The Strategic Use of Information In the Airline Industry

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Declaration

No portion of this thesis has been submitted in support of an application for another degree or qualification from this university or any other institute of learning
Abstract

This thesis is an empirical investigation of the strategic use of information in the airline industry, and explores the development of competition in the airline industry from an information perspective. The research traces the evolution in the environmental conditions facing airlines from World War I to the present. The research also analyses evolution of the uses of information. Information is an enabler, allowing things to be done, but information can also be a resource in itself. The research finds growing strategic use of information from automation to using information as a resource for strategic flexibility.

The main sources of information that airlines use in their strategic efforts are analysed, as well as the ways in which airlines procure this information and the uses they make of it in strategy. The research finds evidence of distinct phases in the evolution of the uses made of information by airlines. Crucial to airline strategic flexibility is local market information acquired informally. However, the evidence also illustrates the serious difficulties airlines face in using the external information about the markets in which they operate in their strategy. Different streams of academic literature support the findings of this empirical research.
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1. Introduction

This research is an empirical investigation of the strategic uses of information in the airline industry. The airline industry has suffered dramatic changes over the last few decades. The technology utilised today by airlines, from the aircraft to the sophisticated communication equipment and computer systems, has undergone dramatic development which greatly affected the economics of the industry. Protective industry regulations were initially applied in order to facilitate the technology and infrastructure development necessary to grow and develop the airline industry into providing the world-wide coverage and reliability that it does today.

International deregulation movements such as the US deregulation in 1978 and the European liberalisation in process, intensified competition significantly over the last two decades, and many airlines have restructured, down-sizing considerably. The airline industry carries today in excess of two billion passengers per year and has demonstrated sustained growth over the last 25 years (Figure 1).
With mature aircraft technology, airlines today realise that although efficiency is extremely important to keep costs in line with competitors, the opportunities for competitive advantage lie in their degree of strategic flexibility. Many airlines are using sophisticated computer systems to better predict demand, in order to guide their pricing efforts and assist in the fundamental issue of matching their supply with demand. But airlines are also realising the serious limitations of those computer systems, and of their organisations in acquiring and using strategically the qualitative market information required to achieve strategic flexibility.
1.1 Purpose and rationale of the research

The airline industry is one of the most information intensive of industries, together with media, banking, and insurance. Therefore, it can be considered an apt domain in which to observe and analyse the acquisition and use of the ultimate strategic resource - information. The study focuses on the link between information and strategy. This important link is under-explored in management research and literature. It also receives insufficient attention from industry practitioners and is therefore a source of much difficulty for organisations in the airline industry.

Airlines possess vast amounts of information and face a difficult task when attempting to use this information strategically. A vast proportion of airlines' information is operational, and this is the type of information with which they appear to be most at ease. However, the airline industry is also an increasingly competitive arena, and airlines are increasingly dependent on market information to survive. This market information consists of up-to-date data about the socio-economic characteristics of each of the many markets in which each airline operates. The more qualitative nature and external origin of this information pose a crucial problem. This information has, by definition, to be procured outside the organisational boundaries, and it is not easy to internalise in a manner which does not jeopardise its usefulness to tactical and strategic efforts.

The great difficulty airlines have in acquiring and using information strategically is very evident in the general problems that airlines manifest in matching supply and demand adequately and in reacting to competitors in the different markets in
which they operate. This contributes to the cyclical nature of the economic health of the industry. One very typical symptom is that, in periods of industry prosperity airlines increase the capacity they offer on routes excessively, only to find their prices under pressure because of half empty flights (Doganis, 1991). This occurs despite the very sophisticated decision support systems now available to airline managers and route planners.

This study emphasises the difference between operational and strategic uses of information, and most importantly, the benefits of using information strategically. It also observes the roles of both internal information and external information in airline competition, as well as identifying the most important sources of external information for airlines, and analysing the extent to which these sources are explored for strategic or tactical purposes.

By concentrating on the characteristics of information rather than those of the organisation, it discusses some obstacles to the use of information, and in particular, the blending by the organisation of internal information with that which is external to it. This blending is as crucial to the organisation as controlling the mixture of air and fuel in an internal combustion engine.

1.2 Structure of the Thesis

This thesis consists of ten chapters including this introductory chapter. Chapter two describes the logic of enquiry and methodology employed in this study in five iterative phases of data gathering and analysis. Chapter three describes the
development of the airline industry from World War I to the present, analysing the role of regulations in the development of the industry, the development of aircraft technology, and the various competitive contexts that faced airlines. Chapter three also describes the processes of deregulation both in the US and in Europe, drawing on the economic principles and objectives behind them. It also analyses the intensification of competition which was responsible for the vast development of airline strategic thinking.

Chapter four characterises the nature of the airline business, from the influence of politics and regulation, to the constructs behind its extreme information intensity, it describes the different product features which constitute the production of airlines, and the sensitivity of the airline business to changing socio-economic conditions. It also describes the characteristics and nature of airline markets and illustrates the extremely narrow margin for error that faces airline management, emphasising the importance of strategic flexibility.

Chapter five studies the development of computer reservation systems (CRS), from their inception as manually maintained inventories of seat availability, to their powerful role in market distortion, to vital sources of information for strategy formulation. It conceptualises the development of CRS as a clear evolutionary process in the use of information from automation to strategic flexibility. Chapter six analyses the role of travel agents in airline competition. Travel agencies have a great influence on consumers' choice of airline, and are important targets for airlines' market distorting efforts. Most importantly, travel agencies are one of the main sources of competitive information to airlines.
Chapter six also analyses the evolution in the role of travel agencies in the airline distribution chain, their bargaining power, the incentive mechanisms that airlines offer them, and the factors behind their importance to airlines as competitive information sources.

Chapter seven analyses airlines' use of the information generated by CRS. It begins by describing MDT technology and its use by airlines in monitoring sales and in guiding competitive information acquisition efforts. It then studies the development of frequent flyer programs, the strategic principles behind them, and their importance in airline competition. Finally it analyses the development of revenue management systems which evolved into extremely sophisticated decision support systems for airline managers, drawing on the strategic principles behind them, and emphasising the role of qualitative information in maximising the usefulness of such systems to airlines. Chapter seven analyses the trading of such systems by information technology firms owned by the very airlines that developed the systems, emphasising that the need for acquiring and using external information by airlines is behind the difficulty in making such important decision support systems useful.

Chapter eight analyses the role of airline sales offices in the acquisition of local market information so important for the strategic flexibility required to competing in turbulent environments such as airline markets. It describes the information that the sales offices are employed to acquire, and studies the difficulties airlines feel in using the very information which they go to great lengths to acquire.

Chapter nine is a compact case study which illustrates the difficulty of an airline
in making use of a revenue management system which it acquired. The case study is not an attempt to analyse the difficulties in implementing an information system, rather, it studies the difficulties in making the system useful for the airline's strategy formulation processes. Important dimensions of the difficulties encountered are the need to acquire and use competitive market information acquired from the local markets, and the need to blend qualitative information with quantitative information.

Chapter ten exposes the theoretical underpinnings of the research, which is strongly empirical, drawing on several perspectives from different academic disciplines to conceptualise the issues found in the research. Chapter ten concludes the thesis integrating theory and practice to provide contributions to both.
2. Research Methodology

2.1 The Iterative Steps of the Methodology

The methodology described below was devised to be as consistent as possible with the purpose and nature of this research. It is qualitatively based, using semi-structured interviewing techniques and participative observation, complemented by both academic and industry literature in order to acquire the information required.

Quantifying or modelling the use of information in the airline industry is not the objective of this study. A study of the strategic use of information in the airline industry which intends to contribute to further understanding of the link between information, tactics and strategy, must have a strong qualitative component. The methodology is also explorative. This has been necessary because of the obscurity of this subject in academic literature and management research. Qualitative methods of investigation were therefore widely used, not only to deal with the complexity of the subject in terms of quantity of variables, but also to maintain a useful degree of explorative orientation. The research assumes a fundamental level
of analysis. It aims to study what uses airlines make of information, how and why. The methodology as a whole is therefore supported by the research principles of grounded theory typified by Mintzberg's research. It studies what managers do, how and why by applying a detective work type of research method.

To complement the explorative nature of the research, and to increase its potential to contribute both to theory and practice, the sequence of activities followed a somewhat unconventional design and order. The literature review was divided into two main parts: airline industry literature and academic literature. In order to maximise the guidance of industry management practices to the research, its findings, arguments and conclusions, the review of the industry literature was the starting point of the research. The review of literature was not a traditionally exhaustive compilation of philosophies and perspectives within a particular discipline. For the most part, it was a filtering of theoretical issues from the various disciplines that proved relevant to the purposes and industry findings of the research. It was also an integration of the two to enforce the coherence of the arguments and the applicability of the conclusions both to theory and to practice.

This section will describe the various aspects of the methodology adopted to perform the fieldwork and reach the findings of this study. It aims to show how the sequence and integration of research activities has served the objectives of the study. It has also the objective of demonstrating the merits of flexibility, progressive design and incremental adaptation of methodology, obeying restrictions and circumstances contingent to the research, and the continuing guidance of intermediate research findings, clues and indications.
Five main iterative phases can be discerned in the methodology of this study:

1. Acquisition of basic information about the airline industry
2. Review of airline industry literature
3. Setting of broad research objectives
4. Fieldwork
5. Analysis of the fieldwork in the context of industry and academic literature

2.1.1 Acquisition of basic information on the airline industry

The acquisition of basic information about the airline industry entailed the compilation and analysis of the basic characteristics of the airline industry. It was this phase that led to the selection of this industry as the object of study. This phase also involved the establishment of some industry contacts for the fieldwork to follow, and stimulated several ideas for the general objectives, approach and perspective to adopt in the research. This phase took place during the two years preceding the enrolment on the PhD program. It comprised approximately five months of semi-structured interviews and participative observation in a medium sized European airline.
2.1.2 Airline industry literature review

This phase entailed an extensive review of airline industry literature. There are few works specific to the airline industry. However, the industry is prominent in business newspapers and magazines, which perform regular economic analyses and surveys. Because of its transitory state of regulation, the airline industry is also very prominent in regulatory and political debates in the media and airline industry literature. The activities involved in this phase of the research provided an important, but not high, level of focus, and generated its general objective: to study 'The Strategic Use of Information in The Airline Industry'. They also provided much of the material for the sections on the industry background, characteristics of the business and regulatory environment both in the US and Europe.

This phase of the research suggested that the study of the strategic use of information in the airline industry required detailed investigation of strategy and tactics in airlines, and of what information and which information systems are used for those purposes. However, this type of material constitutes, undoubtedly, extremely sensitive information.

During this stage of the research, two issues emerged:

1. Because of the strategic sensitivity of the information required for the study, great investment, in terms of time, resources, and investigation was required.
2. Only a contact network could reliably provide such sensitive information. This contact network, if successfully developed, could lead to a desirably high level of access to airlines.

Acquiring these contacts and participating in their networking activities were fundamental to the methodology. Therefore, during this phase, there was an intensive cultivation of a network of contacts. This entailed extensive travelling in the UK, Europe and US. The initial set of contacts served as a base for the acquisition of yet many more contacts. Each contact acquired possessed his/her own network of contacts. Only by developing a close working relationship would each contact feel sufficiently secure to introduce some of the contacts in his/her network. Attendance at some of the frequent airline industry conferences organised by the International Air Transport Association (IATA) and by such airline industry magazines as *Avmark Aviation Economist*, *Airline Business* and *Air Transport World* also proved an invaluable source of contacts.

Another important aspect of this phase of the research was the review of the media and airline industry literature. This was assisted by the industry contacts, with whom issues of relevance to the strategic use of information were frequently discussed. Considering the various contacts' inputs and points of view proved an effective method of stimulating industry interest in the research, and therefore in the cultivation of the network of contacts. It also constituted an effective method of validating literature information, research findings and the various arguments developed during the research.
It also became clear that, to fulfil the objectives of studying the strategic use of information in this industry, no single airline could provide all research material required. Therefore, a conventional case study approach would prove inadequate. The approach initially chosen was to select the airlines that seemed exemplary in using information for tactics and strategy. Although guidance for the airlines to be selected was provided mostly by the airline industry literature, it was strongly complemented and validated by frequent discussions with industry contacts.

In order to explore the main aspects of contribution from each airline to the research, the qualitative approach would have to comprise semi-structured interviews. This would give the flexibility of adapting the line of investigation to each particular subject. In general, airlines use much the same type of information to set their tactics and devise their strategy. However, each airline has different strategic processes, attributes varying degrees of importance to different information. This information is procured in different manners, stored and processed by different information systems and organisational structures, embedded in different organisational cultures, etc. This rendered a quantitative survey-type approach unsuitable for the objectives.

The initial application of the semi-structured interview method proved successful in finding the basic sources of strategic information for airlines and the basic processes of using that information. Most airlines have sales offices in the markets they serve which are of significant strategic importance to them. They acquire local market information through them. This local market information is being considered by an increasing number of airlines as the core of strategic and tactical
information. The local market information has its main source in the travel agencies that sell airline products in each market, and is procured by sales representatives of the airlines in each market. Airline sales representatives visit travel agents as they constitute the dominant distribution channel for airlines. Sales representatives promote their airline’s products, and investigate the reasons why certain agents do not sell them at desirable levels of market share. Airline managers respond to identified market needs, and make the product adjustments they deem necessary in order to become competitive.

Local market information acquired by sales representatives, is complemented by information sold by computer reservation systems - market information data tapes (MDT), which most airlines today acquire. The main strategic decision support systems are revenue management systems (also known as yield management systems), which are used by airlines to maximise the revenue of each route. These systems are basically vast historical databases and sophisticated statistical models which predict the behaviour of demand and quantify deviations from typical or predicted demand levels. Local market information is also used to provide qualitative accounts of demand behaviour and justifications for deviations in sales from what is typical or expected.

The basic findings from this research phase provided the guidance for proceeding with the research. It became clear that in order to study the strategic use of information in the airline industry, the research would have to address the following main issues:
1. The role of travel agencies in the airline industry distribution chain
2. The role of CRS in the airline industry
3. The role of sales offices for airlines
4. The role of MIDT in the airline industry
5. The relationship between airline sales offices and headquarters management;
6. The use of decision support systems such as a revenue management system (RMS), in the industry;
7. The use and influence of local market information in the way airlines manage the many markets they serve.

The main lines of enquiry outlined above became the orientation parameters for the semi-structured interviews which initiated the fieldwork activities. The exponential growth in the network of contacts developed provided the coverage in terms of number of organisations to be studied. However, it became evident that the organisations to be consulted should not be restricted to airlines. The initial enquiries identified the need to study also CRS, travel agencies, and decision support systems vendors. This implied the design of four different types of interview guides (see appendix I) to serve the main lines of enquiry.
2.1.3 The fieldwork

Semi-structured interviews were used throughout (Appendix I). However, because of the nature of the study, intensive research relationships were required, particularly with the airlines. This required extensive travelling in Europe, North America and South America throughout the whole duration of the research.

Intensive research relationships were achieved with three organisations - two large American airlines and one medium-size European airline. The relationship with the latter evolved into a participative observation level of access, which has been maintained for over two years and yielded much-needed sensitive information, in depth understanding of the organisational aspects of strategic information use. Although the latter airline is clearly far from exemplary in the strategic use of information, it revealed useful issues, which identified obstacles to procuring and using information strategically. These issues, too, are useful in understanding the practice of linking information and strategy.

Table 1 describes the distribution of the interviews recorded on tape. As mentioned earlier, a great number of less formal discussions and consultations with the various contacts in the network were important sources of fieldwork information. They were not recorded.
<table>
<thead>
<tr>
<th>Subject</th>
<th>No. of managers interviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major American airline I</td>
<td>6</td>
</tr>
<tr>
<td>Major American airline II</td>
<td>7</td>
</tr>
<tr>
<td>Major American airline III</td>
<td>5</td>
</tr>
<tr>
<td>Major European airline I</td>
<td>6</td>
</tr>
<tr>
<td>Major European airline II</td>
<td>5</td>
</tr>
<tr>
<td>Major European airline III</td>
<td>5</td>
</tr>
<tr>
<td>Medium European airline I</td>
<td>8</td>
</tr>
<tr>
<td>Medium European airline II</td>
<td>7</td>
</tr>
<tr>
<td>Major CRS I</td>
<td>3</td>
</tr>
<tr>
<td>Major CRS II</td>
<td>3</td>
</tr>
<tr>
<td>IT vendor I</td>
<td>2</td>
</tr>
<tr>
<td>IT vendor II</td>
<td>2</td>
</tr>
<tr>
<td>Travel agencies</td>
<td>8</td>
</tr>
<tr>
<td>TOTAL</td>
<td>69</td>
</tr>
</tbody>
</table>

Table 1 – Distribution of Recorded Interviews

The above interviews were focussed on senior managers of the companies involved. The participative observation, which took place in the medium-sized European airline, continuing over a period of two years, consisted of several periods of one to two weeks, spread throughout the two years. In total, 21 weeks of participative observation were completed. The observation involved participation in top and middle management meetings, participation in working groups which purchased and implemented decision support systems, and performed various re-structuring projects both in headquarters and sales offices situated throughout countries in Europe, North America and South America.

The findings and arguments revealed in this thesis were based on the integration of the review of the airline industry literature, frequent informal meetings with the contacts established, the recorded interviews, the participative observation, all of which were supported by the relevant academic literature.
2.1.3.1 Airlines

The main interview guide served as reference to study the strategic procurement and use of information by airlines. The guide focussed on what market information they focussed on to compete, how and where it was procured, and how the organisation coped with and used the information to guide strategic efforts. In the first stage, identifying the market information that airlines use to compete required a review of tactical and strategic variables on which managers based their decisions. Analysing internal reports and statistics that were distributed to managers revealed mainly the quantitative aspects of their decision making. However, it also revealed that those statistics and reports, were not the only sources information to guide strategic efforts. There were two main reasons for this:

(1) In the best of cases, the reports and statistics referred to the previous month or two of operations, and in a business which is so intensive in day-to-day tactical decisions, this seemed insufficient;

(2) The reports lacked qualitative explanations for variations in sales and results. Most importantly, they did not provide competitive information about neither of the markets responsible for the generation of the results.

With the above indications in mind, it became clear that an appropriate method to further knowledge about what information airline managers used to make strategic decisions would be to follow the analyses of statistics and internal reports with interviews of the managers involved. Semi-structured interview techniques were
applied at senior and middle manager levels. The interviews began by focussing on past decisions that were made, and attempted to reconstruct the managers' procurement and analysis of the respective information.

This provided an important breakthrough in the research. Managers were inundated with statistics and internal reports, which many considered to be information overload. Most managers were particularly anxious to obtain more of the kind of information that was most useful to them - qualitative information. This consisted of information which would help them not only to interpret the plethora of statistics, but also help them to make more timely decisions, and in turn would contribute more directly to the improvement of the airline's competitive position. The trend towards valuing competitive information, which is predominantly qualitative in nature and external to the airline, accompanied the intensification of competition in the industry generated by deregulation.

2.1.3.2 The Sales Offices

The above competitive information has one clear main source - the sales offices situated in the markets that the airlines serve. The sales offices procure this information to react to the local manoeuvres of competitor airlines. The local sales manager then requests product and marketing mix changes in order to respond. So, the various sales managers often compete for resources from headquarters managers, who are employed to apply those resources in an optimum manner.
Semi-structured interviews were used to investigate the relationship between headquarters and sales offices in organisational terms and, most importantly, in terms of exchange of information. This required studying what information sales offices are exposed to in the local markets, and how they procure it. Sales managers are typically positioned at the middle management level in airlines. They report to area managers, who in turn report to a commercial director. The communication between sales offices and headquarters was also a target of investigation.

2.1.3.3 CRS

The use of CRS by airlines had four main evolutionary phases:

1. Automating the reservation tasks in airlines, making the process more reliable and more efficient
2. Automating the communication link between the travel agents making the bookings, and the airlines that processed them
3. Realising competitive advantage through information bias created by airlines;
4. Acquiring new market information.

These four phases clearly represent a shift from using CRS for efficiency to using them for strategic advantage. The basic interest in the CRS emerged, not just because they are a main component of the airlines' distribution chain, but because
they were created, and are presently owned and marketed by airlines. The
information provided by CRS has become essential to strategy formulation by
airlines.

2.1.3.4 Travel Agents

The basic relevance of travel agents to this thesis consists of their prominent role in
the airline distribution chain as vendors of airline products and users of CRSs.
More specifically, interest in the travel agencies is twofold:

1. Travel agencies have great influence on the consumer’s choice of
airline, and therefore on the airlines’ market share in every market.

2. Travel agencies are one of the main sources of competitive information
to airlines.

Travel agencies are therefore a crucial element in the strategic use of information
by airlines. Enquiry concentrated on (1) the type of information they provide
airlines, and their interests in providing this information, (2) their influence over the
passengers’ choice of airline. The two points are closely linked to the strategic use
of information by airlines. This is because the travel agent is both a crucial source
of competitive information, and a very appetizing target for market distorting
efforts. Having distorted the market forces in their favour, airlines have to procure
additional competitive information – what are the other airlines providing as
incentives to the very same agents?
2.1.3.5 Information Systems and Information Systems Vendors

The airline industry is today characterised by great many very sophisticated information systems to support competitive decisions. The strategic use of information in the airline industry cannot be studied without addressing the impact that these information systems have on the way airlines compete. In an effort to support and automate their tactical efforts, airlines have developed sophisticated information systems to assist them in three main areas: optimising yields on each route (RMS), optimising schedules according to demand patterns (scheduling systems), and focussing their efforts to visit and influence travel agents (MIDT). The development of those systems has achieved such a level of success that the airlines which developed them created subsidiaries to sell the very systems to their competitors. This posed three main questions:

1. How have these systems achieved such success? - This implied investigating the origins, the development, and the operating principles of these systems.

2. Why are the airlines which developed these systems selling them to the competition? - This meant investigating the reasons why airlines selling the systems think that their competitive positions are satisfactorily safeguarded.

3. How these systems, particularly RMS and MIDT, which are basically quantitative, are used by airlines in conjunction with more qualitative external information?
Semi-structured interviews were carried out with senior and middle managers of several companies selling such software to airlines. The interviews were also complemented by participation in a medium-size European airline’s various working groups assigned to purchase and implement such information systems.

2.2 The Literature Review

Essential to the methodology of the research is the role of the academic literature in furthering understanding of the strategic use of information in the airline industry. The research is dependent upon various streams of academic literature, including information economics, organisation, information systems, and strategy. Exhaustive reviews of each disciplines’ literature would not be feasible. So, in order to make full use of the academic literature, the findings of the fieldwork and those of the review of the airline industry literature were used as contributors to building arguments which integrated theory with industry practice.

So, the research for this thesis did not, as it is traditional, begin by reviewing the literature in order to guide the setting of objectives and the fieldwork. It used industry practice to indicate the theoretical issues relevant to the study of the strategic use of information in the airline industry, and in turn, used theory to conceptualise the arguments and findings of the research.

Therefore, the thesis does not present the traditional ‘Literature Review’ chapter, but instead a chapter that integrates theory with practice, and uses that integration
to provide a contribution to both. This chapter also serves to present the overall conclusions of the thesis in the rich context that the integration between theory and practice constitutes. It also means that the general conclusions of the thesis are immediately preceded by the arguments that lead to them.
CHAPTER III

THE DEVELOPMENT OF THE AIRLINE INDUSTRY

3. The Development of the Airline Industry

This chapter will describe the airline industry and attempt to discern its predominant characteristics. Historical, social, economic, regulatory, political, and technological characteristics constitute the environment in which firms exist. The development of the industry environment goes some way to explaining firm behaviour; it moulds the way airlines compete and hence the uses they make of information.

The chapter overviews the evolution of the airline industry, from its deployment in the world wars, its extraordinary technological development, the political attention it has always attracted, the dramatic regulatory changes, to its present shape in what some call the competitive 1990s, and many call the Information Age. It does not endeavour to be an exhaustive description of all events pertaining to this industry, but it aims to address developments which, given their significance,
contributed to the considerable mutation of the airline industry into the unique and peculiar business that it is today.

It also assembles a characterisation of the airline business, with a more focused commercial perspective. It will begin the characterisation with the political dimension, which is largely covered in the analysis of the regulation of the industry. It will then analyse the characteristics of the product that airlines offer and those of the demand for that product. Following a building-block approach, it will continue with a discussion of the information intensity of the business. This will demonstrate not only the abundance of information, but the vitality in using it in this industry. The final stage will discuss the nature of competition in the airline business. Here a brief and opportune snapshot of the present economic state of the industry (with emphasis on the US and Europe) will be taken.

3.1 Some History

World War I

Significant interest in the powered aeroplane emerged during World War I. Governments in both Europe and the US were enthused by the military potential of such flying machines. Consequently, aeroplane development and production on both continents intensified tremendously. Military aviation has historically been the technological catalyst of civil aviation. In the US, every commercial engine designed began life to military specifications, powering military aircraft (Solberg,
1979). By the end of World War I, leading countries in Western Europe began to support the development of air services for the public. This support was founded on realisation of the capabilities of aircraft in the war, the devastation of the ground transport infrastructure, and the suspicion that fellow leading countries were contemplating the same idea - spurring a competitive spirit. Also, most of the conditions for establishing an airline industry were present: war surplus aeroplanes, ex-military pilots seeking civilian employment, government financial support, and individuals who believed strongly in the future of commercial passenger transportation.

In the US, however, ground transport had not been affected by the war. There was no abundance of war surplus aeroplanes, and the aeroplanes were not sufficiently fast or comfortable to compete with trains. There was no tangible justification or stimulus for the government to take initiatives to support civil air transportation. Hence, the US government did not develop a coherent policy for the development of the air transportation industry. It had also restrained any incentives to design or build new aircraft. The US government, in its preoccupation with defence, insisted on owning the design rights of the relatively few aeroplanes it purchased. Without the essential injection of vast capital resources (the kind of capital only governments have) and the political support to develop such capital intensive technology and infrastructure, the aircraft manufacturing industry in the US was, by the 1920s, reduced to a small fraction of its wartime size.
Despite the initial neglect by the US government of the development of passenger services, the Post Office Department recognised the potential applicability of the aeroplane in the transportation of long distance mail. In fact, the beginnings of commercial aviation in the US can be traced to a grant of US$ 100,000 from the federal government to the US Post Office for an experimental airmail service for the fiscal year ending June 30, 1918 against vehement protests from the railroads (Frandenburg, 1980). The Post Office, however, would take advantage of the used and cheap war surplus aeroplanes. Thus there was still little incentive for American aircraft manufacturers to develop and produce new aircraft.

President Coolidge ultimately became concerned about the US weakness in the area of aircraft design and production. The Aircraft Board was set up to assess the condition of the aircraft industry and the aviation needs of the nation, and subsequently, to develop a long-term policy to fulfil those needs. The Aircraft Board was highly instrumental in the development of the domestic aviation industry during this critical period and influenced four major events which boosted the development of the industry (Taneja, 1989):

- The Air Mail Act of 1925, which transferred airmail operations to private carriers on the basis of competitive bids (Taneja, 1976). This encouraged many new entrants and subsidised the development of passenger services by airlines.
- The Air Commerce Act of 1926 (Frandenburg, 1980; Taneja, 1989), which initiated the government-backed development of civil airways and navigational aids, providing the safety regulations preceding the current
Federal Aviation Regulations. The Act subsidised the heavy investment in ground facilities for air navigation which the private carriers would otherwise have had to make.

- The establishment of a five-year plan (1926-31) to re-equip the army and the navy air services with modern aeroplanes, thus stimulating aircraft manufacture and design (Bowers, 1986, p.3).

- The Guggenheim Fund for the advancement of aeronautics, endorsed the development of schools of aeronautical engineering in 1926 which, produced such famous aircraft designers as Kelly Johnson of Lockheed and Wellwood Beall of Boeing. It also financed Lindbergh’s transatlantic flight, greatly accelerating public acceptance of air travel, and provided a subsidy to the Western Air Express airline to initiate a passenger service between Los Angeles and San Francisco (Solberg, 1979).

- Henry Ford also contributed to the stimulus of public demand for aircraft industry products by producing the famous Ford Trimotor (the ‘Tin Goose’), a reliable three-engine aeroplane. These planes were sent on ‘Ford Reliability Tours’ to help overcome the general public fear of flying (Bowers, 1986).

In contrast to the US focus in the 1920s on airmail services, European focus was on the development of passenger services to replace the ground transport systems destroyed by the war. However, geographical characteristics greatly complicated the task. Air transportation in Europe involves crossing national frontiers. This called for extensive political and diplomatic negotiations.
The Paris Convention of 1919 established the basic international law regulating commercial aviation: every nation has complete and exclusive sovereignty over the airspace above its territory. The concept of national air sovereignty was invoked from property law with its idea of private ownership of land to the centre of the earth. The Convention also established the International Commission for Air Navigation (ICAN), which, as the predecessor of the present International Civil Aviation Organisation (ICAO), provided a mechanism for governments to hold discussions and standardise aviation facilities and services (Dobson, 1991).

In the area of commercial air transportation, six European nations in 1919 jointly created the International Air Traffic Association (IATA), which facilitated the convenience and acceptability to passengers of air transportation by standardising the international system; for example, by introducing the standard airline ticket (Taneja, 1989).

In the US, the McNary-Watres Act of 1930 (an amendment of the Air Mail Act) eliminated competitive bidding. Instead, the Post Office Department subsidised selected airlines with the apparent intention of transforming the industry from a random assortment of short unconnected mail routes to a more stable, integrated and self-sufficient nationwide airline system. In addition, mail payments were made on the basis of capacity offered, rather than the amount of mail transported, thus encouraging the industry to acquire faster, larger and longer-range aircraft. The smaller carriers were undercapitalised and nearly all of them were completely dependent on government contracts. Competitive bidding was eliminated, and use
Mail fees were used as indirect subsidy to support the carriers that were strong enough to contribute to the development of commercial aviation (Taneja, 1976).

The transport companies, some of which were owned by aircraft manufacturers, began to consolidate and strengthen their operations. This also happened in Europe, particularly in Britain, France, Holland, Belgium and Germany. One of these consolidations, the agreement between the German Luft Hansa in 1927 and the French airline, Farman, gave birth to what are currently known as ‘pooling agreements’, whereby airlines agree to share revenues and traffic on given routes (Davies, 1964). The 1930s was the decade when the initiative in commercial air transport passed irretrievably from Europe to America, and the reason is not hard to find. America had developed with startling speed something which Europe was still lacking thirty years later, namely a competitive airline industry in a large domestic market. Already in 1934, the so called ‘big four’ US carriers (American, Western, TWA and United) had emerged from the mass of airlines which had grown up in the late 1920s, and the competition between them produced parallel rivalry among aircraft manufacturers (Lyth, 1995).

The US McNary-Watres Act was eventually found to have been subject to considerable abuse. The findings of collusion brought the Air Mail Act of 1934, which tightened control over the industry. The Post Office Department awarded airmail contracts based on competitive bidding, the Interstate Commerce Commission was put in charge of setting ‘fair and reasonable’ airmail rates, and the Department of Commerce was responsible for the safety and maintenance, operation and development of the route network. The Act also made holding
companies illegal, disintegrating the historical vertical integration of airlines and aeroplane manufacturers. A division of Boeing became United Airlines, North American was divided into TWA and Eastern, and a division of AVCO became American Airlines. In effect, the 1934 Act was an anti-trust bill tailored to the airline industry and designed to prevent a recurrence of the level of concentration that had existed in 1933 (Caves, 1962). However, the Act introduced a highly bureaucratic system of control, involving no fewer than three separate bodies. As Levine (1975) comments, given this dispersion of responsibilities, carriers were able to abuse the system by submitting extraordinarily low bids for air mail contracts in the certain knowledge of having them later made profitable by the Interstate Commerce Commission.

By this time, investment in the airline industry was shrinking, partly because of vast losses experienced by the airlines attributable to fierce competition. The instability of mail routes, and the delays in providing ground and airspace infrastructures caused various crashes, weakening the public faith in air transportation. The Civil Aeronautics Act of 1938 in the US provided a set of guidelines for the development of economic and safety regulations for the air transportation industry. Some expressed reservations about such policies. Caves (1962, p.127) faulted the Act on the grounds that it required “an impossibility by suggesting the simultaneous maximisation of things that probably cannot be maximised”. Lasting conflict centred on the issue of whether the CAB policy prescriptions should be pro-airline, designed to achieve a self-sufficient industry, or pro-competition, designed to achieve low-cost air services available to all (Brown, 1987).
In Europe, the major airlines from Britain, France, Germany, Belgium and Holland began focusing on the linking of empires, most notably with colonial destinations in Asia and Africa.

“During the 1920s and 1930s the political importance of cohesion in the continental United States and the British Empire respectively was highly valued. In the United States this resulted in political discretion being exercised in the award of mail contracts, in order to establish four large, viable commercial domestic carriers which would help unite the country. In Britain, similar considerations resulted in the creation of Imperial Airways (IA), the Empire Airmail Scheme (EAMS), government concentration on Empire routes, and the mobilisation of diplomatic pressure to try to get Empire and Commonwealth co-operation in negotiating commercial rights” (Dobson, 1991, p. 2).

World War II

World War II greatly transformed the aviation industry. The airlines became extensions of the armed forces, learning many logistical and operational skills in the process. The war provided both the pressure and the opportunities for the aircraft manufacturing industry to expand facilities and improve technology. The US government even passed a series of Acts (with respective subsidies and incentives) to ease the transition from war-related to peace-time production. Also, a dramatic technological breakthrough took place - the introduction of the jet propulsion engine, based on the work of Frank Whittle in England in 1930, and that of Hans von Ohain in Germany in 1935 (Constant, 1980; Sterling, 1982).

After the war, five fundamental changes occurred in the air transportation industry (Taneja, 1989, p. 12-15):
The development of better general aviation aeroplanes, helicopters, and faster, longer-range commercial aeroplanes.

The resolution of contradictory political attitudes towards the development of international air transportation services. In 1944, the Chicago conference produced the International Air Services Transit Agreement, allowing civil aircraft of the signatories to fly across another signatory's national borders without landing, and to land for non-commercial purposes when necessary (1st and 2nd freedom rights). The International Air Transport Association (IATA) was established to provide a conference forum for international airlines to negotiate fares, rates, and conditions of transportation; and the Bermuda agreement in 1946 resulted in the establishment of the famous 'five freedoms of the air'.

The great expansion of US airlines. The Civil Aeronautics Board (CAB) approved the start-up of local-service carriers to operate routes between major metropolitan areas and smaller communities (feeder routes), charter services, air-taxi operators, and commuter carriers to provide scheduled services in markets with very low density of passenger traffic. The larger 'trunk-line' and mail service carriers received vast subsidies until the early 1950s.

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1 The five freedoms (which have actually been updated to six freedoms of the air) are: (1st) the privilege to over fly the territory of another country without landing; (2nd) the privilege to land in a foreign country for non-traffic purposes; (3rd) the privilege to put down passengers, mail and cargo taken on board in the territory of the country which gives nationality to the aircraft; (4th) the privilege to take on passengers, mail and cargo destined for the territory of the country which gives nationality to the aircraft; (5th) the privilege to fly passengers, mail and cargo between two foreign countries; cabotage rights: the right to carry traffic wholly within a foreign country; (6th) the right to carry traffic between two countries via the airline's home country.
• The large scale development of airports. The Federal Airport Act of 1946 increased the size of the airports program by providing investment capital totalling US$ 500 million over a seven-year period.

• The expansion of existing national airlines and the emergence of national airlines from newly independent nations.

The Jet Era

In 1939, aeroplane development accomplished a major breakthrough when the Germans flew the Heinkel 178, the world’s first turbojet aeroplane. The jet engine would, however, be much refined by engineers in the UK and lead the development of a broad diversity of commercial jet planes. The first commercial jet was introduced in the United kingdom by 1952 - the de Havilland Comet. This project was fruit of a recommendation by the Brabazon Committee (which was also behind the development of the first turboprop aircraft - the Vickers Viscount), established in England in 1942 to examine the need for post war aeroplanes. The French put their Caravelle jet into service in 1958.

From a global perspective, however, the most significant development was the introduction of the American jet in 1958 - the Boeing 707 - by Pan American Airways, into commercial service. The jet was much more economical than its propeller predecessors, and allowed for a much larger payload and cheaper fares. Airlines were rushing to be the first to introduce B707s and to capitalise on that
innovation by making a good impression on the travelling public (Petzinger, 1995). The Boeing 707 was highly instrumental in developing mass tourism.

The vast superiority of the US aircraft manufacturing industry had long been clear. In the 1930s, the geographical characteristics of Europe meant that small countries in a non-unified commercial area (trade protectionism prevailed) would have insufficiently large markets for any aircraft they may have developed. Also, the development of commercial air transport in Europe was severely delayed by the exigency of extensive political and diplomatic negotiations to regulate a trade that had to cross so many national borders. This weakened the potential large scale demand for air travel and subsequently the demand for larger, faster and more technologically advanced aircraft. In contrast, the US had, by the 1930s, developed a competitive domestic airline industry and was endowed with a large territory unrestricted by national frontiers. The rivalry between airlines meant strong demand for better, faster, larger, more comfortable aircraft. Designing, building and then operating the planes proved to be an early and precious integrated laboratory for R&D in aircraft technology, and provided privileged access to information on the economics of operating different aircraft (this would prove especially valuable in the jet era with the B707 and B727). The vast, decisive and sustained financial support from the government (on a scale which none of the European countries could single handedly accomplish) and pro-airline regulations proved essential in the rapid development of US civil aviation and aircraft manufacture industries.
The United States has tended to promote the U.S. airline manufacturing industry in dealing with air transport policy. This is probably a reflection of the political power of the manufacturing industry as well as a recognition of its importance to national defence. This consideration leads the United States to promote the American airline industry as a market for U.S.-made aircraft and it also leads the United States to provide competitive opportunities for foreign airlines so they will buy U.S.-made aircraft" (Murias, 1989, p. 194).

The 1960s represented an emphatic demonstration of the superiority in aircraft manufacture which was developed by the US. This decade also gave a major boost to international commercial aviation. The immense passenger acceptance of the Boeing 707 and the DC-8 is widely regarded as one of aviation's most significant developments. European manufacturers were deeply concerned about the new aeroplanes developed in the US, and were eager to challenge the American manufacturers' dominance. In 1964, the British government appointed Lord Plowden to lead a committee to examine the aircraft industry. The committee recommended that, because of the limited size of local markets, the aircraft manufacturers of major European countries should combine forces to compete with the US aircraft industry. The committee's efforts subsequently led to the formation of Airbus Industrie in the late 1960s (Taneja, 1989). Ironically, however, Britain was never more than a junior partner in that consortium (Lyth, 1995).

3.2 Dependence on Aircraft Technology

The growth of the air transportation industry has traditionally been paced, to a large extent, by the increase in the productivity of the aeroplane. Airlines of the United States, for example, experienced a growth in passenger traffic of 15 per
cent during the 1950s and 13 per cent during the 1960s. During each of these decades, airlines introduced aeroplanes that could fly at almost twice the speed of their predecessors (for example, the DC-7 relative to the DC-3, and the Boeing 707 versus the DC-7). Lower unit operating costs in turn allowed airlines to offer lower fares, which stimulated the personal and leisure travel markets. These trends of increasing productivity and lower fares continued with the introduction of wide-body aeroplanes, even though such aeroplanes provided no increase in speed (Taneja, 1989).

Over the past few years, civil aircraft technology has matured. There are quieter, more fuel-efficient aircraft with larger payloads, but the days of dramatic technical developments are long gone. Airlines have largely realised that market growth, reduced operating costs and higher profits will not come from the development of aircraft technology. This realisation is recent - only a decade ago did airlines begin to look at themselves to discover that their costs were highly bloated, and that many of their managers were not commercially competent. In America this was discovered in the early 1980s with early deregulation, when new carriers invaded markets. In Europe this realisation has occurred from the late 1980s, when privatised carriers initiated restructuring. The state-owned airlines are still having rationalisation forced upon them. The main point here is that airlines are nowadays largely focused on commercial management instead of relying on the developments of technology and favourable regulations to improve their fates.

Regulation of the airline industry still attracts enormous political attention. Airlines in America have now been operating in a deregulated market since 1978, and in
Europe complex diplomatic and political negotiations over regulation are still taking place. The next two sections observe the US deregulation process and its outcomes, and analyse the more gradual process of European airline industry liberalisation. This is important because it contributes to the portrayal of the nature and environmental characteristics of this business. This will be useful for the discussion on the strategic use of information in the airline industry in the next chapter, which will inevitably delve into strategic management in the airline industry.

3.3 Regulation of the Airline industry in the US

3.3.1 The US Regulated Era

A major characteristic of the regulated era was the very limited scope it offered management to influence the performance of airlines. The Civil Aeronautics Act of 1938 established the Civil Aeronautics Board (CAB) as the governing body to regulate the airline industry in the United States. The CAB was given the authority to set prices, control routes, and to extend anti-trust immunity to carrier business practices and mergers (Caves et al., 1985). This last created almost insuperable barriers to entry to the airline industry: "from 1938 until deregulation in 1978 the CAB had not allowed entrance of a single new trunk airline" (Rakowski, 1990, p. 506).
The basic goal of the CAB throughout the bulk of the airline industry’s regulated years was to maximise service while keeping the firms in the industry financially healthy. As the industry evolved, cross-subsidy became the chief mechanism for achieving this end. This policy had identifiable political sources and important strategic implications. Through cross-subsidy, the CAB worked to divert returns earned on prime services, such as New York-Chicago and the transcontinental routes, into uneconomical but politically desirable goals, such as service on sparse marginal routes, maintenance of weaker carriers, and sizeable labour settlements (Byrnes, 1985).

In the industry’s formative years (before 1960), the CAB’s policies worked relatively well. Because primary demand was steadily expanding and many customers were relatively price-insensitive, the industry prospered while services grew. In the late 1950s and early 1960s, however, the growth rate in demand slackened considerably and new customers became increasingly price-sensitive. Consequently, the industry’s dynamics turned from a non-zero sum game competition into a zero sum game competition. In this watershed period, cross-subsidy began to cause systematic differentials between the smaller carriers’ returns (recipients of cross-subsidy) and the larger carriers’ returns (generators of cross-subsidy). This trend was obscured in the mid 1960s as newly developed jets radically decreased operating costs and led to a spurt in industry growth and returns (Byrnes, 1985), but the inadequacy of industry regulation would later become evident.

During the brief period of ‘jet-induced’ prosperity, airlines turned to diversification as a form of commitment to the airline business. Most carriers in this period entered the hotel business in key locations in attempts to establish or protect an ‘historical interest’
in important destinations, thus meeting the CAB-articulated criterion for awarding routes. Ironically, these attempts to 'play the regulatory game' failed. The CAB itself largely ignored its own route award criteria, and ultimate decisions were basically political (Byrnes, 1985).

