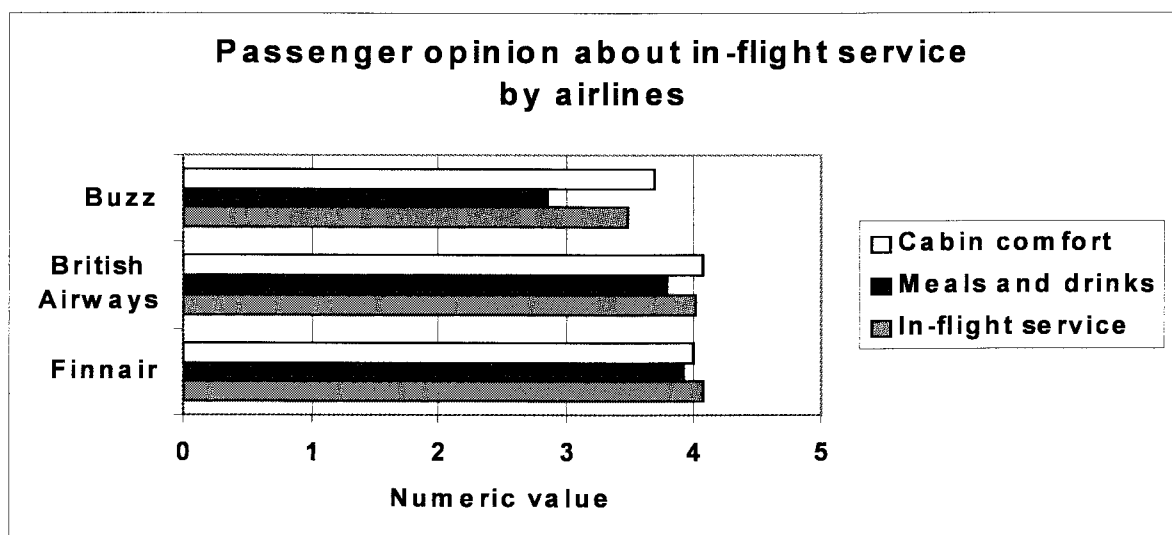


Finnair passengers have given the highest opinion, but as can be seen Buzz gets the same result as British Airways does. Keeping in mind the TABLE x which estimates the cost benefits of the internet sales and ticketless travelling and that is compared to customer opinion which shows that the new low cost value chain can be both cost effective and customer friendly and even better than the old value chain model. In this case can be said that the low cost carriers have found a win-win-situation.

In the airline's value chain from the customer perspective the following function is boarding to the aircraft. The boarding pass is printed in the check-in and then collected at the boarding in both cases, the process is similar also in the low cost and in the traditional value chain and therefore is not to be studied.