As the industry matured and the regulatory pattern evolved, increasingly standardised CAB policies reduced managerial prerogatives to the point where passenger service was the only competitive variable available for manipulation (Meyer and Oster, 1981). Fruhan (1972) looked at why some airlines were more successful than others, and what less successful firms could do to improve their performance. He discovered a limited ability of management to effect changes in the regulated environment:

"...managers have a very narrow choice of directly controlled parameters to which an effective competitive strategy might be tied. Indeed ... CAB decisions in the areas where it exercised direct control were more important to an individual carrier's overall profitability than the decision of that carrier's own management team ...". (Fruhan 1972, p. 155)

Carriers had virtually no control over the two main influences on their profitability: fares and routes. Amongst nine variables often used in airline profitability studies, Fruhan developed three broad categories: route structure, fare structures and equipment policy. It was in this third category that "boom and bust cycles of airline profitability were causally linked to the competitive environment" (Fruhan, 1972, p. 156). His regression model, using data from 1955 through 1966, could find no clear relationship between relative airline profitability and management controlled variables. This result led Fruhan to conclude that in matters of profitability the CAB represented each carrier's first string management team; the second string team (the ones with shareholder responsibility) were allowed to play only when the outcome from the game was essentially decided. It
is possible to speculate, as Levine (1987) has done, that this heavily regulated environment denied airline management many of the strategic options available in other industries, and drew attention to possible alternatives.

"In effect, the CAB operated a controlled cartel, not only for the production of airline output, for which deregulation demonstrated that substitute production could be easily arranged - just as academic analysts had predicted - but also for the production of information about an exceptionally complex consumer service." (Levine, 1987, pp. 427-28)

Kaham (1988) found that while passenger service included amenities, such as low seating density and better food and liquor, the service features with most industry impact were scheduling and equipment. This limited range of strategic options available to airlines in the regulated environment may explain their long term survival despite what Caves has described as grossly ineffective managements (Caves, 1988). Davis (1988) remarked that "the CAB, through its much-maligned, paternalistic authority to award rate increases and additional routes, insulated the industry from such external factors of recessions and the vagaries of fuel pricing. Perhaps most important, however, was the CAB's ability to insulate the industry from inadequate management." Reed (1993, p. 148) added,

"...To prevent airlines from disembowelling themselves with the sword of stupidity, the CAB invariably allowed fare increases that otherwise would not have been necessary. Or it granted new routes to carriers that desperately needed additional sources of revenue to cover the huge debts run up by their undisciplined managements."

Although American airline executives complained about bureaucratic delays and decisions that went against them individually, they found the system to be addictively comfortable.
“Though denying the airlines significant profits, regulation at least protected them against loss, regardless of economic conditions. Airline shareholders never had to fret over bankruptcy; failure was impossible. The system freed the airlines from worrying about the cost of doing business. The airlines, creating vast internal bureaucracies of their own, told the CAB how much money they required to run their businesses, while the CAB, using the airlines’ numbers, merely calculated the fares necessary to cover those costs, plus a modest profit”. (Petzinger, 1995, p. 16)

In November 1976, when Jimmy Carter defeated Gerald Ford in the US presidency, Frank Lorenzo of Texas International was immediately granted permission by the CAB to cut the fares on certain interstate routes by fifty per cent. Texas International dubbed those fares the ‘peanuts fares’. There was, however, a drawback:

“The very success of ‘peanuts fares’ suggested that airlines could manage their own affairs - that they could stimulate their own markets, widen the population of people who had shared the privilege of flying, even create jobs and demand for new airplanes. But as delighted as he was at the outcome of peanuts pricing, Lorenzo did not want John Robson or anyone else in Washington getting the wrong idea about his intentions. Lorenzo went out of his way to say that peanuts fares were limited, isolated illustration of the virtues of flexibility in Government regulation. They were not, he emphasized, an argument for doing away with it. ... Even to an innovator, even to Frank Lorenzo, the system was fine just as it was.” (Petzinger, 1995, p. 48)

3.3.2 The Importance of the Regulated Era in the US

In conclusion, despite the negative effects of regulation discussed above, its wide benefits remain undiminished. The US, throughout its pre-deregulation era, financed development of an integrated air transportation system which served the whole country. It also stimulated important technological breakthroughs, vastly contributing to the development of a powerful aircraft manufacture industry, it created millions of aviation related jobs, and generally promoted trade and economic growth. There were abuses of regulation, as there are in many other industries, by airlines trying to play the regulatory
game to their advantage, but that should not be taken to indicate that policies were essentially wrong. Instead, they represent stages in a normal regulation learning curve. It is difficult to regulate such a complex, social, political, technological, and economically prominent industry. There is no such thing as perfect regulation. The judgement of its effectiveness is subject to commercial and political scrutiny as well as to public opinion. Pleasing all parties involved is impossible and cannot be the objective of regulators. Recognition of the significant points of inadequacy is inevitably blurred by many circumstances, including vested interests, political trends and pressures, lobbying parties and so on.

There could be a purely rational and theoretical argument that deregulation of the US airline industry could or should have happened earlier, but while the theory of economics is constituted by rational exercises and models, the practice of it in industry is very far from rational. Industry involves many interests and considerations of very different nature and high complexity. Therefore, the assessment of the practice of economic policy, should not be made against purely rational and theoretical models. It must involve a degree of tolerance for specific instances of inadequacy, and a wise appreciation for the larger picture portraying the wider and essential effects of policies. Finally, it must be recognised that the practice of economic policy is an evolutionary exercise. Regulatory policies have to evolve to an adequate degree with the change in the contingent social, economic, technological and political circumstances of the industry. It is only natural in the life-cycle of regulations that even the best will become inadequate at some point. Moreover, policies must become recognised as inadequate before change can be politically, economically and socially justified.
3.3.3 Towards US Deregulation

In the early 1970s, the airline industry's growth and returns declined dramatically as the underlying regulatory problems took grip. Because the CAB controlled most key decision variables, competition became fierce amongst the dimensions left to management. Since price competition was largely prohibited, the airlines turned to service and capacity competition. This led to chronic overcapacity on prime routes (Byrnes, 1985), which contributed to the industry's economic downturn. By the mid-1970s, severe inflation and slow economic growth had spawned challenges to the philosophy of economic regulation. Evidence was cited that the continuous flow of regulatory rule adjustments was not serving the nation's best interests (Bailey et al., 1985). Petzinger (1995, p. 78), affirms that:

"...to call deregulation a mistake - as many people would, for at least the dozen years to follow - was a waste of breath. Whether wise or misguided as a piece of public policy, deregulation had to happen. Government protection had its place in helping to establish the modern airline industry; certainly this protection fostered the technical development of the industry, particularly the birth of the jet age. But by the 1970s, if not sooner, airline regulation was as unnatural and anachronistic as Prohibition had been in the 1920s and poll taxes in the 1960s; each resisted the onslaught of common sense only through the political wiles of an entrenched constituency, and each crumbled only when the constituency was overwhelmed with political force."

The overwhelming weight of evidence compiled by researchers during the 1960s convinced most observers that the CAB's preoccupation with protecting the airlines (its responsibility since 1938), could no longer be regarded as being in the public interest. Forty years of tight regulation had resulted in an inefficient and stultified scheduled airline industry. A major concern of those regulating the industry had been to protect licence holders, with comparatively little regard being
given to matters of efficiency and the interests of consumers. However, rather than pressing for a gradual change in the regulatory system, most interested parties favoured complete economic deregulation (Williams, 1993).

US policy advisors, during the move towards deregulation, argued that optimal regulatory policies would permit free market entry and exit as well as a set of safety and pollution standards. The threat of entry would force the market participants to act in an economically optimal way. Markets would be contested by potential new entrants. This is the essence of the regulatory approach based on the theory of contestable markets. Perfect contestability ensures a welfare maximising outcome via the threat of potential competitors, provided that firms have the ability to enter and exit a market costlessly. This requires negligible sunk costs, equitable access to the incumbents’ technology, and the speed to act before the incumbents can change their prices. Given this theory, concentration of firms in a particular sector of the economy should not effect market efficiency (Baumol et al., 1982). Some of the fears of deregulation stemmed from the belief that economies of scale are present in the production of aviation services. This belief leads to the conclusion that markets will become highly concentrated and airlines will abandon marginal-cost pricing in an attempt to extract monopoly rent, thus resulting in consumers’ welfare loss (Weisman, 1990).

Passage of the Airline Deregulation Act (ADA) of 1978 was facilitated by two important factors. First, most major US airlines came to support deregulation. Second, during 1978 the industry posted substantial profits and the public had access to a wide variety of discounted fares. Politicians thus faced little risk of an
outcry from either the industry or the public. A ten-year Essential Air Service program relieved concerns about the loss of service to small communities. Concerns of unions were matched by the commitment of federal assistance payments if jobs were lost as a result of deregulation (Taneja, 1989).

3.3.4 US Deregulation

The Airline Deregulation Act of 1978, and the two years of regulatory reform that preceded it, introduced carrier managers to a much larger array of competitive threats and opportunities. No longer were airline managers to be second string team players enjoying a gentlemanly game on a level playing field. They were forced to rationalise existing operations and to become strategists. By providing both the incentives and the means for improvements in productivity and efficiency, the fundamentals of strategic airline management were changed. While exogenous factors, such as the fuel shock of 1979 (which reduced economically feasible capacity), and the air traffic controllers' strike of 1981 (which limited capacity at major airports), had significant influence, it was the airlines' new found freedom over pricing and route structure decisions which shaped their strategies. However, airlines did not enter the deregulated era well adapted to a world of free competition. Four decades of CAB control had not only shaped entry, price, supply and demand, but had penetrated to the operational core of the regulated firms. Route structure and fleet composition, the essential plant and operating methods of the airline business - work rules and crew assignments, terminal and gate investments,
organisation of maintenance, and all critical marketing activities - were shaped to fit the routes and the fleet (Vietor, 1989).

Many airlines had (and still have) labour costs higher than those of new entrants. Virtually all had route structures that were artefacts of regulation and unrelated to customer demand in the new liberalised markets. Virtually all had been driven by regulation to pursue pricing policies different from those demanded by the marketplace, and very different from those which had been predicted for unregulated markets (Levine 1965). Contractual commitments, including unproductive and expensive long term labour, purchase debts, and long term leases of unsuitable equipment, inflated the costs of incumbent airlines well above those of new entrants. Reed (1993, p. 148) claimed that:

"Prior to deregulation, airline managements were notorious for their free spending ways. Airline employees, from pilots to bag handlers, were among the best paid workers in the world, even though most of them - except for pilots and certified aircraft mechanics - had no special skills that they could transfer to other businesses and receive anything close to their airline pay."

The regulated era not only gave power to trade unions and greatly disturbed the cost/productivity balance, but provided no incentive for any airline to take measures to counteract that very situation. Petzinger (1995, p. 155) observed that:

"...airline bosses were pushovers because they knew that the contracts each of them signed were always quickly matched by every other airline, fixing costs on an equal footing. It was no concern to the airlines that these costs marched higher and higher, as long as the regulators in Washington simply waved through the fare increases necessary to cover them."

The heavy cost structures and the strength of unions were important factors in slowing the pace at which incumbent airlines adapted to deregulation. But there were also other no less important difficulties, such as redesigning route networks, renovating fleets at a
time when new aircraft were dramatically more cost efficient, and most importantly, there were management cultures which would find competition in the airline industry a dramatically new paradigm. Many airline managers resisted deregulation with political lobbies, and others believed it would never happen. When deregulation did happen, the surprise of airline managers was proportional to the time that they had invested in resisting it instead of preparing strategies for their airlines to succeed in a competitive environment. Byrnes (1985, p. 15) reasoned that:

"Four important factors slowed the pace at which the established airlines adjusted to deregulation, giving a temporary, but important, edge to new entrants. First, most established a substantial degree of residual political leverage. Wages fell only when new, low cost entrants made significant inroads and several heavily unionized incumbent firms faltered. Similarly, the marginal buyers used their remaining political clout to slow price rises and [route] abandonment. Second, as new types of equipment, such as fuel efficient, short haul aircraft, were required for the new strategies, backlogs in equipment manufacture and tight markets impeded the transition. Finally, at times, the incumbent managements' values and orientation blocked the transition on two levels. Several carriers' management teams were not geared up for the fast moving competitive, deregulated industry, and thus failed either to change strategies aggressively or to implement new ones aggressively."

Deregulation represented a threat to incumbent airlines and an opportunity to potential new entrants.

"If committed costs, information lags, transaction costs, firm-specific investments, and sheer human inertia play a role in the behaviour of real world airlines, holdover firms should have been at a disadvantage in comparison with the new entrants". (Levine, 1987, p. 406)

The irony was that, despite a larger number of competitive variables available to strategists, the new freedom also meant that strategic options were limited. Defensive strategies and cost cutting were required and the only realistic way incumbents could survive was by exploiting their incumbency status and the larger number of manageable
variables to re-create barriers to entry and to develop the economies of scale and scope previously ignored by academics and regulators but which were essential premises for the contestability theory to work. Airlines have learnt to compensate for above-market cost by successfully pursuing revenue-earning strategies which generate rents through sheer market power. They have also learnt to use their incumbency and large size to impose costs on rivals (especially new entrants), thus making the production cost differences less significant by changing the nature of competition. As Bleeke (1990, p. 162) has noted,

"...it is crucial not to under estimate the power of large competitors over time to make big better again. In the deregulated airline industry, the use of hub control, computerized yield management systems, and frequent flyer programs have been powerful tools for competitors to regain clout and pricing power. The top eight airlines now control 92% of revenue passenger miles compared with 80% before deregulation".

Weisman (1990) has noted that recent events have shown that the sector does eventually tend towards higher concentration after deregulation. More recently, Maldutis (1993) challenged the traditional measures of industry concentration, arguing that they are not representative of airlines' competitive structure. He maintained that competition between airlines takes place at the airport, not at the national level. To test whether the airline industry really was concentrated, he looked at major airports, calculating the Herfindahl-Hirschman Index (HHI) for the 50 largest US airports, representing 98 per cent of total scheduled passenger boardings. His overall conclusion is self explanatory. As he points out, the weighted average index shows that prior to deregulation, the industry was already highly concentrated. The entry of numerous new airlines in the 1978-80 period kept the HHI at about the 2,200 level. Since 1981, the index has been steadily rising, and, as of 1992, totalled 4,007. Therefore, the airline industry today is
highly concentrated. He declares that had this alternative approach to measuring concentration in the airline industry been used, it is possible that the authorities would have adopted very different attitudes to mergers in the 1980s. They would certainly have had to provide more detailed explanations to justify their approval decisions. Hammarskjöld (1987) claimed that deregulation, which was meant to eliminate the regulated oligopoly of airlines, has permitted the industry to form a privately-controlled oligopoly because anti-trust laws were not adequately enforced. Despite all the controversy, he claimed that since the Airline Deregulation Act of 1978, which allowed new entrants into the industry and permitted airlines to chose the routes they wanted to fly and to set the prices they wanted to charge, US consumers have benefited from real price falls of an average of 20%, and up to 35% on long-haul routes. Winston (1993), in a comparison of economists’ predictions about deregulation with the actual effects of deregulation, claims that economists largely underestimated the extent to which airlines would change their methods (notably their move to hub-and-spoke operations) and reduce their costs significantly. Secondly, he claimed that economists overestimated the extent to which deregulation would promote competition. As a result, revenues held up better than expected. Levine (1987, p. 423) claimed that the principal outcomes of deregulation were:

(1) a wave of mergers and consolidations;
(2) a higher than expected degree of vertical integration in the industry, especially among commuter airlines;
(3) the dominance of hub-and-spoke systems;
(4) the surprisingly complicated fare structure which has become characteristic of deregulated markets;
the important role of frequent flyer programs;

the increasing significance of travel agents and the proliferation of incentives to them;

the important role of computer reservation systems;

the emphasis of firm strategy on the control of airport slots and gates;

the apparent persistence, despite physically easy entry and exit, of predation; and

as a consequence of all these factors, the high casualty rate among new entrants.

In the years following deregulation, free market forces began to change the structure of the US airline industry dramatically, primarily by fostering the mushrooming of new lower cost entrants. The new entrants encouraged a wave of rationalising and re-structuring programs, the pooling of vast financial resources, and more aggressive strategies by the incumbents. A focused, low-cost strategy centred on dense linear routes was seen to be the natural entry point for small non-unionised new entrants and hence it was not particularly defensive in the long run. The incumbents largely overcame the challenges that this type of strategy posed and re-assumed a superior competitive position. However, a variety of other focused niche strategies was seen to offer the best prospect of long-run returns for the majority of the airlines. Carriers in this group could develop geographically focused, hub-based or gateway feeder strategies, or they could focus on particular segments of passengers to differentiate themselves (Byrnes, 1985).

The lower fares and the new services produced a large increase in passenger numbers, but the combined effects of fare cuts and excess capacity sent the
industry into heavy losses. Bankruptcy not only took its toll of the new entrants, but started hitting established carriers, such as Braniff International and Continental Airlines. But the process did not stop there. In spite of a brief period of profitability during the economic boom of the late 1980s, the airline failures went on. By 1992, bankruptcy had claimed 117 carriers, including some of the best known in the industry, such as Eastern Airlines, Trans World Airlines, and Pan American World Airways (Tomkins, 1994).

While the successful incumbents built on strong competitive bases within the airline industry and the successful new entrants developed defensible niches, the unsuccessful carriers neither had nor developed defensible competitive postures within the airline industry. They did not have credible transitional strategies coupled with the necessary resources to implement them. Companies in this position, 'stuck in the middle', tend to oscillate back and forth, from one strategy to the other, without developing a solid defensible position (Meyer, 1983). Several of them ignored the fact that deregulation meant exposure on prime routes (Byrnes, 1985). Some declared US deregulation successful from the consumers' point of view:

"Of course, by the only criterion that really matters - customer satisfaction - airline deregulation in the US has been a staggering success. Passenger numbers have risen by more than 70 percent since 1978. Why? Full fares are a third lower in real terms, and more than 90 percent of tickets are sold at discounts averaging two-thirds of the full price. People have 37 percent more flights to choose from: smaller cities in particular have far more flights to far more places than ever before. The fight for customers has brought innovations such as frequent flier programmes and ultra-cheap, no frills flights. The safety record is first class." (Financial Times, 8 April, 1994)

The success or failure of the US deregulation is still the subject of much debate:
“Not everybody considers the perpetual revolution that America’s domestic market has lived with since deregulation in 1978 to have been a success. Price wars may have cut fares (the price of a round trip from New York to Chicago has fallen from US$ 800 to US$ 230 since deregulation), but America’s carriers have lost over US$ 12 billion since 1990 - more than they made in profits since they got airborne. Despite the cheaper fares, passengers whinge about service and the elaborate ‘hub’ systems that the big carriers run.” (Economist, 6 May 1995)

What is clear is that deregulation in the US airline industry has given airline managers control over their airlines’ strategy. In the face of the new intensified competitive environment, they were forced to enter an extraordinary learning curve - that of airline management. Gradually, airlines learnt how to observe markets and the behaviour of consumers in order to make best use of their resources to conquer them.

“One of the most significant lessons to be learned from the US airline deregulation is that marketing has become supreme in the management structure of the airline. If the chief executive officer is not already a marketing man, certainly the marketing voice in that company is among the strongest” (Davis, 1988, p. 169).

The increased responsibility of managers in the fate of their companies, brought upon them by deregulation, was a largely positive pressure and it is behind the great development of strategic and tactical expertise in the airline industry. Today, the US airline industry is the most intensely competitive arena for airlines, where the most sophisticated strategic and tactical tools and manoeuvres are applied. This competition intensity, which constitutes a forum for the development of airline management, is diffused to the rest of the world through liberalisation of air transport, which is spreading progressively. Degrees of air transport liberalisation have already taken root in New Zealand (1983), Canada (1987), Western Europe, Australia (1990), Sweden (1992), and India (1992) (Verchère, 1994; Button,
1991). The most significant liberalisation for the structure of international air transport is that presently progressing in Europe, which is also stimulating liberalisation between Europe and the US.

3.4 Regulation in Europe

There is a commonly held view that the liberalisation of European air transport has borrowed much from the experience of US deregulation. Whilst it is a truism that policy makers benefit from the American experience, basic structural differences between the two industries may impose limitations on what can be learnt by the American experience that may apply to the European Community. It is therefore useful to bear these differences in mind when analysing the liberalisation of European air transport, and indeed when implementing economic policy. The most obvious difference is that Europe consists of numerous autonomous states with different languages, cultures and administrations, while the US comprises a single nation and therefore had a much easier task of implementing regulatory reforms. Also, Europe's geographical characteristics mean that countries have small domestic markets and that 80 per cent of all airline journeys inside the continent are international. The average distance travelled is 60 per cent of that in the US, with most flights being under two hours, which makes ground transport a stronger competitor. The total European air transport market is only some 52 per cent of the size of its American equivalent. Non-scheduled services account for more than half the demand for air travel in Western Europe, and within the US this sector has never accounted for more than 5 per cent of demand for air travel (Williams, 1993, p. 67).
Finally, when US deregulation occurred in 1978, the US had numerous private and profitable carriers. According to the Financial Times (8 April, 1994), US carriers were better prepared than their European counterparts are today. The US government could more easily watch weaker carriers be eliminated by competition without intervening than individual European governments can today. Carriers had no choice but to adapt quickly to the new market conditions and respond to competition from new entrants, instead of hoping for state subsidies to finance restructuring or for the defence of their individual interests by their governments. However, the Financial Times also warns that:

"Deregulation should do for Europeans what it has already done for the US. That is why it is such a great idea. But the US experience leaves little room for doubt about what it will do to Europe's airline industry. In short, it looks like being a bloodbath." (Financial Times, 8 April, 1994)

3.4.1 Before European Liberalisation

Until the mid 1980s, European scheduled airlines were strictly regulated by highly protectionist bilateral agreements. Capacity was restricted and often equally divided between national carriers operating on a single designation regime (only one airline designated by each country's government may fly the route); revenue pooling, whereby both national carriers on a route were guaranteed revenues proportional to the capacity they offered, was normal; fares were kept high through collusion with the International Air Transport Association (IATA) and the prevention of new entrants through national licensing policies; and all major
European airlines were state owned and frequently subsidised. Therefore, it is a reasonable conclusion that competition was virtually non-existent, and that the industry closely resembled a cartel. European liberalisation of air transport can be considered:

"...an overdue and entirely welcome antidote to years of publicly sponsored collusion between sleepy airlines which preferred to enjoy the fruits of cartel life in the form of high costs rather than high profits, and for whose management the word 'competition' had connotations more of the golf course than of the marketplace". (Financial Times, 30 May 1990)

3.4.2 The Impetus for Liberalisation

Deregulation in the US created new economic and market dynamics. Economies of scale, whose applicability to the airlines was largely ignored, were now visible. The dominance of incumbent airlines over the new entrants after a very turbulent time immediately after deregulation (where new entrants inflicted considerable damage), the proliferation of hub-and-spoke network systems, and the marketing and scale advantages of computer reservation systems were the major restructuring agents of the US airline industry. The implications of the above factors for the European airline industry were profound and irreversible. First, the Americans demanded more liberal Air Service Agreements (ASAs) to give their carriers the opportunities of global economies of scale and an international hub-and-spoke system. As American airlines operated from an enormous domestic market, they could produce very strong inducements for more liberal agreements, such as cabotage rights. Thus, they had strong bargaining power advantages over foreign airlines. The questions then arose as to what implications such agreements
might have for the EC and whether it would be advantageous for the European Commission to negotiate with the US on behalf of its members.

There was also the issue of how European airlines could respond to the implications of the globalisation process in the US. They were increasingly disadvantaged in the transatlantic market because of the huge pool of passengers in the USA located away from international gateways. While their American competitors could draw these passengers into their hubs for onward flights across the Atlantic, European airlines were legally restricted from doing so. This resulted in the vast majority of passengers who started their journeys behind international gateways in the USA flying across the Atlantic on American carriers. Another factor was that the US experience provided an example of benefits that could be achieved by deregulation. This further undermined support for the existing regime in Europe, but it also revealed some of the problems arising from the sort of full-blown deregulation that the US had implemented. This provided food for thought about how far and how fast Europe should liberalise its market.

3.4.3 The Birth of European Liberalisation

Faint signs of liberalisation appeared in the 1970s. Two judgements by the European court in 1974 and 1978 (E.C.R. 359 and E.C.R 1881) clarified the convenient confusion over the applicability of the European Community’s competition laws to the air transportation industry. These laws were based on the Treaty of Rome of 1957 which formed the basis for the European Community and its gradual move towards a single
market. Following these rulings, consensus was reached that articles 85 and 86, which prohibited the collusion that would distort the market and the abuse of dominant positions, did in fact apply to the air transport industry. This was to be only the beginning; implementing and enforcing these competition laws on airlines proved to be difficult.

In 1979, the Commission published the first memorandum on air transport (European Commission, 1979). The memorandum expressed the EC's objective that air transport should comply with the broad aims of the Treaty of Rome. The report gave no firm proposals and was intended to act only as a stimulus for further discussion. The position for the enforcement of the competition rules was unsatisfactory as the Commission was dependent upon the co-operation of member states to restrain anti-competitive practices and had no real independent power to take any action (Adkins, 1994). Hence, a decade-long string of attempts by the Commission to develop airline policy was largely unsuccessful and very little progress was made.

In 1984, the second memorandum on airline policy (European Commission, 1984) was published. The proposed creation of a competitive common air transport market was generally considered somewhat radical and far reaching, despite the emphatic rejection by the Commission of the American-style deregulation for Europe. This rejection was justified by the structural differences between the European and the US market. The US was a unified domestic market reserved for US carriers; US government policy was liberal and accepted the social and economic effects of such a policy; and all US carriers operated on a commercial basis and in sufficient numbers so that it was not imperative that they all be kept viable (Adkins, 1994). The memorandum proposed that pooling
agreements, capacity sharing, price fixing and subsidies should gradually be phased out. The sensitive area of market entry was dealt with cautiously (Weatcroft and Lipman, 1986). In general, the reactions to these proposals varied in accordance with inherent vested interests, but encountered strong opposition from trade unions and most carriers.

After a series of European Summits calling for completion of the Single Market, in 1986 the Community passed the Single European Act (SEA) which amended the Treaty of Rome, and set 1993 as the deadline for the creation of the Single Market. Article 8a had a direct impact on airlines: "The internal market shall comprise an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured according to the provisions of this treaty" (EC Bulletin, 1986). The passage of the SEA had a strong symbolic importance in revitalising the European movement and helped to carry forward not only European integration in general, but airline reform in particular.

In 1986, the judgement by the European Court of Justice in the case known as the ‘Nouvelles Frontiers’ (Slot and Dagtoglou, 1989) reaffirmed the principle that EC competition rules must apply to air transportation and represented a turning point in the Commission’s attempts to liberalise air transport. As most of the EC member states were reluctant to apply the competition rules to air transport, little action followed that ruling. Consequently, the Commission, eager to develop greater competition in air transport, accused ten major European airlines and another 3 carriers of infringing Article 85 of the Treaty of Rome. This proved to be an effective tactic and led, after much discussion, to the Council agreeing that a series of measures to liberalise European air transport should be introduced. Subsequently, the Commission dropped the proceedings against the 13 airlines (Sherman, 1992). The EC, in fact, moved on two
fronts so that the member states would either accept the package, or have it legally forced upon them (Dobson, 1995).

3.4.4 The First Package

In December 1987, the European Council opted for the adoption of a liberalisation package. It was fairly modest in ambition and achievements. It sought to reduce capacity restrictions marginally over a three-year period and tried to open up the market by allowing multiple designation of airlines, more regional routes and more fifth freedom rights. It also created zones of fare flexibility where price-cutting could take place (see Vincent and Stasinopoulos, 1990). As a result of the first package, a number of smaller airlines were enabled to enter some of the most important intra-Community scheduled routes, or given substantially increased freedom to provide the capacity and charge the fares they wished. These included both existing airlines which had previously concentrated on domestic or regional markets, such as British Midland and Hamburg Airlines, and new entrants such as Air Europe and Ryanair. A few fifth freedom services were established, notably by Aer Lingus on routes from Dublin to Manchester and onto other points, such as Amsterdam, Paris and Copenhagen (CAA, 1993).

After 20 months, the results of the first package were modest (Weatcroft and Lipman, 1990). The effects on capacity regulation and fares were disappointing. The zonal fare schemes were not much used and old cartel habits died hard. It was only where new
independent operators entered the field through multiple designation that the provisions for discounts of 15 per cent on economy fares were used (Dobson 1995, p.193).

3.4.5 The Second Package

The second liberalisation package was accepted by the European Council in November 1990. The second package took the process of liberalisation further, but did not add any significantly new dimension (CAA, 1993). The scope of zonal fare discounting was expanded, and market access was enhanced by allowing third, fourth and fifth freedom rights (restricted) between all airports, including major hubs, which had previously been exempt. Multiple designation was also made easier by lowering the passenger threshold at which another service could enter the market. However, there were still several protectionist measures. Capacity liberalisation could be delayed on routes for two years to allow a carrier to re-structure and there were provisions for protecting non-profitable routes serving community needs (See Weatcroft and Lipman, 1990, pp. 43-51 for a more comprehensive analysis). The second package was a significant move towards a more liberal and competitive internal airline market. The remaining restrictions, apart from cabotage and government financial support for state-owned airlines, were largely concerned with how the new rules would be applied in practice (Dobson, 1995). However, both the second and the first packages failed to drive down fares more than marginally (Betts and Gardner, 1992).
3.4.6 The Third Package

The existing commercial framework for international civil aviation, based on national policies and bilateralism, found it increasingly difficult to cope with the emergence of regional groupings, such as the EC and the Andean Pact. The system's inadequacy was also exposed by problems arising from international difficulties in air traffic control and CRS (computer reservation systems), from transnational airline alliances, and generally, from the emerging global airline market. Governments and airlines began re-examining their plans, and it was soon clear that the airline industry was on the verge of a dramatic process of change (Betts and Gardner, 1993). Both in the US and the EC, committees were set up to look at the future of the airline industry.

In 1993, the third liberalisation package was accepted in Europe. The Commission was determined that a completely deregulated market should be avoided because it would lead to abuse and anti-competitive behaviour. Given the concerns expressed by a number of countries, the proposals were as far reaching as one could reasonably have expected. The proposals covered route and airline licensing, ownership regulations and the fare regime (Dobson, 1995). The third package was the most far reaching in the gradual process of European liberalisation, designed to encourage greater competition and bring down European air fares. On average, these were still at least a third higher than in the US (Betts and Gardner, 1992). Full European cabotage was delayed for four years, and regulations for public service routes and to address the problem of scarce slots at major airports, were postponed. Unrestricted fifth freedom rights were created, but consecutive cabotage (for example, Air France flying the London-Manchester leg of the Paris-London-Manchester route) was restricted to 50 per cent of the international
leg of the route (the London-Manchester segment could sell no more than 50 per cent of the total capacity offered on that route). Pricing was to be on a single disapproval regime (one country could veto a fare) to avoid predatory or excessively high fares. The most radical move was to introduce a common licensing policy, which facilitated the entry of new airlines, now defined in terms of Community rather than national rules of ownership.

3.4.7 Friction over State Aid

For some, such as the British and the Dutch governments, the third package proposals did not go far enough. The British in particular felt that the Commission was still far too willing to allow government financial assistance and bailouts for the airlines. This failure to stop state aid was mainly the result of the Commission wanting to avoid political fights with member governments at inconvenient times (Economist, 16 April, 1994). Spain, for example, insisted that “it would bail out its state airline with Ptas130 billion (dollars 1.1 billion), whether agreement to the cash injection was reached or not” (Economist, 9 Dec. 1995). Between 1990 and 1993, BA estimated that Sabena, Air France and Iberia together received aid of about $3 billion. “While these payments have been justified by governments in terms of the need to finance restructuring programs, it is unclear that the sums involved would have been made available on the same terms to non state-owned airlines” (CAA, 1993, p. 5).

The Commission established the ‘Comité des Sages’ in June 1993 to examine the economic problems confronting the airlines of the EC. The spirit of the Comité
des Sages' report (Comité des Sages, 1994) was for maintaining the momentum towards liberalisation, although future progress was in doubt. The recommendations of the Comité des Sages in the commercial domain were controversial. Despite recognising that capital injections and state aid had severely contributed to over-capacity and uneconomic pricing, the Comité still acknowledged the need for a 'last chance' financial aid package for some airlines. During the hearings run by the Comité des Sages, the polarisation of the EC member states became obvious (Financial Times, 28 Sept. 1993). A protectionist lobby, led by Air France and Sabena, called for a freezing of capacity and fares until 1996, which would effectively mean the suspension of competition for two years. This had the potential of seriously jeopardising any expansion hopes of successful European airlines such as KLM, BA, Air UK and Virgin. Secondly, there were calls for an EC fund to help with restructuring. Thirdly, there was an attack on Britain, alleging that it acted hypocritically in calling for liberalisation in Europe while at the same time retaining the most restrictive of bilateral agreements with the US (Financial Times, 28 Sept. 1993).

In March 1994, a rescue package was produced involving government funding of $3.42 billion over three years in return for some rationalisation of the work force. (Flight, 23 February, 1994, p.25; Flight, 16 March 1994, p. 5). In July 1994, the Commission approved state aid totalling $ 7.1 billion to three airlines, including Air France, Olympic Airways of Greece, and TAP of Portugal. Since August 1991, the industry calculates that the Commission has approved state aid to European airlines totalling US$ 10.35 billion. Privatised airlines, such as British Airways, and other carriers in the process of being privatised, such as Lufthansa, have
attacked the latest subsidies as threatening to distort competition in the new liberalised market (Financial Times, 27 Sept. 1994).

The problem was not just financial aid to airlines. Providing state aid to the airlines for restructuring was an investment that had to be safeguarded. Hence the airlines would also have to be shielded by their governments from any seriously damaging competition. The approved state aid also demonstrated that the Commission once again had collapsed under pressure from protectionist governments. Even the US administration made clear its dismay at the Brussels decision: "In the late 1980s and early 1990s, when Pan Am and Eastern Airlines went under, the US government resisted enormous pressure to intervene. In the long run, US carriers and consumers are better for it. The European Commission should have stood up to these subsidies in the same way" (Financial Times, 29 July 1994). US carriers, of course, stand to gain much from the bankruptcy of European airlines, especially in the transatlantic markets.

"The EU's skies have been free of cross-border restrictions on schedules and prices for three years. Yet prices are still high. Barely a dozen new (and small) carriers have taken off successfully; most of the rest have found their way blocked by state-owned airlines, themselves kept alive only by Brussels-approved state aid". (Economist, 6 April 1996)

3.4.8 The Importance of Airport Slots

As liberalisation progressed in Europe, independent carriers, which have often been catalysts in the introduction of competitive fares and higher standards of service, have increasingly complained about the obstacle to entry to new routes posed by
the scarcity of prime time, take-off and landing slots at major airports.

Recognising this, the Commission brought forward proposals for a gradual redistribution of slots. It already had in place rules governing the distribution of new or abandoned slots. The reaction from member states was fundamentally hostile.

In fact, there were many vested interests against the proposals. For example, while BA favoured EC liberalisation and the creation of a single European airline market, it developed a convenient perception of slot redistribution as a form of re-regulation rather than deregulation. In other words, it stood to lose valuable slots to such competitors as Virgin Atlantic and British Midland, which would threaten its Heathrow fortress.

The Commission persisted and the Council adopted a set of rules in January 1993. States were to be responsible for placing a congested airport in the hands of a co-ordinator to allocate new or unused slots. Any slot not utilised over 80 per cent of the time could be confiscated and put in a pool, 50 per cent of which would be allocated to new entrants. These were modest measures as the slots remained largely 'grandfathered' - airlines which have been operating slots have first option to keep them. The issue of slot allocation is of paramount importance in the intensification of competition.

"There is little chance of two airlines competing if one operator's aircraft can take off and land and its rival's can do neither. In many of the world's airports, at least during the busy times, demand for take-off and landing slots far outstrips supply. In most airports these slots are allocated in ways that stifle competition. Until recently, this hardly mattered. Airport congestion was rare, and air travel so heavily regulated, that airport slots were the least of the worries of a would-be competitor to established airlines. ...The system is usually administrative: slots are distributed by bureaucratic fiat, not according to how much they are worth to different airlines. Worse, this decision is based on 'grandfather' rights. ...This insures the continued dominance of airports by flag carriers." (Economist, 19 Oct. 1991).
Many propose the auctioning of slots. In 1990, the European Commission proposed that incumbents should sacrifice slots for auction. Lobbyists made it think again (Economist, 19 Oct. 1991). The Commission now opposes the idea of trading airport landing slots - it favours a much more interventionist approach, its reason being "to prevent large airlines from dominating airport landing slots" (Financial Times, 28 Jan. 1992). However, with the present system of allocation of slots, incumbent airlines consider they practically own the slots indefinitely. Legally, it is not clear who owns slots, but some legal specialists say it is definitely not the airlines (Skapinker, 1996). The system is restricting the freedom in European skies (Economist, 6 May 1995).

3.4.9 Recent Progress

Perhaps the most important development in recent years, after the liberalisation programme, has been the increasing competence of the Commission to negotiate on behalf of the Community in Air Service Agreements (ASAs). Political inhibitions have largely been overcome to intervene within the domestic affairs of the EC. However, there has generally been less success in negotiations involving foreign states. The debate of the Council of Ministers' on 20 June 1995 on this matter suggests that there will not be a breakthrough in the short term. Ministers declined to sanction the draft Commission's negotiating mandate and asked the Commission to produce a more detailed analysis of the benefits of EC-wide
negotiations (*Avmark Aviation Economist*, June-July 95). The European Union’s transport commissioner, Neil Kinnock, has argued that:

"... in aviation, just as in trade, one collective European voice would be more effective than a cacophony of national voices. He has therefore opposed efforts by individual European countries to sign ‘open skies’ treaties - and indeed begun legal action against some for undermining the single market with agreements that discriminate against fellow EU members. His threat has been ignored. Last year half the EU’s member governments signed bilateral ‘open skies’ agreements with America. His bluff called, Mr Kinnock is now dawdling on his way to the courtroom; he has so far taken no action against the most recent infringer, Germany". (Economist, 6 April 1996)

The current threat is that the interests and the unity of the EC as a whole may be undermined by the attempts of individual states to safeguard their positions in bilateral agreements with the US. The five former ‘wise men’ from the Comité des Sages met in mid-August 1995 for a preliminary discussion about the progress of liberalisation in the European Union (Odell, 1995). Their main comments and concerns were as follows:

- On a scale of zero to five, the ‘wise men’ assessed the Commission’s progress as two, which in summary means that some progress in certain areas was initiated, but that considerable concern still remains.
- The group’s main purpose is to follow the results and to act in a monitoring role, thus attempting to avoid the eternal shelving of its report.
- They claim that the Commission is trying to solve the problem of allocating the slots at the wrong end. The Commission should focus on
improving the use of existing capacity and enhancing capacity for the future.

- They worry about a political inclination to support rail transport and that subsidies to rail transport may allow unfair competition with the airlines;

- On the subject of negotiation of Air Services Agreements, they advise that issues such as how to replace national designation clauses and allocate route rights among Europe’s carriers will make progress difficult. The main problems the Commission faces are that member states do not actually share a common aviation policy, and that the Commission can hardly negotiate with third parties on behalf of the EU without a sound internal market in place.

- The general tone of the meeting was critical of the Commission’s progress, but all five members seem keen to ensure the Commission stays on course to lead the EU into a truly open market by 1997.

Although progress has been painfully slow, the importance of transport to the EC is undeniable: it is vital for the development of the European Union (Verchère, 1994), generates over seven per cent of its GDP, and has broad economic, social and political benefits (Dobson 1995).

### 3.4.10 Conclusions

The aim of the EC has been to avoid the full deregulation model of the US, and to produce a flexible, safe and efficient market which responds to the main demands
of the consumer, which can meet certain Community needs, and avoids abuses of
the free market, such as predatory pricing and exploitation by the dominant
players. European liberalisation has been a lengthy and strenuous process largely
because of its highly political nature and the conflict of interests shown by the EC
member states, whose prime objective has been to safeguard the interests of their
airlines. So often, policy is not determined by the 'objective' economics of the
situation, but by political perceptions, accurate or otherwise, about the economics
involved and by a multitude of other non-economic considerations (Dobson, 1995).
European air transport is still complex and heterogeneous. What the national
airlines of the member states each have in common is dominance of their home
markets and major hub airports. This dominance has often been built up over
many years, during which national airlines enjoyed positions of near or actual
monopoly as a matter of government policy (CAA, 1993).

The EC increasingly bringing its competition rules to bear has reduced the rigid
structure in the European airline market that had developed since 1946. The
Commission, working in conjunction with the Court of Justice and member states,
such as Britain and Holland, has largely conquered political obstacles to reform.
Having politically powerful states which have been willing to lead the way in
liberalising air services has been crucial for the Commission to pressure the other
more protectionist states. The UK and Holland were most receptive to the idea of
liberalisation. Both had developed their main international airports as gateways to
and from Europe and they wanted better access to foreign passenger markets.
They also had the best developed national reform programmes in the early 1980s.
Britain had three reasons for wanting a liberal single airline market in the EC. The
first was doctrinal: the dislike by Thatcher acolytes of industrial regulation. The second reason was that Britain, unlike other European countries, had a good string of independents - BM, Dan Air, Air UK, Air Europe, etc. In a freer market it was expected that these airlines, along with BA, would succeed, especially considering the importance of London in European air travel - in 1993, ten of the fifteen largest international scheduled routes (including the five largest) were to or from London (CAA, 1993). And thirdly, there was an international perspective created by deregulation in the US. Britain has been the main advocate of reform in the airline industry. This is ironic, given Britain's reputation as a reluctant and increasingly 'optional' and less co-operative partner in the EC.

So, capacity, frequency, fare and route restrictions, and the division of whole markets by pooling agreements, have all been reformed. These achievements amount to significant progress in allowing the market rather than political forces to mould the EC airline industry. However, on the whole, the dominance of national flag airlines has been eroded only slightly, and few intra-European Union routes are yet contested by more than two carriers. "Most damningly, Europe's notoriously high air fares have been slow to fall. On the evidence, consumers may well wonder what the EU liberalisation has really achieved" (Financial Times, 20 Sept. 1995).

The most observable changes in the European airline system have been the proliferation of regional routes, the increase in fare competition on routes where a third airline has joined the flag carriers, cross border alliances, and the foreign investment and ownership of airlines. However, because of congestion, potential new entrants have great difficulty in attaining take-off and landing slots at airports
Despite the achievement of important changes within the EC, there are still underlying problems which threaten the future progress of the Community. In particular, national factors can lead to the manipulation of protectionist concerns contained in EC regulations for the benefit of flag carriers. Amongst these worries are: the issue of state aid with the failure by the EC to assert a ‘one last time’ criteria; the persistence of national cabotage until 1997, when European cabotage is supposed to be implemented; and the apparent persistence by individual members of the Community to negotiate Air Service Agreements, officially justified by fears that the Commission is not yet qualified to do so. All these provide ample scope for protectionism in the short/medium term.

There are also doubts over the effectiveness of EC rule implementation and enforcement. A major problem is that liberalisation needs wider and stronger political support to work, while at the same time it needs to show evidence that it is working in order to gain political support. “Until there is clear evidence that competitive forces are starting to assert themselves much more vigorously, progress towards an open European market will continue to depend heavily on momentum generated in Brussels” (Financial Times, 20 Sept., 1995). European carriers have to rely more on international traffic to gain market volume than US
carriers. European carriers’ domestic markets are too small to provide it. Furthermore, BA, for example, makes a very large proportion of its profits from its American routes. European liberalisation of cabotage rights would therefore mean not only a larger playing field, with European carriers’ domestic market increasing to the size of the whole EC, but a more level playing field would be negotiable between the EC and the US. Access to European and US cabotage could be exchanged, enlarging the market potential for both sides.

For the foreseeable future, the international airline industry is unlikely to become just a matter of commerce and business, whether it goes down the route of liberalisation or that of regulation and protection. It will remain highly political and involve complex diplomatic negotiations for some time to come, whether they are conducted by national or regional representatives. The success of liberalisation and its eventual impact on air fares will ultimately rest on the goodwill of EC member states (Betts and Gardner, 1992). Some (Betts, 1993) believe that any increase in competition should not be on a comparable scale to US deregulation. But perhaps the most important determinant of the success of liberalisation will be the airline passenger market itself. If it moves out of its latest depressed state (as its seems to be doing in response to general improvement in the world economy), this might create more room for manoeuvre by airlines and give them the basis from which to act more adventurously in creating the new international system.

“If the European airlines respond to regulatory changes in the same way as their US counterparts, we are certain to witness a transformation of the industry in at least two ways: increased market orientation, leading to a proliferation of new services, and growing price and cost pressures, making productivity improvements a key factor for success.” (Barton et al., 1994, p. 30)
However, it is unlikely that Europe will accept unlimited liberalisation. The prospects are for a continuing debate between governments as to how far they can go, and for a continuing struggle between the free marketeers and the instinctive interventionists (Verchère, 1994). The European liberalisation process will, however, not be complete until open skies extend over the Atlantic as well. This is because airlines make most of their money on long-haul flights, and it is hard for, say, a British or a Dutch airline to obtain rights to fly from Paris to New York while the French government regulates the route. "In a European-American free-aviation area, any one could fly from anywhere, subject to buying a slot at an airport. It is time to take the flags off aircraft's tails" (Economist, 9 Dec. 1995).

Whatever happens, intense political arguments and complex diplomatic discussions will inevitably be involved as matters cannot be resolved solely on the basis of economic analysis or abstract models of transportation systems.

3.5 Liberalisation of Air Transport Between the US and Europe

3.5.1 Regulatory and Commercial Significance

The prominence of this liberalisation is substantiated not only because the European and North American markets together account for almost seventy per cent of world air traffic (ICAO, 1992), but because the liberalisation of the traffic between the US and Europe is already posing important regulatory questions. It is severely testing the unity of purpose within the European Community and testing
the ability of two strong economic powers on different continents to regulate powerful alliances, that between British Airways and American Airlines, while simultaneously pressing on with efforts to intensify competition. This liberalisation also provides a good example of the classic and delicate conflict between national trade goals and market efficiency goals. Achieving degrees of market efficiency while acting with mercantilism is arduous.

The effects of a potential intensification of competition between the US and the European Union (EU) would undoubtedly spread to the rest of the world, as carriers of any nationality operating to and from Europe or the US would have to face extremely competitive airlines. Unless the countries of those carriers loosen protectionism over their markets, they will have extreme difficulty not only in gaining access to EU or US markets, but in ever out-competing EU or US carriers. This potential liberalisation would constitute a milestone in the development of the world air transportation industry. It would create an environment of much accelerated dynamics, constituting a highly pressurised forum for the development of airline management thought and hence for the evolution of the strategic use of information in the airline industry.

3.5.2 Recent Progress?

The Americans have supported Europe in principle throughout the liberalisation process. Politically, the liberalisation of Europe means the increased probability that cabotage 'rights in Europe are put on a potential negotiation table of Air Service Agreements
between a unified Europe and the US. The US has thus far been frustrated in its great ambition of operating cabotage rights in Europe. Its idea of liberalisation is the abolition of all restrictions on any services an airline wants to offer. However, its policy of restricting the number of gateways available to foreign operators in the US was not completely aligned with that notion. The US has also not shown any signs of reforming its market place either by allowing cabotage operations for foreign operators or by loosening restrictions on foreign control over US airlines (Dobson, 1995).

Because European countries have small domestic air travel markets (which means small cabotage bases), individually they cannot offer significant cabotage bases for negotiation in Air Service Agreements. This gives the US, in practice, a strong incentive to negotiate with individual European Union members rather than with a unified Europe. By using this method it has much more bargaining power by virtue of the large cabotage base it can offer as enticement. Hence, the US is able to obtain favourable ASAs in exchange for fewer concessions. According to the Financial Times:

"Suborning [competition rules] to national trade goals devalues their effectiveness. The US would doubtless respond that such tactics have paid off. Its carriers stand to gain greater operating freedom in the EU, without conceding equivalent rights in their home market. But if the US genuinely wants liberalisation of world markets, this is no way to achieve it. Its 'open skies' deals amount to using government muscle to win favours for US carriers. Such mercantilism does not advance real free trade but perpetuates the state intervention, nationalistic attitudes and bilateral arrangements which have prevented aviation developing into a truly global industry. Such an approach also risks turning relations with Brussels into a confrontational trial of strength. That would be counter-productive and inappropriate when the two sides are working together to lower transatlantic trade barriers in other sectors. The sensible course is to extend their co-operation to aviation." (Financial Times, 8 July, 1996)

According to Neil Kinnock, Europe's transport commissioner, by dealing as a bloc with the US, the EU might be able to accomplish greater benefits than its members can obtain
individually. However, the EU would need far greater unity of purpose than it now possesses. Interests are conflicting. For many of its larger members, the priority in transatlantic negotiations is to enhance the role of their bigger airports. For smaller ones, it is to expand their carriers' access to the US market (Financial Times, 7 June 1995), or simply to protect them from damaging competition. An example is the deal between the Dutch KLM and the US North West Airlines, signed in 1992, which had a vast effect on the German market. Although the total number of passengers travelling from Germany to the US had remained stable over the previous three years, the number of German passengers travelling via Amsterdam increased by about 80 per cent (Financial Times, 7 Dec. 1995). This means great market share and monetary gains for Amsterdam's airport. France, Germany and Britain stand to lose much in terms of traffic at their major airports from open skies deals the US has signed with European Union members (Financial Times, 7 Dec. 1995).

"In these circumstances, trying to forge a common front which satisfies all concerned looks a thankless - perhaps impossible - task. Underlying these divergences is EU governments' longstanding tendency to regard their flag airlines as projections of sovereign power, and air transport policy as a means to promote the interests of carriers, not of their customers. Such attitudes will persist until Europe has a genuinely competitive airline market, ruled by efficiency instead of nationalism." (Financial Times, 7 June 1995)

Despite efforts from the European Commission to stop individual countries from negotiating ASAs with the US, the Americans have signed open skies agreements with Germany, the Netherlands and most of the countries in northern Europe. Amongst other things, these agreements open international routes to new entrants, removing limits on flights and frequencies and allow carriers flying from America to pick up traffic from Europe to fly to other countries (and vice versa). But they do not permit
European carriers to compete in the protected American market (which accounts for around 40 per cent of the world market). The UK has so far refused to sign a similar agreement in order to protect BA (which is looked on by the British Government with “the cool detachment that a mother reserves for her only child” (Economist, 31 Aug. 1996) and the other British carriers at Heathrow.

Neil Kinnock has written to all EU governments involved, threatening court action if they continue to negotiate or sign deals with the US. He regards the agreements proposed by the US as illegal because they do not embody provisions required by the EU’s regulations and could conflict with its competition rules. So far, the governments appear to have ignored his threat, and the dispute may ultimately have to be resolved in the courts (Financial Times, 14 March 1995).

3.5.3 The British Airways / American Airlines Alliance

The proposal in June 1996 of a code-sharing alliance between British Airways and American Airlines was hailed as unequivocally good news for the two carriers. Both airlines would effectively double their networks at minimal expense, leading analysts to forecast additional profits of hundreds of millions of dollars (Cohen, 1996). Code-sharing simply means the ability of one airline to transfer its passengers onto the other’s network. In essence, the two companies become one, for “code-sharing plainly requires extensive co-operation between participants on pricing, marketing and most other things that make an airline tick” (Independent, 12 June 1996). The proposed alliance prompted a European Commission
competition investigation into transatlantic airline alliances (*Financial Times*, 8 July 1996).

For all their power, BA and American concluded their deal as a way of defending themselves against forces in the aviation industry they could no longer control. Rival airlines in both the US and Europe have been busily concluding similar alliances, while their governments have been signing liberal 'open skies' agreements which allow airlines from one country to fly freely to any point in the other (Skapinker, 1996) (e.g. KLM/Northwest, Delta with a few European airlines including Virgin, and Lufthansa/United). Both American Airlines and BA have equally embarrassing positions to defend. Robert Ayling (BA's chairman) had, three months earlier, strongly criticised Lufthansa's alliance with United Airlines on the basis that relaxing anti-trust laws would reduce the level of competition. Yet Lufthansa and United together flew fewer than of 14 per cent of scheduled flights between the whole of Europe and the US (*Independent*, 12 June 1996). Robert Crandall (American's chairman) had told the American Chamber of Commerce in 1995 that code-sharing was inappropriate because it is based on misleading the consumers into believing they are buying one thing while selling another; that it was profoundly anti-competitive and would in the long term inevitably reduce the number of competing carriers.

However, the BA/AA alliance needs immunity from America's anti-trust laws if the companies are to pool their services. "This would be the American equivalent of banning the Monopolies and Mergers Commission from investigating the activities of the two companies. ...This would mean that the most powerful cartel in
aviation history would be given carte blanche to behave as it wants in the marketplace” (Independent, 12 June 1996). Washington has made anti-trust exemption for transatlantic alliances conditional on European countries improving access for US carriers. The American regulators conveniently think that some sort of liberalisation is in order to balance the reduction in competition that would be caused by the virtual merger of the world’s two most powerful airlines. “While competition is taken away with one hand, it is increased with the other. That is what they would like you to believe anyway” (Independent, 12 June 1996).

Except that in terms of competition, balancing an alliance such as the BA/AA may be impossible. Also, US carriers would gain increased access to Europe in the process. This would mean damaging not only the other British carriers, but the business of many more European airlines, as AA could use BA to carry its traffic to practically anywhere in Europe.

The liberalisation that the US has in mind to compensate for the alliance relates mostly to the protectionism over Heathrow. It is in particular over ‘beyond Heathrow rights’ - the US would like to pick up traffic at Heathrow to fly to other countries. This would constitute a penetration of BA’s hub/fortress, and most importantly, a penetration by US carriers of one of the most important European gateway airports. A route from the US, via Heathrow to Tokyo for example, would not only erode the vast profits that competing carriers such as Virgin make on it, but it would lure away much of the European carriers’ traffic to Japan.

The British, however, insist on the Americans granting British carriers the right either to operate inside the US, or to buy control of American carriers (at present they are limited
to a 25 per cent share). This "would be a bitter pill for Mr. Pena [the US transportation secretary] to swallow in an election year" (Economist, 31 Aug. 1996). The US considers the deal to be less than positive for an election year, not with unions opposing it (Feldman, 1996).

3.5.4 Conclusions

The liberalisation of the EU's internal market, to be completed in 1997 when carriers will be able to operate freely between and within all 15 member states, will erode the effectiveness of protection built into each country's bilateral accords with the US. After 1997, US airlines, through open skies deals, will, for example, be able to use an EU airline to carry their own passengers anywhere in the EU (Financial Times, 7 Dec. 1995). Hence the importance of air transport unity of purpose in the EU. Europe, too, must penetrate the US market if there is to be any meaningful liberalisation of air transport over the Atlantic.

"However, the chances of a decent EU wide deal [with the US] look slim. Weak airlines such as Air France, Iberia and Alitalia will almost certainly force their government owners to dilute or block any agreement. Britain is unlikely to cede to Brussels anything that might weaken Heathrow's dominant position in transatlantic traffic." (Economist, 6 May 1995)

According to the Financial Times, the aviation markets between the US and Europe should be ruled by market forces and not by political debates:

"The EU should propose opening its single aviation market fully to US carriers once it comes into being next year, in return for comparable access to US domestic routes. That would ensure fairer and more open competition than the patchwork of
bilateral deals sewn up by the US in Europe. The two sides should abolish their
anachronistic restrictions on foreign ownership of airlines, which have merely
thwarted industry rationalisation. They should also aim to align their competition
policies to keep markets open, rather than to promote their airlines' interests.
Finally, they should seek the negotiation of multilateral aviation rules in the World
Trade Organisation. Those steps would require radically changed attitudes among
governments, long used to treating even privatised flag carriers as extensions of the
state. But they need to recognise that such practices are to blame for the problems
afflicting the industry today. The starting point for any solution must be to get
governments and bureaucrats out of the airline business, not further in.” (Financial
Times, 8 July, 1996)

Robert Crandall (American Airlines’ chairman) supports cabotage because he
wants to use it as a trading weapon to gain access to other nations’ domestic air
tavel markets. In his opinion, only the most foolhardy of foreign carriers would
actually attempt to compete head-to-head on US domestic routes against the
strongest US carriers. To compete profitably in the domestic US market, a foreign
carrier would have to duplicate its US rivals’ entrenched, well-financed hub-and-
spoke networks overnight, which, because of the cost and logistics involved,
would be impossible (Reed, 1993)

The negotiation of Air Service Agreements between the EC and the US is difficult.
This is because the EC is having tremendous difficulties in gaining and asserting the
authority to negotiate on behalf of its member and stop them from negotiating
individual bilaterals with the US; and also because reconciling the differences in
liberalisation philosophies between the EC and the US is not easy. Also,
establishing frameworks for negotiation which take into account the different
geographical and structural characteristics of the industry in the US and EC is
proving complicated.
"The big thing to watch in the coming decade will be how these radically different models of aviation - free competition within the United States, rigid regulation outside it - come together. One way to encourage the coupling would be for America to remove its restrictions on foreign airlines buying American ones. That would inject much needed capital into the American industry and open a real connection between the two systems. Then the world might begin to have an aviation industry worthy of being called 'global'." (Economist, 6 May 1995).

Market efficiency is the grand official agenda of politicians involved in efforts of liberalisation both within the European Community and between the EC and the US. However, in practice the efforts are being guided by agendas of nationalism and mercantilism. Achieving market efficiency goals with such ulterior motivations will no doubt be a long and arduous process, where progress can be achieved only through extremely reluctant concessions from the parties involved. Any concessions on matters of such immense significance damage the often fragile home political support and popularity of the governments ceding them, and hence their prospects of re-election.
4. The Nature of the Business

The airline business is a politically charged activity, target of much regulatory attention, and of economic theory. Its information intensity, competitive conduct and peculiar rationality have caused many deviations from academic and regulatory predictions and theories. This section is a general attempt to identify and describe the characteristics and influences that give the industry such peculiarity. More specifically, it attempts to connect the characteristics of the business with the importance of procuring and using information strategically, and to serve as foundation for the chapter addressing the strategic uses of information in the airline industry.

This section will start with a compulsory overview of the political and regulatory restrictions involved in managing and competing in the airline industry. This reference is essential since the influence of politics and the hold of regulation are behind the most restrictive forces in airline management and competition. The
extent to which airlines procure and use information strategically is directly linked
to the intensity of competition to which they are exposed in the markets. The
section will then continue by examining the information intensity of this industry.
It will illustrate that the airline business is extremely information intensive, not
only operationally, but strategically.

At this stage there will be only a general overview of the type of information that
an airline acquires and processes in order not only to operate, but to be
competitive. This is because in the next chapter that very information intensity
will become much more salient in the context of exploiting the mechanisms of
acquisition and use of information in airline management and emphasising its
importance for airline competitiveness.

Acquiring and using information can be seen as an organisational capability. In
that there is a learning curve in procuring and using information, the type and
degree of experience in competitive markets is a major determinant of the airline’s
ability to procure and use information proficiently. Procuring and using
information strategically in such an information intensive business is therefore an
essential organisational capability for airline strategy.
4.1 Flying Politics

4.1.1 The Politics of Regulation

For an airline to fly it needs to have aircraft, crew and its operational competence certified by civil authorities. It also needs to have allocated times to take off from the airport of origin. It needs permission to serve foreign countries and to compete with the respective national carriers. It needs permission to fly over the country or countries in order to arrive at the planned destination. It needs allocated times to land at foreign airports, and more often than not it needs permission to charge the fares it wants in the various markets. It also needs permission to offer the number of seats (capacity) with the frequencies it deems appropriate for each market.

Given the vast and intense diplomatic and political negotiations which air transport needs to operate, it is hardly surprising that air transport and politics are extremely intimate. Lyth (1995) points out two closely connected and enduring characteristics which have marked the development of the air transport business over the last seventy-four years. First, it is critically dependent on one of the world’s most complex and expensive of modern technologies - aircraft manufacture - and second, it has attracted from the outset an abnormal degree of governmental control, regulation and general interference. According to the Economist, this political interference is not always coherent, and greatly hinders the development of the airline industry:
"The world's air-transport industry has been shaped by the clumsy hands of governments ever since its birth 80 years ago. Today, despite the freeing of airline fares and routes in America and much talk of deregulation in Europe, air transport remains more subject to the largesse and strictures of bureaucrats than almost any other industry. Every aircraft maker is subsidised. Many airlines are either state-owned or subsidised. Routes and fares nearly everywhere outside America are fixed by official fiat. At one end of the industry, governments dole out cash to aircraft makers; at the other, they hold down demand for aircraft by restricting the competition among airlines that would let growth in traffic soar. Government meddling in every aspect of air travel has so distorted the industry that it makes sense for the companies which operate in it to spend much of their time begging for yet more government help. As a result air transport often seems to operate in an economic daze". (Economist, 7 March, 1992)

Burns (1969) enquired whether airlines should be oriented, purely and simply, towards the needs of their growing number of customers, much advocated by the new independent British carriers of the 1960s, or if they should continue to place the main emphasis on an orderly and stable supply of air transport, with all the implications which that carried for national government policy and international co-operation? At the national level, the question of an airline's purpose drew an almost unanimous response in the post-war years. Even the very existence of large civil fleets was internationally regarded as an eminent threat to peace. These same defence concerns are behind the origins of jealously possessive and defensive political attitudes towards airlines and aircraft manufacturers.

"Civil Aviation has been tangled up in politics from its very beginning. There has always been more to it than just carrying mail, freight or passengers for a profit from one point to another. Civil aviation, apart from commercial considerations, has also been deemed important from military and intelligence purposes, as a means of encouraging national and imperial cohesion, and as an important status-symbol. In all these aspects politics plays an important part. Commercial aviation has had to rely upon political and diplomatic sponsorship in order to obtain routes and landing rights; furthermore, notwithstanding the move towards deregulation which took place in 1978 in the United States, airlines have often been subsidised and fares regulated to ensure profitability. The free market has been repeatedly submitted to political interference". (Dobson, 1991, pp.1-2)
Although the military and political dimensions remain very much intrinsic to the air transportation industry, liberalisation trends and pressures have gradually turned the airline into a commercial enterprise, particularly in the US, where deregulated markets are now 19 years old. In Europe some nostalgic airline chiefs, who have for so long been used to flying under their national flag, hope that nationalistic interests in air transport will somehow retard the evolution. Nevertheless, liberalisation is taking place with intense political bargaining to accompany it. We are seeing an increasing number of commercially-oriented private European carriers. Ironically, the increasing commercial role of airlines in many countries has contributed only to a more commercially-oriented and no less intense ‘national flag’ attitude. What started as national sovereignty and pride justifying the government ownership of airlines, the denial of air transport freedom rights to foreign carriers, and the general restriction of competition, has evolved into pure nationalism and hard mercantilism.

“Free trade has always been, and remains, an impossible dream in aviation. Though aviation has long fostered hopes for international peace, in diplomatic terms it has created nothing but jealousy and conflagration. Like bees, airlines pollinate the world’s financial system with capital. They create, mobilize, and transport wealth in proportions vastly exceeding the fares paid by the passengers”. (Petzinger, 1995, p. 341)

According to the World Tourism Organisation (1994), protectionism over air transport is based on a variety of important commercial considerations beyond national pride and sovereignty:

- air transport provides employment and develops high technology businesses (airlines, aircraft manufacture, airports, etc.);
• aviation is highly instrumental in developing the tourism industry;
• airlines are important earners of foreign exchange and avoid foreign exchange being spent on foreign airlines;
• air transport services are important in regional development and in the promotion of foreign trade; there are essential national air transport services which, although uneconomic, are politically or socially useful.

4.1.2 The Manipulation of Governments

Airlines are not surprisingly, very proficient when it comes to politics. After all, the industry was created and developed by governments. Airlines are expert at manipulating their governments, and the competition behind the scene is just as intense as it is in the normal commercial market. Large airlines in particular flex their political muscles so mightily that their governments feel obliged to defend their specific interests internationally, and even against national competitors.

Examples include the dropping of the 'price-fixing' charges brought by Laker Airways against British Airways in the US courts at the personal request of Margaret Thatcher to Ronald Reagan, just when BA was to be privatised (Gregory, 1994); the great difficulty of Virgin Atlantic and any airline other than BA in getting airport slots at Heathrow; the presence of a BA representative in negotiations on bilateral agreements between the UK and the US, and Spain's forcing of approval of state aid to Iberia by the EC.
“It’s an odd thing about British Airways, but it has always regarded the government as a 100 per cent owned subsidiary at its beck and call. Privatisation and the onset of a limited amount of competition in the skies has failed to shake the airline in its belief that its own interests and those of British people are one and the same thing” (Independent, 3 July, 1996).

Airlines also have a tendency to play the politics game and then complain when decisions go against them. Many airlines hire professional lobbyists in order to pursue their causes in political channels. American Airlines, for example, when trying to get a Chicago-Tokyo route back in 1990, hired a lobbyist (William Burhop, who had been hired in 1989 as vice president of federal affairs). After the decision to grant the route to United Airlines was made final, American complained.

“[American Airlines] accused the DOT of playing politics. But that’s like accusing the National Football League of sponsoring football games. Of course DOT played politics. It’s in Washington. It’s leader is a political appointee. And its senior officials, typically, are mid-career lawyers and political hacks trying either to hang on to their cushy jobs through ever-changing administrations or to land high-paying jobs as Washington lobbyists. So they do whatever they’re told by their political masters. And American should have known that going in. Instead, the airline put itself in a position to be outmanoeuvred, then cried “Foul!” when it happened.” (Reed, 1993, p. 260)

Another example was a medium-sized European airline which is trying to enter an alliance, attempting to gain antitrust immunity from the US and European governments in order to intensify the role that one of the partners (a major American carrier). When questioned on the matter, the manager of the European airline replied:

“...We need to hire Mr. [Lawyer] and Mr. [Lobbyist], and that will be very expensive, but they know their ways around politics. I have no doubt we will get it.” (Commercial Manager – Medium-sized European airline)
4.1.3 ‘Flag Carriers’ - the Political Leverage of their Unions

State owned carriers are abundant in Europe (Air France, Alitalia, Iberia, Air Portugal, Olympic Airways, etc.). They have received, through the years, vast amounts of state aid to cover their recurring financial losses. They are, however, facing extinction in the long term, as more liberalised regulations are implemented internationally. The EC, for example, is strongly encouraging and permitting state funding for the privatisation of airlines, and many have thus begun the fundamental restructuring and rationalisation required.

Airlines maintain yet another political dimension, which applies especially to state owned carriers, but also to many private ones - the political leverage of their labour unions. Indeed, many have been the airline executives fired for upsetting the unions. A recent example was Rigas Doganis of Olympic Airways. Despite turning the loss-making airline into profit (for the first time since the 1970s), he was dismissed “because he had incurred the wrath of Olympic’s unions” (Financial Times, 29 April 1996) when the Greek prime minister felt he could not politically afford to antagonise the populist wing of his party. Other examples include Pierre Godfroid (Sabena), and Renato Riverso (Alitalia). The fundamental problems of state owned airlines are: (1) their labour costs are artificially bloated and (2) their organisations suffer from chronic oversize and from a ‘bureaucracy syndrome’. To become attractive for privatisation, flag carriers need not only extensive and dramatic restructuring, but to be managed as commercial concerns. This poses problems. They need not only the impetus
furnished by the necessity to survive without tax payers’ funding, but the orientation and the know-how of a commercially minded management.

Politicians, by definition, do not have the independence, the solid support, the motivation, nor indeed the expert know-how required to turn airlines into efficient, and commercially proficient organisations. Hence the inertia of many state owned carriers today. “If you have a combination of strong unions and weak government you will never reform the airlines” (Financial Times, 29 Apr. 1996). The privatisation of European state owned airlines (for example) will be a long and arduous process, since in order to be attractive to private investors, airlines need to be at the very least competitive, but in order to become competitive most need first to be managed with the impetus and know-how of private concerns.

4.1.3.1 Chronic Duality of Competition Standards?

Private airlines and their governments complain about the distortion of competition that government owned carriers cause. It is true that state owned carriers are a distorting influence in the economics of the airline industry. However, given the ease with which large airlines, such as BA, manipulate their governments to promote their individual interests nationally and internationally, and given the worldwide political influence that countries such as Britain still have, it is unclear whether many flag carriers distort competition more than some private carriers.
The Americans condemn the existence of European state owned airlines while maintaining their own legislation to protect troubled carriers from their creditors (Chapter 11 bankruptcy), allowing them to undercut competitors' fares and gain market share. BA and the British government condemn them while continuing to defend Heathrow as BA's fortress against national and international airlines. KLM and the Dutch government condemn flag carriers whilst signing an individual open skies agreement with the US (despite EC opposition), diverting traffic from major European airports into Amsterdam airport. These are only examples of the duality of competition standards that politics and the political influence of airlines inflict on the airline industry. It is not unreasonable to see competing in the airline business as precisely about distorting competition in one's favour. Manipulating governments to gain official support and international influence are some of the ways of distorting competition to gain market advantage. Politics has fundamentally shaped the structure of today's air transportation industry, producing routes which are more the result of political considerations and diplomatic activities than commercial impetus.

"...The intimacy of these airlines with their governments developed a long-standing acknowledgement that consumer and commercial considerations have been subordinated to national interest and political interference". (Airports International, 1989, p. 17)

Despite the frequent prevalence of political forces over the market forces of the airline industry, there is a general increase in competition, facilitated in part by US deregulation and the European liberalisation now in progress. In some US and European markets, competition has achieved such a degree of intensity that airlines have been forced to re-structure, minimise costs and formulate new
processes of devising tactics and strategy. This encouraged some airlines to take an active interest in the procurement of market information and the strategic use of it.

4.2 The Information Intensity of the Airline Business

The airline business is one of the most information intensive of businesses. Businesses of comparable information intensity include insurance, banking and finance, and the newspapers. It is essential to understand the reasons, factors and constructs behind the strong information intensity that the industry exhibits. This understanding can be gained by examining the nature of the airline product, the characteristics of the demand that exists for that product and the basic organisation and functioning of airlines. This will expose not only the intensity in operational information of airlines, but more importantly for the purposes of this thesis, the great intensity in strategic information of the business.

4.2.1 The Airline Product

From a consumer point of view, an airline’s product is more than a seat on a flight; it is has various essential variables which influence buying decisions:
• A route network. Passengers do not fly for the sake of flying; they fly in order to reach some destination which an airline must serve, either with direct flights or with flights via intermediate points in the airline’s network;

• A schedule. As passengers normally have preferred dates of travel, many, especially the business passengers, also have preferred times of departure to their destinations. So airlines must also have an adequate operating frequency for each market they serve;

• A fare for the trip. This is the main decisive factor for economy class passengers. The airline is a very price sensitive business. (Doganis, 1991; O’Connor, 1995, Wheatcroft and Lipman, 1990)

• A reasonably accessible distribution channel. Traditional distribution channels are airline ticket counters (direct sales) and travel agents;

• Quality of service, including pre-flight, on-flight and post-flight service;

• A reasonably good safety record.

The most dictating characteristic of managing airlines is that airline seats are a highly perishable product (Doganis, 1991; O’Connor, 1995; Shaw, 1990). Ultimately, what an airline is selling to its customers is a seat on an aircraft. In order to serve a route and offer the seats in each aircraft, an airline will have invested and incurred considerable costs in ground facilities, acquiring the airport slots, ground personnel, crews, aircraft lease or purchase, maintenance, flight operations, marketing and sales, promotion of the route, distribution of the product, fuel, etc. The airline industry is characteristically a business with high fixed costs, high opportunity costs and proportionally low variable costs (Smith, 1995).
Historically, reduced real yield has been the airlines’ main lever to stimulate traffic growth, since people obviously travel more when it is cheaper to do so. This could be achieved easily without compromising profitability in the days when technological advances were cutting unit costs. With maturing technology, however, this reduction has become more difficult. Airlines are being forced to find ways to cut costs and improve productivity without relying on technological breakthroughs (OECD, 1993). The ability of airlines to control their costs is a fundamental factor in setting competitive fares. However, they have little influence on several of the major factors affecting the costs of providing seats. Some, such as the cost of fuel, are fixed externally; others, such as labour costs, are determined largely by the history of each carrier. Little flexibility remains to affect airline cost structures. (OECD, 1993)

Considering that an aircraft has been allocated to operate a specific route on a scheduled basis, variable costs vary marginally with the number of passengers on board the aircraft. This means that once each aircraft takes off for its destination, all the unoccupied seats represent not only irrevocably lost revenue, but costs which remain uncompensated. This means that opportunity costs are high, as the aircraft and crew, being highly mobile resources, could always have been deployed elsewhere. As the number of passengers on board increases, the more revenue the airline has to offset the high fixed costs that it incurs. Therefore, the airline business is highly leveraged in the sense that once the break-even point of the flight is covered, the profits raise exponentially. Conversely, when business is
poor, airlines can consume vast amounts of capital in a matter of days. It is a very sensitive business. As a senior manager of a large American airline commented:

“If I had got just one or two more business travellers on our planes last year, we probably would have doubled our profits. That’s how sensitive this business is.”

In 1993, IATA (International Air Transport Association) calculated that if the average international ticket had sold for just US $14 more, the world’s airlines would have broke even instead of losing a combined US$ 11.5 billion (Markillie, 1993).

Figure 2 illustrates the sensitivity of the airline industry. In a deregulated market such as the US, the fluctuations in both in unit costs and yield per passenger are volatile as competitive forces and environmental conditions affect airlines. In the five years prior to 1994 the airline industry as a whole lost more money than it has
ever earned since its emergence 75 years ago. This sensitivity is increasing with
the intensification of competition in many world markets.

"Because they are both capital and labour intensive, and because they are very
sensitive to changes in consumer spending, airlines are inherently volatile and
highly cyclical enterprises. Even in the very best of times, their high costs of
operation and ownership prevent their operating margins from rising much above
the Standard & Poor's 500 average. And, in bad times, airlines can consume
incredible amounts of cash in the blink of an eye". (Reed, 1993, p. 242)

"The airlines provide vivid case studies in corporate strategy. The terrific sums of
capital at stake and the numbing repetitiveness of their operations make airlines
uniquely sensitive to the commands of management. Even a question of
substituting chicken parmesan for chicken divan becomes a vital corporate matter -
to say nothing for deciding to which continents an airline should fly, what fares it
should charge, how many jets it should buy, or whether it should assent to the
demands of a union or instead allow employees to go on strike. The thinness of the
industry's margin of error is evident in how many names have vanished from the
roster: Eastern, Pan Am, People Express, Frontier, Braniff, and Air Florida, to
name some whose unhappy fates we will follow in this book." (Petzinger, 1995, p.
xix)

An airline's output (a seat on a flight) cannot be as closely inventoried to match
fluctuations in demand as most physical products. The basic unit of production for
airlines is the number of seats that each aircraft carries. The airline product is also
hard to differentiate; it is largely a commodity. What the passengers are buying is
in essence a seat on an aircraft which will transport them safely to their
destinations. One airline seat is very much like another, and one freight hold is no
different from the next. Consequently, airlines go to great and costly lengths to
differentiate, or to build the image of being different from the other competitors
(Doganis, 1985).

"I am selling a seat, the same seat that maybe five other carriers of the same route
sell. I could blindfold you, walk you down a jet, seat you on a seat, and you would
not know if it was mine, carrier X, Y or Z". (International Sales Manager - large
American airline)
“The air travel industry is like the banana business. Airline seats are a commodity - despite heroic attempts at differentiation, passengers think one airline’s seat is very much like another’s - and when a plane takes off with empty seats, the commodity is spoiled”. (Smith, 1995, p.26)

Airlines find great difficulty in differentiating their products. This is not because of lack of variety in attributes to manipulate, but because differentiation efforts are either easy to imitate (e.g., in-flight food), or far too expensive to produce and involve high levels investment and risk (e.g. high frequency of flights, last minute availability, etc.). Therefore, airlines’ product specifications are fairly homogeneous in each market segment.

The narrow tolerance for errors in airline management caused by a perishable product, high fixed costs, difficulties in differentiation and price sensitivity puts a very heavy emphasis on the strategic management of airlines. It pressurises airlines into constant information osmosis with the business environment and creates a dependency on external information. It is therefore vital, in competitive markets, that airlines acquire, process and use information about the markets in which they compete, about the potential customers of those markets, and most importantly, about their competitor's tactics. All of this information is highly volatile and changes daily. Effective day-to-day market-specific tactics are essential for airlines to succeed in competitive markets.
4.2.2 The Airline's Markets

Another salient characteristic of the airline business is the large number of markets that airlines serve. Each city or combination of cities served represents a distinctive market since demand for travel in each market is influenced by forces specific to each market. The different markets are also direction-specific; each city-pair served by an airline represents two distinct markets. On a given route (e.g., London to New York) there are two distinct markets: London-New York and New York-London. Return tickets to London sold in New York (which are normally US-originating traffic) are affected by different market forces from those influencing passengers buying return tickets in London (which are normally sold to UK-originating traffic). Often there are great differences in pricing and yield management (capacity allocated to the different subclasses) between the two sets of originating traffic.

The average international carrier serves in excess of one hundred different cities all over the world, many of them several times a day. Each city generates a whole host of information, which must be used to fill the many different tactical parameters that have to be adjusted daily. This generates an intensity of operational information with which to co-ordinate resources and logistics of the fleet, crew and ground personnel, to account for each individual sales transaction with each passenger, point of sales and distribution channel, etc. It also generates vast amounts of strategic information about variations in sales for each different subclass of service (many airlines operate over 15 subclasses of the economy class and 3 or 4 subclasses of the business class), which represent variations in demand.
from each market segment. It generates information about competitors’ tactics in each of the different cities (pricing, scheduling, frequency, promotion efforts, etc.), and generates information about the different economic and political climates that exist in the different countries in which the airline operates.

Another characteristic specific to each market, is the structure of the distribution chain. In most world markets, the distribution of airline products is largely (typically 70-85 per cent) in the hands of travel agents. However, very different types of agents constitute the travel agency community and their mix is specific of each market. Each type of agent has specific types of customers. Airline managers balance the mix of agents in which to promote and market the airlines’ products, with the demand in each market for travel to its home country, to other destinations in its network and the product specifications it offers in each market.

- **Retailers** – these are agents which have no specialisation, sell a wide mix of traffic including some business passengers, some tour operator products (commission-base), and leisure “seat-only” traffic;

- **Chains of retailers** – These are either sales outlets of one company, or associations of retailers. In both cases they are managed centrally; they have large volume of business and cover large and important geographic areas of demand. Therefore, they have great bargaining power with airlines for commissions;
- **Tour Operators** – These are agents which buy seat capacity from airlines (work with a high component of charter capacity), and package it with hotel rooms, car hire, excursions, activities, etc. They are often large in size, sometimes vertically integrated having a charter company and a chain of retailers (e.g. Thomas Cook). Many are also specialists in particular destinations, and thus very important for some airlines. They normally have great bargaining power with the airlines whose home countries are mostly tourism destinations (e.g. Portugal, Greece, Spain, etc.). Tour Operators need low fares in order to produce packages in such an extremely competitive business, which operates with very low profit margins (Shaw, 1990), and can often use charter capacity as an alternative to scheduled capacity.

- **Consolidators** – These act as sales brokers for the travel agents that have no IATA certification and therefore need a licensed sales outlet to issue airline tickets. In countries where the travel agency community is very fragmented, there are many agents that do not have enough volume of business to become IATA certified. Consolidators typically are the agents which get the lowest fares from airlines (10-20 per cent below the Tour Operator level) in some markets airlines build their own consolidating operations in order to retain the revenue from the fare level differential.

- **Business specialists** – specialise in business travel, and often have contracts to act as travel managers for large corporations;
- **Business Chains** — chains of business specialists which are either sales outlets of a company (e.g. American Express), or associations of business agents. They are normally centrally managed;

- **Incentive houses** — these are specialists in business conferences and company incentive trips;

- Business specialists, chains and incentive houses, because they specialise in high yield traffic, are the agents that get the highest incentive levels from airlines. In order to penetrate these distribution channels significantly, airlines need to have not only high quality products (schedule, set of destinations, frequent flyer programs, business lounges, etc.), but a large presence and volume of business in the market in order that the incentives the airline is able to provide constitute significant revenue for the agents.

- **Activity specialists** — These are agents specialise in activities such as religious events, Golf, cultural excursions, etc. They too package airline seats with other products such as hotel, car hire and the respective activities and get low fares from the airlines;

- **Ethnic Agents** — Specialise in selling travel to emigrant communities of certain countries. These are normally loyal to the national carrier of the respective countries and constitute a solid source of market share for some airlines,
Another obvious market force is the competition provided by other airlines. The same airline constitutes different competition even for the same route, where airlines operate in both directions. British Airways, for example, as the national carrier, has a stronger competitive position to sell in the UK than in the US. BA manages sales to passengers originating in the UK through its sales offices in the UK. These promote and manage the sales of their product by UK points of sales, while the sales offices abroad will promote and manage sales to passengers originating abroad which visits England, or flies via the UK. That is the norm of sales management in the airline industry.

BA has much more presence amongst corporations and travel agents in the UK, because it doesn’t just sell the US as destination, but a few hundred other destinations in its network. Therefore it uses different strategies in the markets at each end of the routes. Given that agents operate on commissions, the revenue potential of commissions that BA is able to give them in incentive programmes is more significant to the agents (in proportion to the operating revenue of each agent), than that of a foreign carrier. This is because a foreign carrier operates fewer destinations from the UK than BA, and therefore sells fewer passengers in the UK, constituting less operating revenue from which the travel agents earn their commissions.

Some airlines use price leadership tactics to decrease the adversity of foreign market forces; others use aggressive incentive programmes to agents. Other airlines simply focus on sales in their home country, when it constitutes a large enough market in itself for demand to some destinations to fill up flights in both
directions. Others yet, focus on foreign markets as sources of 6th freedom traffic. They compete with the national carriers of the foreign countries in a set of destinations they deem relevant for the demand that exists in each foreign country. KLM (The Dutch airline), for example, has a small home market. So, it uses demand in foreign markets to feed its flights departing from Amsterdam. It uses Amsterdam as a hub. KLM compete for example on the Lisbon – London route, even though they do not operate it directly. KLM uses, amongst other flights, their flight from Lisbon to Amsterdam, to feed their flights from Amsterdam to London. The same applies for long haul flights. This strategy demands good connections in the hub airport, expert yield management and extremely responsive pricing because, in such a price sensitive business, it is not possible to compete with direct flights if the indirect flights’ price is not lower (typically 15-20 per cent lower). A successful 6th freedom operation means that the airline operating in foreign markets will have a larger presence that if it was selling point-to-point traffic from that country to its home country. The complexity of the specific market forces of every market is such that airlines are forced not only to treat each market as an individual set of market forces, but to acquire, process and use vast amounts of market information in order to remain competitive.

4.2.2.1 Airline Market Segments

In the airline business there is a link between the difficulty of differentiation and the information intensity of tactics and strategy. The difficulty of differentiation puts yet more emphasis on acquiring information about competitors’ products, pricing and distribution tactics. This can be illustrated by analysing how airlines
in general target the different market segments. Basically there are two main market segments: premium traffic, and non-premium traffic. The two impose very different demands on the airlines.

Non-Premium Traffic

Virgin Atlantic provides a mild differentiation with its well promoted image, 'premium economy class', more in-flight entertainment, food and service, and a wide variety of duty-free products - and charges substantially lower fares than its competition. This, however, is possible only for airlines with a low cost structure and when they are competing against higher cost carriers, because a low cost 'no-frills' airline will have yet lower prices which will appeal to a price sensitive segment. This 'hard to differentiate/high sensitivity to price' environment encourages airlines to be extremely tactical, changing prices, availability and the combination of sub-fares daily so that they fill their aircraft and maximise the average yield per passenger in balance with the amount of revenue each flight generates. This, in turn, means that they have to keep extremely alert for changes in competitors' tactics. This means an active procurement of competitor and market information to be utilised in constant tactical adjustments.

Premium Traffic

The high yield traffic is composed primarily of business travellers. To achieve the kind of differentiation needed to target business travellers, airlines have to invest heavily because the business traveller has different and more demanding needs. Because this type of traffic is very precious to airlines, there are some airlines
which are structured completely around the business traveller (e.g., American Airlines). The standard of product specifications is inevitably proportional to the importance of this type of traffic for airlines. In essence, the business passenger is not so sensitive to price (normally the employer pays for the trip), but demands product features which are expensive to provide:

- high frequency of flights to each destination (which creates a risk of over-capacity).
- a large route network (which only large carriers have the resources to develop).
- a frequent flyer program with wide coverage.
- unrestricted fares - the ability to ‘no-show’ without penalty, or to cancel at the last minute, or to travel on another carrier. This means a risk that the aircraft will depart with empty seats which could have been filled, and that the passenger will decide that he/she will fly on a rival carrier, giving it the revenue which the initial carrier took the risk to obtain;
- last minute availability - business travellers normally do not book long before the trip. Holding available seats until the last minute increases the risk that they will depart empty.
- Much larger seats with more leg-room (which reduces the payload of the aircraft), increasing the opportunity costs of the space in the aircraft and increasing the units by which revenue increases. This exposes the airline much more to the revenue sensitivity of the business.
Although business passengers generate much higher revenue, the targeting of this sort of traffic for an airline means a heavy investment and incurring a substantially higher risk than the targeting of economy passengers. Any airline gets full fare business traffic regardless of whether it specifically targets it or not, but in order to get a constant feed of premium traffic, airlines must focus on the business segment. This combination of heavy investment and high risk constitutes an extra high pressure for airlines to research their markets well, to acquire, process and use vast amounts of strategic information in their strategic efforts. It increases the airline’s incentive to invest in forming relationships with the business traveller, either individually through frequent flyer programs, or collectively through ‘preferred carrier’ negotiations with corporations. It also strongly encourages airlines to study the business traveller’s buying behaviour and travel trends very closely. Airlines successfully focusing on this market segment (American Airlines, British Airways) accumulate and process vast amounts of information not only to form relationships with customers by increasing the loyalty of the customer base, but to make statistical predictions to incur a more calculated risk in the revenue management of flights.