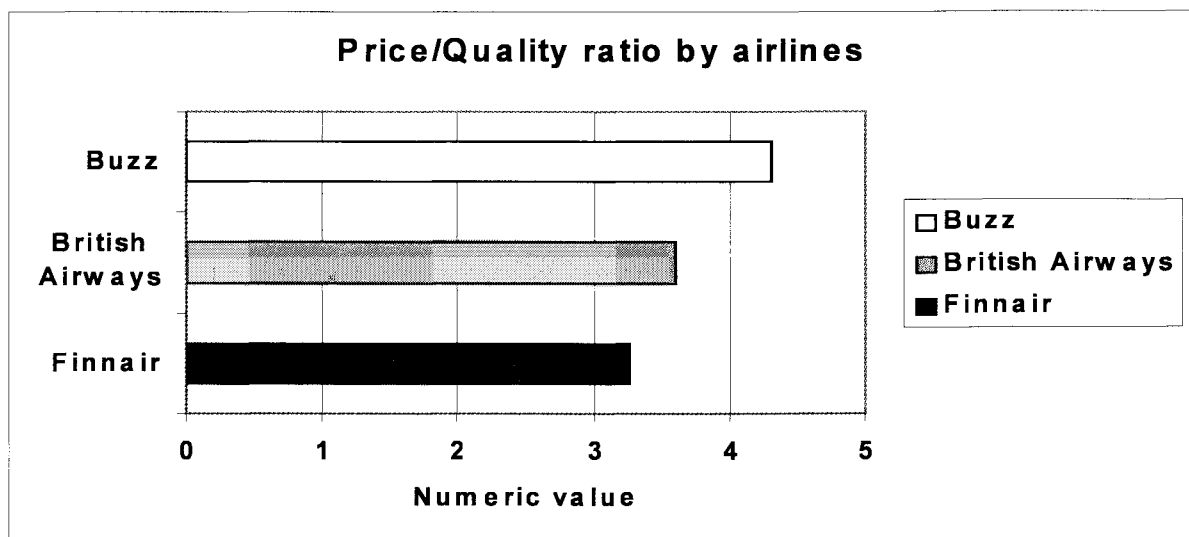
The following functions in the value chain is the in-flight service. The results are presented in the TABLE 25. Buzz does not offer free meals or drinks and also the seat pitch is reduced to minimum in order to maximize the seating capacity. These elements must have affected to the values that Buzz has got. The biggest difference is in meals and drinks, which are to be paid in the plain if wanted. Buzz got 2,85 out of 5 and the best result was Finnair's 3,92 and that was the biggest single gap in this study (1,1points) and the difference to British airways is 0,9. Even though the opinion about the meals and drinks was quite not so good when compared to Finnair and British Airways, the cabin comfort got almost the same result as the two others.

TABLE 25 Passenger opinion about in-flight service by airlines



The gap between Buzz and Finnair / British Airways is only 0,3 points. There are many things that might effect to opinion about the cabin comfort. One of the most important factors are the seat pitch, which in Buzz case is reduced to minimum. Other factors that might affect to cabin comfort opinion are clearness of the cabin, Storage space and in-flight magazines and other entertainment. One of the reasons why customers have gave good results to Buzz might be that because of the lower price the customers are not expecting that must from the service. When asked the question about the price and quality ratio, the results supports that perspective. Results for the price and quality ratio are shown in the TABLE 26. In this question Buzz made big difference to it's competitors, price/quality ration compared to Finnair was 1,0 better and to British Airways Buzz got almost 0,7 points higher results. The reason for such a big gap can be to some extent explained by the price the passengers have paid for their flights. Finnair / British Airways passengers had paid for their tickets on average 690 € and the Buzz passenger on average 175€. The Finnair / British Airways passenger have paid almost four times more than the Buzz passenger, which gives a lot advantage compared to competitors in this route.

TABLE 26 Price / quality ration by airlines



From the customer point of view the new low cost airlines value chain is very competitive. The low price attracts people and works also as shield towards the service level.

12 Cost leadership as an airlines strategy – implementation

One of the main purposes of this study was to form a framework of the low cost airlines in Europe. In the theoretical part of this study the framework was given (see FIGURE 15) and in the following TABLE 27 is gathered the information about the implementation of the low cost strategy based on those variables. The data is gathered from the tables presented in this study or from the Airlines internet site / annual reports

TABLE 27 Cost leadership as an airline strategy in Europe – implementation

VARIABLE	Virgin Express	Easyjet	Ryanair
High daily utilization of A/C	No – average daily utilization if compared to other carriers	YES – 11,2 block hours a day	No – average daily utilization if compared to other carriers
Frequent flights	Data not available	YES – average of 3 flights per route a day twice as much of KLM and British Airways	YES – almost three flights a day per destination
Short to medium length routes	YES – Average trip length is 899 km (21% less than AEA average)	YES – average trip 866 length (23% less than AEA average)	YES – average trip length is 781 KMs which is 40% less than AEA average
Short turnaround times	N/A	YES – less than 30 minutes	YES – less than 30 minutes
Secondary airports	NO Main airports of the cities	YES, whenever possible	YES, always
One A/C type	YES Boeing 737-300 and 400 series	YES Boeing 737-300 and 700 series	YES Boeing 737-200 and 800 series
One or few bases	YES – Base in Brussels	NO – 4 bases: Amsterdam, Geneva, London, Liverpool,	NO – 5 bases: Dublin, Glasgow, Brussels, London, Frankfurt
High seating density, one class service	YES and NO – Also business class	YES	YES -
Point to point service	YES	YES	YES
No overnight crews	N/A	N/A	N/A