4.2.3 Characteristics of Demand

“A thorough appreciation of demand must be used to develop traffic and other forecasts, since every activity within an airline ultimately stems from a forecast”. (Doganis 1985, pp. 20-1)
The demand for air travel is a derived demand. It is dependent on the various activities associated with trips. Air transport is what economists sometimes call an 'intermediate good' because most people use air transportation as a means to achieve some other purpose (O'Connor, 1995). Very few passengers fly merely for the sake of flying. A sales manager of a major American airline said:

"Nobody flies because they love to fly. You buy a telephone not to have it hang on your wall, but to provide you with a means to talk to somebody. The airline is the means to get some place."

Consequently, when trying to estimate passenger demand, it is necessary to study the various components of demand for each particular destination. As a consequence, there has been strong pressure on the airlines to expand vertically into other areas of the travel industry, such as hotels, travel agencies, car hire or tour organisers, in order to gain greater control over the travel product (Doganis, 1985). Demand for travel-related products is highly dependent on the consumers' disposable income. This, in turn, depends of the overall economy. Very few goods in the economy are as responsive to income as air transport (Tretheway and Oum, 1992). There is general agreement among airline forecasting experts that the income elasticity for air travel is between 1.5 and 2.0 in different markets (Wheatcroft and Lipman, 1990, p. 127). This means that a growth of 10 per cent in the economy would typically bring a 15-20 per cent traffic increase for the airlines. However the consequences would be disastrous for the industry if the economy regressed by 10%, giving a typical decline of 15-20%. This means that airlines must also keep themselves informed about economic trends in the various markets that they serve. This sensitivity, however, has a more direct impact with the leisure traveller. Business travel is less sensitive to disposable income. It is
affected by disposable income indirectly through the effects that variations in consumer spending have on corporations. According to a sales manager of a major American airline,

“The good thing about the business traveller is that if someone has business in a city, they are going to travel there no matter what the circumstances are. The leisure traveller is more sensitive to things like disposable income, weather, security threats, etc. But these guys just have to be there. The technicians have to go service the equipment, they need to go sell a product for a manufacturer, etc.”

Historical analysis has shown that the industry’s traffic pattern, like the economy, is cyclical. This creates problems in strategic planning - it is difficult to anticipate a downturn cycle with enough time to alter the capacity offered by airlines. On a number of occasions in the past, aircraft orders have been based on optimistic forecasts and placed in periods of upturn, but deliveries have come in periods of economic downturn, when the airlines need them the least. The acquisition of new aircraft involves long lead times. Orders for new aircraft are often placed years before delivery.

“Looked at from a distance the commercial aviation industry looks comfortably predictable, traffic growing in line with the world economy and boosted by lower real fares. ... GDP and air traffic are closely linked. They reflect the same things - the level of disposable income, the value of leisure time, the globalisation of corporations, for example; GDP itself increasingly depends on the level of activity in the tourism and travel business. ...The timing of the business cycle varies greatly from region to region” (Nuutinen, 1996, p. 16)

Also, demand for airline services varies by season, month, week, day, and time of day. To accommodate peak demand, airlines must acquire additional assets, facilities, and personnel. These added investments lead in turn to higher average operating costs because the additional resources are under-utilised during off-peak periods. Airlines are often tempted to acquire more aircraft to accommodate the
higher demand of peak seasons and hope they can still fill the aircraft in the low season. More often than not, this turns to over capacity. Furthermore, because airlines provide a scheduled service, they cannot add or discontinue flights to match short-term variations in the level of demand.

The seasonality of demand is specific to each market, and within each market it is specific to the segment (business travel, leisure), and it causes demand to vary by time of year, month, week and day. To accommodate the seasonality of each market and of each of its segments, many airlines are compulsive accumulators of historical data, so they can make statistical predictions. The market specific seasonality when multiplied by the number of cities served by an airline means yet another sea of information which airlines must acquire, process and use in order to keep within the narrow boundaries of the margin for error of the industry. Finally, another important characteristic of demand is that airlines are in competition with other modes of transport. However, the longer the distance of the trip, the stronger the inclination to opt for air transport. In Europe for example, trains are increasingly a strong alternative to air travel. Some also see electronic communications equipment such as teleconferencing, fax machines, video-phones, etc., as a substitute for air travel, but the magnitude and significance of this type of competition is still unclear.

4.1.4 Airline Competition

The marginal costs of adding an extra passenger to a flight are negligible. Thus airlines tend to use marginal costing to maximise the revenue each flight
generates. This is done by offering highly discounted fares in order to fill aircraft. Marginal costing by airlines has been behind the frequent fare wars. This, in turn, pushes yields down, as consumers shop around more intensively for such discounted fares (Doganis, 1985, pp. 20-1). The result is:

"...vicious, endless fare wars that in most businesses would quickly thin out the players, but that in airlines - the commodity with sex appeal - have helped produce a record chaos and wreckage rare in any industry and almost incredible in one so important to the nation's and world's economy". (Smith 1995, p. 27)

To maximise revenues, it is in the interest of airlines to use marginal costing to sell only those seats which would otherwise have taken-off empty. This demands very accurate market segmentation and a precise prediction of how many seats will be sold in each flight at normal fares, as well as timely information on competitor's tactics. Many airlines turn to sophisticated yield management and market segmentation techniques to fill seats, which would have otherwise remain empty, with discounted fares and last minute bargains. To acquire information about competitors' tactics, airlines use the sales offices they have in the various countries. Because of this combination of high fixed costs, low variable costs and a perishable product with such price sensitive demand, allied to large units of production and the high revenue leverage, airline competition is difficult. In competitive markets, vicious fare wars are frequent, combined with high commissions to travel agents to shift market share and confidential pricing to complicate competitors' reactions (these will be dealt with in the next chapter). The nature of airline competition is such that some think fair and constructive competition is not possible:
"By contrast, the new view says that the trouble isn’t bad luck; it’s the very nature of the business - and that means the trouble is not going away. ...the argument goes like this: no matter how many employees or labour concessions negotiated, the fixed costs of aviation - planes, fuel, facilities - are destined to remain relatively high. The marginal costs of adding a passenger on a partly filled flight are negligible. So you needn’t charge much to make that perishable product worth something. The result is that last year 92% of airline passengers bought their tickets at a discount, paying on average just 35% of the full fare. In an industry with high fixed costs and low marginal costs, competition may produce a market share that never settles down. Economists say such a market has an ‘empty core’” (Smith 1995, pp. 28-9).

What sort of competition is possible remains to be seen. The main conclusive thoughts from the general analysis of the nature of the airline business are that:

- the airline business is a complex activity;
- it is extremely information and decision-intensive;
- the characteristics of the industry and its product are such that airlines have to acquire, process and use strategically vast amounts of external information;
- Airlines’ strategies are frequently adjusted by day-to-day tactical decisions.
CHAPTER V

COMPUTER RESERVATION SYSTEMS

5. Computer Reservation Systems

The emergence of CRS marks an important stage in the use of information by airlines. Automating reservations was the beginning of a learning curve which would take the airlines to the high level of sophisticated competition which they enjoy today. CRS are the base of most strategic information systems and data in use in the industry today. Reservations data constitutes a rich source of competitive and market information. Also, airlines began to achieve greater levels of understanding about their business through gradually using the information generated by these systems as a resource to fine tune their tactics. In short, CRS represent the main force behind a learning curve that took airlines from using information purely for automation purposes to using information as a resource not only for the fine tuning of market tactics, but for the advancement of their strategic thinking.
This section takes an evolutionary approach to analysing the development and the role of CRS in the airline industry. It starts by discussing the birth of CRS in the US in the early 1960s and the motivations for their development. It then analyses the process of retail automation that took place from the early 1970s and began exposing the strategic potential of CRS to airlines to the point of raising regulatory attention. It then focuses on the international proliferation of CRS technology in response to the American experience. At this point regulation stepped in. CRS technology and the role of CRS began to mature. With the maturity of the role of CRS in the industry, the nature of the relationship between airlines and computer reservation systems was transformed into a strategic symbiosis of some sophistication. This is the subject of discussion that follows. Finally, the last part of this section conceptualises the evolution of the computer reservation systems in the airline industry and points to implications for airlines’ strategic use of information, which will be the focus of the rest of the chapter.

5.1 The Birth of Computer Reservation Systems

American Airlines envisioned an automated reservation system as early as 1958. It set out to establish a real-time data processing system that would enable it to access the reservation details of any passenger at any of the company's locations. The existing procedure was slow, cumbersome and wasteful of labour. Travel agents could sell seats only after they had confirmed availability for each individual flight. This was posted on the office notice board. When a reservation was made, the travel agent notified the airline's central reservation office and then filled in a passenger name
record (PNR), which was then sent to the reservation office. The central office monitored seat availability; when this dropped below a certain level, it would send out a note to all the agents to tell them to stop selling seats. This, too, was posted on the agent's notice board. Discrepancies between the number of seats booked and the PNRs were frequent, resulting in under-booking or over-booking of flights, with consequent loss of revenue and customer satisfaction. The company's motives for developing a way to automate this activity were operational. A substantial increase in the efficiency of the system was vital if the company's operations were to grow.

The inadequacies of the system escalated with the growth in air travel and the expansion of airlines operations. In 1955, American Airlines ordered 30 Boeing 707s, and 25 Boeing 727s in 1961. The increased seat capacity that these aircraft brought heightened the importance of control over seat inventories and reservations. The most acute problems were in the high frequency short haul routes when jet services were introduced in the early 1960s, where a high volume of reservations had to be processed in a short period of time (Copeland, 1990). The beginnings of Sabre (American Airlines' reservation system project) were humble and problematic. Part of the problem was that senior management did not understand computers and discounted their importance (Reed, 1993). Therefore, there was little enthusiasm for spending the kind of money necessary to upgrade and modernise Sabre (Semi-Automated Research Environment) to keep up with the rapid developments in computer technology. Also, there was conflict between departments:

"Marketing and Finance, the two driving forces that might have been expected to be the driving forces behind the development of computer technology, had failed to provide the leadership necessary to progress. The finance department was directly responsible for American's data processing operations. But the marketing department actually determined the extent to which Sabre would be developed,"
through its control of marketing technology research and development funds. In fact, rather than being a focal point for co-operation, Sabre for years had been a pawn in the feudal war that had raged between American’s marketing and finance departments”. (Reed, 1993, p. 62)

The result was that Finance bought 1,000 computers, but couldn’t get approval to fund their installation, so they ended up in the basement. The solution to the problem came when Max Hopper (head of the Sabre project) stopped Bob Crandall (American’s chairman) in the street for a two-minute meeting to alert him to the situation (Reed, 1993). It took IBM and American Airlines six years to develop the first version of the computer reservation system - Sabre -, with the system coming on stream in 1964. TWA and United Airlines were quick to follow in commencing the development of their own systems. At this period, all these were universally regarded as labour and time saving systems for handling large and growing amounts of reservations data. The project between American Airlines and IBM would undergo a first mover learning curve in reservations technology development, and would serve as a reference for the rest of the industry and show that it was technically possible to automate reservations. IBM, too, gained valuable experience in the Sabre project with American Airlines.

"By 1965, the IBM Sabre projects had demonstrated that real time teleprocessing was a viable solution to the core problem of passenger reservations. The early experience spurred the principal developments of the late 1960s: (1) the desire of IBM to exit the custom system PNR business and earn a return on its investment by marketing a PNR product to other airlines; (2) the desire of Eastern, TWA and United to acquire PNR systems to keep pace with their rivals. The increased capacity of its System/360 computers encouraged IBM to include innovations from the Sabre projects in a standardised airline reservations product. The managers of all airlines sensed the importance of systems with PNR functionality”. (Copeland, 1990, p. 118)

IBM then began to leverage its experience from the Sabre projects into the development of its own reservation system - PARS (Programmed Airlines Reservation System). This system would not only promote sales of the
System/360 hardware to airlines, but would also free the company from the time consuming, risky business of developing custom reservation systems. To maximise the size of its potential market, PARS was aimed at the functional requirements and transaction volumes of medium size carriers. By 1965, Eastern had decided that it too needed an automated reservation system with PNR functionality. So, it set out to improve and expand the IBM PARS software with the help of strong technical expertise recruited from Delta. In 1968 ‘Eastern-based PARS’ as it became known, was installed in Eastern’s new data centre in Miami. It became a technological standard for large-scale reservation systems.

Both TWA and United tried to build comprehensive custom systems that went far beyond PNR functions, and even exceeded the original goals envisioned for American’s Sabre. But they both failed because they lacked experience with the technology and its application. Both carriers were then forced to seek alternative solutions to their reservations problems as rapidly as possible (Copeland, 1990). In 1970, both United and TWA arranged to purchase Eastern’s software and contracted IBM for assistance with the accelerated implementation processes. By the end of 1971, TWA had successfully installed the system (TWA continued to call it PARS). United called the solution to its reservation problems Apollo.

By this time, American was already beginning to utilise data, which the reservation transactions generated, to fine-tune its operations and to focus its marketing strategies. The first benefits from the automation of reservations would be increased processing speed, which permitted the system to be more productive, and increased accuracy of seat inventories. The new accuracy of passenger inventories, which the automated
system delivered, allowed the airlines to begin ensuring that flights were not under-booked, by knowing accurately how many reservations were made to a particular flight, and thus how many seats remained available. The experience of a more accurate reservation system also showed that flights could in fact even be overbooked in order to maximise load factors. It is typical of the airline industry that there is a proportion of passengers who make reservations but who do not turn up for flights ('no-show'). So, it is conventional wisdom today that if flights are not overbooked then they take off with empty seats which can be filled by overbooking. Accurate reservation processes are the origins of overbooking policies and, in turn, controlled overbooking of flights constitutes the origin of today’s extremely sophisticated revenue management systems. The above skills already represented something more than the most obvious use of the technology - the use of the information that the technology generated.

"[These] capabilities were skills that took time to perfect, and the early innovators’ accrued experience was more difficult to imitate than their technology." (Copeland, 1990, p. 125)

5.2 Retail Automation

The stimulus of retail automation had two basic components:

(1) After having automated their internal reservation systems, airlines saw the potential for further increasing the efficiency of the system. The new bottleneck of the reservation process was that travel agents still had no idea of the airlines’ seat inventories unless they contacted them. This would mean
that airlines would still need to employ armies of telephonists to answer the reservation calls, and that many of these calls would be for flights which would already be full, adding to the inefficiency in the cost of issuing a ticket;

(2) Airlines realised the opportunity for offsetting the costs of developing the internal systems and maybe making some profit from them by charging the travel agency for the use of a retail automating reservation system. If airlines could install links to their internal reservation systems in the travel agencies, then the travel agencies too would benefit from a great increase in efficiency. They would no longer have to go through the OAG publications (Official Airline Guide) - the size of a telephone directory - in order to find out which airlines flew where and then call them to make the reservations if they had availability. Agents would simply have to fill in the transaction parameters in the terminals and let the system do the rest. This would mean that the number of reservations an agent could make in a year would increase greatly.

5.2.1 Industry's Attempts to Automate

In 1972, the president of ASTA (American Society of Travel Agents) approached CDC (Control Data Corporation - a computer vendor) to propose a joint development effort of an integrated travel agency system. Such a project was considered technologically feasible and financially desirable. The proposal called for a central reservation system, based on IBM computers but owned by CDC, to provide reservations and ticketing facilities to travel agencies on a subscription basis (Lundstrom, 1987).
Travel agents represented a small but growing part of the airlines’ distribution chain.

Airlines became uncomfortable at the prospect of a computer vendor owning the access to travel agencies. The project would have meant that airlines would be charged by CDC and by travel agents for using distribution systems. This was a serious threat. The counter action was instigated by American Airlines, which proposed a task force comprising airlines, hardware suppliers, and ASTA members to consider a Joint Industry Computerised Reservations System (JICRS).

“In a perfect world, Crandall would never have pushed for a system jointly owned by all airlines. He would instead build his own system, Sabre, available to individual travel agents for subscription. But Sabre was still recovering from its years of neglect, and American’s finances remained lacklustre at best. Moreover, if American began hooking travel agents up to Sabre, United would undoubtedly begin to do the same, but with its more powerful system and financial resources that Crandall could only dream about. By urging the creation of an industry wide network, Crandall would score two victories, blocking the travel agents from establishing their own system, while preventing United from forging a propriety link with them. And for good measure, in the creation of the single system, United, as the largest airline in the industry by far, could be expected to shoulder the greatest share of the development expense. ... At United, Dick Ferris shared Crandall’s view that the agents should never be permitted to establish their own computer reservations network, but Ferris had figured out Bob Crandall’s game and looked warily on the idea of creating a single system owned by the airlines”.

(Petzinger, 1995, p. 69)

To entice travel agents, American offered an additional one percent commission on the value of their ticket sales in return for delaying development of the CDC system and participating in the JICRS study (Copeland, 1990). And so the JICRS project began. For two years the task force studied the feasibility of such a system. In 1975, the JICRS technical team concluded that a joint system was technically feasible and economically viable. Because the development costs of the system would be allocated in proportion to the passenger volumes of the carriers involved, United Airlines, being the largest carrier, would shoulder most of the financial investment. This led United to be the most conservative participant. It considered the projected economics of the
system excessively optimistic. American Airlines, through Max Hopper’s leadership of the project, detected that there was a distinct possibility that United would abandon the joint effort and opt for marketing its Apollo system to the travel agency community. So, American began planning for the marketing of its Sabre system, using the findings of the JICRS project as a reference.

“Crandall had ordered his field managers to listen for ‘competitive intelligence’, demanding that they pass along anything they might hear about what United was telling travel agencies. Max Hopper had learned that United was warning travel agents away from an industry wide system, vaguely promising that it would soon have something better to offer them. So, while they were publicly promoting the industry wide alliance, Crandall and Hopper were privately developing plan B, a strategy for having Sabre terminals, rather than a jointly owned system, installed in any travel agencies willing to pay for the equipment. The development costs would be huge, but Crandall would come up with the money somehow. This was the future. American, he believed, had no choice.” (Petzinger, 1995, p. 71)

5.2.2 The Independent Marketing of CRS: Apollo vs Sabre

During 1975, United finally concluded that investing in the marketing of its Apollo system to travel agents would make economic sense. In January 1976, United announced its withdrawal from the JICRS project and its intention to make its Apollo system available to travel agents and installed four terminals in different locations, mainly to establish whether any service enhancements to the system were required. The prospective JICRS development co-operation ceased in 1976 when American and United began marketing their systems competitively. Retail automation developed concurrently with airline deregulation. After 1978, the marketing potential of the systems complemented the market threats and opportunities accompanying the new competitive environment. Airline deregulation spurred a competitive vitality into the
leasing of automated reservation systems to travel agents. United's advance warning of its installation plans gave American some advantage. United was confident that its system had a 3-year technical superiority over its rivals (Petzinger, 1995), which would prove a sustainable competitive advantage in the race for retail automation. But American attributed rather more strategic importance to the marketing of the reservation system to travel agents, hoping that significant revenues would be generated by the leasing of systems which increased the productivity of travel agencies. The company installed more than 130 terminals that year.

The differential in the attribution of strategic importance to retail automation between United and American was vast. For example, whereas United assigned the responsibilities of marketing Apollo as an additional duty of its field sales force, resulting in a relatively low level of promotional leverage, American established travel agency automation as a separate unit and invested heavily in its marketing. Also, by basing a downsizing effort on seniority, United made redundant some 30 PARS programmers (many of these were immediately hired by American), which meant the loss of a significant part of the airline's expertise in data processing (Copeland, 1990).

Another force behind the great importance attributed to retail automation was that American Airlines felt their reputation would suffice to be the preferred carrier of many travel agents if American's schedules were available to them. However, AMR (American Airlines) reasoned that this outcome would be unlikely if Apollo was the system in use. Because retail automation meant that travel agents would have to pay for the leasing of the equipment and subscription fees, it was unlikely that they would subscribe to two systems when agents could do their job with one. Additionally,
because at the time the systems would include only the vendor airline’s flights, if the agent subscribed to the competition, the agent would tend to use the most efficient way of making the bookings rather than going through the OAG lists and calling the other carriers. This would mean that American’s schedules were ‘less available’ than, say, United’s, leading to a potential competitive disadvantage.

So, American started targeting large and geographically strategic travel agency locations, which produced a halo effect on the demand for the system. The first 200 installations were motivated by fears of loss of revenue to United. The salient intention was revenue retention. Experience from the initial installations demonstrated to American that although travel agents were leasing less hardware than expected, thus generating less revenue than expected from subscriber fees, retail automation was generating revenue rather than merely retaining it. The original estimation had been that the first 200 installations would contribute $3.1 million annually in incremental passenger revenue. The return on investment had been projected to be 6 per cent without incremental revenue and 67 per cent with incremental revenue included. Even before the first installation effort had been completed, the estimate for incremental passenger revenue was revised to $20.1 million, resulting in a return on investment exceeding 500 per cent.

"What began as necessary competitive counter to a precipitous action on the part of a major competitor has now evolved into a project of significant financial magnitude to American Airlines. Further, it is occurring at a time when we are threatened with major regulatory changes which potentially could lead to a situation in which the marketing information provided and even a limited control over the distribution mechanism could prove invaluable." (U.S. District Court AA080717)
5.3 Early Strategic Uses of CRS

The airlines in the best position to observe and comprehend the heightened role of information were American and United Airlines. These carriers came to recognise that reservation systems were not merely operational tools, but could be used as a means for influencing and ultimately controlling the deregulated market. By 1978, American Airlines was faring none too well in its battle with United for market share. This was thought to be because United had a better route structure. So, American Airlines devised the co-host system whereby other airlines were given preferential treatment in the display of flights on the Sabre system, upon payment of a fee. Five airlines, which had route structures that complemented that of American Airlines joined the system. Thus, American's network of routes was, in effect, increased and United had to fight back with a similar system. The screens of the two systems now showed the host airline's flight first, then the co-host airline's flights, then those of the airlines not thought to be a direct competitive threat, and finally the remainder.

Research has emphasised the crucial role played by screen position. It has been shown that on a busy route there can be many screens full of information. However, as many as 50 per cent of ticket sales are made from the first line on the first page, and 70-90 per cent of all sales are selected from the flights listed on the first screen (Gialloreto, 1988). This information display bias was to prove extremely profitable. More important still from a strategic and financial point of view, carriers could use the system to penetrate the home territory of co-hosts. Research has also detected a 'halo effect', which is the systematic tendency [of travel agents] to book a disproportionately large share of revenues on the vendor airline (US DOT, 1988). If an airline has the majority of travel
agents in a city linked to its reservation system, then the local agents will be more likely to book passengers on that carrier, even if this means taking a connecting flight, because the host offers no direct services. There were many selective campaigns targeting strategic geographic locations.

The competition for the revenue and market share benefits of the 'halo effect' was intense; though the ethics were debatable, the effort was often well rewarded. By 1980, Sabre was to return a net profit of $300.2 million on total revenues of $339.3 million (US District Court AA035416). American Airlines’ 1982 budget for retail automation called for spending at an annual rate of $20 million. This expense was justified with a projected return on investment in excess of 500 per cent and the recognition that the company had been able to increase its influence over the flow of passengers through the air transportation network in a manner most beneficial to American (U.S. District Court AA072613). In 1985, American's profit from Sabre was thought to be $143m on revenues of $336m. Such profit levels led American's chief executive officer, Robert Crandall, to admit that if forced to chose between Sabre and the air transport business, he would have to keep the information technology business (Sabre) and sell the airline (Lawless 1989). The development of an automated reservation system to solve the efficiency problems of American Airlines assumed such powerful strategic importance in the industry because it generated such extraordinary demand and return on investment - enough to be regarded as a very viable standalone business. The following tables illustrate the extraordinary viability of the Sabre and Apollo investments:
Table 2: Projected cash flows generated by airline computer reservation systems ($ millions):

**Apollo**

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<tr>
<td>Booking fees</td>
<td>173.4</td>
<td>191.2</td>
<td>205.1</td>
<td>224.3</td>
<td>238.4</td>
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<td>Other participant revenues</td>
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<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
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<tr>
<td>Subscriber fees</td>
<td>95.3</td>
<td>98.3</td>
<td>101.2</td>
<td>104.2</td>
<td>107.2</td>
<td>110.2</td>
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<tr>
<td><strong>Total cash Revenues</strong></td>
<td>270.6</td>
<td>291.4</td>
<td>306.3</td>
<td>330.5</td>
<td>347.6</td>
<td>364.2</td>
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<td><strong>Cash Expenditures</strong></td>
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<tr>
<td>Operating expenses</td>
<td>69.5</td>
<td>74.2</td>
<td>77.1</td>
<td>82.1</td>
<td>86.8</td>
<td>91.2</td>
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<td>Equipment Investment</td>
<td>47.3</td>
<td>50.5</td>
<td>52.5</td>
<td>55.9</td>
<td>59.1</td>
<td>62.1</td>
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<td>17.4</td>
<td>17.4</td>
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<tr>
<td>Subscriber Network</td>
<td>95.6</td>
<td>98.6</td>
<td>101.6</td>
<td>104.6</td>
<td>107.6</td>
<td>110.6</td>
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<tr>
<td><strong>Total Cash Expenditure</strong></td>
<td>229.8</td>
<td>240.8</td>
<td>248.7</td>
<td>260.0</td>
<td>270.9</td>
<td>281.3</td>
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<td><strong>Net Cash Flow</strong></td>
<td>40.8</td>
<td>50.6</td>
<td>59.6</td>
<td>70.5</td>
<td>76.8</td>
<td>82.9</td>
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**Sabre**

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<td><strong>Cash Revenues</strong></td>
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<tr>
<td>Booking fees</td>
<td>250.6</td>
<td>266.7</td>
<td>282.9</td>
<td>307.0</td>
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<td>339.2</td>
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<td>Other participant revenues</td>
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<td>1.6</td>
<td>1.6</td>
<td>1.6</td>
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<tr>
<td>Subscriber fees</td>
<td>105.5</td>
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<td>105.6</td>
<td>105.5</td>
<td>105.1</td>
<td>104.5</td>
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<tr>
<td><strong>Total cash Revenues</strong></td>
<td>357.7</td>
<td>373.9</td>
<td>390.1</td>
<td>414.1</td>
<td>430.3</td>
<td>445.3</td>
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</tr>
<tr>
<td>Operating expenses</td>
<td>91.4</td>
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<td>99.6</td>
<td>105.2</td>
<td>110.5</td>
<td>115.4</td>
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<tr>
<td>Equipment Investment</td>
<td>58.4</td>
<td>61.8</td>
<td>63.6</td>
<td>67.2</td>
<td>70.6</td>
<td>73.7</td>
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<tr>
<td>Development expenses</td>
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<td>17.0</td>
<td>17.0</td>
<td>17.0</td>
<td>17.0</td>
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<tr>
<td>Subscriber Network</td>
<td>93.1</td>
<td>96.0</td>
<td>96.9</td>
<td>101.8</td>
<td>104.7</td>
<td>107.6</td>
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<tr>
<td><strong>Total Cash Expenditure</strong></td>
<td>259.9</td>
<td>271.5</td>
<td>279.0</td>
<td>291.2</td>
<td>302.7</td>
<td>313.7</td>
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<tr>
<td><strong>Net Cash Flow</strong></td>
<td>97.8</td>
<td>106.6</td>
<td>117.6</td>
<td>133.0</td>
<td>141.3</td>
<td>149.3</td>
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Table 3 - Income, costs and profits ($ millions):

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<tr>
<td><strong>Income</strong></td>
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<tr>
<td>Participant Revenue</td>
<td>152.6</td>
<td>174.4</td>
<td>199.1</td>
<td>230.9</td>
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<tr>
<td>Subscriber Revenue</td>
<td>78.8</td>
<td>97.5</td>
<td>93.4</td>
<td>107.5</td>
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<tr>
<td>Imputed Income from Host</td>
<td>36.3</td>
<td>46.4</td>
<td>31.0</td>
<td>35.2</td>
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<tr>
<td><strong>Total Income</strong></td>
<td>267.7</td>
<td>318.4</td>
<td>323.5</td>
<td>371.8</td>
</tr>
<tr>
<td><strong>Operating Costs</strong></td>
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<tr>
<td>Computer Operations</td>
<td>26.4</td>
<td>32.9</td>
<td>30.1</td>
<td>34.2</td>
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<tr>
<td>Communications Network</td>
<td>27.2</td>
<td>35.7</td>
<td>35.4</td>
<td>53.0</td>
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<td>Subscriber Services</td>
<td>41.4</td>
<td>49.1</td>
<td>45.2</td>
<td>47.4</td>
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<td><strong>Total Operating Costs</strong></td>
<td>95.0</td>
<td>117.7</td>
<td>110.7</td>
<td>134.6</td>
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<tr>
<td><strong>Depreciation and Amortisation</strong></td>
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<tr>
<td>Depreciation of Equipment</td>
<td>27.2</td>
<td>35.3</td>
<td>22.1</td>
<td>29.3</td>
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<tr>
<td>Amortisation of other assets</td>
<td>21.0</td>
<td>28.8</td>
<td>20.6</td>
<td>29.9</td>
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<tr>
<td><strong>Total Depreciation and Amortisation</strong></td>
<td>48.2</td>
<td>64.1</td>
<td>42.7</td>
<td>59.2</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td>143.2</td>
<td>181.9</td>
<td>153.4</td>
<td>193.7</td>
</tr>
<tr>
<td>Net Income (loss)</td>
<td>124.5</td>
<td>136.5</td>
<td>170.1</td>
<td>178.1</td>
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<tr>
<td><strong>Total Invested Capital</strong></td>
<td>224.7</td>
<td>260.4</td>
<td>187.7</td>
<td>234.1</td>
</tr>
<tr>
<td>Net income as per cent of Investment</td>
<td>55.4 per cent</td>
<td>52.1 per cent</td>
<td>90.6 per cent</td>
<td>76.1 per cent</td>
</tr>
</tbody>
</table>


The sort of benefits airlines received from the reservation systems drove them to insist on exclusivity of use. For example, contracts with travel agents were explicit that 95 per cent of reservations had to be on the airline's system, which made subscribing to another system impractical. By 1987, 95 per cent of travel agents in the US were automated. This meant that gains could be achieved only by displacing rival systems. Some airlines went to great lengths to do just that. United Airlines, for example, offered one agent in Northwest's territory the following incentives to switch from Sabre to APPOLLO: $500,000 in cash, a 10 per cent 'override' commission (on top of the regular commission) for sales on United, and free use of APPOLLO, including telephone line charges, for five years (Feldman, 1987). Texas Air tried to lower the costs of
agents switching to its System One by defending them in lawsuits resulting from breach of the exclusivity clauses in contracts. The expected revenue increases from switching travel agencies were seen to more than compensate for even vast sums in damages (Feldman, 1987). Indeed, some leaps in market share were huge. For example, in the 1983-86 period, System One (Texas Air) jumped from 16 per cent to 45 per cent in Miami; APPOLO (United) in Orlando went from 10 per cent to 35 per cent; and PARS (TWA) in St. Louis moved from 59 per cent to 77 per cent (US DOT, 1988).

American and United were gaining revenue with market power gained through information. So successful were they in using information to their market advantage that the degree of deviation from perfect contestability prompted their competitors to seek legal protection and the government to intervene.

5.4 The Antitrust Issues

Numerous carriers and travel agents filed petitions with the Civil Aviation Board (CAB) because of problems associated with CRS dominance. These problems fell into several categories: access to the CRS, bias in the CRS display, monopolistic and discriminatory pricing of booking fees, and exclusive arrangements with travel agents that limited entry and competition with other vendors. The net effects of these practices were gains to the airlines which owned the CRS, labelled 'incremental revenues'. The government's extensive investigation into the allegations identified a number of practices that CRS vendors used to earn these incremental revenues. The most important of these were bias in the CRS' displays (and the underlying algorithms which created the displays), and discriminatory access and pricing (Guerin-Calvert,
American and United were found to have developed algorithms that ordered the display of information in ways which favoured them or their co-hosts. The displays were ordered by using carrier-specific factors to rank flights, instead of factors that were in the best interest of passengers, such as the shortest journey time or the most convenient departure time. These systems were not only generally biased, but also specifically predatory. For example, American Airlines was found to have systematically biased its displays against New York Air by adding 40 minutes delay to all New York Air flights. When Braniff Airways decided to lower its fares, CRS bias came into action to reduce the market impact of the lowered fares:

"There were strange things happening at Braniff. Flights to Dallas would be booked full right to the last minute, then dozens of passenger would no-show; Braniff was turning away reservations, only to find its planes unexpectedly flying half empty. Top officials at American swore that these tales were exaggerated and that if anyone at American had ever used any such dirty tricks against Braniff, they were lower level employees acting out of overzealousness." (Petzinger, 1995, p. 149)

When Continental Airlines, ran by Frank Lorenzo, discounted its fares, American Airlines' competitive reaction was to use CRS bias to prevent the changes in Continental's pricing of its inventory being communicated to the markets:

"In Dallas Bob Crandall's people were taking 'screen science' to a new level of sophistication. ...Lorenzo's new airline had just posted discount fares in a number of cities. But the discounts on 49 particular routes were not showing up on Sabre terminals in travel agencies across America. An [American] internal memo cited 'suppression of all Continental fares' at the discount levels between the 49 city pairs." (Petzinger, 1995, p. 205)

When TWA became a competitive inconvenience, American Airlines had already prepared programs to automate the required predatory CRS bias:
"Crandall wanted a way to punish TWA. All of TWA's flights as well as nearly every commercial flight in the United States, were visible in the Sabre terminals now being installed in travel agencies across the country. Crandall ordered one of his people to design a set of computer instructions enabling American, if it ever chose, to eradicate all traces of TWA from the listings in Sabre. Crandall wanted a single 'transaction' designed, something that could punish TWA instantly with a few key strokes." (Petzinger, 1995, p. 76)

The Department of Transportation also found that the CRS vendors had been charging different carriers different booking fees. Prices were not related to the costs of the services purchased, but to the extent of competitive threat represented by the carriers. This was discriminatory pricing to raise the costs of rivals, especially those of new entrants. Booking fees ranged from about $0.30 to well over $3 per segment, and the threat of CRS vendors charging $3 for bookings, when the average profit per segment was $2.50, seemed to have deterred a number of potential new entrants. The Civil Aviation Board also found that some carriers had promised United that they would not compete aggressively in some of United's markets.

Other anti-competitive practices were alleged, though there was much less evidence of these. CRS vendors were said to delay the loading of rivals' fares and schedule data into the system so that the vendor could respond more rapidly to changes in market conditions than its rivals. It was also claimed that the CRS vendor could use the system to gain immediate access to information on all carriers' prices and bookings in any market, and so obtain anti-competitive market intelligence. Although the regulation that emerged from these investigations generally eliminated the more blatant forms of anti-competitive use of CRS, it was not totally satisfactory. Vendors were not prevented from making charges; they were required to charge all airlines the same, but the amount to charge was not regulated. Standard charges came to be between $1.75 and $1.85 per booking. At these levels, CRS ownership continued to be a financial
gold mine (Shaw, 1990). Furthermore, some (Avmark Aviation Economist, April 1994) felt that,

"...in total, the regulations are most notable for their timidity in dealing with alleged bias against airlines that do not have stakes in Sabre and Apollo ... An underlying premise of the new rules is DOT's and the Bush administration's, stance against regulation. The Department's fundamental opinion is that those who developed the CRS technology - Sabre and Covia [United's Apollo] - deserve the attendant economic rewards." (Avmark Aviation Economist, April 1994)

5.5 The International Emergence of CRS

In Europe and the rest of the world, CRS began emerging in reaction to the development and growth of the American CRS. Figure 3 shows the major international CRS and the airlines who invested in them. Airlines in general realised that forming their own CRS would be the solution to minimising the threat of an American CRS proliferation. Ironically, they also benefited greatly from the American CRS technology expertise. Some airlines also wanted to benefit from the same sort of competitive leverage that these systems generated for American carriers.

"Galileo remains very important for BA, but for different reasons from the ones that started us off. The reasons that we invested in Galileo are not the same reasons why it is important now. We invested in CRS (and the other airlines), primarily as a defensive measure back in 87, when the European airlines woke up to the fact that the Americans were about to come in and take over our distribution. That's what got us into it. I suppose that at the time we also thought that we were going to make a lot of money out of it which is a long way into the truth" (Distribution Manager - Major European airline).

CRS regulation in Canada and Europe was quick to emerge. It was derived from the American regulatory experience in these. However, because regulations are based on political will and the economic philosophy of governments, CRS regulation has not reached some parts of the world which are significant in terms of air transportation.
Examples of these include Asia, South America, Mexico, Africa and the Middle East, where both airlines and CRS still enjoy the benefits of strategic practices of debatable ethics in terms of competition.

Figure 3 - CRS Industry Structure

Source: Avmark Aviation Economist, April 1994, p.13
“Capitalising on the enormous advances in technology and dramatic reduction in the price of the computing capacity, [airlines] have created a means to control the way travel is packaged, priced, marketed, sold and delivered to passengers anywhere in the world. In some cases they have established information enterprises which are more profitable than their airline activity.” (Weatcroft and Lipman, 1990, p. 88)

There is great secrecy about the profitability of CRS. They are very profitable enterprises. The last time this type of data was publicly available was in the early 1980s when there were ongoing government investigations on the role of CRS in airline competition. When asked how profitable the business was, a manager at a major international CRS owned by a consortium of airlines replied:

“Profitable enough. You knew I was never going to answer that question! We in this industry ensure that we make that data as difficult to get as we possibly can.” (Vice-President - Major CRS)

To measure the market shares of the CRS and evaluate them in terms of their impact on airline competition, data on the number of booking segments and the concentration of those bookings are required.

“The key thing is the number and the quality of the travel agents that we have, and obviously the concentration of agents that we have in any one area. For example, in Europe we have a strong concentration of users in the UK, Germany, Italy, Greece, to a lesser extent in France, and we are very weak in Spain and Scandinavia. Our main focus is in the markets which have the main volume of bookings potential even though it is a lot easier for us to bring in a user from the US than it is, say, from Scandinavia” (Senior Manager - Major CRS).

Because of the secrecy of the CRS industry, because widely available booking statistics would allow accurate estimations of profitability, and because of the unrelenting strategic importance of CRS for airlines and the vested interests of the dominant airlines, the data still elude researchers. Also, CRS are highly conscious of their image and communicate with the industry through highly professional public relations departments.
“We use a lot of public relations in getting messages out to the market. It is very important from the standpoint of making sure that the message that we really would like to deliver to the marketplace is always the same message. I think anytime you let a bunch of people talk to the press, you never know what they are going to say. I think you have to be very careful because it is a very small business. I think part of it is that we want to make sure that the travel agencies that do business with us and the airlines that we do business with also get a consistent message. Part of it is conditioning the market signals that we send. We need to craft the message. We may have all the same product, but we all crack a different message to the marketplace” (Commercial Director - Major CRS).

The result is that it is typical of this industry that each CRS communicates market statistics about its position in the CRS industry to the markets which are manipulated to serve vested interests.

“... A different yard stick, when it comes to communicating marketing their presence in the market. Some talk about number of terminals, some about number of locations, some about bookings, about concentration in certain areas, but the statistical indicators are all very much manipulated to serve conveniences. There isn’t a set of reliable industry comparisons. We used to be very up front about that information and giving it out objectively, but we have now become very reluctant to giving it out publicly too” (Senior Manager - Major American CRS).

Because of the airline ownership of CRS, the CRS industry has developed in a very ‘ethnic’ manner. It is presently typical of this industry that CRS have gained dominant market shares in their home markets. Home markets here are defined by the markets where the airlines who own each CRS originate. For example:

“If you look at Europe in particular, our main competitors Galileo and Amadeus have very strong allegiances with particular countries. Galileo, by definition of its ownership structure, has a very strong allegiance with the UK, Italy, Portugal, etc. Amadeus obviously has a very strong affiliation with Spain, with France, and with Germany” (Sales Manager - Major American CRS).

By defending a dominant market share in certain regions, a CRS ensures that other airlines will subscribe as they need shelf space to sell their products in these regions. But any system trying to penetrate another system’s territory cannot
hope to be any more than a secondary player. This means that the larger and more
global carriers have to subscribe to all existing CRS, even small carriers who fly
internationally need to subscribe to several CRS in order to ensure that their
products reach a satisfactory part of their markets.

"The industry has developed in such a way that all of the airlines need to be in all
of the systems. Each of the systems has a certain strength in a certain area. Clearly,
Sabre has its main strength in North America, both in the USA and in Canada. That
is worth a lot. For example, BA can't shut itself out of a system which covers 40
per cent of the US market. And fortunately the US is a very important market for
most of the European carriers. And the same thing applies for Lufthansa, Iberia,
SAS, etc. They all need to have a good distribution in the United States."
(Marketing Manager - Major American CRS)

5.6 The CRS Business of Today

Although they are still owned by airlines, CRS today are more independent of
airlines. There are two principal forces behind this. First, there are the regulation
measures, which removed the screen bias, stopped discriminatory pricing and
"de-hosted" the systems. This restricted the ability of airlines to use CRS against
their rivals (at least in the blatant ways they were being used). Second, the very
competition between CRS has pushed for an increased degree of independence
from the interests of their airline owners. This section will start by explaining the
function of the CRS in the present airline industry. It will also address the
economics and market forces that CRS are subjected to as they attempt to serve
two sets of customers with conflicting interests, and finally, the new strategic role
of CRS in the air transportation industry which has evolved into a sophisticated
symbiosis between airlines and CRS.
5.6.1 The need for CRS

"We, are basically an electronic supermarket. We are a huge supermarket and we display on our shelves the products of the various airlines and make those available for sale. We provide the data and information to the travel agent in order that the travel agent can make the booking" (Sales Manager - Major CRS).

The function of the CRS has evolved from creating an efficient means of reserving flights to a system that maintains and supports the greater scale and complexity of travel and tourism information. The CRS itself has contributed immensely to this information explosion. With the growth and evolution of air transport, the information available about airlines' schedules and fares has increased massively both in quantity and complexity. Passengers need to choose from seats available on many airlines, operating in thousands of city-pair markets, selling their inventories in a number of combinations on thousands of connecting flights every day for up to a year in advance. Each seat has associated with it several possible fares which vary depending on the rest of the customer's itinerary and fare restrictions designed to enforce segmentation (e.g., Saturday night stay).

This information was once made available in a vast document listing the schedules and fares available to travel agents and customers. But schedules now change quickly and the number of possible connections has increased immensely, making such documents impractical to use. The fares available are so numerous and change so quickly that they can no longer even be listed; the flights on which they are available and the quantities of seats on each flight to which they apply are changed daily. Electronic assistance in maintaining an updated database available to travel agents is a necessity in this environment (Levine, 1987).
"It is incredibly inefficient to determine the price of goods, automobiles, VCRs, etc., by going to all the stores. In the airline industry, that information is readily available. So it is a dimension of the airline industry which is different from most other industries. Most other industries don't have such an efficient way to disseminate price" (Vice-President - Major American airline).