Internet sales	YES – 20% of all sales made through internet, less than the other low cost airlines, but still more than flag carriers	YES – during the year 2000 65,1% of all ticket were sold through internet and the year 2001 the figure was 86,5%	YES – approximately 65% of all sales came from the internet 2000 and the figure is rising
Ticketless	YES	YES	YES
Simple pricing	NO – 6 different products	YES – price differences based on time discrimination	YES – price differences based on time discrimination
No pre-seating	NO – seating is done at the check-in	YES	YES
No meals or drinks	NO – café and sandwich is offered for free	YES	YES
No FFPs	YES	YES	YES
High degree of outsourcing	N/A	N/A	N/A
RESULTS			
Load Factor%	73,3%	80,8%	69,9%
Making profit?	NO, loss - 69€ millions net margin – 22,5%	YES, Profit 62€ millions net margin 10,6%	YES, profit 108€ millions, net margin 21,4%

As can be seen Ryanair and Easyjet are closer to the theory than the Virgin Express is. The theory was based a lot on the Southwest's activity map presented by Porter. There are similarities. They all use one type of aircraft, they are ticketless and the sales is made through the internet. Trip length is smaller than the European average and short turnaround times is one of the elements which makes the daily A/C utilization together with secondary airports high. As said Ryanair and Easyjet are closer to the Southwest model but the biggest difference is that they have more bases. That is probably the reason why the trip length in Ryanair's case is shorter. Data for some of the elements presented in the table was not able to get, but all in all this gives a good picture about the low cost strategy implementation in the Europe.

13 Conclusions

One of the general competitive strategies is the cost leadership strategy and in the airline business, when done right, can be source of sustainable competitive advantage. Southwest Airlines has shown the road how the cost leadership should be done and in Europe two airlines have copied that model better than others; Ryanair and Easyjet. Virgin Express which was the third low cost carrier in this study is a little bit different than the others.

The cost advantage for the low cost airlines comes from two things. From effective route network and from low total cost level compared to production level. The biggest single cost element where low cost airlines' differs from the flag carriers is the staff cost. On average can be said that the cost advantage can be up to 100% less than the major airlines.

Even though low cost airlines offers low and attractive prices they are no benefactors. The pricing is usually simple and price differences are based on time discrimination. The lowest prices are available only well before hand and during week days when the demand is low. Towards the weekend prices goes up and the highest prices can be up to 20 more than the lowest price advertised.

From the consumer perspective the low cost airlines' value chain is comfortable. The buying of the ticket is easy and being ticketless gives you one thing less to remember. When you have paid less than normally for your ticket, you don't expect that much from the service and therefore the price/quality ratio stays high.

Cost leadership requires strong management. It is tempting if extra revenue is offered e.g. from cargo or from business class, but being a low cost carrier means, that you must keep up with the planned concept otherwise the whole strategy can be ruined and loss is easily made.

During the writing of this thesis Buzz announced that it shall close down the London – Helsinki route. The company flew to Finland two years and (according to rumours) was making break-even result on that route. As the Marketing Director for Buzz said we can fly 2 – 3 routes from London to France compared to one route to Helsinki. The route length (1814 KMs) was too much.

14 Suggestions for future research

Making of this thesis has been challenging and interesting task. During the making many new ideas has risen for future research, but two of them I think would be worth of a further study. With the low prices no-frills airlines attracts people from the conventional airlines, but also from other forms of transport like trains, ships, buses and cars. This leads to the fact, that low cost airlines does not only is fighting over market share on a certain route, but it can create new demand. One of the suggestions for future research is; how much new demand can low prices create?

Airline business is very people intensive and much of the all cost are people related. As the low cost airlines are driving down lot of the all cost, this naturally asks more from the employees. The second research question is; how should the human resource management be arranged, so that employees stays motivated to implement the low cost strategy?

Southwest Airline's CEO Herb Keller has said "Hire people with a sense of humor" (Freiberg, 1996, 73) – It that the answer?

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KLM's homepage (www.klm.com)

Methodix homepage (www.methodix.com)

Ryanair's homepage (www.ryanair.com)

Virgin Express homepage (www.virginexpress.com)

16 Terminology and abbreviations

Revenue Passenger-Kilometres (RPK)	One fare-paying passenger transported one kilometre. RPK's are computed by multiplying the number of revenue passengers by the kilometres they are flown
A/C	Aircraft
AEA	The Association of European Airlines. An association of the largest scheduled European airlines
Available Seat-Kilometres (ASK)	The total number of seats available for the transportation of revenue passengers multiplied the number of kilometres which those seats are flown
Passenger Load Factor %	The percentage of seating capacity which is actually sold and utilized. Computed by dividing revenue passenger-kilometres flown by available seat-kilometres flown on revenue passenger services
Revenue Tonne-Kilometres (RTK)	One tonne of revenue traffic transported one kilometre. Revenue tonne-kilometres are computed by multiplying metric tonnes of revenue traffic (passenger, freight and mail) by the kilometres which this traffic is flown. Passenger tonne-kilometres are calculated using standard weights (including baggage) which may differ between airlines and between domestic/short/long-haul)
Overall Load Factor %	The percentage of total capacity available for passengers, freight and mail which is actually sold and utilized. Computed by dividing total revenue tonne-kilometres actually flown by total available tonne-kilometres
Yield	The average amount of revenue received per revenue tonne-kilometre. Passenger yield: passenger revenue per RPK
Unit Cost	The average operating cost incurred per available tonne-kilometre
Breakeven Load Factor	The load factor at which operating revenues will cover operating costs. Unit cost divided by yield
IATA	International Air Transport Association, a global association of more than 200 airlines

17 Attachments

The data presented in the empirical part of this study is based on the following data.

What	Form	Source
Numeric values of the interviews	Opinion about the check-in AY/BA out going N=61, 4,65; AY/BA in coming N=67, Buzz out going n=44, Buzz in coming n=36 TOTAL: AY 4,33; BA 4,07; Buzz 4,09 In-flight service AY 4,07/BA 4,02/Buzz 3,48 Meals and drinks AY 3,99/ BA3,79/ Buzz 2,85 Cabin comfort AY 3,99/BA 4,07/ Buzz 3,69 Price/quality AY 3,26/ BA 3,61 and Buzz 4,31	Passenger interviews
Total cost comparision / ASK	Ryanair 5,61 € cents/ASK Easyjet 5,69 € cents/ASK Virgin 6,83 € cents/ASK BA 8,86 € cents/ASK KLM 8,88 € cents/ASK Aer Lingus 11,1€ cents/ASK	Total cost from the company' annual reports and ASKs from the Air Transport Intelligence data base
Bloch hours / day	Easyjet 11,2 Sabena (estimate) 10 British Airways 9,6 Aer lingus 8,6 Ryanair 8,45 Virgin Express 8,4 British Midland 7,84	AEA statistics, Company own data. Year ASKs divided by 360 days and the divided by the average fleet size
Average trip length	British Midland 554 km Ryanair 781 km Aer lingus 844 km Easyjet 966 Virgin Express 988 Sabena 1141 km AEA Average 1248 British Airways 2006	AEA stacticics, Company data and Amadeus GRS system using FQD command
Daily frequencies	Easyjet 3,1 Ryanair 2,7 BA 1,8 KLM 1,4	OAG