The CRS also evolved from a system to reserve flights to one including other aspects associated with travel, such as car hire, accommodation, etc. Thus, it also serves as a consolidator of the information on the various components of travelling. This served the distribution of the airline product well since it is an intermediary product - a means to achieve a purpose - making it more convenient for people to make travel arrangements and buy travel. This not only increased the revenue base and the potential markets for the systems, but increased their value to travel agents, who saw many more of their work activities automated.

"It was principally an airline system and then it grew to handle cars quite adequately, and then to handle hotels, and then leisure products, tours, and cruise lines, and then it was expanded to handle accounting systems so agents can do their own marketing analysis of their own account activity" (Sales Manager - Major American CRS).

In fact, some would even suggest that from a travel agency point of view, CRS provide perfect market information:

"Using a CRS you can have perfect information in the market. There are very few industries which have that. You can find out exactly which airlines are flying where, when, how many seats they have available, what kind of aircraft they use, all details about their fares, pricing, how that compares, etc. So you've got all the information in that system, and you, the travel agent, serving your customer, can pin point the best deal, whether that is the cheapest fare, whether that is the shortest flight, or whether that is the best connection and whatever else" (Commercial Director - Major CRS)
5.6.2 CRS Economics and Market Forces: a dilemma

CRS take airlines’ products to the travel agents so they can sell them to the passengers by making a booking on the system. The system in turn communicates that booking to the airline’s internal reservation system and returns a message to the agent to confirm the booking. For a CRS to be useful to a travel agent, it needs to have on its electronic shelves the products of as many airlines as possible. On the other hand, for airlines to participate in the CRS, that CRS has to have as many travel agents as possible using its electronic shelves to sell tickets in the locations where the airline needs them sold. This implies that it is not just the number of travel agents subscribing to the system that is important, but also the concentration of them in key airline markets and the number of bookings those travel agents produce. For the CRS business the marginal cost of an extra booking, or an extra travel agent subscriber is negligible.

“We market Sabre computerised reservations system to travel agents. In order for the computerised reservation system to be worthwhile for travel agents, we need to have as many vendors in that system as possible. We need to be able to sell every airline, every car rental every hotel company. The way this company makes its money is from booking fees. The great majority of our operation here is directed towards the travel agent, which is the person who uses the terminal to make the bookings, but the travel agency does not pay the booking fees. The person who pays the booking fee is the airline, the hotel or the car hire company. Basically, our business works by generating as many bookings as possible through the system. It doesn’t really matter to us which airline customers book; we get the same fee from Iberia or British Airways” (Manager for European Markets - Major CRS).

Today, the vast majority of travel agents are automated. This means that any shifts in market shares of the CRS can be achieved only through displacing rivals, or through any focused and significant change in travel agencies’ demographics which favours any particular CRS (both unlikely occurrences and difficult to
orchestrate). Also, CRS are so entrenched in their territories that it would be difficult to demolish their local dominance.

"...now they are established and they are in place and have a strength in the market. And the CRS business is reaching quite a mature stage now and we have got pretty established CRS in most important target markets and there is not a huge amount of shift of share really, even though they are all going around fighting each other" (Marketing Manager - Major CRS).

The technology used to operate a CRS is basically high memory capacity, to store and index vast amounts of information, and the communication technology and infrastructure to transmit that information from the airline’s internal reservation system with the travel agents making the bookings to sell the travel. That basic technology is readily available today and used in many industries. The more specific technology applied in this industry relates to the building of searching tool applications for travel agent automation and productivity. The main tools available to travel agents from CRS today are:

- searching tools - flights, car hire, accommodation, itinerary, etc.
- booking tools - for reservation and confirmation of reservations in flights, car hire, and accommodation
- integrating tools - for booking of travel with various elements, such as flights, car hire, hotels, and restaurants
- management tools - for travel agency accounting, customer databases, etc.
- corporate consulting tools - to enable travel agencies to manage travel for corporations.
The CRS technological competition is in building user friendly applications and interfaces so that travel agents can have the highest level of automation and technical integration while at the same time decreasing the burden of relatively high training costs to the level of travel consultant turnover.

"Travel agents want user friendly applications. A travel consultant is a high turnover position. Also, the training time required to learn productivity, commands, format, etc. is expensive. They look then for solutions to reengineer operations to reduce that learning curve" (Sales Manager - Major CRS).

This technology is, however, highly exposed in the market. Most airlines subscribe to several CRS in order to sell their products in different parts of the world, and travel agents, which use CRS, are very numerous. CRS have also become technically very similar and have developed identical product specifications. Differentiation efforts are intense, but expensive and short lasting. In short, the CRS has become a technological commodity in the travel distribution industry.

"The selling points of CRS are getting increasingly difficult to highlight objectively. Now, all of the systems have good functionality, they all have a very high level of content. And with the current code of conduct both in Europe and the United States, that has also created a framework where everyone has to be more or less the same. So, what distinguishes a CRS product from another is partly sales technique, service levels (how well you service the travel agents), there is still quite a battlefield out there for certain functionalities of the system, now that all the CRS come to a windows environment, that has made it a lot easier to be very flexible and integrated" (Technical Development Manager - Major CRS).

Also, there is a lot of cross fertilisation of technology amongst CRS, not only because of the exposure and relative technical maturity of the applications, but through the movement of employees between companies.
“We’ve hired over the past 7 or 8 months close to between 10 and 15 people from Sabre. We hired them because they were doing something specific of interest to us. We probably have some big project coming up related to a certain area of our business, and these people are involved in the same areas for our competitor” (Manager for Easter Europe - Major CRS).

“And the knock on effect of that is a so called ‘cross fertilisation’. In other words, a lot of people who work here have worked in the past for Galileo or Amadeus, and likewise, people who have worked here now work for them, and nobody leaves a company without having contacts there, so that is a certain amount of information that gets exchanged in that way. Product information, market information, etc. what product is coming up, which market is very important. That information is a useful complement to the information that drives our strategy” (Commercial Director - Major CRS).

The airline industry’s technological products are displayed and promoted in the numerous industry conferences which take place every year (e.g., ATIS, IATA conferences). This provides not only a place for airlines and other travel-related organisations to shop, but allows each firm to observe what the competition has to offer.

“But every three months, the airlines meet and all the CRS come to that meeting as well. And all the CRS come along and they do a presentation about their latest products and they print out newsletters, and their brochures and all this kind of thing. And there was a time when all this information was just given to airlines on request, but now it is on the table...there is no point in trying to be secretive about that kind of information. It is in the public domain” (Sales Manager - Major CRS).

So, innovations in this industry are matched quickly, and therefore difficult to appropriate in economic terms. The result is that CRS, in their intense competition for market share of travel agents, have been investing vast amounts of money in developing new applications to attract them. Those development costs have been passed to airlines, who pay the booking fees, and CRS have not been attaining any significant competitive advantage for their endeavours.

“The goal of the CRS for some time now has been developing products that benefit subscribers [travel agents], so that they have a relative competitive advantage...
against the other competing CRS, and you will be the CRS of choice amongst the subscribers [travel agents]. The problem with that is that very little development was done for the airlines and we continue to pass on booking fee increases over 5 per cent a year for about 5 years. And the airlines are saying, 'Hold on, we're under extreme cost pressure and we can't afford to pay these exorbitant booking fees. Our revenue growth is not coming close to the cost in distribution, we need to scrutinise our booking fees and all of our distribution costs, and try to correct that'” (Financial Director - Major CRS).

Furthermore, the highly sophisticated tools which travel agents now have available to them because of this strong market share competition amongst CRS are in direct competition with airlines’ interests.

“We are actually paying them to develop travel agent application which push our yields down and even compete with our direct sales efforts. That is not funny!” (Distribution Manager - Major American airline)

<table>
<thead>
<tr>
<th>Airlines</th>
<th>Travel Agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Pay for bookings</td>
<td>+ Make the bookings</td>
</tr>
<tr>
<td>+ Want maximum yields</td>
<td>+ Need to provide passengers value</td>
</tr>
<tr>
<td>+ Need presence in maximum number of markets</td>
<td>for money</td>
</tr>
<tr>
<td>+ Need access to the most significant sellers of tickets</td>
<td>+ Receive commissions per ticket from airlines</td>
</tr>
<tr>
<td>+ Are increasingly conscious about distribution costs (Travel agents commissions and CRS booking fees)</td>
<td>+ Are also incentivized by airlines to up-sell and shift market share (overrides)</td>
</tr>
<tr>
<td>- Need functionality to:</td>
<td>- Need functionality to:</td>
</tr>
<tr>
<td>link with their internal reservation systems</td>
<td>have reliable bookings</td>
</tr>
<tr>
<td>update inventories quickly</td>
<td>have user friendly systems</td>
</tr>
<tr>
<td>have a flexible fare structure</td>
<td>(high training costs and consultant turnover)</td>
</tr>
<tr>
<td>have flexible fare restrictions</td>
<td>have flexible search tools (lowest fare, particular carrier, re-booking, etc.)</td>
</tr>
</tbody>
</table>

Figure 4 illustrates the delicate position of the CRS in the airline industry.

Whereas the CRS needed to be an extension of its airline owners’ interests, the regulatory measures that abolished screen bias, airline hosting and discriminatory charges have meant that the obvious interest that airlines had in owning the CRS has also diminished.
5.6.2.1 Distribution cost consciousness

Even though CRS are very profitable enterprises, and therefore one might think that, from an investment perspective, airlines had every interest in owning them, that interest is no longer clear. Airlines work with a high proportion of debt and are economically very sensitive and dependent on cash flow.

“At the end of the day, airline managers need to balance on one hand the good investment that a CRS may represent, but on the other, the cash flow of the airline and the value that the distribution channels are providing in terms of control of their products. The inclination that is emerging is that we need a reasonable cash flow cushion to operate and more control over the distribution of our inventories. After all, we are the ones who take all the risk to produce those seats.” (Senior Manager - Major European airline).

When asked about the issue of airline distribution cost consciousness that generated the above comment from an airline manager, one CRS manager commented:

“We think it’s been a good investment, but we don’t think it stands big enough for them to ignore the other side - it will still come into play. What our goal would be is to make it so important to them from an investment perspective that they forgive that. Now if you look at how much money an airline can arrange for - I mean 21 per cent of their cost is distribution related - that’s a lot of money! We’re talking about some of the largest airlines in the world. So what we want to do is make sure they remember us as an investment with potential for good returns“ (Vice-President - Major CRS).

The CRS booking fees are not a significant part of the overall distribution costs when added to agents’ commission and incentive costs. However, the airline business is very sensitive in terms of cash flow, and even a small portion of these costs affects this vital cash flow.
"And even today if one goes through the mathematics of how much it costs to support and maintain a reservation centre operation versus how much does it cost to have a relationship with the CRS and pay the associated booking fees, it is still more cost effective. Now, the CRS booking fees as a percentage of the total [airline] distribution costs is infinitely small. However, there is a concern that we [the CRS] are put off that distribution chain, and how we can minimise their costs” (Europe West Manager - Major CRS).

Airlines are aware that even a small change in the cost/revenue ratio may mean the difference between millions in losses and breaking even. The major airlines (even those that own CRS) have established teams to look at how they can increase efficiency in their distribution costs.

“So American has been analysing the booking fees from the CRS, and there is a lot of costs from the booking fees area from the CRS that don’t provide efficiency. But I think when you focus on one piece of the distribution, you might miss what you’re looking for. You’re not actually looking to target a specific cost area. When you look at one piece, it looks like commission costs are kind of high, but that really raises the flag that maybe all of the costs along the distribution channel need to be re-evaluated and re-assessed for efficiency. Another area is exploring alternative distribution mechanisms” (Distribution Manager - Major American Airline).

Booking fees are a small proportion of airlines’ distribution costs, so airlines are not merely focused on minimising booking fees, but are looking at the larger distribution picture. The CRS are responsible for the huge growth in the proportion of bookings that the travel agents make versus other distribution channels, such as airline reservation centres and direct selling. Therefore, the CRS represents a large component of the bargaining power that travel agents have in terms of commissions and incentive programmes.

"The cost of distribution through that channel has steadily increased and the perceived value of that distribution is beginning to be causing questions. If you look at the cost of distribution on an average ticket, I have seen figures quoted that 22 per cent of the cost of that ticket is used to pay for distribution. Very few products that you see in the market today have such high distribution costs. For airlines distribution is probably the third highest cost that we pay” (Distribution Manager - Major European Airline).
The development and the establishment of CRS has created a distribution chain structure which is extremely expensive for airlines now that airlines can no longer use CRS against each other in the blatant ways they once did. So, the CRS has become somewhat of an economic inconvenience, not merely because of the booking fees that it charges, but by weakening the control that airlines had on the distribution of their products. The CRS is today an established means of allowing the travel agencies to apply market economics which are in their own interests and in some cases in the traveller's interest, rather than the airlines'.

"The [CRS] industry has a total of 800-900 million segments multiplied by $3 per segment. That will give you the total value of the industry $2.5 billion, which is not that big. Travel agency commissions are probably ten times higher. That is where the airlines want to effect the change" (Commercial Director - Major CRS).

Airlines go to great lengths to maximise the revenue they obtain from each flight. Yet, travel agents, wishing to remain competitive in their business, search for the lowest fares available in the market on behalf of their customers. This pushes down airlines' yields. Airlines experience great difficulty in influencing agents to 'up-sell'. Most offer a typical base commission of 5-10 per cent for an economy ticket, and 10-15 per cent for a business ticket. The problem here is that airlines are becoming aware that travel agents cannot normally influence people to fly business instead of economy class. Rather, they have a certain number of business customers and economy customers who can be influenced to fly certain carriers. Therefore, the strategy is to influence travel agents to shift market share by providing them with competitive incentive programs. This is expensive.

Airlines are now not only paying vast amounts of money in base commissions, but also heavy override commissions to shift or merely maintain market share in their
The most important markets. This is the main factor behind the high distribution costs that the airline business has come to suffer.

5.6.2.2 The CRS and Airline differentiation

There is another aspect of distributing through CRS which is beginning to inconvenience some airlines - the difficulty in supporting airline differentiation efforts. The displays of CRS are filled with information about all the flights travelling to any part of the world, but that information is limited to the fares and schedules of each airline. So, on a typical CRS screen there will be, for a given date of travel, a list of all flights from carriers who subscribe to that system, with all the different fares available from each one and the timetables of travel. Figure 5 shows a typical screen.

Figure 5 - Sample of normal 'availability screen'

<table>
<thead>
<tr>
<th>Airline</th>
<th>Flight No.</th>
<th>Different fare codes (descending price order) and number of seats available in each fare</th>
<th>departure and destination</th>
<th>dep. Time</th>
<th>Arr. Time</th>
<th>aircraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>1AA</td>
<td>141</td>
<td>F9 C9 B6 G4 V4 K4 H4 Q2 M1 W0</td>
<td>LHRJFK</td>
<td>1300</td>
<td>1600</td>
<td>763</td>
</tr>
<tr>
<td>2AI</td>
<td>101</td>
<td>F2 A4 J1 D7 W7 L6 K5 Y4 V2 U0</td>
<td>LHRJFK</td>
<td>1315</td>
<td>1545</td>
<td>744</td>
</tr>
<tr>
<td>3UA</td>
<td>907</td>
<td>F9 C9 Y7 B7 M7 H4 Q4 V3</td>
<td>LHREWR</td>
<td>1355</td>
<td>1640</td>
<td>777</td>
</tr>
<tr>
<td>4VS</td>
<td>307</td>
<td>J9 W9 Y7 B7 L7 M5 G3 S2 N0</td>
<td>LHRJFK</td>
<td>1400</td>
<td>1640</td>
<td>744</td>
</tr>
<tr>
<td>5BA</td>
<td>177</td>
<td>F9 J9 S7 B7 K5 M4 L4 Q2 V1</td>
<td>LHRJFK</td>
<td>1400</td>
<td>1640</td>
<td>741</td>
</tr>
<tr>
<td>6DL/VS</td>
<td>2803</td>
<td>C7 D6 W4 Y7 B7 M1 H1 Q0 K0 L0</td>
<td>LHRJFK</td>
<td>1400</td>
<td>1640</td>
<td>744</td>
</tr>
</tbody>
</table>

Source: Interview with a travel agent (using a Sabre terminal)

Note: This is a sample of the 1st 'availability screen' for a request of a flight to New York. The description of fields has been added by the author for interpretation purposes.
The CRS was designed at a time when air transport was growing substantially and when the airline owners had clear dominating positions in their territories. It was therefore geared towards the mass distribution business - providing automation to travel agents so they could sell as productively as possible. So, it does not take into account any more qualitative aspects of airlines’ products which may be differentiators or drivers for better yields. Some insist that the difficulty in differentiating originates in the nature of the airline business, and that there is not much a CRS can do to support differentiation tactics.

"The market in the airline business is price driven, I don’t care how many graphical interfaces you display it in, and how pretty they look, the consumer is firstly going to the price page, and if the price looks pretty, then they may look at other things" (Senior Manager - Major American Airline).

Also, it has become common practice for travel agents to have the functionality of what some call ‘biasing tools’. These are the ability to pull up on a screen only the flights of a particular carrier to the given destination (see figure 6). This is a tool which has been officially justified by the travel agents’ need to conform to a passenger’s request to fly a particular carrier. However, most passengers do not ask to fly a particular carrier. They ask either for a list of flights which fulfil a particular travelling need (two week vacation, or a day return), or for the lowest available fare to a given destination.

"Most customers just come in and say ‘I need to go to Paris next week. Give me your cheapest fare’. Very rarely will they say ‘I want to fly BA’. As long as the price is right, they don’t mind which carrier they travel on. Unless it is some airline that they’ve never heard of and the difference to fly a more known one is small. ...So in the end it is mostly up to us which airline we sell" (Travel Consultant - British Travel Agency).
Therefore, in practice, these tools have become effective means for travel agents to conform to particular incentive arrangements with airlines for the shifting of market share. Subsequently, they are instrumental to the travel agent's ability to 'advise' (influence) passenger choice of carrier, and so to the bargaining power travel agents have over airlines' incentives. This not only totally bypasses any differentiation efforts that airlines may have invested in, but proves very expensive for airlines in terms of commissions. The choice of carrier becomes more of a function of how much different airlines pay travel agents in overrides than of the product specifications offered to passengers.

**Figure 6 - Sample of 'carrier specific' display screen**

<table>
<thead>
<tr>
<th>Airline</th>
<th>Flight No.</th>
<th>Different fare codes (descending price order) and number of seats available in each fare</th>
<th>Departure and destination</th>
<th>dep. Time</th>
<th>Arr. Time</th>
<th>aircraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA</td>
<td>117</td>
<td>F9 J9 S9 D7 K7 M6 L4 W2 G1 V1</td>
<td>LHRJK</td>
<td>0845</td>
<td>1125</td>
<td>772</td>
</tr>
<tr>
<td>BA</td>
<td>1</td>
<td>R9</td>
<td>LHRJK</td>
<td>1030</td>
<td>0920</td>
<td>SSC</td>
</tr>
<tr>
<td>BA</td>
<td>173</td>
<td>J9 S9 B9 K4 M4 L3 W3 G2 V1</td>
<td>LGWJFK</td>
<td>1040</td>
<td>1335</td>
<td>747</td>
</tr>
<tr>
<td>BA</td>
<td>175</td>
<td>F9 J8 S7 D7 K3 M3 L2 W2 G1 V0</td>
<td>LHRJK</td>
<td>1100</td>
<td>1340</td>
<td>747</td>
</tr>
<tr>
<td>BA</td>
<td>177</td>
<td>F9 J9 S6 D6 K5 M4 L4 W4 G4 V1</td>
<td>LHRJK</td>
<td>1400</td>
<td>1640</td>
<td>747</td>
</tr>
<tr>
<td>BA</td>
<td>185</td>
<td>F9 J9 S7 D5 K5 M2 L2 W0 G0 V0</td>
<td>LHREWR</td>
<td>1445</td>
<td>1735</td>
<td>747</td>
</tr>
</tbody>
</table>

Source: STA travel agent (using a Sabre terminal)

Note: Sample of 'carrier specific' screen for the request of a flight to New York. The description of fields has been added for interpretation purposes.

Differentiation and market segmentation are associated. Airlines must determine market segments in order to target them with differentiation efforts. When a booking is being made, today’s most sophisticated airlines are capable of identifying which point of sale is making the booking and its location. This is helpful because they can make judgements about which points of sale can sell.
more profitably, which points of sale are worth defending in terms of market share, and even which points of sale are more viable in terms of exchange rates. However, carriers which have reached this level of sophistication and have gained experience have come to recognise the potential for going one step further in this segmentation game. They glimpse the potential for the ultimate segmentation exercise, which is reaching the passenger who is making the booking and studying the information this generates. CRS do not allow this, because it is the travel agency doing the booking and influencing passenger choice.

"That's one thing that distribution can provide, and if you think of the Internet and electronic distribution, you can collect information about individual travel habits, begin to see where they fall in terms of their profile and the type of product in which they are really interested. And so that may be one direction in which this new distribution channel might go. But that said, it takes a huge processing information infrastructure to handle that" (Distribution Manager - Major European Airline).

This level of segmentation gives the opportunity of pin pointing groups of passengers with specific needs, so that the airlines can capitalise on both providing the product specifications passengers require, and on building relationships with them. It also creates a high level of complexity, which in turn requires more technical and organisational infrastructure to support it.

"So the balancing act in determining the future of distribution really is: is it worth the investment in that infrastructure to provide that complexity in fare structure to provide the products that the passenger wants, or would it be that the travelling public would be just as satisfied with a less complex fare system that doesn't require as much processing support, and will travel just as much and the end result would be that the airline would have the same amount of profit and revenue? So that's the uncertainty" (Distribution Manager - Major American Airline).

With the pressure of potential alternative distribution mechanisms, CRS are beginning to recognise that there are ways in which they can help in assisting with
the differentiation tactics of airlines, while leveraging their position in the industry and making additional revenue in the process.

"We would like to give the airlines the opportunity to differentiate themselves in the CRS. Today the CRS is very sterile. It is a screen and regulated. We want to give the airlines the ability to advertise their product in our system, give the ability for airlines to leverage their partnerships to the system. For example, after a customer finished a booking, the system knows the destination and might come back with a message saying, 'have you considered staying in Hilton Germany? You will get triple mileage there', or something" (Technical Development Manager - Major CRS).

It is ironic that, after having served as competitive weapons for the airlines, the CRS, which are owned and were developed by airlines, are having to find ways to defend a delicate position in the distribution chain of the industry. To protect themselves against potential distribution alternatives, such as the Internet and direct sales, CRS must defend travel agents while attempting not to inconvenience the airlines excessively.

5.6.2.3 CRS perspective

In their efforts to obtain travel agents' market share, CRS have traditionally concentrated their marketing and technical development efforts in the travel agency community. CRS are having to respond to the distribution cost concerns of airlines:

"The concern here is that STIN [Sabre travel information network] has had a history over the last five years of raising the booking fees to its airline subscribing customers. The CRS business has largely been driven by the subscribers and where we make our money supposedly. Even though the airlines pay us, actually pay the bill, to get a bill for something you've got to have bookings, and to have bookings you have to have a presence in the subscriber community" (Commercial Director - Major CRS).
Whereas the cost of developing CRS technology back in the 1960s was tremendous because the technological capability had to be pioneered, nowadays the technology required to develop alternative reservation systems is readily available and at a much lower cost than in the 1960s. Also, the technical, programming and marketing skills are abundant in the labour market. This has made some CRS recognise that airlines really can have an impact in the distribution chain, if they choose to do so.

"So a lot of the airlines that have the resources are developing alternative technologies and we’re coming to a point where they can, like the Internet. Now technology has got inexpensive enough and there is new avenues and opportunities like the Internet they can develop their own distribution costs and bypass the CRS. I frankly think that a lot of the CRS have overlooked the airlines and the power that the big airlines have. And it is the big airlines that line the pockets of the CRS. They account for about 80 per cent of the revenue for the CRS, and certainly we need to be concerned with our smaller airline customers as well. But it’s the big airlines that have the financials to develop the alternative distribution channels” (Distribution Manager - Major American Airline).

Those CRS that have recognised this are setting up teams to analyse airlines’ distribution strategies in order that they, too, can be involved in any alternative distribution arrangements. Another CRS takes a different approach to the issue and one of its senior managers reasons that the process of distribution chain restructure will be incremental rather than revolutionary.

"There will be alternative distribution systems and the CRS will want to become involved in them. They will be niches that could become core. It’s going to be more of an evolution than a revolution. There are too many behaviours that need to be changed for a revolution to occur” (Commercial Director - Major CRS).

Today CRS cover 85 per cent of air travel bookings. Another manager at a major CRS reasons that even if alternative distribution channels captured a further 15
per cent market share, they would continue to have a strong core business with the travel agents.

Do you realise we have 33,000 travel agencies connected to Galileo. So if that’s 85 per cent and we would still have 70 per cent, we still have to serve a huge number of people. So if there’s a very big dichotomy, we can’t ignore such a large proportion of our business. We need to work with them and find out how they can survive. At the same time, we need to be able to provide Internet solutions and other channel solutions that may come along in the future. Galileo is trying to send a message to our travel agency partners that we’ll want to work with them in the future, where we will say some of our competitors may be going directly to the Internet. But while we want to go to the Internet, we want to use our partners and I don’t think our competitors do that" (Senior Manager- Major CRS).

Because of their airline ownership, CRS are very restricted in the functions they offer to other airlines. The functions offered to travel agents which are not completely aligned with the airline owners’ interests are necessary in order for the CRS to gain market share amongst travel agent users. But having established defensible CRS territories, CRS have ensured that any airlines operating in these markets have to subscribe to them so their products have the necessary market exposure. So, functions offered to other airlines are seen as a competitive threat by airline owners, and very much resisted.

"There has been a lot of talk about developing a news flash to alert interested parties on fare changes, but then that is a sensitive matter, because it will create a conflict of interests. Airlines would not be very happy for their fare changes to be immediately available to their rivals. If United has just changed their fare on a Boston - Los Angeles flight, and as a travel agency you may have a customer booked on that flight and every day the price changes and the customer before he takes the flight, would have more opportunity to get a lower fare. We are trying to get a positive use for that information" (Software Development Manager - Major CRS).

The search for a positive use for a specific bit of information implies the recognition that information is a resource and as such requires use to benefit the organisation.
The economic interests of airlines and travel agencies are not aligned. So, airlines are trying to fragment the distribution channels in terms of the proportion of bookings in an attempt to reduce their distribution costs and decrease the market power that travel agencies possess. They are turning to direct sales operations for that. However they need the travel agencies in order to maintain exposure in their markets. The CRS is in the middle of this strategic conflict.

"We do two things. We provide the travel agencies with the tools to manage their business against their competition in the most efficient manner, so if they need lowest fare search capability, to be able to screen out airlines or connecting cities, the functionality is all in the system. It is up to travel agencies to configure their own internal systems whichever way they want, so they have a full array of tools to manage their business. And if they negotiate rates with the corporation, we provide a private fares package for the agency to actually control those rates for that particular corporation. On the airline side, basically what we do is we give airlines enough control over schedule change, and parcelling up of the seats into a number of different classes of service so they can play their yield game any way they want by allocating seats, or oversell, or however way they want to go about it. While they’re in conflict, they really can’t do without one another, so they just kind of find a way to live” (Commercial Director - Major CRS).

5.6.3 Sophisticated symbiosis...

The use that airlines make of CRS has been transformed from generating incremental revenue and market power to reducing distribution costs and accumulating market information. While airlines get dividends from bookings made on the CRS which they own, they give rivals dividends on the bookings made through other CRS. Airlines are trying to reduce the cost of bookings made through reservation systems, because they are aware that their CRS cannot capture all the bookings made on their flights. Because no CRS has more than a 30 per
cent market share worldwide, it becomes a negative sum game for most carriers.

The exceptions are the few carriers who operate mostly in the regions where their own CRS dominates. Airlines are also trying to funnel as many bookings as they can through their own CRS both to reduce their distribution costs and also to control the information that these bookings generate.

"Economically, it makes sense to try and funnel as much volume of bookings as possible on the CRS that I own because I lose dividends on any other bookings in any other CRS. Realistically in certain markets, because of certain relationships that may exist, that may not be possible. The alliance between Covia and Galileo has provided the coverage, the presence in the various markets, the financial capability for expansion and significant returns on the investment. It is profitable enough" (Commercial Director - Medium-sized European Airline).

Market information is another dimension of the fight for market share in the CRS industry. The bookings that are transacted by travel agents through reservation systems generate timely and precious up-to-date information about market share relative to other carriers in any specific markets, and about consumers' buying behaviour. Not only are airlines using this market information to fine tune their tactics, but their CRS are now selling that information to other airlines and to firms which produce reports which are sold on to airlines. This is a very profitable business since it generates vast amounts of additional revenue but does not require a great deal of additional investment. The information is already being generated from day-to-day CRS operations. The competition for market share is, therefore, also a competition for control of information. The more bookings that are made in a carrier's own CRS, the more information it will obtain more quickly, without having to buy it from other CRS, and the more interested buyers there will be, generating in turn yet more dividends.
So, despite the greater travel agent bargaining power and the higher distribution costs that a CRS represents today, airlines still have every incentive to want the CRS they own to gain market share amongst travel agencies. Consequently, they find sophisticated ways of leveraging their CRS's position in the market place, using their own market power.

"It has been proven over and over again that if you have an alliance with the national airlines of a country, you will have the lion market share. For those same reasons, why we are successful in our owner markets, and where we have association with the national airline, we are very successful. And in markets where we do not have those associations, we end up with 15 - 20 per cent market share, and the other guy has 70 per cent - that is a fact, it's there! Lufthansa is Lufthansa. In Singapore, Singapore Airlines is the only one out there and there is no regulation in Asia at all" (Commercial Director - Major CRS).

"Without the support of United Airlines, we would not be where we are today. Look at Europe; we have a number of markets where we have 80-90 per cent market share, and it is all because our owner supports us. So the best way to go to a new market is through the national carrier. You need his effective support. If he doesn't support you effectively, then you may have problems. You need to make sure that your interests are aligned with his interests, and that can be a challenge" (Sales Manager - Major CRS).

CRS which are owned by several airlines use the market presence and power of their owners in the markets to gain market share. The CRS owned by single airlines build joint ventures and franchises with local airlines to sell their CRS to travel agents in specific markets.

"We support our existing joint ventures, which is Gulf Air, Cyprus, British Midland and 3 others in our region [Europe and the Middle East], as well as look out for potential joint ventures either within our direct sales markets, which are the European markets, or outside of those markets as well. So we look out for potential joint ventures as well inside and outside our direct sales markets" (Sales Manager for Europe and the Middle East - major CRS).

The result of using airlines' market power is the demarcation of territories that characterises the CRS industry today. In the markets where rival CRS dominate,
and in which a penetrating CRS cannot have the support of the local dominant carrier, they are quite content with the commissioning support of secondary players and attempt to gain market share through promoting the technical virtues of their system.

“Certainly in the UK, BA owns the NDC [the national distribution company which distributes the CRS products locally] there that distributes to the agencies and there is a perceived value for agencies to participate on the CRS that the predominant airline owns. Some of that is perceived, some of that is real. In countries that we own the NDC, such as Germany and France, the predominant airlines there are participating in Amadeus. Therefore, we have to sell our product as being technically better than their product. It’s obviously much tougher. Our market share in those areas is much smaller. There is very little to differentiate our services technically. Therefore the agencies are going to go for the one owned by the dominant carrier there because they perceive a value there. And that won’t stop. The airlines are probably making private fares available to companies who use agencies that are connected through a different CRS. They will still do that” (Senior Manager - Major CRS).

To influence travel agents’ choice of CRS and even move some travel agents from other CRS, airlines began offering incremental commissions on each ticket sold through their CRS (DOT, 1990). This proved effective because it contributed directly to the profit of a travel agent, since they incurred no extra costs by using a different CRS to book the passengers.

“If you look at Galileo in the UK, which is owned by BA and have an 80 per cent market share in the marketplace, they’re pretty happy guys. So there is a lot more leverage on the airline side to do those things. So they will give you as a travel agency an override of a dollar a ticket or something, to do the bookings on their system, and that’s a big chunk of money” (Senior Manager - Major CRS).

This practice of using overrides to encourage agencies to subscribe to specific CRS, however, has been contained by regulation in the US and Europe. So, airlines can no longer directly entice travel agents to subscribe to their CRS through offering extra commissions, or threatening to reduce existing
commissions in those regions. However, the same cannot be said for regions where this regulation is non existent.

“What airlines can no longer do is to approach travel agencies and force them to change CRS through overrides. That they can no longer do in the US and Europe” (Senior Manager - Major CRS).

The influence of the carriers in the marketplace however remains powerful, not only because the offering of overrides to change CRS is hard to prove, but because the influence remains very much active through less formal mechanisms.

“There is all kinds of indirect influences that still exist; e.g., in the US marketplace, who sells Apollo? United Airlines. We have a contractual agreement with them that they are our sales representatives. So when United goes in, they have on their card ‘United Airlines’. They are selling automation to the travel agent. Although it is never stated, there is an implied connection between me as United Airlines selling automation and me as United Airlines with my overrides and commissions, my seats and my planes that I am trying to fill. It is sort of a hidden market force” (Sales Manager - Major CRS).

“If you are a fairly dominant carrier then you can have influence in the marketplace, and we do use United Airlines as our sales force in the US and in Mexico and in Japan, and in the US we also use USAir. Sabre uses its American Airlines people. With us, the USAir territory and the United Airlines territory in the US don’t overlap. It is definitely worth using the strength of the carriers because they have a lot of influence in the marketplace” (Sales Manager - Major CRS).

Another indirect but powerful influence over travel agents' choice of CRS is the use of negotiated deals with corporations. Direct sales by airlines to corporations is increasing. Airlines try, wherever possible, to bypass the travel agency in corporate travel and so save the commissions paid to the middleman. However, some corporations still prefer to deal with travel agents. They may perceive them as more impartial than dealing directly with airlines; after all, they are travel brokers. In those cases airlines offer discounted fares to the corporations, conditional on the bookings for their travel being made on their CRS.
"Today there is no regulation that prevents an airline from going to a corporation and saying 'Mr Corporation, we have a strong relationship together. I want to strengthen it. As such, I will provide you with a negotiated city-pair pricing. However, for that you must tell your travel agency that your bookings must be on Galileo or Apollo'. And the corporation can then influence the travel agency and say 'Look, I am an important customer of yours. I do $20 million of travel volume a year with you. As such I want you to put my bookings on Apollo'. And the travel agent will say 'Well, why?' And he says 'Well, that’s none of your business. I have relationships, and I want that volume to go through Apollo'. Similarly in Hong Kong, Galileo will ask BA, 'Who are your key customers? Let’s go knock on the doors together'. Why not? It is utilising the tools that are available to leverage your position. Our salesmen are airlines and our own sales personnel" (Sales Manager - Major CRS).

In regulated countries, joint ventures and franchisees (who are normally airlines) which sell CRS are recompensed through functions which are outside the current legislative powers of regulations. These functions are mainly related to assisting airlines to provide a differentiated service and promote passenger loyalty. One is to provide services to the travel agents which are congruent with the services an airline provides its frequent flyers:

"Here this is difficult, but if you are an NDC owner, you can get other levels of functionality, and you can get your server requirements which fall outside the DOT that may benefit you. It is small things, for example, like seat selection, seat maps, all kinds of things that are not at top level, but sort of second tier importance. Frequent flyer databases, for instance; Lufthansa and Air France can make sure their frequent flyers are best served through Amadeus, and they can prevent that in Galileo or Apollo. There is a strategic benefit in pushing Amadeus and they can manipulate and serve the agencies better through their CRS" (Sales Manager - Major CRS).

There are, however, many countries where CRS regulation is non-existent, or not enforced. In those regions, the benefits of owning or selling a CRS for a third party are still extremely interesting and very powerful.
"Apart from the airlines that own us, we have support from associates. Many of them want to run an NDC [national distribution company], because an NDC can be interesting business. Many airlines see strategic advantage in owning an NDC, from a money point of view and there may be still some advantages in displays. You know, beneficial treatment in the CRS of certain airlines. In the US especially, the CRS are strictly regulated. If you look at the displays, it is all what the DOT [Department of Transportation] tells you to do. That's not the case in the Far East, for example, and that will probably take a long time to happen" (Sales Manager - Major CRS).

"Mexico and Japan are diametrically different to the rest of the world. There is no bias in Mexico, there is no rules in Mexico. It's open trade for everyone to do what they want and Japan is the same way. There are no rules in those market places" (Commercial Director - Major CRS).

In Japan, for example, it is the CRS purchasing department that decides on which airline to book passengers:

"...as a matter of fact, in Japan you don't sell from the CRT [computer reservations terminal]. You sell from the Apollo purchasing department. Literally in many cases they say, 'OK, I have an Hawaii passenger. Who do I put them on?' And the purchasing department says, 'We have volume on this guy, so put him on this guy'. The customer doesn't seem to care. Very seldom do they debate or voice an objection. It is usually a group, and then they go enter the data in the CRT, just as a data entry thing. They hardly use the screen display. Most of them have very few sets. They pop real high volumes through them, but it's mostly data entries" (Sales Manager - Major CRS).

Internationally, the current situation is a multitude of different regulation arrangements and a heterogeneous variety of approaches to economic trade. This provides ample scope for some airlines to continue using CRS as market distorting weapons in many regions. So, strategic leveraging practices are hybrid. It is not merely a case of the airlines using CRS, or indeed, CRS using airlines, but a sophisticated combination of both - sophisticated symbiosis.

"We've got more marketing clout and the ability to penetrate more markets because we're owned by a number of different airlines. I don't know if we use the airlines to penetrate the market more than they use us to penetrate the market, so it's tough to know who's really ahead of the show here. I am sure the airlines feel
that we’re there to service them. We’d like to believe that. We’re pushing the airlines in the direction that we want to go” (Commercial Director - Major CRS).

“If American goes into some place, or United goes into some place, the first thing they do is they send their Sabre or their Apollo workforce into that area and they convert as many agencies as they can to Apollo or Sabre. So they’ve got the agencies now with them, so they do a market ploy where they start flying out of that big place. The more upload (getting people in the seat), the bigger booking concentration is on their CRS systems. They build first the CRS presence and they try to get a Lunn Poly or a big multinational on their side. They would do some overrides. They would do some stuff to start getting their product sold. Spain’s national carrier is in Amadeus, right? Lufthansa is in Amadeus, Air France is in Amadeus, BA is in Galileo, so they are not there. You have the same thing going on where you have the lift and the sales force that backs up the lift” (Sales Manager - Major CRS).

These entrenched symbioses pose not only complex regulation formulation questions, but regulation enforcement questions. Forcing airlines to divest from CRS is an option. However, given the long historical ‘quasi dependence’ that exists between the two, and given the crucial importance and integration of the airline distribution chain into the tourism and travel industry as a whole, this may prove economically and politically costly.

“Is there a model though under public governance which would have the same degree of implied support and interest on behalf of the owner airlines on the market place? I don’t know. If you diversify ownership, then it’s a totally different ball game” (Commercial Director - major CRS).

5.7 Conclusions

The development of CRS can be conceptualised as a clear evolutionary process. Airlines were seeking automation in order to respond to the pressures imposed in their operations by the growth in air travel. Efficiency was the justification for the initial R&D investment. When the system became operational, it continued to be seen as
automation and justified in terms of the increased efficiency and productivity it would bring to travel agencies, and hence to the airlines too.

"Interest in travel agent computerization initially centred on reducing the cost of issuing a ticket by automating the booking and ticket-writing functions. At first this was seen as an information production and processing problem similar to the initial creation of in-house CRS and the initial provision of computer services between airlines. In this role, CRS were production tools, rather than systems of demand enhancement." (Levine, 1987, p. 459)

American Airlines and United began marketing their systems competitively. United's Apollo system was technically superior to American Airlines' Sabre simply because it was developed at a later stage in the learning curve of CRS technology, actually benefiting from the experience that American Airlines had with IBM in developing Sabre. United however made a classic business mistake in thinking that the technical superiority of its system would be sufficient to protect the company from the ambitions of American Airlines. So, despite its more powerful position in terms of size and financial resources, United did not take the marketing of the technology as seriously. American, responding to the threat of its schedules becoming less accessible in travel agents than United's, were United to beat American in the retail automation race, invested very heavily in the marketing of its Sabre product, even though Sabre was considered technically inferior at the time. The result was that American took the lead in the retail automation race and, most importantly, in the learning curve of the use of CRS technology and data. This is an illustration of the power of marketing and using the technology versus merely having the technology. What was an obvious use of information and technology - automation - had less obvious potential, which was in the grasp of only the first movers. Those who had developed and implemented computer reservation systems were able to learn that these could generate incremental revenue.
One of the first lessons was that the way information was presented to travel agents could influence their choice of carrier.

The airlines would profit from leasing the necessary hardware and software to travel agents. In fact, the airlines' investment yielded substantial and totally unexpected benefits. Only after these benefits started to emerge did the airlines begin to realise the strategic potential of what they had developed with information. Only then did they start to consider more strategic uses for CRS and to justify further investment in terms of not only increased rents, but also the strengthening of market power. Increased efficiency was no longer the universal justification for investment.

"After eight years of investment in the business, and you have fairly good lease fee structure out there, so agencies were kind of paying their way, and then all of the sudden you turned out this big deal of cash from bookings. So it was like woe! The systems originally were all biased just because they were home grown for individual carriers' internal offices. I don't think anybody tried to leverage the bias probably until the early 80s" (Commercial Director - major CRS).

With the experience in CRS technology and retail automation, the perception of information evolved from simply a contribution to efficiency through automation. The new perception of information saw beyond automation and glimpsed the strategic potential of using information as a resource for market advantage in other less obvious ways. Given the uncertainty faced by all airlines after 1978, it was not at all obvious that adopting a strategy of retail automation was the key to industry dominance. Only the first movers were positioned to understand the power of a retail system, making rapid imitation unlikely.

"Intelligent persistence leads to invaluable experience not easily imitated by rivals. Firms that begin to ride an experience curve ahead of their competitors realize a head start that will endure as long as new opportunities continue to be revealed. Technology can always be purchased, but the same can rarely be said for knowledge." (Copeland and McKenney, 1988, p. 368)
More than the technology itself, it was the experience in developing CRS in retail automation and in using the information that CRS generated which provided the first movers with a superior understanding of the airline business. It also exposed to them the strategic value and potential of reservations information. This experience generated superior knowledge of how to use information as a strategic resource rather than merely a means for efficiency. Expert uses of this information can be seen in the extremely sophisticated revenue management systems in use today, in frequent flyer programs, and in the complex and flexible incentives provided to travel agencies through real time monitoring of variations in their sales activities. These are tactical activities of paramount importance in competitive airline markets, and which take expert knowledge and organisational capabilities to be used. The vast disparity in the level of use and sophistication of these tactical tools in the airline industry is a prime example of the difference between possessing merely the information and the technology, and possessing the knowledge to use both effectively. By the time regulators and other airlines appreciated the competitive significance of retail automation, it was too late to challenge the dominance of the first movers. American and United were so successful in devising ways to use their systems to exploit the new environment that their rivals were often forced to seek legislative protection.

"When they decided that distribution was in fact a marketing tool and in fact we can do quite well, then the government stepped in and they neutralised it to the extent they can, although they left enough flexibility in the systems for the agencies to get around some of the neutrality that was put into the systems. But what happened was that you had all of a sudden a large influx of cash into the companies because you could now charge and your investment was minimal" (Commercial Manager - Major CRS).

CRS began to emerge internationally in response to a potential American dominance of distribution and with the intention of making the same kind of
additional revenue. However, airlines in Europe had to share the development costs, because even though the technology involved was no longer pioneering, setting up such technical infrastructure was still a vast investment, and no European carrier had the spare resources required to do it individually.

Two systems emerged in Europe: Galileo and Amadeus, each of which had powerful airlines in its ownership structure. The same race for retail automation then developed. However, because CRS were owned by various carriers, the market power of the owner carriers was used to reach travel agents. The result was the consistent and defensible regional market dominance of each CRS. Galileo merged with Covia (which owned United’s Apollo) and became Sabre’s main competitor internationally. Amadeus tried to merge with Sabre, but without success (Avmark Aviation Economist, 1992). Other reservation systems emerged world-wide and also established the same entrenched regional roots.

Today, the overwhelming majority of travel agents is automated and using some CRS or another, depending mostly on their regional locations. The CRS has greatly contributed to the strengthening of travel agents’ position in distribution. They can exert strong influence over passengers’ choice of carrier, and consequently they can greatly influence airlines’ market shares of the bookings they transact. This costs airlines immensely in terms of commissions and other travel agent incentive programmes. Furthermore, CRS market share shifts are marginal. The CRS technology is mature and its applications are diffused innovations. CRS competition is intense for the conquest of market share through technical innovation, but to no significant avail. The result is increased booking
fees for airlines without any obvious material benefit. American Airlines’ experience in using the CRS technology revealed that accurate and timely information from the booking transactions could be used to fine tune tactics and was also very valuable as a tactical resource which provided much information about the competition and the passengers. Other carriers soon followed the practice.

CRS charge high booking fees and have very defensible market positions. This means that any airline that has a reasonably extensive and international route network, even if it owns a CRS, will have a large booking bill to pay. There may be many bookings going through its own CRS, but there will be equally many going through rival CRS. Also, most CRS are owned by several airlines, so the dividends that they get from booking fees have to be shared in proportion to their share in the investment. On the other hand, there is an increasingly heightened interest in the information which booking transactions through CRS provide. The most obvious interest is in the booking information generated by reservations on routes served by the CRS owner carriers. But that information also has a high market value amongst competitors serving other routes, and CRS booking information is therefore being sold today.

The high market value of this information emerged, not only because the benefits of using it were promoted by the very success of the first movers, but also because many carriers are actually reaching the level of sophistication in the strategic use of information that the first movers reached some years ago. The result is that airlines are creating market pressures to lower booking fees and are even more
interested in reducing the market power that they inadvertently gave travel agents in the process of retail automation. At the same time, airlines have found more sophisticated ways of responding to the difficulties in displacing rival CRS. Their aim is increasingly to control the precious information from booking transactions.
6. Travel Agents and Airline Competition

The previous section argued that the development of CRS and the advent of travel agent automation have affected the position of the travel agents in the airline distribution chain. This section will elaborate on the factors which contributed to the transformed role of the travel agent. It will then add to the discussion, also initiated in the previous section, about the conflicting interests between airlines and travel agents. Finally it will discuss the factors which are already pressuring travel agents, and provide a glimpse of the potential new paradigm travel agents face. The role of travel agents in the distribution chain is an important dimension of airlines’ current strategic uses of information. The role that travel agents are playing in the airline industry today has stimulated particularly sophisticated information uses, which will be discussed in the following sections. In order to enforce their market strategy, sophisticated airlines not only monitor the sales of travel agents very effectively, but use them as sources of competitive information.
6.1 The Bargaining Power of Travel Agencies

Before US deregulation, the role of the travel agency was simply an extension of the airlines' reservation offices. The marketplace was simple, there was little competition on routes, and carriers applied simple fare structures, which were set by the Civil Aviation Board (CAB). The same happened in Europe and the rest of the world.

"The travel agent marketplace that the combination of airline and agency regulation created was a very orderly one. Regulated fares were simple and easy for agents to deal with, so no travel agent could attract business through superior assistance with fare search since only one or two airlines served most routes and there was little likelihood of further entry" (Levine, 1987, p. 455).

In the 1970s, the travel agent’s role was that of representing airlines, and so airlines thought they had every interest in automating travel agents in order to increase the efficiency of their internal reservation systems, while earning some revenue in the process. Airlines were increasing the productivity of agents, whose economic role at the time was that of faithfully representing the commercial interests of airlines.

"Back in the 70s the primary objective of the travel agent was fairly clear, they were representatives of the airline they sold - like sales offices - and they got commissions. The commission structure, of course, is designed to incentive upselling, meaning that if you are a full fare passenger, you could be convinced that flying first class would be better, or moving to an airline that has more expensive fees. And at that time there wasn’t this myriad of different fares that are almost incomprehensible. Back then you knew that if you moved up to the next class you would get better service and you wouldn’t have to worry about this vast disparity between bargain basement fares versus first class fares. It was fairly clear back then. So, at that time the value of the agency was very clear to the airline, meaning that if we pay you commission, then they are going to be incited to up-sell" (Distribution Manager - Major American Airline).
With the development of air transportation, the number of cities served by airlines increased, and so did the number of travel agents that served those cities. In the US, for example, the number of travel agents more than doubled in the decade between 1978 and 1988 (DOT, 1990). Another contributing factor to the growth in importance of travel agents was the inclusion of other travel-related products in the CRS, such as hotels, car hire, trains, cruises, etc. This gave the travel agents a larger role, not only in terms of number and variety of products available for sale, but also as consolidators of travel arrangements - providing holiday and travel packages. They achieved equally dominant positions in the distribution chain of these other products (DOT, 1990).

"Currently, in the current distribution world, airlines distribute over 80 per cent of their inventory through travel agents. That probably means that it is the highest volume that the agents distribute since they first started. It is interesting to look back into how the this whole distribution system developed to the place that it is today, because 20 years ago travel agents distributed a very small proportion of the airlines' product. Airlines distributed most of it themselves. Passengers wouldn't really think about a travel agent unless they had a lot of money and were interested in a pretty complex trip. The travel agent's function really has been a new development, and I think that we can attribute that development to the improvement of the information being distributed by airlines. The development of Sabre was really instrumental, I think. When it started being implemented in travel agents in the late 60s, even at that point the amount of distribution to an airline by travel agents was about 20 per cent, and it has really gone up since then."

(Distribution Manager - Major European Airline)

The expansion in terms of number of passengers carried by air transportation over the last 30 years was accompanied, with the various deregulation movements, by an intensification of domestic and international competition. This means that on a busy route it is not uncommon to find seven or eight carriers competing for passengers.

"An orderly marketplace with few airlines and regulated fares blossomed (or exploded, depending on one's point of view) into a confused bazaar of new entrant airlines and the complex fare structure." (Levine, 1987 p. 455)
Deregulation took place concurrently with the race for retail automation between the major airlines. The beginnings of retail automation were marked by the use of computer reservation systems to achieve market advantage through biasing efforts. The vast revenues that airlines were accruing from booking fees and the CRS bias contributed to fierce CRS market share battles, which gave most travel agents powerful CRS functionality. At that time, the travel agent was perceived not only as an extension of the airlines' reservation centres, but also as a source of much revenue and an outlet point of the market power which CRS were designed to orchestrate.

With the regulation of the CRS, and the inclusion of other carriers' inventories in reasonably unbiased displays, the travel agents' role was gradually transformed to that of a travel broker. Other flights were included on the display, and air travel being a difficult product to differentiate - almost a commodity, with the new distribution technology and a more assertive role in the distribution chain - it is not surprising that customers turned increasingly to travel agents for the booking of travel.

"Deregulation has greatly favoured the agent in the US. Competition in air fares and frequent service changes have meant that more passengers have turned to the agent as a source of the latest market information." (Shaw, 1990, p. 208)

The intensification of competition also brought a much greater complexity in the fares charged by the airlines as they employed sophisticated techniques to maximise the revenue of each flight. Today, it is not uncommon for carriers to have ten different fares in economy class and two or three different fares in
business and first class. These complex fare systems are largely unintelligible to the public. Hence, people turn to the travel agent not only to decipher this complexity, but also to achieve better value for money from the existence of more discount fares.

"The domestic US market is always going to function on the schedule and price, and the fare wars that we have constantly. The agency community is constantly monitoring the fare wars and react relatively quickly and re-booking people and changing their reservations and doing baby-sitting on their records. In the international market, the whole structure of it from most people's perspective is that it is confusing, it's complicated pricing. People tend to run to the agencies to handle them more as an assurance than anything else" (Senior Manager - Major American CRS).

With increased competition and the subsequent complexity of market information, the travel agents underwent a crucial transformation. From being merely extensions of airlines' reservation centres, they began to sell information to customers.

"Unlike the past, where travel agencies in an orderly marketplace served principally as ticket vendors, the confused marketplace of deregulation allowed agents to sell information to customers. Deregulation increased the value to consumers of having an expert search for them, since it was more likely that a good agent would find a new airline service or a fare that the consumer couldn't find herself. It also created new profit opportunities to travel agents because it was very costly for customers to monitor the search process. ... The system rewarded airlines that were particularly adept at paying high incentive commissions." (Levine, 1987, p. 456)

The disproportional increase in airlines' distribution costs can also be attributable to the ease with which travel agents can now influence the customers' choice of travel.

"But the travel agency today, with all the systems that are available to them can really control an awful lot of travel, and can direct traffic pretty much" (Commercial Manager - Major European Airline).
A recent survey in the US indicated that 24 per cent of travel agents usually choose a specific carrier in order to qualify for an overriding commission and an additional 27 per cent sometimes make such choice (US DOT, 1990). A study by the US Department of Transportation observed that "some industry participants believe that agencies can choose the carrier for half of their leisure customers and one-fourth of their business travellers" (US DOT, 1990, p. 8). The influence of travel agents over passengers’ choice of carrier was strengthened and facilitated with the automation and biasing functionalities provided by the CRS. Travel agencies can also build in their own biases.

“Travel agents can do it easily. If you can sit there and you can take, say, you want all your BA flights, then you can build a robotic application to go into our end system and enquire through the normal availability messages and screen-scrape out all of the BA stuff, put it into your robotic and present your agent only BA trips. There is nothing to it” (Market Development Manager - Major CRS).

Furthermore, while CRS are today subject to strict display regulations in many countries, the travel agents are not regulated in this way. Agencies developed new ways of using CRS with the help of programs created by airlines, CRS, some agencies, and independent software firms. Some programs, for example, modify CRS displays to instruct agents which airlines are ‘preferred’ by the agency or its clients (DOT, 1990).

“I have to do a neutral display, OK? And it has to go through all the miles and miles of regulation criteria stuff, right? For this thing, it doesn’t make any difference what the agency builds; they can build a bias anywhere they want. So if BA gives them overrides for that, then yes, no problem“(Vice President - Major American CRS).

“One of the important things to recognise under the regulated environment is that all the CRS companies were regulated and cannot provide a biased display. The travel agency community is not regulated. So we have put biasing tools in Apollo that the travel agency can exercise at their option. They have a function in there
where they can enlist an airline or a hotel company, or a car company and that will influence the display. So, if they want to influence it for American or Continental Airlines, they put that parameter in and then when their travel counsellor sells a seat for a commercial account that has an ongoing discount on an airline, then they only see the screen display for those airlines” (Technical Manager - Major CRS).

“A lot of the travel agents have their own interface information systems with the CRS, mainly as a way of inventory management, so that if you book a holiday in the Algarve for example, they can bring all the different component bookings on the screen. I am not quite sure how their system works, but I should think also that commissions and the different overrides different airlines offer them should also play a part in those systems” (Commercial Manager - Major CRS).

Airlines are today forced to compete not only to appeal to passengers, but most importantly, for travel agents’ favourable market influence. This has given travel agents increased bargaining power in negotiations for the distribution of each airline’s products. The result has been a substantial and sustained increase in the commissions airlines pay travel agents to distribute their products. This increase is disproportionately higher than increases in their other costs.

"Commission payments have risen sharply in recent years. They have done so both in absolute terms, and as a proportion of airlines' operating expenses. Today, commission payments constitute the third most important input cost for airlines after those of labour and fuel. ...there is every possible reason to believe that the situation in the US is typical of many other markets." (Shaw, 1990, p. 209)

“Three of the eight US majors spent more than 10 per cent of total revenues on commissions in 1994, and Northwest paid more than 17 per cent of its revenue because of its heavy dependence on Pacific routes where overrides push commissions up to 30 per cent. Commission expenses per ASM [available seat mile] have almost tripled between 1980 and 1993, while unit labour costs have risen by less than 20 per cent over this period.” (Avmark Aviation Economist, March 1995)

Airlines in Europe pay a base commission to travel agents to distribute their products (9 percent is a normal level). However, they also use more complex incentive programs with certain agencies, according to the strategic importance
and tactical focus they attribute to them. The main pricing and incentive mechanisms used by airlines in competitive markets are as follows:

- **Overriding Commissions** – these are commissions given to agents on top of the basic commissions. They are normally used to stimulate market share for specific destinations. Typical override values are 10-20 per cent for economy traffic and up to 50 per cent on business traffic. These commissions are given on an *ad hoc* basis to different agents at different points in time, and vary in value and in the destinations as well as the subclasses to which they apply. They are private agreements between airlines and agents.

- **“Rappel” Mechanisms** – these are incentives used to stimulate the loyalty of the agents independently of the destinations. They are composed normally by indicators of, volume, market share and growth in sales from the previous year. As an example, an airline may pay the agent 1 per cent if it grows by 5 per cent in volume of sales of $500,000, and if it maintains a market share of 40 per cent. “Rappels” are used by airlines mainly in their home markets, or in markets where they have a significant presence. This is because agents normally can only adhere to one or two “Rappel” incentive programs, if they are to achieve their targets and hence receive the revenue at the end of each year. Rappel mechanisms are also private arrangements between airlines and travel agencies.

- **“TOCs”** – are confidential fares given by airlines to travel agencies. Traditionally, these were offered mainly to tour operators and
consolidators in order to maintain the prices confidential and not to upset other agents. However, they are increasingly being used with other types of agents in order to hide pricing tactics from rival airlines. TOCs are not direct incentives, they do not provide the agent with additional revenue. Indeed, often it reduces the revenue the agent receives, because the lower the fares, the less revenue will 9 per cent represent. However they enable agents to be more competitive. Some CRSs, such as Amadeus, are already accommodating that industry practice by providing electronic means of distributing private fares. They supply and maintain software for distributing different private fares to different groups of travel agencies (e.g. Amadeus Nego Fares). The intention behind the development of systems such as Nego Fares was to automate the logistics involved in the distribution of different fares to different agents, and the activities of updating those fares. However, the system also enabled airlines to increase the number of fares and the frequency of altering these fares to varying numbers of travel agents. So, some airlines today focus much of the distribution of their pricing on private fares. The system enabled airlines to hide a much greater part of their pricing tactics from competitors eager to react to it.
6.2 Conflicting Interests

Travel agents provide information so passengers may manage their travel, and they earn commissions from airlines for distributing their product. Typical base commissions are 5-10 per cent. Overriding commissions carrier (which may vary from 5 per cent up to over 35 per cent of the ticket value) are given as incentives for travel agents to bias the information they provide passengers so as to influence their choice of carrier. This situation creates a principal agent problem between the travel agent (the agent) and the passenger (the principal). Airline marketing programs are designed to reward the agent for directing business to the airline at the expense of the principal paying for the tickets. Passengers expect unbiased information on what carrier service is most suitable for their travelling needs. On the other hand, travel agents have strong incentives to provide biased information which favours certain carriers. The airlines are paying travel agents vast amounts in overriding commissions so that they serve their interests. Travel agents, because they work on very tight profit margins (DOT, 1990), are very susceptible to overriding commissions. However, they are also vulnerable to competition from rival travel agencies, which are particularly numerous in large cities. Hence, agencies still have to provide their clients with reasonable value for money.

"As deregulation came into play and the fares began to go all over the place, and as consumers became more aware of what was happening in terms of pricing and fares, the change of the regulatory environment and the additional information and education that the consumers were receiving, resulted in the change of mentality of the wide public, to say, 'Oh, there's really two or three classes of service, and in the coach cabin there seems to be all sorts of fares, and if I shop around I will find the best deal'. So, as that developed the travel agent became more and more chartered by the consumer to look out for their interests versus those of the airlines, meaning that airlines are looking for higher fares and the consumers for lower fares. Twenty years ago, if you asked the travel agents where they got their money..."
from, clearly they would say that it was from selling airline seats and being representatives of the airlines. Today, I think if you ask the travel agents the same question their first response would be that 'I service my clients'. There is still a lot of airlines' desire to influence what goes on in a travel agent and that does happen. But the individual agent, whilst having targets placed on them, their first desire is to provide service to their clients. And part of that service is to actually down-sell, versus up-sell. At that point it starts to look that there is a conflict of interests that arises in the agents” (Distribution Manager - Major American Airline).

“For every would-be price fixer [airline] hoping to sell high, there are 10,000 vacationers who want to buy low, and the [CRS] terminals glow on both sides of the counter [airline/travel agency]. The contest isn’t close to even.” (Forbes, 15 March 1993)

To find a way of responding to both sets of conflicting market interests, travel agencies have adopted a common practice of selling to their clients the low fares, thereby pushing airlines’ yields down, while shifting market share towards airlines with which they maintain overriding commission relationships.

“What that means for the airlines is that the airlines are basically funding these consultants to perform activities that may not be in the best interests of the airlines. I think that is not the full direction that it goes, because like I said there is always opportunities to try to influence the agents. Airlines are paying more and more money in commissions and overrides to try to influence the travel agents, and they do something which is not in the airlines interest, which is pushing yields down. Now, we want to keep business, and that’s really what we are doing now in the travel agency community. Initially our interest was to create an environment where people were encouraged to sell value of the travel and up-sell. Now, with the overrides and the other incentives that are given to agencies by airlines, we aim to just keep business and not necessarily create higher revenue traffic” (Commercial Manager - Medium Sized European Airline).

This works particularly against airlines who shift market share at great expense, but who see the vast majority of passengers boarding their aircraft on some kind of discount fare or another, and that includes even many business passengers. In 1994, 92 per cent of airline passengers bought their tickets at a discount, paying on average just 35 per cent of the full fare (Smith, 1995).
"So at that point there is that complicated drift and that is definitely causing the question that if we are funding this 100 per cent, why don't they look out for our interests more? And so I think that at that point you wonder, 'Well, if there is two parties being served, who should pay for that?' Ultimately, the consumer pays either way, because they pay for it in the airline ticket and it goes back to the travel agent" (Distribution Manager - Major European Airline).

Shaw (1990, p. 210) claims that airlines should be properly rewarded for their vast investment in the business of air transportation.

"It is still absolutely essential that airlines should be in control of the distribution of their product. Airlines commit enormous sums to the future development of aviation through the capital costs of the aircraft they purchase. Intermediaries, of whatever type, do not make an investment which is remotely comparable. They should not control the distribution channel."

However, the entrenched position of the travel agents in the distribution chain is difficult to challenge. This is because:

1. bargain fare hunting, which is one of features of the broker function of travel agencies, is increasingly popular amongst passengers;
2. travel agents perform relatively complex travel planning and consolidating functions, which airlines have no interest in doing; and
3. travel agency's market shares are typically quite fragmented (DOT, 1990), and many small agencies have highly defensible positions in the market.

"The extent to which airlines are able to bypass travel agents is very limited. They cannot and do not want to handle complex multileg interline trips with car and hotel bookings, etc. They are only interested in their own flights" (Area Manager - Major American Airline).

"Small travel agents are also in considerably defensible positions. Many focus on a network of people to which they consistently sell, which are loyal and accustomed to deal with them. So the fragmentation of the travel agency market into the
existence of many small travel agencies is a characteristic of the business” (International Sales Manager - Major American Airline).

“The role of the travel agency is to provide information to, and to broker on behalf of, the passenger. Demand for this service, especially from inexperienced leisure travellers or passengers with complex itineraries remains strong” (Avmark Aviation Economist, March 1995).

6.3 Commission Capping?

A recent effort from the major US airlines to reduce their distribution costs was the capping of travel agents’ base commissions. Delta Airlines initiated the practice of commission capping in April 1995 (Avmark Aviation Economist, March 1995). This applied to domestic return fares, limiting them to just $50, irrespective of the monetary value of the fares. All major carriers soon followed suit.

“Delta capped travel agents’ commissions because paying travel agencies commission is expensive and if you could minimise what you pay to travel agents, then the money goes to your own pocket. And other carriers matched that” (Marketing Manager - Major American Airline).

“That doesn’t affect travel agents’ propensity to sell us, because say every carrier did the same, which they did, there is the same value in selling any one. But that was relying on everybody doing it” (Sales Manager - Major American Airline).

This led ASTA (American Society of Travel Agencies) to initiate a court action against the airlines on allegations of breaching US antitrust laws by collusion to fix travel agent incentives. However, the major airlines have arranged out of court settlements, not only to avoid the negative publicity, but to keep the commission capping in place.
"The other unexpected development was the reaching of a tentative settlement on the class-action litigation brought against six majors over their travel agency commission capping. Individual carriers' shares of the $87m total settlement ranged between $9.8m (USAir) and $20-$21m (United, American and Delta). However those payments are insignificant compared with the long terms cost savings derived from the lower commissions. The settlement allowed the majors to retain their commission caps." (Avmark Aviation Economist, November 1996)

Airlines maintain that the practice of commission capping will not affect travel agents' propensity to sell their seats because the main factor behind travel agents' choice of carrier has always been overriding commissions and not base commissions.

"The major incentive for travel agents to sell particular carriers continues to be the incentive commissions (overrides), because before everyone gave the same base commission anyway. So, it is just a matter of reducing the base commission, but continuing to incentive them as you wish" (Commercial Director - Major European Airline).

However, by reducing the base commissions, airlines are reducing the revenue which goes to the travel agents. The real economic effects of this practice will not be apparent for quite some time, but it encourages the travel agents with sufficient bargaining power to demand yet higher overriding commissions to compensate for loss of base commission revenue.

6.4 Competing for Corporate Travel

Another area where travel agents are in direct competition with airlines is corporate travel business. Corporate travellers (passengers travelling for business purposes), who are also normally frequent travellers, are airlines' highest yield
passengers. The problem is that they are also the travel agents’ premium clients in terms of commissions. So, while airlines attempt to by-pass travel agents wherever possible through direct sales products, negotiated discounts with corporations and their frequent traveller programmes, the travel agents target the corporate market. Agencies are doing this not only to avoid being by-passed, but to earn revenues additional to the commissions they get from airlines by providing travel management services to corporations. This also differentiates them from their travel agency rivals in terms of expertise and the services they can provide.

"But the travel agency today, with all the systems that are available to them can really control an awful lot of travel, and can direct traffic pretty much. The airline business is now driven by all these other things, and it is in direct competition with the travel agencies as far as corporate travel is concerned. If travel agencies go to corporations and guarantee them the lowest fare, they are already in conflict with the airlines. They're trying to raise yield, and agencies are trying to reduce the yield. I, as an airline, decide that maybe I can’t survive on volume and then go to the corporation now and I'll cut a corporate deal with them. So, if he gives me 85 per cent of all his travel, I’ll discount it. And then the travel agency is forced to deal with negotiated rates, where they may or may not earn full commission structure, and half the time the corporations will re-direct their business to a travel agency who uses a system which is owned by the airline who is giving the deal. Some of that is not quite on the open because it’s kind of bugging" (International Sales Manager - Major American Airline).

There is, however, a large disparity amongst travel agents in terms of their ability to serve corporations directly. Many travel agencies have under-trained, under-paid staff, and therefore lack sophisticated travel management skills. With the competition amongst CRS for market share, travel agencies are filled with technology and sophisticated functions which most cannot utilise.

"Then you’re kind of driven to this kind of technology game, totally under-utilised for the most part. I would say there is not 5 per cent of the agencies who can use the sophistication they have. They all want it though! They use it strictly as a point of sale terminal for the most part. They don’t do a lot of sophisticated analysis. Most are not really running this full integrated business. They are really running a typical travel agency; they sell limited products, travel, hotels, cars, etc.
So now they have got this brand new machine, but they still use it the same way that they have for the last 6-7 years. And they had no business drivers to force them into using this new technology, and they’ve sought the path of least resistance and that’s to what they have learnt 10 years ago. They got into PCs, but they just use it as an emulation device to get into the old functionality. But all the owners and the managers are caught up with ‘If I am going to compete in the marketplace, I need a PC’. They really don’t understand why they need it, but ‘It is nice for me to have it’, because then they can tell everybody ‘I am definitely a sophisticated business’” (Vice President - Major CRS).

There is both the opportunity and the technology for many travel agencies to progress to a more value-adding role in the distribution chain. This, however, will take considerable cultural and economic restructuring. This is an illustration of the barrier that the use of the technology (not its development or acquisition) can constitute. The technology is readily available for all travel agents who subscribe to CRS, but very few are making use of it to add substantial value to their business. Those who are utilising that technology by investing in the skills and organisational infrastructure to use it are developing skills and gaining experience which has a very healthy market value, and they are proving to be fierce rivals to the airlines’ by-passing efforts.

"The more sophisticated users of technology, they will go to a company, and they will say ‘Give me six months of your travel and expense reports’, and they’ll take those expense reports and they will run it through their systems and they will say ‘If you were working with me I would reduce your total T&E [Travel and Expenses] budget by $400,000 and I’ll guarantee you lowest fare and I will manage your whole travel platform for you’. They will do that kind of work for a corporation and they’ll use their systems that they’ve created to deal with their negotiated rates and their guarantees, and their commission tracking and follow up thing. They do whatever analysis work needs to be done by the client, and they’ll police the travel policy for their client. Their biggest problem is that corporations have a hard time setting travel policy, and an even harder time enforcing travel policy. So it’s kind of a give and take until they settle in” (Commercial Director - Major CRS).

"Today they’re saying, ‘My God they’re going to go direct. I need to get out of the commission business’. So the smart ones will share their commissions back with corporations and say that if you want me to do these things, this is what it will cost per transaction. It’s here and now, and it’s becoming a real pain in the butt to us” (Commercial Accounts Manager - major European Airline).
6.5 Changing Paradigm?

The current dominant economic paradigm of most travel agents is such that the revenue they earn is not directly related to the costs they incur in the operation of their business. This is a difficult aspect of the business to manage, which involves a high degree of uncertainty. Relatively few agencies or corporate clients have adopted a fee system. Most locations do not charge any service fees, and of those which do (only 25 per cent of the total) the great majority (86 per cent) obtain less than one per cent of their net income from such fees. Those who charge fees tend to be more profitable than those who do not (DOT, 1990).

"The commission system is also flawed because the agency's payment depends solely on the amount of the fare, not on the amount of work needed to meet the customer's needs. As a result, the payments made to an agency for a transaction under the commission system may bear no relation to its costs." (DOT, 1990, p. 15)

It is in the interest of the airlines that travel agents begin working with transaction-based rather than commission-based charging. This way they would greatly reduce their distribution costs in terms of base commissions. Airlines are trying to influence the travel agents to change their sources of revenue from airline commissions to client fees. Much of this influence is being applied through the computer reservation system companies who 'advise' the travel agencies.

"Travel agents should change their economic paradigm. In the past, someone could walk in, talk one hour to the travel agent and then walk out, never come back and never buy a ticket. And if he bought a ticket, the travel agent would get 5-10 per cent of the revenue of that ticket which could be as much as $500 dollars. The guy that buys the ticket says, 'Well why if I only need 20 minutes of your time, why are you getting $500 for that? That doesn't make sense'. They need to change their role" (Marketing Director - Major CRS).
Certainly, in corporate travel it is economically desirable for the travel agencies to abandon the practice of being influenced by the airlines through overriding commissions. This would promote their image of travel brokers with the corporations, who want exclusive interest relationships with the agent who manages their travel. Knowing that the agent is exclusively serving their interests is important since the costs of monitoring the travel agents’ searches for products which serve their best interests would be expensive and defeat the purpose of contracting out these activities.

"We see the role of the travel agent changing. You see it already in the US, with the commission capping, and whatever, and consulting fees. A travel agent focusing on business, they get a fee for handling the business, so it is not like you get a 10 per cent plus a 5 per cent override for a ticket. You get the base price of the corporation. Corporations give them say 5 per cent fees for handling tickets. That is a different approach. Within that paradigm I think that a travel agent can play a good role also in the future" (Commercial Director - Major CRS).

"Consequently, some agencies and corporate clients have shifted to a fee system, where the client, not the air carrier, compensates the agency by paying it a fee. The agency then turns its airline commissions to the client. The fee system would help ensure that the agency’s incentives are consistent with the client’s expectation that the agency’s goal is to provide it with the best possible service and would reduce the uncertainty facing an agency over the adequacy of its compensation” (Marketing Director - Major CRS).

The problem with this system is that while it would save costs on base commissions paid by airlines to travel agencies, it would not reduce the emphasis on overriding commissions, since the system is based on the travel agents’ sharing these with their corporate clients. The sharing of overrides is hard to monitor by corporations because overrides are private agreements between agencies and airlines and agencies are not legally required to disclose their existence. Hence, many agents do not share their commissions with corporations, and the ones that do, do not share commissions with all their corporate clients, and where they share them, it is a very small proportion of their commissions (DOT, 1990). This
does not reduce the agency’s bargain power, because despite overriding commissions, a travel agent is still an option with less bias than that of having discount arrangements with one particular airline.

Most firms do not have a consistent travel policy and the ones that do have problems in enforcing it (DOT, 1990). The travel agent does not require policy enforcement; rather it still acts as a travel broker who may be somewhat biased in recommending which carrier to choose, but not significantly biased in terms of the monetary value of the fares. It is still possible for agencies to serve the cost efficiency interests of their clients while still receiving overriding commissions to shift market share for airlines. The fee-based system affords travel agents the opportunity of strengthening the relationships with their premium customers, whilst strategically using the commission sharing arrangements with other clients to cross subsidise that. A rational course for travel agents to follow could be to focus on the areas where their particular expertise can add the most value. As seen previously, not all travel agents are capable of competing in the corporate travel business because it takes a higher level of technical sophistication accompanied by the expert use of it.

"It is not walking in and getting one hour of free time and say bye bye. They should focus on areas where they can add value, focus on the passengers where they actually make money. They can focus on certain market areas via their expertise, in the areas where their expertise and knowledge is. Multinational travel agents will probably focus on serving big corporations. With leisure, you need to know a lot about a certain market, destination, or whatever. But the booking itself is fairly easy, if you have that expertise then you will attract those passengers. If you sold a ticket to a business traveller, that could bring you $500 in the past. But if you sold that ticket to him, that wouldn’t happen anymore. Instead of making $500 on one out of every five customers, you will probably make money out of each customer that you deal with, irrespective of the fact of whether he buys a ticket from you or not" (Vice President - Major CRS).
Focusing on a fee-based system could prove a manoeuvre more acceptable to corporations than to individual passengers in the leisure segment. Corporations can more easily appreciate that system's added value than can the average leisure traveller. It would therefore be more difficult for travel agencies to justify the merits of a fee-based system to the public.

"That is already happening in the US - more in the business segments - because they can form institutionalised relationships and sign agreements, but leisure cannot do the same. It will take time, and margins for the travel agents in the leisure business can still be interesting. If you are a passenger and you like it then you will come back. The Internet, for example, cannot answer all the questions that a leisure passenger has" (Corporate Accounts Manager - Major CRS).

6.6 Conclusions

Travel agencies enjoy a substantially entrenched and powerful position in the air transportation distribution chain. Airlines consider the benefits that the travel agents are enjoying unfair since the airlines incur all the risk in the production of available seat miles (capacity offered to the passengers) and suffer disproportionately high distribution costs. Ironically, the airlines have inadvertently contributed to this situation with their retail automation efforts and most importantly with their market distortion efforts. These market distortion efforts also constitute additional information for airlines to acquire in order to respond to each other's travel agent incentive tactics.

The ability of airlines to by-pass the travel agencies is limited and it involves substantial investment either in the building of customer relationships (direct sales, frequent flyer programmes, promotion), or in the development of alternative
distribution media such as the Internet and interactive sales television. Both initiatives are being explored by airlines, but it will take time and vast investment to achieve significant effects in the reduction of the travel agency’s bargaining power. Also, travel agencies are themselves establishing presence in alternative distribution channels. Because of the economics that characterise airlines, the political persistence of hampering bankrupt airlines to compete on equal footing with others (through allowing state aid in Europe and Chapter 11 bankruptcy arrangements in the US), the existence of highly subsidised loss-making flag carriers, and the very nature of competition in the airline industry, market forces will not permit the natural disappearance of overrides. Also, airlines are legally obliged to refrain from any collusive arrangements by international anti-trust laws, and so cannot orchestrate the abolition or reduction of overrides. Anyway, there is no consensus among airlines to do this.

On the travel agency side, overriding commissions are very important sources of revenue, and while some are moving towards fee-based arrangements with corporations, they have no incentive to refuse, or indeed, stop demanding overrides from airlines proportional to the bargain power they have. Corporations, too, have no incentive, or indeed, means of making travel agents refuse overrides and would lose their rebates if they did. Finally, the practise of shifting market share in exchange for overriding commissions by travel agents is expensive for clients to monitor. However, it is very closely monitored by many airlines. The economic, social and political desirability of this situation is at least debatable, and poses many important regulation questions: Should the airlines be allowed to continue offering travel agencies overrides? Should the travel agencies
be obliged to divulge the commissions and overrides they receive? Should the travel agencies be allowed to shift market share on behalf of the airlines at the expense of impartiality to the passengers?

Any significant regulatory measures on this matter will be subject to fierce battles of interests. The major airlines have powerful political influence and the travel agents are well organised (ABTA - Association of British Travel Agencies, ASTA - American Society of Travel Agencies, for example). They, too, enjoy significant political influence. While it is in the financial interest of travel agencies to keep receiving overrides, not all airlines may be interested in distributing their products through completely impartial travel agents. Besides, the abolition of override commissions would only work if the regulations were equally implemented, and enforced worldwide. Therefore, controlling overrides and their effects with regulation could be a complicated and strenuous process.

It must be conceded that more detailed research is required on this matter. However, there is strong indication that the market share shifting, induced by overrides, is at the root of the travel agents' disproportionately high bargaining power and subsequently the artificially high distribution costs of airlines. Passengers are the ultimate payers of these costs. Therefore, a strong argument could be built that this situation is causing significant economic inefficiencies in the airline business and, in consequence, in all the industries it serves.
CHAPTER VII
USES OF CRS INFORMATION

7. Uses of CRS Information

7.1 MIDT Technology

Retail automation was a great milestone in the generation of competitive information which would greatly affect the future of airlines' strategy. The experience in an automated retail environment proved invaluable for airlines. However, another no less important, but less explored, use of this information was to monitor the booking activities of travel agencies. This use of information emerged because American Airlines, as first movers in CRS retail automation, were well positioned to observe the great increase in importance of the travel agent in the airline distribution chain. With retail automation, the proportion of bookings made through travel agencies increased dramatically. American Airlines was also well positioned to realise that the combination of the CRS
display regulation and increased travel agency experience in using the CRS would contribute to an increase in the bargaining power of travel agencies. Travel agents, after all, were brokers of airline products, so when they began exercising their bargaining power, normal and override commission expenses began to rise. This prompted American Airlines to develop an information system (SMARTS - sales management and response tracking system) to monitor the bookings that travel agencies made on American in relation to the bookings they made on other carriers for each particular route. This way, American Airlines could invest travel agency incentives more selectively and achieve greater returns for these investments.

The SMARTS system initially worked by extracting booking information per point of sale from the Sabre reservation system and processing it to give market share per route per point of sale, per operating carrier. This meant that it was possible not only to examine market share against that of specific rivals on specific routes, but also to study variations at frequent and specific points in time. Because this information related to bookings, it referred to the future rather than 'sold' and 'flown' revenue. This characteristic meant that the airline could react to this information before its relevance perished. However, information extracted from Sabre would only cover those travel agencies using the Sabre reservation system to make their bookings. It then became important to obtain the same type of information from other reservation systems, which had significant market shares in important markets. The first step for achieving this was the marketing of that information to other carriers by American Airlines, which promoted its 'virtues for airline strategic management. This constitutes the birth of MIDTs
(management information data tapes). The CRS regulation, in place in the US and Europe, which is still proliferating internationally, mandates that all products and services offered by CRS companies have to be made available to all airlines at non-discriminatory prices. So, today, all major CRS produce and market MIDTs, which are becoming widely used by airlines. Systems like SMARTS are also being marketed by the many airline-specialist IT firms and used by many of the major airlines. Some smaller carriers are also attempting to implement the technology. The systems now consolidate booking information from the various relevant reservation systems and process the information per route, per flight, per specific carrier, per point of sale.

7.1.1 The Contents of MIDTs

Traditionally, airlines accumulate information on sold and flown revenue. This is the revenue sold by each agent, which is reported monthly through the BSP (bank settlement plan), which is an organisation which accounts for the transactions of travel agents and their payments to airlines of the fares from the tickets which they sell. This information consists of data on payments made each agent to one airline compared to the payment of the agent for the total of his sales to all airlines. Flown revenue is the proportion of the sales of each agent which actually were flown by the airline. It does not, however, specify how much the agent has sold on which airlines and therefore gives no idea of the market share that the airline has in each agent for sales to each destination. This was the major breakthrough that MIDT technology brought.
There are two main formats by which MIDT information is received by airlines. The major carriers, those which can afford to set up their own MIDT information processing teams, buy the tapes directly from the CRS companies, and process the tapes. Many airlines, however, do not have the scale of operations to dilute such investments, or regard the in-house processing of that information to constitute no added value. So they buy what is known in the industry as ‘captured MIDT information’. This consists of largely standard reports, which use the most popular industry measures. Figure 7 shows a sample of the main fields of data included in the unprocessed CRS magnetic tape.

**Figure 7 - Data Fields of Unprocessed MIDTs**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Definition (Where required)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meld Name</td>
<td>Date at which the booking was made</td>
</tr>
<tr>
<td>Transaction Date</td>
<td>The sequence in which bookings were made</td>
</tr>
<tr>
<td>Sequence Number</td>
<td>Code to identify the travel agency making the booking</td>
</tr>
<tr>
<td>Agency Identification Code</td>
<td>Travel agency’s IATA number</td>
</tr>
<tr>
<td>Agency IATA Number</td>
<td>Number of the flight on which the booking was made</td>
</tr>
<tr>
<td>Flight Number</td>
<td>Airline code on which the booking was made</td>
</tr>
<tr>
<td>Airline Code</td>
<td>Departure airport of the booking</td>
</tr>
<tr>
<td>Departure Airport</td>
<td>Airport of arrival for the booking</td>
</tr>
<tr>
<td>Arrival Airport</td>
<td>Number of passenger in the booking</td>
</tr>
<tr>
<td>No. of Passengers</td>
<td>Class of service the passenger has booked</td>
</tr>
<tr>
<td>Class of Service</td>
<td>Type of link between the CRS and the airline internal reservation system</td>
</tr>
<tr>
<td>Local Departure Time</td>
<td>Indicator of the validity of the booking or its cancellation</td>
</tr>
<tr>
<td>Departure Date</td>
<td></td>
</tr>
<tr>
<td>Local Arrival Time</td>
<td></td>
</tr>
<tr>
<td>Type of Link Indicator</td>
<td></td>
</tr>
<tr>
<td>Booked/Cancel indicator</td>
<td></td>
</tr>
</tbody>
</table>

Source: Galileo International’s technical manual of MIDT products

The above fields can easily relate to tens of millions of entries per month, considering that major carriers have thousands of daily flights each one carrying on average in excess of 150 seats, and each seat will have several bookings and cancellations attached. Also, there are many entries which are incomplete or
contain codification errors which require correction or 'cleaning' in order to produce coherent reports. The number of records that each field can contain and the number of possible combination of fields which produce different analysis, make not only the processing, but the use of this information a difficult task. There are some airlines which produce myriads of different reports on this information to achieve greater detail.

"...then you have to write your own programs and analyse the stuff. The one I thought was probably the craziest so far was the discussion we had last week regarding SAS. SAS wanted the entire itinerary at time of booking. They want all you have while you’re doing the sell transaction. They wanted to look at all your O&Ds [origins and destinations] even though they may be only a piece of it. They wanted to look at it when you’re initially selling the system. Every time you modify the sale or add segments to it they want to see the whole thing, they wanted to see it when you file the record away, the final record and they wanted to see what it looked like again when you ticket it. So they get a ton of data, I mean they’re not that big, but they’re going to get a lot of data and now they look at it and they’re going to analyse it. Some people just want to know bookings per agency, per location that type of information. Other people want journals, they want an entire journey itinerary given to them. So various people use it for various analytical purposes." (Commercial Manager – Major CRS).

Because of the processing capability required to filter and process the ‘raw’ MIDT information, ‘captured MIDT information’ products, marketed by several airline IT firms and some CRS companies, are increasingly popular. These are normally limited in the number of measures used and variables compared. This reduces the potential extrapolations which airlines may make of the data, but facilitates the task of using the data in their strategic efforts. Information can be excessive if the organisation is not capable of using it. Table 4 is contained in a sample report provided by Sabre Decision Technologies to a medium sized European Airline:
Table 4 - Sample MIDT Report

Top 9 Outlets/Market Share by Agency/Online/Non-Directional

Market Analysis by Airlines by Agency

Market: EWR - LIS

October 1996

<table>
<thead>
<tr>
<th>Agency IATA Code</th>
<th>Agency Name</th>
<th>Agency</th>
<th>Airline</th>
<th>Agency bookings</th>
<th>Share</th>
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</thead>
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<tr>
<td>1069161</td>
<td>Landings TVL</td>
<td>TP</td>
<td>257</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>257</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2256980</td>
<td>Saga Intl Holidays TVL</td>
<td>TP</td>
<td>104</td>
<td>86</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>BA</td>
<td>13</td>
<td>10.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DL</td>
<td>4</td>
<td>3.3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>121</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4160138</td>
<td>Collette TVL SVC</td>
<td>TP</td>
<td>61</td>
<td>81.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>BA</td>
<td>14</td>
<td>18.7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3157989</td>
<td>Adams TVL</td>
<td>TP</td>
<td>62</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0950199</td>
<td>Academic TVL Abroad INC</td>
<td>TP</td>
<td>62</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3155619</td>
<td>Elmora TVL CTR</td>
<td>TP</td>
<td>59</td>
<td>96.7</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>DL</td>
<td>2</td>
<td>3.3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>61</td>
<td></td>
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<tr>
<td>0667966</td>
<td>GVI</td>
<td>TP</td>
<td>49</td>
<td>94.2</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>BA</td>
<td>3</td>
<td>5.8</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2267700</td>
<td>Grand Circle TVL INC</td>
<td>TP</td>
<td>49</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>49</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Sabre Decision Technologies MIDT - Sample report

7.1.2 The Use of MIDTs in Airline Competition

The advent of CRS and the use of information captured from the CRS by airlines has transformed the way airlines monitor the effectiveness of their strategy in different markets. Access to more detailed and up-to-date sales and market share information has stimulated some airlines to develop extremely focused and responsive sales forces.
"I think travel agencies are very influenced by commissions, overrides, prizes, etc., but the airlines are getting a lot smarter in targeting them, devising ways to make sure they get something back for them. We are becoming a lot smarter in targeting where we need to pay overrides and where we don’t. A good example is Concorde, we provide a service which no other airline has got, so why are we going to pay overrides for travel agencies to sell it? It’s daft! It makes no sense at all! But we have been doing it for years! We’ve only just figured it out that we oughtn’t to do it, but we are not doing it now" (Commercial Director - Major European Airline).

The use of this technology is directed at the sales force employed in the various sales offices around the world, who can use this information to monitor agents sales activities, discovering which agents are supporting which airlines for which destinations. It has become part of the strategic processes of airlines’ sales offices by indicating which agents to visit and incentive programs to provide.

"...what we do, in the States with the tapes [MIDT] is we download them immediately all the way down to the sales rep who’s responsible for that area. [He’s] equipped with a laptop, then he can go into the agency or the corporation and say ‘Well I gave you 1000 bookings last week’, and they use that. We have red flag reports that come up and say ‘This doesn’t work’, so we customise it to the account [sales point]. They can be intelligent enough to say ‘Before the quarter is over you won’t get your incentive (if there was one) if we don’t get enough business. Here’s the problem areas’" (Sales Promotor – European sales office of major American airline).

This improved monitoring capability has greatly assisted airlines not only in focussing on agents, but in building information exchange relationships with them and customising the incentive programs they offer to the characteristics of each agent.

"If we’re getting all the information through the computer about what your agency does, you can’t sit there anymore and say, ‘But I sell Chicago all the time’. But I can say ‘Well yeah, look at the screen for last month. You were six points below the other guys, and so don’t tell me you sell Chicago. Here it is!’". You as the agent may think you’re selling Chicago, but it’s the people on the telephone and the counter that are selling the seats, but in fact you don’t. So, are you willing to have a training session with your people and tell them that my God you need to sell more American. Are you willing to let our sales rep come in and push American, to help you with things that you need? In many cases we know more about the
travel agents' businesses than they do themselves. There is a lot of travel agents
that don't even know what their gross sales is through the year” (Sales promoter –
major American airline).

Because airlines receive and accumulate MIDT historical information, they are
able to observe variations in market share in each agent for each destination. This
is used as triggering device for many visits in order to find out why market share
is decreasing, and what the airline may offer in terms of product specification
changes, or incentives in order to improve the situation. MIDT has proven a very
effective tool for sales promoters and sales managers more because the
information it generates raises focussed and targeted questions than by the mere
observation of the results. The most profitable uses of MIDT technology are
those that apply it as a tool to guide both the informal acquisition of qualitative
market information to explain the variations in the airline’s competitive position
and also the informal acquisition of information to improve that position.

7.2 Frequent Flyer Programs

Frequent flyer programs (FFP) are a use of information derived from the use of
CRS technology pioneered in the 1960s. The advent of CRS enabled the storage
and indexing of vast amounts of information. An incremental step was to begin
accumulating information about business travellers, the premium customers of
airlines. Upon analysis of the reservations data, American Airlines noticed that a
small number of passengers was responsible for a large number of trips and
‘revenue. It was therefore logical to develop strategic tools to attract their loyalty.
With the CRS technology, the technical ability to set and track millions of individual customers' travel accounts and offer them incentives to travel and spend yet more money with the same airline was available. The development of frequent flyer programs is a fine example of an effective marketing strategy aimed at differentiating the airline product, targeting the high yield frequent business traveller, to achieve a degree of customer loyalty. American Airlines used its CRS to identify the most important group of customers - the business travellers.

To appeal to this group, American introduced the 'AAdvantage' frequent flyer programme in 1981. In May of that year, the group of people who devised the frequent flyer program was expecting some 50,000 members in the first year of its operation.

"They weren't even close. More than a million people joined AAdvantage before the end of that year. And nearly a million more people joined the frequent flyer programs that quickly sprouted up in 1981 at most of the nation's other carriers in response to AAdvantage. ... AAdvantage membership totals flew past the 19.1 million mark in 1992 and are growing now at a rate of nearly 2 million new members a year" (Reed, 1993, p. 177)

Observers estimate that the cost of starting such programs as AAdvantage were between $2 and $12 million and that they resulted in an increase in an individual carrier's business of between 20 and 35 per cent (Business Week, 27 Aug. 1984).

Frequent flyer programs have also become very important direct mail lists, which are very effective in cutting advertising costs.

"Of course, no one associated with the creation of the AAdvantage program back in 1981 ever considered that they might be working on perhaps the most effective marketing program ever created - in any industry. All they knew they were doing was looking for a solution to what had been a long-standing unsolvable problem within the airline industry. How does an airline build customer loyalty?" (Reed, 1993, p. 178)
Because of fears by the people who developed the program at American, that corporations would begin to use the free mileage points gained by their employees, which would mean corporate discounting, American had prepared Corporate AAdvantage. However in the early 80s corporations were less concerned with cutting travel costs, rather they saw the mileage prizes as benefits they could give their employees without paying extra for them, consequently, American never felt compelled to introduce the corporate program (Reed, 1993). By not introducing the corporate program and rewarding business passengers individually, American would take advantage of a principal agent problem between business travellers and their employers. The relevance of frequent flyer programs to this thesis is that they are a means of differentiating the airline product and of studying the habits of business travellers. They also constitute in some markets barriers to entry. Accumulating information about their most important customers and using it to stimulate customer loyalty, while achieving disproportionate amounts of revenue and creating barriers to entry, is an effective strategic use of information.

7.2.1 The Principles of Frequent Flyer Programs

The idea behind the frequent flyer programme is to promote brand loyalty by rewarding passengers for continuing to fly American, thus eroding the commodity nature of the service. The rewards were attached to the number of miles flown by passengers and took the form of upgrades or even free flights. The FFP's effect on the demand/revenue ratio is that it creates a principal agent problem. It frequently rewards a business traveller (the agent) on behalf of the employer (the principal). The agent normally
benefits from these rewards. The FFP can function as a genuine discount when the entity receiving the benefits is the one who pays for the flights. However, this is not normally the case. Frequent travellers generally use bonus miles for their leisure trips. Hence, they have strong incentives to pay higher specification fares, to travel more than is strictly necessary, and to take longer routes or more trip segments to reach their destinations (Civil Aviation Authority, 1993). This costs their employers vast sums of money, but gives the airlines disproportionately large amounts of revenue.

In 1990, 3 per cent of US passengers accounted for 27 per cent of all trips and 40 per cent of airline revenues (Humphreys, 1991). Layer and Reid (1988) estimate that ticket prices are 10-15 per cent higher than they would be without frequent flier programs. Layer and Reid (1988) consider that frequent flyer programs may be costing American business as much as $7 billion a year in added travel costs. Frequent flyer programs have become widespread and an essential feature of business travel. In 1991, membership of the main American programs was reported to be: American 14.2m; United 13.3m; Delta 10.1m; Continental 9.1m; Northwest 8.6m; USAir 7.8m (Humphreys, 1991). The degree of consolidation of programs has been high, since the wider the range of routes on which bonuses can be gained and used, the greater the appeal to frequent flyers. Another market advantage of frequent flyer programs for a carrier is the opportunity they afford to compile information on customers. Frequent flyer programs give carriers such information as the customers' name, address, employer, number of flights flown and destinations, preferences for meals, seating, and a host of other details. In the past, airlines had information on the total travel of their passengers, but little, if any, about the individual customer. As this membership
database accumulates, the airlines are able to utilise it for market research, specialised promotions, and differentiation.

In the US, Morrison and Winston (1995) found that abolishing frequent flyer programs would cause larger airlines' fares to fall relative to those of smaller airlines, because the larger airlines carry a greater share of passengers redeeming frequent flyer miles, which helps curb losses of market share. The largest carriers would often lose market share from such a policy and the smaller ones would gain. Travellers obviously differ in the frequency of their trips, their reasons for travel and the frequency with which someone else pays for their ticket. By offering free trips instead of reduced fares and by using their networks to take advantage of these differences among travellers, large carriers have increased their market share. But smaller carriers can and have offset the competitive advantages of frequent flyer programs by charging lower fares and developing strong customer loyalty. Frequent flyer programs are important to competition, but are only one dimension of it.

Levine (1987) claims that frequent flyer programs have assumed an unexpected importance in deregulated airline competition. When first introduced by American Airlines in 1980, the frequent flyer program seemed to many observers in and outside the airline industry, and perhaps to American, itself to be a marketing ‘gimmick’ of only peripheral importance. It is now apparent that frequent flyer programs are very important loyalty building tools. Airlines are however increasingly interested in the information accumulated by frequent flyer program databases. The information contained in these databases is used not only
for the building of substantial mailing lists, but even to predict the demand of the business segment in particular markets.

"If you’re going to start a new city we could literally pull one of the largest mail lists in the world which is our Advantage List. We could literally pull who’s in the zip code, who’s in the area, where do they fly. We could run an analysis on it and tell you right away that Luis is doing 100 segments a year, he usually goes to Denver and he does that 12 times a year, so he’s worth this much" (Corporate Sales Director - Major European Airline).

What started as a simple marketing exercise of offering discounts to frequent travellers evolved into sophisticated information systems to support the accounting of frequent flyers’ miles, and at a latter stage, into an exercise of information acquisition.

7.3 Revenue Management Systems

Revenue management systems, also known as yield management systems, are today an important part of the competitive airline industry. They are responsible for the great complexity of fares in the airline markets. This section will begin by exploring the origins of such systems, and the strategic motivations for their development. It will then explain the strategic principles behind such systems and the main functions they perform in airline competition (without delving into technical analysis). It then continues with a breakdown of the main levels of sophistication of the systems. This examines the different roles they perform in different airlines, but most importantly, the difficulties which higher levels of revenue management sophistication impose on airlines as organisations.
The relevance of this section to the thesis lies not in exploring exhaustively the technicalities of the system, but in providing an illustration that even in the airline industry, which has a high content of quantitative information, the benefits of a sophisticated decision support tool, such as revenue management, are in how the technology is used and not simply in its acquisition or implementation. This requires a vast investment in terms of the organisation’s ability to understand and use the information contained in the system. In order to make full use of a decision support system such as the revenue management, it is important to recognise the limitations of its models and predictions. Only then can the airline complement the statistical recommendations generated by the system, and cope with constantly being interrogated by the system for strategic decisions. Using a revenue management system well is the difference between having the airline work for the system, or having the system work for the airline.

7.3.1 Origins of Revenue Management Systems

The beginnings of revenue management systems can be traced to the development of automated reservations systems by airlines in the 1960s. More accurate control of inventory allowed American Airlines to notice that some passengers were booking flights but not boarding. In order to predict the proportion of passengers that would ‘no-show’, American Airlines began to accumulate reservations data for each flight to serve as historical data for the statistical predictions which would serve as recommendations for the degree of overbooking of flights. Without overbooking of flights seats would take off empty and revenue was lost
forever. The airline would have little chance to fill them because they were reserved until take-off. Overbooking the flights minimised the risk of under-utilising the capacity which aircraft offered.

When the number of passengers who had reserved their seats and who would 'no-show' could be fairly accurately predicted, an incremental step was to predict the proportion of seats which would not be reserved and flew empty - for which no demand had been expressed. The data required for this prediction was in the reservations. By accumulating historical reservations information, it became possible to predict not only the number of 'no-shows', but also the number of seats for which there would be no demand. When this was related to the time reservations were made, the rate at which the reservations would be made could be predicted. So, American began to gain a sense of the probabilities of seats on each flight being sold at each particular period of time before departure. With the deregulation of the US air transportation industry in 1978, carriers were given the freedom to set their own fares in the markets. So, by associating the data to the different fares each passenger paid, and experimenting by varying the fares, it also became possible to study passengers' sensitivity to price - the extent to which demand could be stimulated by lowering some fares, and the extent to which higher fares would affect demand. This enabled American to calculate the probability of seats being sold at specific points before departure, at particular fare levels, and to realise that on some flights demand was particularly strong. By holding prices at certain levels there would still be enough demand to fill flights, even at a much higher average fare. By using the information contained in the 'AAdvantage frequent flyer database (Reed, 1993), American Airlines found that
business passengers were not particularly sensitive to price, but normally made their reservations shortly before the departure of flights, and would not remain at their destinations for long. So, they were more sensitive to schedule, time of booking before departure, and flexibility of travel arrangements, than to price.

The strategic problem was now twofold. First, how many discount seats should be sold at which fares? and how long before departure? If too many seats were sold at discount prices, then there was a risk of not having enough seats for business passengers arriving at the last minute. If too few seats were sold, then there was a risk of the aircraft taking off with empty seats. Second, how could the airline ensure that the higher yield passengers would not begin buying deeply discounted fares instead of the premium fares they normally paid? The answer to the second problem was simple. American would attach restrictions to the fares. So, even today, discount fares are normally bought 21 days in advance of the flight, and require a weekend stay. The answer to the first question took many years of historical reservations data and required data processing power on an almost unimaginable scale. To begin accumulating meaningful data, American had to experiment with varying the proportion of discount fares in relation to the number of seats held back for business passengers. In addition, the demand for business travel varies by time of the day, by day of the week, and by destination.

"There were some obvious guidelines: on week days in the early morning and late afternoon it made sense to hold back a greater number of seats for potential business passengers. But even this was pure guess work; the mix of passengers was unique for every flight. The patterns were shaped by trade shows and industry conventions, by Super Bowls and weather aberrations." (Petzinger, 1995, p. 75)
The only way for the airline to notice variations in the number of business passengers was by being intentionally optimistic in its predictions. If a business passenger could not get a seat at the last minute, that meant that he could not make a reservation either. So, for revenue management purposes, the airline would never have known that it had sold too many discount fares on that occasion, because the only information processed by revenue management systems was that from confirmed reservations.

"At the beginning, around 1977-78, when we were trying out stuff to get a feel for the thing, there was a lot of seats going empty, and a lot of money lost, but we got the show on the road, and it paid back good!" (Member of the Board of Directors - Major American Airline).

The error margin was therefore intentionally favourable to the business passengers because the only way to acquire information about them, to perfect the statistical models, was always to aim for an excess of seats held back for business passengers. Thus, they always had seats to reserve in American Airlines' reservation system, and could contribute not just with revenue, but with information for the mathematical models. This was a trade off between revenue and information as an investment to develop the market sensitivity of the revenue management models. An early version of American's revenue management system is considered to have been responsible for the liquidation of charter services in the US. Donald Burr, the founder of People Express, the low cost, low fare airline he built into the fifth largest carrier in the United States, attributed its demise to the revenue management capability of his rivals. (New York Times, 1988).
"The name given by Crandall to the advance purchase discount was 'super savers'. Suddenly it was possible to fly on a regularly scheduled American flight from coast to coast for $277 instead of $412. ...Crandall’s super saves were spreading throughout the airline industry and accomplishing the intended purpose. Within months the charters were dead. Bob Crandall had killed them off." (Petzinger 1995, p. 75)

The success of its yield management system allowed American Airlines to compete for passengers even with the low-cost airlines. The secret was that the yield management system was designed in such a way as to stimulate demand in order to increase the revenue of the flight. This was achieved by discounting deeply only on the seats which otherwise would have flown empty.

"When, by 1984, Crandall and Amster had nearly perfected the process, it seemed like alchemy. If People Express were offering a $99 fare to the West Coast for instance, American, in theory, could advertise the identical fare, but sell only as many seats as the gigabytes of historical data in the Sabre system suggested it would sell at that price. The remaining seats on that particular flight - the number varying by the day or perhaps by the hour - would be held in reserve for full fare passengers making their arrangements closer to the day of departure. So, while both People Express and American might advertise $99 to Los Angeles, the average fare on the American Plane might be $250, say, while, the average on People Express, where every seat has the same value, could never be more than $99. ... American had out-People Expressed People Express. Because he had no computer systems and no yield management, Don Burr [People Express’s chairman] would have to offer every seat on any given flight at the price Bob Crandall was offering on a fraction of his. Crandall was only too happy to let Burr sell a cheap seat to anyone that American had turned away for the sake of a passenger paying the full fare" (Petzinger, 1995, p. 271).

In the US deregulation era, revenue management systems were used by incumbent airlines to counter the lower fares offered by new low-cost entrants. The idea was to offer a sufficient number of discount fares on each flight so that the low fare entrant can be beaten by the higher frequency of the incumbent's flights. Revenue management capabilities enable an incumbent to respond quickly and inexpensively to a low fare entrant, depriving passengers of a price incentive to fly the new entrant. By meeting or beating the entrant's lowest fares, the
incumbent can attract price sensitive discretionary passengers. This way, not only does the incumbent achieve higher revenues, since the marginal cost of carrying an extra passenger is negligible, but it also inflicts considerable, sometimes fatal, damage on the new entrant.

7.3.2 The Principles of Revenue Management Systems

The objective of a revenue management system is to maximise revenues on each individual flight by setting a fare structure which divides the aircraft into many different units and sells them to different segments of the market. Robert Crandall, chief executive officer of American Airlines, joked about the system enabling airlines to offer "the adjustable rate air fare - tell us what you can afford and we'll sell you a ticket." (Fortune, 29 October 1984, p. 24). The principles of yield management are based on the economic concept of utility, as expressed through the demand curve. There is a maximum price which each customer is willing to pay for a good or service. That price is equivalent to the utility or benefit which he/she gets from the consumption of the good or service. Figure 8 illustrates this concept for an imaginary route. Cases A and B both use a simplistic demand curve which illustrates that the lower the price of a particular air fare, the higher the number of seats sold.
Figure 8 - Minimising the consumer surplus

Case A

Case B


Case A shows that if an airline used only fare Y ($50), then there would be a relatively large number of unsold tickets, as many customers are not prepared to pay that much for the trip. In addition there would also be a large number of customers who bought tickets at this price, but who would have been willing to pay more for them. Case B illustrates that if that same airline on that same route used five different fares (C, Y, A, E, S), the proportion of seats sold would be greater, and the consumer surplus would have been minimised by transforming most of it into revenue for the airline. This is because the airline identified five different groups of customers and charged them the highest price they were prepared to pay. In practice, the exercise does not achieve completely optimal results, and the fares have to be accompanied by special restrictions (advance booking, Saturday night stay, under 26 years old, etc.) so that the customers who would pay higher prices do not buy cheaper tickets.
“For a long time it was thought that the ‘fences’ or booking conditions attached to different fares were a sufficient safeguard to ensure that yields or revenues were not diluted by high-fare passengers switching to low fares. However, they failed to ensure that revenues on each flight were being maximized. In many cases the opposite happened. ... [yield management] involves the manipulation of an airline’s reservation control system in order to maximize passenger revenue. This is done by trying to sell each seat on each flight at the highest possible price so as to get the maximum income from that flight.” (Doganis, 1991, p. 302)

Basically an RMS works like this: the computer makes frequent checks, sometimes several times a day, on how forthcoming flights are filling up. Each flight may have more than a dozen fares allocated to it, and the computer constantly juggles their availability. If bookings are coming in quickly, it will recommend restricting the number of low fares on offer. If, on the other hand, it predicts there will be some empty seats, it will recommend the creation of more bargain fares. The computer uses historical databases for every flight to check on past flight patterns (Economist, 12 June 1993). In order to cater for the premium fare paying passengers, the system uses historical information to calculate the number of premium fares sold, and the rate and the timing at which they are sold for each flight for each destination. Aggregate statistical calculations for all flights to each destination are not useful because the proportion of premium fare demand to low fare demand varies by day of the week and by time of the day. So, each specific flight has its own typical mix of passenger fares. Figure 7 illustrates the disparity between leisure and business passenger booking profiles.
To accommodate the business passengers' demand, which constitutes the vast majority of premium fare purchases, the revenue management system sets a limit on the number of seats sold at discount prices so that there can be a calculated number of free seats available for reservation by business passengers who book at short notice (Figure 9). If there were no limits to the number of seats allocated to discount fares on each flight, the flight would simply fill up with discount fare passengers, since they can make their travel arrangements much longer before departure than can business passengers. The airline would therefore be 'spilling' premium fare traffic to other flights, which would most likely be those of rivals who ensure availability for these late passengers.
The basic value of a revenue management system is in comparing the evolution of a booking curve of a flight to the typical evolution of the booking curves for that flight through time. The system can then statistically form positive and negative tolerance margins, and recommend whether particular deviations from what it regards as typical are significant and hence worthy of fare structure correction to stimulate or slow down demand for particular fare levels.

Figure 10 illustrates the basic monitoring of the booking curve for a particular flight. The above example is simplistic - it differentiates only between discount and premium fares. In practice, revenue management normally comprises several discount fare levels, which would be horizontal dotted lines placed strategically at different points below that of the limit for discount fares, whose booking curves
would be individually monitored. It is now common for airlines on competitive routes to have as many a great many fares on a single flight.

The recommended number of seats allocated to each fare will be adjusted by the system according to the statistical trends which it can detect. Here the system requires additional information from its users. The system can easily be programmed with seasonality coefficients and even with data on general demographic changes and traffic growth predictions for each market. However, the system has no way of detecting reasons for some wide deviations from the typical booking curve. The manoeuvres of competitors may be among these reasons. Also, determining the number of fares and monetary value of each fare in a particular flight is a key activity in revenue management and very much an exercise in which the airline utilises its market sensitivity and experience. It often becomes an experimental exercise where the user needs to rely on market information which is not contained within the historical databases.

7.3.3 The role of qualitative market information

For given destinations, some airlines have vast historical databases which will be used to determine the typical business component of the traffic on that route, and the specific flight numbers for which there is particularly strong business demand (the morning and late afternoon flight, etc.). But an important addition to that information is the competitive information of the market. The route manager needs to know about such things as specific offers by the competition, how much they pay key travel agencies in overrides, and specific events (such as conferences
at the destination, etc). Market specific events and competitive tactics affect
demand for a particular airline’s flights and can alter the revenue management
variables dramatically.

"They are allowed to override [the system]. Typically they override on those
flights that are flagged as exceptions. There are also situations where we know in
advance that the system isn’t going to handle a seasonal change as we would like
so analysts - tactical analysts as opposed to flight analysts - they will plan how we
should make a global adjustment or a broader adjustment to the flights that will
need adjustment. And they try to adjust the input to the model so that the model
will adequately represent the demand at the time" (Route Manager - Major
American Airline).

"...accurate forecasting of demand by booking class is the key to success, but
demand is influenced by many external variables. ...The yield controller must
control not only current sales, but also external developments which may affect
future sales. ... In markets where fares are not strictly regulated, yield managers
must constantly monitor the fares being offered by competitors. While they must
maximize revenues, they must also have an eye to market share. Losing market
share may mean even higher unit costs“ (Doganis, 1991, p. 306).

"The user can then accept [the revenue management system’s] recommendations,
or adjust them. In order to adjust them, the user needs to know something that the
system doesn’t. This means more qualitative information is needed about the
market” (Pricing and Yield Management Manager - Major American Airline).

A new entrant airline on a particular route, for example, can cause wide deviations
from the typical booking curve. This diminishes the value of the historical data
and puts emphasis on more qualitative information. It then becomes more
important to know what the strategy of the new entrant is than what the typical
demand for that particular flight was before the existence of the new entrant. The
same applies for other tactical manoeuvres by competitors.

"These people [yield managers] also rely very much on sales office information for
specific events which will stimulate travel. This information is provided in an ad
hoc basis - event driven rather than process or system driven” (Vice president -
Major American Airline).
This kind of information is not neatly stored in the historical databases, which guide the revenue management system. Extensive searching is required for external information. Revenue management systems are simply statistical models which take into account the quantitative information. They perform statistical calculations of what is typical for specific flights in terms of demand - bookings for each particular fare level at each particular point in time before departure. The more sophisticated systems make recommendations on the typical price elasticity of the different market segments which compose the typical passenger mix on each flight. These are also based on the historical information contained in the database. Having vast historical databases is especially valuable in mature markets (such as the US market), since the number of new entrants is relatively small, and the number of new domestic routes is increasing slowly.

In Europe, the regulatory liberalisation is allowing a greater number of new entrants in the markets and allowing the incumbent airlines increasingly to make use of fifth and sixth freedom rights. Here, in terms of revenue management, the exception is the norm and the emphasis is not on the vast historical databases, but on the airline’s ability to capture and use external information from local markets to guide its strategy, not only in revenue management, but in the general management of the markets. The revenue management information on each particular flight is added to the historical database after departure of the flight to contribute to data which feed the models. In short, the system learns from the use that is made of it, and from the results that the use has produced in terms of revenue for the flight. This means that the quality of the system’s recommendations is also dependent on the level and quality of the
experimentation which the user carries out in order to know what stimulates good 
or bad results. The better the use made of the system, the more useful it becomes.

It is common for revenue management systems’ heuristics to be constantly re-
calibrated in response to changes in market conditions. In order to calibrate the 
systems’ heuristics, airlines must be familiar with the extent to which the 
historical data and the heuristics of the system capture the characteristics and the 
events of the marketplace. This implies that they must know the limitations of the 
systems in the stimulation of demand. For that they need to be proficient users of 
the other, less quantitative, tools of airline management.

"Another classic one is, let’s say you want to start up a new route from some small 
airport and Dallas. There is no data to support that there is any traffic flow, but 
what if by starting the route you will stimulate traffic? Some decisions clearly will 
always remain intuitive. Clearly that cannot disappear; that’s what running a 
business is all about. You can’t put it on auto-pilot. I think the airlines that will 
succeed will be the ones that will make the best use of decision support tools. 
There is absolutely no question in my mind. That will play a huge role” 
(Consultant - Major RMS Vendor).

"The [yield management] systems are only good up until a certain point, to the 
extent that the model can really capture what is going on in the market. ...The goal 
was for the computer to make as many of the decisions as possible. However, the 
system now has models who isolate flights with abnormal characteristics and flag 
them, so they let the system manage the norm and the analysts manage the 
exceptions. ...It would be nice to have a totally automated environment. Any time 
you can take people out of a complex decision process, any time you can do it with 
a high level of accuracy, you want to do it! But I think there are too many 
exceptions and variables in this industry to do that” (Revenue Manager - Major 
American Airline)

"Yield management cannot eliminate the human component. For example, this 
year’s Olympics; there is no historical data, so demand cannot be modelled.”
(Commercial Manager - Major American Airline)

"...To stimulate demand, the human factor has to kick in, and you can’t run it all 
by a damn machine!” (Commercial Director - Major American Airline).
Amongst these crucial tools of airline management are the sales force’s ability to capture competitive information, using the influence of key travel agencies in the shifting of market share, the sales force’s ability to strike direct deals with corporations, and realising the adequacy of the capacity and schedules offered to the characteristics markets. To use a revenue management system well is to know not just what it can do and affect, but also what it can not do or affect, and how other management tools should be used to complement it.

7.3.4 Levels of sophistication

The above section described the basic principles of revenue management systems. In practice, however, the most sophisticated airlines have adapted the revenue management system to their specific requirements and the characteristics of their operations. Different airlines use different types of revenue management systems according to their size, level of revenue management investment, financial muscle, network characteristics and organisational capabilities. This section will examine the great disparity in the sophistication of the revenue management systems used today in the airline industry.

“We get yield management systems from the most simplistic which will say ‘last year on this date we had 100 passengers, so this year we expect 100’. All the way to an O&D [true origin and destination] system, depending on different airlines, different levels of investment, etc. that led to different approaches also through years” (Senior Manager - American Airline IT vendor).

“Yield management manifests itself in many different ways of control. Some of the simpler ones are overbooking. You have 100 seats, you overbook by a certain percentage because so many passengers won’t show. Another simple one is in the
 subclasses of the coach cabin, which are segmentations of the inventory according to the different segments of the market. Another manifestation of yield management may be in a network. Let's say you have a flight from Boston to Dallas to London. On the flight to London, do you take more passengers coming from Austin, or do you take more passengers coming from Dallas? That depends on the total profitability of each customer to the airline. So it is deciding on an itinerary level how many passengers to take at each given point - that's the O&D manifestation. It can take into account, if you wanted to, which specific travel agent you were booking from, and therefore the commission that is being paid to that travel agent. It will basically lead to a dynamic market, where you make instant decisions on variable pricing specifically to you as the consumer, one on one marketing. "That's the direction everything is headed in" (Technical consultant - American Airline IT vendor).

There are three basic manifestations of revenue management:

(1) overbooking of seats;

(2) segment-based revenue management;

(3) true origin and destination-based (O&D) revenue management.

Overbooking is the first step on the learning curve to the more sophisticated forms of yield management. There are some major airlines, however, who still use revenue management only for overbookings. Overbooking flights is based only on numerical statistics; it does not require vast historical information and, most importantly, it requires no external market information. Therefore it is easy for airlines to become experts in overbooking techniques. However, the evolution from overbooking techniques to mastering sophisticated yield management requires a much higher investment not only in the development of technical capabilities, but in the development of organisational capabilities to gain a much higher level of understanding of the markets. Some airlines have not made this breakthrough.
"A lot of airlines don’t practice yield management. They may call it yield management by name, but [they] basically sell the seats until the aeroplane is full, or maybe control overbookings - many airlines do that today!" (Senior Consultant - Major American RMS Vendor)

Segment-based revenue management techniques are common in today’s airline industry, especially among small and medium sized international carriers who have point-to-point route networks as opposed to hub-and-spoke operations. Segment-based revenue management basically consists of using the principles of yield management to maximise revenues on each individual flight irrespective of the true origin and destination of the passengers. Here another level of sophistication in terms of functionality was inadvertently created by the CRS. In order to differentiate their product, the major CRS devised various levels of participation as a way to increase their product portfolio. These basically relate to the frequency with which the airline’s inventory is updated with the airline’s own internal reservation system’s data in the CRS which travel agents use. The most sophisticated level of participation is an online connection between an airline’s internal reservation systems and the reservation systems which the airline uses to deliver that information to travel agents. This way, travel agents have up-to-date information on latest availability. That is how the CRS initially promoted the virtues of the higher participation level to the airlines.

"If we take the [following example:] I want to go to Lisbon tomorrow morning on TAP. So I look in Sabre to find out what's available. Then that information I'm looking at in the mainframe..., TAP may have provided that 2 days ago. So, it might show on the screen there are 4 seats available in business class, where in fact they have all been sold, or it might show, which is more likely in fact, it might show there are no seats available, but if I phone TAP up there are some" (Senior Manager - European CRS).

"So what I see on my screen is absolutely the latest data. If there's one carrier out of that list that doesn't have direct connect availability (in other words the information might be two or three days old) I've got less incentive to go book it, because I know I can get a seat on all these other carriers, so why do I want to bother with one when there's doubt?" (Senior Manager - American CRS).
However, when airlines began subscribing at on-line level so that the travel agents would have more accurate inventory displays, some realised the potential for what is known today as interactive selling. Airlines using interactive selling techniques are able to recognise which agent is making the booking, and take into consideration factors such as the currency used, the commission the agent is receiving, the importance of that agent in terms of annual number of tickets and average fare level at which it sells, their coefficient of cancellations, etc. The airline will consider information which provides a basis for comparison of the revenue generated by different points of sales for the same ticket, and for assessing to what extent the agent is worth defending in terms of market share versus revenue maximisation. It then decides to which agents it wishes to sell which seats and at what fares (when there is a surplus of demand in relation to the capacity offered by the airline). The airline will reply to booking requests depending on the economic characteristics of the travel agency attempting to book. It may return a message of zero availability, or availability only at specific fares, etc. Some airlines create specific fares which are open only to specific travel agencies. Interactive selling is difficult for airlines as organisations because it means they are constantly being interrogated for complex tactical decisions which demand great tactical flexibility and responsiveness from them. These types of organisational capabilities are difficult to develop, particularly in large airlines.

“For an airline to have a very sophisticated yield management system and subscribe at the highest level to the CRS, they would have to have a very sophisticated internal system. If not, they would have to go through a long process of gradual change. They have to have a decision system which can cope with being constantly interrogated by the information systems. It is selling in a very interactive way and that is difficult” (Vice president - American CRS).
Interactive selling requires investment by the airline in the higher level of services it receives from the CRS. It must subscribe at a higher level of participation. This is typically 25-30 per cent more expensive than the normal subscription charges. But the greater investment creates organisational capabilities to cope with making strategic decisions in an interactive way. Making decisions on the effects exchange rates have on the revenue generated is a complex task, but relatively easy to process by an airline, since most are comfortable with quantitative analysis and well equipped in terms of software and hardware to do this. The net differentials relating to currency for any fare class may be as much as 40 per cent (Avmark Aviation Economist, June 1988).

"... the cheapest Kuala Lumpur to London return fare in 1989 was only $845 if sold in Johor Bahru in Malaysia, and $1,060 if sold across the causeway in Singapore. If the same seat was sold in London it would have generated about $1,400 revenue. If sold in Australia as part of a Sydney-London trip, the revenue would have been greater still" (Doganis, 1991, p. 306).

However, difficulties arise when local market information and qualitative variables have to be considered. For example, it is common practice for some airlines to offer availability to specific agents in peak traffic seasons at the expense of obtaining optimal yield, in order that the agent involved will sell them in the lower traffic seasons. Also, an airline needs to have an idea of how much its rivals pay the travel agent in overriding commissions, what fare structures its rivals are applying in specific markets, who are the travel agent’s major clients, etc. This information is not readily available. It is within the reach only of sales offices, difficult to acquire and even more difficult to use by headquarters. Nevertheless, the investment may be worthwhile if the airline can capitalise on it. Controlling seat inventories by point of sale can bring a 5 per cent improvement in
overall revenues (*Avmark Aviation Economist*, June 1988). Given the sensitivity of this industry to fluctuations in revenue, a variance of 5 per cent on overall revenues may mean the difference between millions in losses and making some profit. The more recent marketing techniques used by the CRS companies to sell the higher participation levels promote the virtues of the system as a tactical management tools, instead of the higher precision tool which assists in retaining travel agents’ goodwill by having more up-to-date inventory information.

“A high level of participation in the CRS is valuable because it is a good marketing tool for the airline, and if [it is] associated with a sophisticated yield management system, that is even better for the airline. But it is only really worth having a sophisticated yield management system if you have CRS connectivity to make full use of it” (Senior Manager - American CRS).

**O&D Yield Management**

Currently, the highest level of revenue management sophistication is what is known as O&D (true origin and destination) yield management. This is used by the major airlines, which have large networks and who are experienced in revenue management. Basically, O&D revenue management involves the integration of inventories in order to manipulate fares to optimise the revenue generated by the airline’s entire route network. This is achieved by recognising, when the travel agent is making the booking, the true destination of each passenger.

“And if you get into interactive O&D selling, where when you [are] requesting something you have to give your true O&D, than I can decide what I want to offer you back as available seat. Then you’re getting into fairly sophisticated yield management techniques by the airline. Delta is one example where every time you book Delta in Apollo, you send a record to them and they give their specific availability at that moment in time of that O&D” (Commercial Director - Major American CRS).
Airlines can then take into account whether passengers are connecting with other flights to reach their destinations, and can offer them competitive fares in order to attract their custom for their entire journey instead of just one leg of that journey.

There is a clear trade-off between optimising yields or optimising the revenue that each passenger generates. Indeed, sacrificing the optimality of fares for one of the legs of a journey may well mean that the passenger flies both legs on the same airline, and thus generates more total revenue. By using an O&D revenue management system well, an airline can gain considerable competitive advantage over another which is using a segment-based system. For example, assuming that there were no direct flights from Brussels to Rio de Janeiro, a passenger wanting to fly from Brussels to Rio could be offered a fare of £100 on a flight to Lisbon, and a fare of £800 on the connecting flight from Lisbon to Rio (maybe with two different carriers) using segment based revenue management. An airline using O&D revenue management would be able to recognise when the passenger is booking the flight that he doesn’t want to go to Lisbon at all. In fact, he wants to go from Brussels to Rio. Segment-based revenue management systems cannot do that. So, the airline might discount the first leg flight to £50 (through marginal costing - selling a seat which would otherwise have flown empty, or by denying a seat to another passenger who would generate less total revenue) in order to ‘feed’ the passenger to its own £850 flight from Lisbon to Rio. Even if it had no seats left on its Brussels to Lisbon flight, it might even offer an alternative route which would make the connection to Rio at another hubbing point. This way the airline would ensure that the passenger would fly both legs on its aircraft, generating a total of £900. Also, by using the same principles, the airline can more easily
compete in destinations to which it has no direct connections, even though its rivals may.

In practice, a sophisticated O&D yield management system would apply the basic principles of revenue management, but integrate the inventories of each flight on an airline’s network by recognising the typical patterns of traffic flow through the network, selecting the most significant combinations of flights, and accumulating historical data to compute the probability of connecting passengers turning up for flights. The airline would then create fares (subclasses of C or Y) for those specific purposes, and would constantly monitor the development of the booking curves for those fares relative to their own typical patterns. However, applying the principles of O&D yield management in vast networks at an interactive level, while taking into account exchange rates, agency commissions and market share importance, while building and processing historical databases to predict the large number of variables that influence the demand for each subclass of each flight and using local market information to complement computer predictions, is at the very least a tremendously complex task. Some think that may be going too far:

"Those who think that O&D yield management is really important are generally the international worldwide guys, global guys. But when your route network is very complex and you're hubbing in a lot of locations, and you're doing a lot of cross traffic feeds, and you're trying to feed international both ways, then they try to get pretty sophisticated. They may even be too sophisticated" (Vice Present - Major CRS).
7.3.5 The Trading of Revenue Management Systems

There is today in the airline industry a growing business of selling information systems and technological solutions. Several major international airlines have set up their own small IT companies and are now competing fiercely with specialised hardware and software vendors. With the international proliferation of airline liberalisation, an increasing number of airlines are suffering from the effects of greater competition. Some of these airlines believe that buying a revenue management system can be the solution to their deficiency in terms of strategic flexibility and responsiveness. After all, the success of experienced airlines in revenue management systems is admired across the airline industry. This was seen by some airlines as a good opportunity to generate incremental revenue from the investments which they had already made when they developed their own systems. Revenue management systems are now being commercialised by IT firms belonging to the very airlines that developed them. Those airlines have experience not only in developing the systems, but in adapting their organisations to make use of them. So, they are well aware that the investment in acquiring these systems is by far outweighed by the organisational investment required to make use them.

"With yield management systems, for example, you don't turn on a button and it sets everything automatically. There is a fair amount of input that is required both in terms of calibration, data that you've collected and the quality of that data, but also you have to actually take the results. Any system is only as good as how you interpret the results. You have to interpret the results and factor in real world situations. I mean fundamentally sciences such as yield management are very dependent on your ability to forecast. Forecasting is generally very strongly driven by history. But history is history. At the end of the day you still have the macro economic factors, market conditions, maybe something strange is happening... Decision support systems don't make decisions for you; all they do is present you..."
with support to make decisions. At the end of the day, you still have to rely on your experience, your market knowledge, etc. That knowledge of how to use it consists of knowing the markets, the competition, the organisation setup, the procedures in practice, and also to set up the right data collection not only your internal data, but also data outside, it may be formalised data (it may be informal data)” (Commercial Director - Airline IT Vendor).

Some airlines are selling the very systems which they regard as important strategic weapons and a strong component of their strategic advantage. They do this in the knowledge that their rivals will be hard pressed to make use of them in ways which would pose any threat to their competitive positions. These airlines realise this because they are confident that the use they are making of the systems cannot be easily imitated. They also realise that there is still ample scope for them to improve the use of their system and maintain the advantage even when the buyer is learning how to use it.

“"We’re selling all these technologies to everybody else because we can make money out of it and because by the time they get it we’re already up to stage 5 by the time they’ve incorporated it, you know. We’re not going to give up something that’s going to hurt us” (International Sales Manager - Major American Airline).

“"And we have to keep ahead of everybody else. If we don’t continue advancing, we get lost in the shuffle. If we’re good, we’ve got to continue to be good and the only way to do that is to keep getting better” (Area Manager - Major American Airline).

The most obvious difficulty that buyers of these systems have is that the systems need historical data in order to make reasonably accurate predictions. Airlines who have not been operating a revenue management system will also not have been accumulating historical information about each specific flight. Even when they have some sort of historical information, it is not codified in the way the revenue management system requires. Other less obvious, but no less important, difficulties are in adapting the organisation to using a revenue management system. The system needs to be constantly fed with strategic and tactical thoughts
by the organisation. Revenue management systems require that the organisation delegates a great deal of strategic responsibility to those who are using the system to monitor the market responses to the airline's product, in order to cope with being constantly interrogated for strategic decisions.

Another major difficulty of using revenue management systems is that the data which the system's models use to forecast demand are historical. Real time market events, such as competitors' tactical manoeuvres and destination-specific events, often reduce the relevance of the historical data. To devise a strategic response to a variation in sales, the airline needs to know not just the extent of the variation (which is what the revenue management system provides), but most importantly, the origins and reasons for the variation. To respond to unusual market signals, airlines need to acquire local market information which lies outside their immediate organisational boundaries. This market information is not neatly codified to fit the system; it is event driven and highly perishable. This requires great investment in flexibility and responsiveness in procuring, acquiring, interpreting and using local market information on the part of airlines.

The practice of selling revenue management systems by airlines is a clear capitalisation on the difficulties that buyers will have using the systems. American Airline's subsidiary - Sabre Decision Technologies (SDT) - is the dominant player in the airline information technology and solution business. It belongs to the Sabre Group, which owns the CRS business and which in turn is owned by AMR Corporation, which owns American Airlines. The Sabre Group generated US$ 1.5 billion in revenues in 1995 and is the most profitable unit of
AMR, generating margins far in excess of those achieved at the far-larger airline unit (Flint, 1996). SDT accounted for 34 per cent of those 1995 revenues. Its ninety-page brochure offers products and services for administration, airport and ground transportation, cargo, catering, crew scheduling, distribution planning, financial services, flight operations, frequent flyer programs, hotel, in-flight services, maintenance and engineering, pricing, rail, reservations, sales automation, and yield management. The business of the AMR Corporation is increasingly about far more than operating one of the largest airlines in the world. It is believed that SDT is dominant in its business because of a combination of an extensive product portfolio, a strong brand name provided by American Airlines’ success in this field, and most importantly, because it markets most of its products as part of consulting projects.

“Decision support systems aren’t ‘off the shelf’ systems. They require a great degree of calibration. They require a great degree of knowledge transfer. So, if it’s really not treated as a consultative project, you don’t get the benefit out of it. … We don’t really compete in that kind of thing. … I can think of at least two major airlines in Europe that I know who have made investments in purchasing yield management systems, but made the classic mistake of thinking that if they just pay a million or half a million bucks for the system and plugged it in, it would all be OK. People have to understand the technology, people have to understand the product and the organisation, they have to understand the data, all of those things are important. … It is a huge change, and you don’t get the benefit without the change” (Vice President of Sales - Major Airline IT Vendor).

This provides strong indication that American Airlines’ experience in developing and using technologies is reflected through SDT’s dominant position in the airline technology solutions business. American Airlines’ presence in the airline technology solutions business will also assist the airline in keeping informed about the technological developments in the field, and about which competitors ‘buy and sell which systems through the inevitable diffusion of technological and
competitive information in the business. SDT's consulting activities will also no
doubt enrich the airline's experience in using technologies. It also provides
indication that American Airlines not only recognises the organisational
difficulties in using revenue management systems, but capitalises on them to
generate incremental revenue without eroding its competitive advantage. For
example, the first client for the latest version of an O&D revenue management
system developed by SDT was not American Airlines, but Air France. Air France
is owned by the French government and is one of the major European airlines. It
is using state aid to undergo an extensive re-structuring program in order to
reverse its astronomical financial losses.

"We don't really have that many restrictions because American itself doesn't own
the systems. We do. See, we're free to go sell it. ... American's relative [potential]
gain from O&D yield management is smaller, right. Air France's relative
[potential] gain from O&D yield management is much greater, but will they get to
exactly the same point as American? I doubt it! ... Any system is only as good, in
my opinion, as several other things. It is only as good as the organisation, the
organisation structure, as the process and procedures to use that, and the data that
goes into it. The large databases of history - Air France may not have them, they
may not be as clean and [Air France may] not really understand how best to use it.
So plugging in a system is only part of the solution. So if you don't have these
other three things working harmoniously, you don't get the benefit out of things.
So that's where I think American has got a reasonable advantage over most people,
because they can certainly understand the business. Like many other things, you
know... you don't take a super computer and put it in Kenya, and expect people to
use it as effectively" (Senior manager - Major Airline IT Vendor).

The development of more complex and sophisticated statistical models and
relational databases for the modelling of revenue management is, however,
subject to diminishing returns. Airlines experienced in revenue management are
aware that there are higher returns to be accrued by using better the reasonably
sophisticated revenue management systems they already have. This is because
they recognise that there is ample scope for improving present strategy
formulation and decision making processes within the organisation, and for
developing better organisational capabilities to improve the blending of local market information with the airline's own internal information.

"Competitive advantage really comes from systems, but as much comes from how you use them. You don't just learn to use a system well. You figure out better ways to use it. You figure out better ways to understand the interaction between pricing and yield management, between scheduling and yield management, between yield management and distribution. There is ample room to continue to improve your knowledge" (Senior Consultant - major Airline IT Vendor).
CHAPTER VIII

AIRLINE SALES OFFICES AND LOCAL MARKET INFORMATION

8. Airline Sales Offices and Local Market Information

"Deregulation and liberalisation pose important threats for the previously protected incumbent airlines which they affect. ... Competitors will be able to work in all areas of the marketing mix, without their rivals being able to claim government protection. Planning horizons generally become much shorter. There will be no point in airlines undertaking detailed long-term planning if the marketplace is very unstable. Instead, the skills that will be needed will be those of maintaining flexibility, so that business policies can be adjusted as changing circumstances dictate" (Shaw, 1990, p. 101).

Headquarters is responsible for managing operations and administration processes, and ultimately, for setting the plans and devising the commercial strategy of the airline in its various markets. Sales offices have an increasingly active role in airline strategy; they convey local market information to headquarters, often with justifications for price change requests, requests for increased budgets for incentives to travel agents, and justifications for variations in sales. The qualitative and tacit information sales offices acquire is recognised as important by senior managers.
“I think there will always be some room for the tacit information in strategy. It could diminish. Within this industry especially to some extent ‘if you fly it, they will come’. The real battle is in yield, not in load factor. Anybody can fill their airplanes with price. The key determinant of success is your ability to get your yield up. The key way of getting the yield up is to get more full fare passengers on board. And that has to be done through the sales force. That is exactly what they are doing. They are the providers of that information, they are the promoters of the product, they are the relationship managers of the deals that we have in place, but they are also the eyes and the ears of the airline.” (Corporate sales manager – Major American airline)

Airlines go to great lengths to acquire market information, but they experience much difficulty in getting that information across to the senior management so that it can be used for strategic decisions. This is because the information upon which the relationship between top management and sales offices is based was acquired informally, outside the organisational boundaries. Also, senior management finds difficulty in basing a decision on informal information acquired by someone else in the organisation.

“One of the things that I have to do is approve or reject all of the corporate deal proposals that we have and a lot of it qualitative. Yes, you can know some factual data about how much business the company has that we can potentially get, but you’re going to have to believe what the rep is telling you, or the corporate account is telling you” (Corporate Sales Manager – Major American Airline).

“It’s informal. You know what discount levels the other carrier’s going to go in with, basically just by being in the market place. It’s all informal. I think it’s what causes frustration to a lot of senior management of the airline that are used to very factual numbers that are valid, whereas ours are all by feel” (Area Manager – Major European Airline).

The information procured in the markets through sales representatives is more often than not well understood by the managers of the sales offices. However, the same level of understanding cannot be reached by headquarters, which has to manage centrally such resources as fleet, revenue management, and crews.
"The formal system actually asks more questions than it gives answers. But where the information lays outside us, is clearly more in the revenue side, there is more qualitative information to be found. But on the cost almost everything can be easily systematised. The cost you have control over, the revenue you don't because it comes from outside. It's just the nature of the beast" (District manager - Major European Airline).

Information on costs and operations of the airline is abundant. It is generated and codified by the airline in such a way as to be divisible and to find neat places inside the structure of the organisation. However, the same cannot be said for the information acquired in the day-to-day selling of its products in each market. Symptoms of the difficulty that even the most sophisticated of airlines feel in using the market information acquired by its sales offices are the attempts to model and internalise this information in conjunction with trying to generate as much information as possible in order to take decisions. Too much information delays strategic decisions and blurs the assessment of the relevance of vital bits of information.

"American Airlines probably gets more information than we can use. We're very analytical as a company." (Area Manager – Major American airline).

This section will analyse the contents and importance of local market information as well as the ways in which airlines acquire and use it in their strategic endeavours. It will start with a general overview of the role of airline sales offices in airline strategy. It will study the interaction of the sales offices with travel agencies and their relationship with corporations for the sale of corporate travel. These interactions constitute the main processes of acquisition of local market information used increasingly in airline strategy. Finally, it will examine the exchange of information between the sales offices and headquarters in order to
8.1 The Role of Airline Sales Offices

Traditionally, the main role of the sales offices was to manage the local distribution of the airline’s products and the financial transactions with the points of sale. However, with intensified competition and the emergence of CRS technology and information technology in general, there has been a shift in the role of sales offices. Increasingly, this role is to inform headquarters of local market conditions and provide it with competitive information to be used in strategy. The relationship between sales offices and travel agents has evolved into an intense exchange of competitive information. This is because by giving travel agents focused sales incentive programmes (which are private agreements), airlines have managed to create a set of less obvious market forces, which greatly distort the markets. Incentives to travel agencies, albeit expensive, are very effective tools to bias the information travel agents sell to their customers in favour of specific airlines. The increased importance of the role of travel agents in the airline distribution chain has increased their bargaining power. Airlines have invested yet more resources in the monitoring of travel agency sales activities, and in the building of information exchange relationships with them in order to tap into these sources of information. This external information is a powerful fuel for the strategic processes of airlines. Airlines, however are not completely at ease when it comes to basing vital strategic decisions on it.
"We, airlines, all to a degree tend to work internally, but that internal combustion system has to be fuelled by some external mechanism. And that external mechanism is the information that is gathered at some point about the markets" (Commercial Manager - Major European Airline).

The nature of the airline business and the increasing competition in many markets has meant that the competitiveness of airlines is increasingly determined by their ability to use highly perishable and qualitative market information. Medium and long-term strategic plans are guidelines compiled from the accumulation of tactical information.

"An airline is very much based on tactics, day-to-day actions, reactions, etc. Strategy is taking all the tactical information, from all the departments that are consulted and you put it into one big pie, and say: 'Here's what we want to do'. Then it serves as guidelines to our day-to-day running of the airline, more of a reference sort of thing" (Senior Manager – Major American Airline).

“Our speciality is local information, so we’re interested in competitive information about what the other guys are doing in the same market we work in. We get our direction from headquarters, they say ‘This is important to us, and this is what we would like you guys to find out’. And generally, we know how to do that. It is up to us to figure out how to get into the specific accounts [points of sale], how to identify which accounts we want to go to, and draw in the information that is available to us to do that” (District Sales Manager - Major American airline).

The main purpose of sales representatives is obviously to promote sales. However, in order to promote his airline’s products, the sales representative must acquire much information about the competition and the airline’s main points of sales in order to identify opportunities and focus his promotion efforts.

Increasingly, with the sophisticated information systems which extract and process information from the CRS reservations, the visits by airline sales reps to the points of sale are in response to variations in sales which the airline deems significant and worthy of investigation.
“We have access to information that allows us to see what the agency sells for the competition, and then we go to the agency and say ‘Where does that come from?’ And then we go after that account to try and shift the traffic over to us” (Sales Representative - Major American Airline).

Sales representatives have to determine which agents are most important for the airline, and what the airline’s market share is for particular destinations in each of those agents. They then must procure competitive information to identify reasons behind the variations in market share, such as confidential pricing mechanisms or incentive programs which are affecting sales.

"I can find that [competitive information] because my guy sitting in Abu Dhabi, calls me up and complains that his fare is bad. That’s why you need to be savvy, if you’re a sales manager or if you’re a sales representative, and pay attention to those kind of things. And you pay attention to those kind of things by, maybe you check your computer, maybe you see newspaper ads and you double check to see that you have the same fares as the other guy. You visit your accounts [and ask] ‘How’s everything going?’ You do that in your own way, shape or form" (International Sales Manager - Major American Airline).

“Sales reps these days spend most of their time analysing the accounts, looking for opportunities. Are they performing the way they should be? Are there weaknesses that they can point out that we can correct and change? Are there opportunities that this account has that we can capture more business from? The sales reps’ main knowledge is in knowing how to use the information that is available to them. They know a lot about the competition, they know a lot about the markets, the customers, all of those things, because they’re not going to succeed if they don’t, not today!” (Area Manager - Major American Airline).

Competitors’ pricing and incentive programs in each significant point of sales are of paramount importance, not only because they are very influential factors in sales, but because they constitute hidden market forces. Override commissions and private fares are not openly published in CRS displays; they are private agreements between airlines and each of the points of sale. Travel agents are points of interaction between the airlines’ product and customers. So, the sales consultant, working in travel agents dealing with customers, is constantly exposed to unstructured and tacit information. This cannot be captured by the reservations
information used by airlines to determine variations in market share per flight relative to specific competitors.

"We get as much information as possible [from travel agents]; for example, what prices do our main competitors have, what promotion activities they deal with, what sales activities do they work with, how aggressive they are, what markets they push more than others, and so on. We get that information through our representatives [sales offices]. We are relying on their feedback, on their information. If they cannot sell us for some reason, then they identify the reasons behind it. That in itself drives the feed of information that we might be looking at. ...Don't forget they [sales offices] are living in the market place! Being represented there makes it easier, quicker and reliable to get competitive information" (Sales Manager - Major European Airline).

Some airlines constantly check their competitors' fares and schedules by employing teams to monitor the CRS displays. This process has to be done manually, since the regulations prevent the 'hosting' of CRS by airlines, and no CRS has yet marketed a product to alert airlines to changes in competitors' prices and inventory. Because CRS are owned by airlines, the vested interests of their owners prevent any such products being marketed. An airline relying simply on reservations information and revenue statistics for each market will overlook vital market signals. As an example, whereas a competitor's fare may show in the CRS as £100, in reality, it may be £75. Another case may be that whereas a competitor is charging the same fare, it may be giving heavy overriding commissions to certain travel agencies. From an airline's perspective, it is vital to receive these market signals.

"So, when you compete, if everything is published, you know how to react to your competitor, but what if they are unpublished? Somebody is selling from certain agencies 35 per cent discount of the fare, so how do you get best information about this? It's from contact networks! That comes from your airline's sales force, it comes from the sales guy in London calling up a few agencies, having a few contacts, taking them out to lunch and finds that BA has cut a special deal just for next week because of some festival or football match" (Senior Manager – Major European Airline).
"We initiated a special fare in the Gulf, effective April 1. To prepare for that, we needed certain information. So, we went out to a certain area, to a certain amount of representatives and we said, ‘We are looking for the least expensive fares that are taking place from now until the end of May. Who has them? What are their restrictions? How do they compare with the lowest published fares in the market? How are their sales programs? Etc.’” (Sales Manager – Major American Airline).

Many airlines still rely very much on published fares and monthly variations in sales to determine the effectiveness of their products and to adjust strategy. Given the competitive intensity of the business and the specific seasonality of markets, given the fact that competitive information to justify variations in sales is highly perishable, and the existence of hidden market forces, a systematic and structured monthly review of strategy is proving increasingly inadequate. Greater strategic flexibility is required. More external information is procured, and more qualitative analyses are performed. An increasing practice to counter the problems of relying on published fares and monthly variations in sales is the use of MIDT booking and market share information in relation to specific competitors at particular destinations, in conjunction with specifically tailored and focused airline sales incentive programs. Local market information is a vital addition to these tools. This information is increasingly being used as an input to strategy, thereby achieving a greater level of flexibility and a more timely response to market signals.
8.2 Relationship with Travel Agents

8.2.1 Travel Agent Incentives and Airline Competition

Some airlines have developed extremely effective sales programs. Sales programs therefore consist of sales objectives and a mix of incentives offered to the different types of agents to acquire market share and high-yield passengers. With the improvement of the sales monitoring capabilities provided by CRS and MIDT technology, airlines are able to improve the returns on the investments they make in incentive programs to travel agents.

"I think it's very similar with everybody. You pay incentive money overrides to those accounts that provide you with the extra share" (Commercial Manager - Major European Airline).

"...It is a two way street! If you want to be my partner, then you've got to sell me at a time when I need the traffic. You've got to sell some business class passengers, some first class passengers, and I'll help you with leisure passengers to maybe get a sharper price" (Director of Commercial Sales - Major American Airline).

Sales programs aim to take advantage of the dependence of many travel agents on the substantial revenue that these incentives provide. Airlines can stimulate agency loyalty, leverage specific markets and specific segments of traffic in an extremely focused, responsive and flexible manner, providing they use that local market information in their strategic decisions.

"I would say that for the most part it is successful, or we wouldn't continue it. So the perception is that it works. Agencies want extra incentive money. They build it into their budget, and they plan on spending the extra dollars that they can earn sometime in the next twelve months. They'd better perform if they want to get paid that money. We have the ability now to instead of just saying collectively just
give me an extra per cent of all of your dollars, we set targets in those markets”
(Commercial Director - Major American Airline).

The returns that airlines get from effective incentive programs go beyond the extra revenue and additional market share. Airlines also achieve a better relationship with agents in terms of exchanging competitive information. Travel agents that have incentive agreements with an airline are keener to provide competitive information, because a principal variable of incentive programs is the volume of sales associated with market share. What began as a means to encourage the travel agents to distort markets, is increasingly used as a means to persuade the travel agents to share competitive information with airlines. Today, many incentive programs aim to achieve a balance between shifting market share, and providing the agents with an incentive to engage in a relationship of intense information exchange.

"The thing that we like, because of our relationships, is that if someone sees something that may go away from us, they will tell us, they will want us. They will say ‘Hey, help me get through this’ and we will use what we have to do it. Those are our customers - our distributors” (International Sales Manager - Major European Airline).

"They’ll tell you immediately if they didn’t make their incentive programmes and they’ll love to come in and tell you here’s why I couldn’t. They come up with all kinds of ideas. It’s not purely numbers, it’s different aberrations that will happen" (Area Manager - Major European Airline).

For a given airline, the strategic importance that a certain destination has varies constantly, almost on a daily basis. This means that airlines’ strategies for each market also vary constantly, which in turn means that to remain competitive, airlines are forced to acquire a vast amount of external information. It also means that, to remain competitive, airlines are forced to be responsive in processing this information and in communicating it to middle and senior managers, who have
the power to adjust strategy and product specifications according to the needs of each market. The improved monitoring capabilities that airlines have at their disposal to develop focused incentive programs can become useful for airline strategy only if senior managers make use of the qualitative information acquired by sales offices to develop their strategic plans and allocate resources to each market.

“I make the programs that the sales guy takes to sell. And if he says, ‘We got to change this’, and I say, ‘Why?’ he says ‘Because..., the competition is doing this’. And I know that because nobody is selling my tickets any more” (International Sales Manager - Major American Airline).

Apart from the investment that airlines make to subsidise the strong bargaining power of travel agents through higher commissions, they are investing increasingly in their sales forces. Airlines need more and more focused and responsive sales forces to form links with travel agencies that go far beyond institutional relationships, into personal relationships, capable of exchanging qualitative and sensitive information. Airline sales representatives constitute important assets for the sales offices.

“...You’re expected to have relationships with your accounts [travel agencies] that will withstand those periods when there may be some antagonism in the industry, or in certain situations and stuff. If you deal with me every day, every week for three or four years and things are going well, somewhere within those three or four years we’re going to have a problem, ups and downs, but if you recognise that I do the best for you all the time, even if I can’t give you what you want today, you know that I can’t give it to you because I have done everything I could to try and make it happen and I couldn’t” (Sales Manager - Major European Airline).

The value of a sales representative for an airline is not merely dependent on their working experience in the airline business. His/her network of contacts and relationships with travel agencies and corporations may leverage the airline’s
sales significantly in particular regions. It is normal practice for sales reps to be 'head-hunted' from other airlines.

“When Eastern fell, I was told to go out and find who was the best rep Eastern had in Boston and hire him. And I did! I asked travel agents, and in fact I asked Eastern's manager, after they closed up. I said, 'Who is the best person you have on your payroll?' He told me, and then I went out and checked that person with travel agents and corporate accounts, and they agreed. The store closes [Eastern's bankruptcy] and somebody has to buy the shelves!” (Sales Manager – Major American Airline).

8.3 Relationship with Corporations

There are few airlines today focussing on the business traveller. Examples include SAS, American Airlines, and United.

“The trend now over the last 3 to 5 years is to really know the corporations. If in 1995 we had 2 more business passengers in every flight, we probably would have doubled our profits” (Corporate Sales Manager - Major American Airline).

Airlines focussing on the business segment realised that in order to minimise the competition from other carriers, they could search for business passengers, not just in travel agents, or by merely offering frequent flyer cards, but by negotiating with corporations which are significant sources of business traffic. The ways airlines go about seducing premium traffic vary. Options depend on the presence and competitive position of each airline in each market. They also depend on the ability of airlines to procure market information about the business traveller, about the travelling habits of corporations, and about the market forces that rule negotiations with corporations. The market for corporate travel is very information intensive. Information is required about the population and travel
needs of corporations in the different countries and regions of each country, about other carriers’ discount rates to corporations, about the potential to by-pass certain travel agents. Also, developing contact networks capable of exchanging the type of market information of interest to the airline requires expert acquisition and use of information. Basically, airlines target the corporate travel market in three main ways:

- By negotiating directly with corporations, and attempting to by-pass the travel agents.
- By negotiating with business specialist agents
- By targeting the corporation directly, but without by-passing travel agents, making corporations buy the tickets through travel agents at a discount, and giving the agent a special incentive (e.g. an override).

Few airlines have the market presence and the bargaining power to be able to negotiate directly with the corporations and by-pass the travel agents. The ones that follow this strategy normally do so in their home markets, and in the regions where they are clearly dominant. Often that gives the airlines enough customer base to leverage corporate sales abroad. There is an increasing number of multinationals willing to centralise their travel with one or two airlines, if the incentive is sufficient to justify the effort to set and enforce a corporate travel policy. Airlines which deal directly with corporations and by-pass the travel agents need to acquire the most information about corporations’ travel needs and about the market forces which dictate what incentives are adequate to buy the different types of traffic from corporations. This market information is strongly
qualitative, exists in informal channels, and is difficult to verify and validate. It is collected by sales reps, whose list of clients includes corporations.

"You don’t really know. You get a sense for what the market place is doing. You trip over competitor contracting information. You have them telling you, ‘Hey, I want to stay on your airline, but the other guys are offering me this’. There is a lot of information that floats around and that’s one of the qualifiers before we do a deal" (Senior manager – Major American airline).

"You know what’s going on because there is a market place. It’s not a perfect market place, but there is a market place. I could tell you what the going rate for a company with 1000 business class sectors between London and New York is. I can tell you what the going rate is for each airline to get that business" (Area manager – Major European Airline).

American and United Airlines are examples of the few airlines which have a sales force dedicated to the promotion and marketing of corporate travel. They have realised the merits of that specialisation for two main reasons: (1) the returns on investment are clearly high. One deal with a corporation can bring a few hundred regular business travellers to the airline; (2) the higher degree of difficulty in terms of information acquisition in order to compete in the corporate travel market by-passing the travel agents justifies a specialised sales force.

"A lot of the bigger corporations pretty much do it [corporate deals with airlines]. United actually changed its whole workforce around to create a corporate sales group" (Senior manager – Major American Airline).

This specialisation goes far beyond the breeding of specific technical or analytical skills. It is a clear specialisation in information procurement, acquisition and use. Even though the type of information the sales reps procure in corporate travel does not differ extensively from that procured by sales reps in travel agents, the networks of contacts required for acquiring information about corporations and the market forces of corporate travel are different. The sales rep needs to know
which corporations to target and must then develop an extensive network of
contacts in the corporate world. This is a difficult task if one considers that the
setting and enforcing of corporate travel policies by corporations is a practice still
in its infancy.

"... the corporations are very immature when it comes to handling traffic. It’s an
immature business [corporate travel]" (Corporate Sales Manager - Major European
Airline).

Such negotiations with large corporations have to be carried out at a high level,
(i.e., president, or chairman). Access is difficult. Business-specialist travel
agencies, for example, are well aware that once airlines get information about
their clients, they can attempt to by-pass them. So they tend to demand incentive
deals linked to volume of sales, overrides on many routes, and low business class
prices. They realise that much of the bargaining power they enjoy is attributable
to the market information they have, which airlines would like to acquire. To
maximise their usefulness to their clients they need to achieve considerable
discounts from airlines.

8.4 Relationship with Headquarters

The relationship between headquarters and sales offices is difficult. This is
mainly because the sales offices are constantly bringing external information into
the airline. Headquarters, especially in the most sophisticated airlines, has a
tendency to work very much with the powerful information systems available and
the statistics they generate. This feeds the tendency already in place of airlines to
be very much dependant on operational information for their decisions. Friction between sales managers and route, fleet or yield managers is common. The former possess information about the airline's strategic position in the various markets; the latter have information mostly from mathematical exercises for maximizing revenue and utilizing resources. The latter work with utilisation statistics and predictions based on historical information. They have tangible measures on which to base decisions and interpret results. The former work with tacit constructs and with informal information. Their efforts often produce results which are difficult to quantify or measure in tangible terms. It is therefore not a surprising tendency of airlines to be very operationally oriented and let operations guide strategy instead of strategy guide operations. However, sales managers depend on headquarters for vital strategic decisions, and would like headquarters to take into account of the market information they acquire.

"I had the Hawaiian market. One of the problems you ran into was that there was nothing you could hardly do as market manager to manage the market because the system overrode you. I wanted to change the aeroplane from Portland to Honolulu from a 747 to a DC10 and I would make that request to the scheduling people, and we would figure out how much incremental revenue, or cost savings, whatever, was going to be associated with whatever reason I wanted to make the move. So I had a number when I was done. If I made this move, I could do X. OK? And they go away and they come back and maybe two weeks later and they would say, 'You know, if we make that move, we're going to lose this 737's ability to fly from Cleveland to Miami, and that 737's revenue is worth more than you're going to save over here'. I would have to say 'What do you want me to do?' There is nothing I can do with this thesis! So we quit doing it. After a while and a lot of passionate fights went on, a lot of manipulation of the system. Lots of things went on for those who understood the system well enough to manipulate it" (Area Manager - Major American Airline).

Sales offices normally send headquarters requests for change of product specifications: prices, schedules, capacity, sales programs, budgets, etc. In order to maximise the utilisation of resources and minimize the costs, headquarters
attempts to quantify and measure in tangible terms that which is intangible. This means that much of the intangible information associated with the various proposals from the markets is lost, or at least not taken into account, and that the only dimensions to measure the importance of the proposals are increased revenue, reduced costs or improved utilisation of traditional resources, such as fleet, crew and capital.

This means that the medium to long term needs of the various markets are not considered. On the one hand, the volatility of many airline markets and the competitive intensity of the business tempts airlines to maximise short-term profits out of present circumstances, and not to plan for the future. On the other hand, the nature of the distribution chain and the market forces that rule it, such as incentives for travel agents, dictates that market presence and scale of operations are important determinants of success. High yield comes from business passengers. To capture business traffic, airlines need the scale of operations and the market presence to negotiate either with the business specialist agents, or directly with corporations. To achieve market share, airlines need to be significant sources of revenue for travel agents in the various markets if travel agencies are even to consider negotiating incentive programs with them. Neither of the above market positions is achievable through short-term investments, or by strict maximisation of resource utilisation.

"Give the sales offices more attention and more autonomy to benefit from the advantages of having a feel for the local market places" (Commercial manager – Major American Airline).
It is therefore ironic, but not surprising, that airlines invest resources in sales forces to acquire market information in order to be closer to the reality of the markets, but yet find great difficulty using this information for strategy.

"I think that you have to give market managers an opportunity to actually fail and you have to trust those men. If they tell you they are going to deliver x number of seats even though they can't prove they're going to give you those number of seats, and they have commitments from their suppliers - giving them more autonomy or taking more of a risk with them, and seeing if they deliver or not. If you go to Japan, with wholesalers we have a handshake. They live on their word and their commitment to you and you've got to convince the guys back here that their word is good enough, and that is very difficult. You've got to kind of back them up a little bit and say, 'You try it and if it doesn't work then we've got to deal with it'. You've got to give them the opportunity to deliver" (Area manager – major American airline).

The negotiation processes which take place between headquarters and sales offices involve the interaction between parts of the organisation which have different operating interests and different types of power within the organisation. There is competition for resources and sales between the various sales offices of an airline. Each sales manager is accountable for the results in terms of volume of traffic, revenue, and yields of his market. There is frequent competition for such resources as capacity, which is controlled by the operations department in negotiation with the commercial department. There is competition for advertising budgets, for travel agency incentive programs, etc. These are resources which greatly affect the performance potential of each market and constitute pillars of airline strategy.

"There was basically tension built into it because, as an example, I had the Hawaiian market and Frank Clark at the time had the international transcontinental. And if the international transcon either fed the Hawaiian market or Hawaii was an extension, who had the passenger from New York to Honolulu? They were flying Frank's transcon service to LA, but they were connecting to my aeroplane where I was using his aeroplane from LA to Honolulu. So right away you get these big arguments over whose seats, and whose prices get put on, whose inventory you
take out. That was a very contentious operation for about two years. As a matter of fact, one time the president brought us in one time and told us that we had to quit fighting” (Former sales manager – major American airline).

Most major strategic measures taken in a market involve discussions and negotiations with the pricing and yield management department, with the scheduling and operations department. These negotiations are often subject to the set of social forces that the organisation of an airline constitutes.

"Nobody would be happy if you played by the rules and restrictions, and they weren’t. You were in a matrix organisation, so you had all of the responsibility and none of the authority. So you had to sit down and negotiate with everybody: scheduling, pricing, yield management. You had teams. You had to get them on board and you had to get them to think the way you wanted them to think and then to see if they actually could execute. And we basically found out that you couldn’t do it, for the most part. The decisions would end up being a measure of power and influence rather than the logic of the thing. The mathematical logic was very rarely worked out. If you had a lot of leverage, a lot of influence, knew your way around, you could have some success, but the airline itself may not have been better off“ (Sales Manager – Major American airline).

8.5 Conclusions

Strategic flexibility and responsiveness in the airline industry come from the capability to blend internal information with external information and qualitative market information with quantitative information. Airlines must combine the capability of acquiring and using market information with the other capabilities of the organisation. The difficulties they experience in using external information are symptoms of the difficulty of blending those capabilities. External information is hard to control, mostly informal and qualitative by nature. Internal information conforms to the organisational structure, is neatly codified and scientifically analysed, but by itself is of little use in such a competitive business.
Many airlines today possess very sophisticated information systems, operational processes and decision support systems. These play a vital role in their tactical processes. However, by themselves, these do not make an airline competitive.

"Everything is technology related today, and you can have too much technology if you don't use it. If you have somebody just looking at the numbers, that's no good. If you just talk price and about the pie charts, then that's all you'll talk about. You won't have a relationship with the market. Technology for technology's sake is a waste of time. The reason you have technology is because somebody needs it. You don't just create it because you can and I think we've done some of that" (Vice-president – Major American Airline).
CHAPTER IX

CASE STUDY: USING REVENUE MANAGEMENT SYSTEMS

9. Case study: Using Revenue Management Systems

"The system isn’t strategic but how you use it is" (Air Transport World, August 1996)

This case study will describe the experience of a small airline in attempting to make use of a simple segment-based non-interactive revenue management system, which it acquired in the hope of substantially improving the strategic management of its markets. The case study illustrates much more than an airline’s attempt to implement an information system. It describes the reality of attempting to use information in such a way as to be useful to strategic decisions. Air X had put its hopes of improving its strategy-making processes by acquiring the sophisticated information system, but then realised that strategy requires much more ‘information than that provided by information systems. It requires the use
different types information from different sources inside and outside the organisational boundaries.

The first movers in revenue management, such as American Airlines, have developed information systems incrementally since the 1960s, when they began to realise the importance of having accurate inventory controls, to the modern ‘True Origin and Destination Interactive Selling’ revenue management systems, which constitute the cutting edge of that technology. Revenue management systems demand much investment on the part of the organisation to make use of them. That aspect of revenue management is not appreciated by many airlines. They are well aware of the strategic potential of these systems, but less aware of the powerful organisational capabilities required to fulfil that potential. The airlines which have developed them, and who make good use of them, are symbols of sophistication and strategic responsiveness, and therefore well respected by their less experienced rivals. Analysing exhaustively the constructs of the incremental learning processes that the first movers on revenue management underwent in order to reach the level of sophistication they enjoy today would be ideal. This would produce evidence to suggest that the use of the systems demands a far greater investment than the acquisition of the systems, and therefore much harder to imitate. However, this would require detailed and longitudinal research, and would constitute a large research project in itself. Instead, a more feasible option, which can better contribute to the larger picture on the strategic use of information in the airline industry, will be drawn.
This case study relates to the experience of a small European airline in acquiring and implementing a relatively simple segment-based revenue management system. The airline owns close to 40 aircraft and serves 60 destinations worldwide. It has a fairly simple point-to-point route network. The bulk of its operations is concentrated in Europe, where it serves 30 destinations, Africa and South America. It serves four destinations in North America, five destinations in South America, ten destinations in Africa, and one destination in Asia. The airline employs approximately 9,000 staff and carries some 3.5 million passengers per year. Air X is a state-owned carrier and is undergoing a major re-structuring program, which was a condition imposed by the European Community in exchange for state aid. To perform the re-structuring program, which involves fundamental change in the organisation, Air X employed the services of a major international Consulting firm. This was the first time the airline had used consultants. The airline was being assisted by specialists in organisational change in its re-structuring process, which, amongst other projects, involved the implementation of a revenue management system. The difficulties in using the system, which caused the airline great perplexity, also provided a challenge to the consulting firm.

"Essentially, [the consultants] provided us with a vital hard methodology of work which forced the old ways. Also the name [of the consulting firm] stamped on our re-structuring project did us no harm in getting acceptance by Brussels for the approval of the much needed state subsidy" (Re-structuring project manager - Air X).
9.1 Top Management Discontinuity

As with many state-owned carriers, the government appoints the people who run the airline. Hence, whenever there is a change of government, there is also a complete substitution of the airline’s top management. This causes fundamental problems of discontinuity in the running of the airline. Even when there has been no change in the government, top management positions in the airline have been characterised by high turnover. The main reasons behind this are (1) the frequent industrial relations conflicts (especially involving the pilots’ union), where the political leverage and internal influence of the unions are such that even the government’s political protégées are frequently sacrificed in concessions to the unions; and (2) escalating and recurring financial losses by the airline over the previous 20 years which had become increasingly hard to justify and fund with taxpayer’s money.

Learning the intricacies of the air transportation business takes considerable time. By the time top management has become reasonably proficient in the operation and running of the airline, there is generally either an industrial relations conflict or a change in government, which causes the complete replacement of top management. The result is that top managers are well aware of the short life span of their positions, and thus very reluctant to introduce major changes. More importantly, top managers are reluctant to devise and implement medium or long term projects, as they feel they may very well see the costs or failures of the projects attributed to them, while any merits and benefits of the projects are attributed to the next management team. However, the previous management of
Air X was forced to initiate a major re-structuring program because European air transport regulations now require that state aid be authorised by the EC. The EC authorises state aid only to those carriers which present real re-structuring plans. The discontinuity in the airline's management and its reluctance to inconvenience the unions or start much needed major re-structuring initiatives, when added to the fact that the airline has traditionally been managed by politicians rather than professional commercial managers, constitutes the main force behind the organisation's natural resistance to change.

Amongst the initiatives included in the re-structuring of Air X are down-sizing and renovation of its workforce, especially its key managers, the division of the company's departments into cost centres, the upgrading of the information technology and market management infrastructure, the formulation of a corporate strategy, and the general reduction of operating costs through higher productivity. Partial privatisation plans are also on the medium-term horizon. The focus of this case study is on the upgrading of the information technology and market management infrastructure, and on the company's corporate strategy formulation process. In the course of upgrading the information technology infrastructure, Air X has initiated four main projects:

1. the implementation of a revenue management system
2. the acquisition of management information data tapes (MIDT) to automate the sales force
3. the development of a frequent flyer programme
4. the building of a central management information system (MIS).
The relevance of the management information system project (project (4)) to the use of the revenue management system is that route managers need information to be aggregated and consolidated by the organisation, for it to be of any use to the development of strategic guidance and goals to the company. Project 4 attempted to address this need. The building of a central management information system was the first project to commence. Only upon commencement of the project did Air X realise that there was more to the initiative than the mere acquisition and implementation of the technology. The architecture of the system and its organisation were dependent on the information which would go into the system. Air X was then forced to think about what information was relevant for management, what form it took, and where it was.

"No doubt I will build the system and buy the administration tools for it, but it is more difficult to feed the system with the right information to manage the company. That is my main worry" (MIS Project Manager – Air X).

In order to find the answers to the unexpected questions which the project generated, it was decided that top management and the heads of all departments involved would be consulted about what existing information should be included in the system, and what other information could be gathered to complement this.

"We are developing a management information system to aggregate information for management decision-making. For that we consulted the various departments about which indicators should be developed. Most had little or no idea of what to change. We have a problem in deciding what management information to develop, so we have to start by using what already exists" (MIS Project Manager – Air X).
This consultation revealed more fundamental problems behind the symptoms of management information deficiency. It was discovered that much information about the operations of the company was duplicated in different locations. When the information was compared, it exhibited fundamental inconsistencies. The duplication of the information was partially caused by the discontinuity and the incompetence of the various Air X managers teams who had 'visited' the airline throughout the years. As a result there had been incoherence in the purchase and implementation of information systems, and some systems were totally incompatible.

"Most of the information we have in the various departments is simply incompatible with each other. Information is physically impossible to transfer between systems" (MIS project manager - Air X).

"Each department has its information, which is not aggregated or in many instances not even compatible with others. In meetings each person takes his own set of figures. Sometimes there are major discrepancies - 10% in revenue is not unusual - sometimes due to incomplete information, sometimes due to simple calculation errors. It is not unusual to spend important meetings arguing about the numbers and calculations instead of discussing the central issues" (MIS project manager - Air X).

Other problems of a more psycho-social nature were revealed. The rivalry between departments, in particular between the commercial and finance departments, was a major difficulty. There is restricted access to the president and his board of directors, so much of the information conflict between the departments is over which should inform the president about the quarterly operating results of the airline. The reporting of the operating results requires integration between information from the finance department and information
from the commercial department in order to correlate the results of each route, flight, commercial initiative, etc. This has never been achieved.

"Finance produces financial reports totally independently from what management needs. The attitude is that they have the finance technical know-how, so they produce the information they think should be produced. The result is that other departments find it difficult to digest the reports and management gets financial information totally unaggregated and in excessive quantities. We at least know what is relevant and what is not!" (Commercial Director - Air X).

"The guys over at the commercial department think that we [finance] are here to work for them. We think differently. We are the finance people: if anyone should be informing the president about the company’s financial operating results, it should be us!" (Finance Director - Air X).

The result is that Air X is still trying to obtain information about results of its operations by route, and by flight. The information about revenue by route and indirect costs by market area is the property of the commercial department, which receives it directly from the sales offices, which manage travel agencies’ sales. They are trying to desegregate it to give values by flight. However, all information about direct costs is the property of the finance department, which receives that information directly from the operations department (crew expenses, maintenance, etc.) and from the suppliers of fuel, catering, etc., who send their invoices to finance. Each department insists that the other should supply it with reports so that it can add them to its own information and compile a master report for the president.

"... The government ownership of the company has never promoted cost control. Also, the departments are rivals and isolated from each other and very reluctant to share any information. They are used to report information on up, but never horizontally. ... They know how much they spend per year in total, but the data is only itemised in operations, not in the commercial department (by flight or by destination, etc.). This is why we have duplicate information processing and different numbers to measure the same stuff. So, the fierce fights about the validity and integrity of the data dominate top level meetings, which should be about wider and more important things" (Senior consultant - Consulting firm employed by Air X).
Route managers are the users of the revenue management system. They belong to the commercial department, and are still awaiting information about the attribution of operating costs to the different flights, the determination of break-even revenues for each flight, and for the specific economic importance of each market to the company. They need this information in order to develop a sense of how much the market should be defended - a trade-off with revenue maximisation, frequent accurate and timely operating results of each route, etc.

This type of information cannot be supplied by the revenue management system; indeed, it is needed to reap the benefits from the use of the system.

"There are as yet no estimations of costs by line, by segment, by flight. Therefore there are no estimations of the break-even points, either by average fare, total revenue, or load factors. I will do my best, but it would be nice to have some targets!" (Route Manager - Air X).

The result of this management information deficiency is that the company does not have the information to monitor the results of their strategic efforts. It also complicated the task of setting strategic objectives.

"Top management does not know exactly which routes are more profitable than others. That, plus the isolation of the sales offices in terms of market information, means that management does not know where the company is losing money, how much it is losing, and, most importantly, why! This is why their corporate strategy is not in touch with reality!" (Senior consultant - Consulting firm employed by Air X).
9.3 Lack of Historical Information

Revenue management systems consist of statistical models which require vast amounts of flight specific historical information organised according to the specific parameters that supply the models. This historical information has to be statistically significant and representative of the economic and competitive circumstances of each market. This poses two main problems. First, information is required on the performance of the specific fare levels which compose business class (class C) and economy class (class Y). These are known in revenue management as subclasses of C and Y. For an airline which has never used these subclasses in the market, it is impossible to have readily available historical information about them. Second, the advent of European liberalisation is increasingly causing great transformation in competition in European markets, where airlines have entered and abandoned routes, have started operating combined routes, etc. This means that even if any structured historical information existed, it would not be representative of current European markets.

To address the first problem, Air X seriously considered buying fare information from a train operator which used revenue management in order to begin testing and calibrating the models and heuristics of the system. This idea was quickly abandoned because the information had absolutely no relevance to the business of air transportation. Air X had been using, for some years, four main fares: business fare, full economy, advance economy and special economy. Even though the different fares had respective restrictions on their use (e.g., 21 day advance purchase, Saturday night stay, refundable or non-refundable, etc.), the
seat inventory allocation of those fares had not been strategically controlled. Air X did not impose limits on the number of seats offered at each fare level. Also, the fares were not codified as subclasses of Y or C, as the revenue management system requires. Air X simply processed the different monetary values of each fare in its sales.

"The revenue management system also exposed some basic inadequacies of our reservation system namely the storage of flight information per subclass of C and Y, speed of operation, and technical compatibility with other information systems in terms of architecture" (Route Manager - Air X).

Using existing information, a careful solution to this problem was devised. Air X would extract from its reservation system data on the last few years of operation of those fares, and class them as belonging to class C or three subclasses of Y by devising a corresponding scale of one to four in which the monetary values of the fares would fall. They would then be indexed to the various subclasses that the revenue management system requires. By calculating the revenue that each flight generated and relating it to the specific mix of fares sold, and to the number of seats that remained empty, Air X managed to begin building some sort of historical database which at least related to its own flights. At the time of writing, the processing of this data is still taking place. At this point a fundamental revenue management problem became obvious - Air X had not been manipulating the number of seats allocated to each fare level on each flight (it had no means of doing so rationally). It had not made the strategic decision of allocating seats for the higher fare paying passengers who tend to reserve their flights at short notice before departure. This meant that the historical database that had been improvised by the airline was useful only to determine the elasticity in terms of price and time before departure of the lower fare paying passengers, who tended to fill up the
flights before the higher premium passengers made their reservations. So, Air X could obtain some idea of the variations in demand of the low fare paying passengers, but because there had never been an appropriate cushion of seats deliberately left for the full Y and business fare paying passengers, historical information on their behaviour was non-existent.

"Looking back on that I ask myself how we could have been so stupid! We put conditions on the fares, but not on the number of seats allocated to those fares. I mean OK, so the business passengers could not buy discount fares, but even if the poor guy wanted to pay premium prices, he could never get a damn seat with us. No wonder the front of our plane [business class] is so small today, and no wonder our average fares were so ridiculous! But then again I suppose we didn't have a way of controlling the number of seats anyway" (International Sales Manager - Air X).

At this point, Air X concluded that the only way to learn about the premium fare paying passengers was by experimentation - trial and error - and using local market information, not simply by pressing a button on the revenue management system.

"To know the fare values to set for the various subclasses, the user should know what the competition is charging and how time and price sensitive the subclasses are. So, really, we need to try out different fare structures and see what happens I think! He also should be aware of any special offers from the competition. For that he needs help from the sales offices!" (Network Manager - Air X).

As discussed elsewhere, American Airlines had intentionally left a generous number of seats for the business passengers to reserve, knowing very well that many of these seats would fly empty, in order to study the variations in demand for the higher fares. This knowledge came more easily to the first movers, because they had been developing the system from the very beginning, and thus constituted a derived learning curve of their experience.
9.4 Implementing and Using the Revenue Management System

Air X purchased its revenue management system in 1992. At the time of writing (1997), Air X was still not using the system. To begin using the system, Air X realised that it would need market information in order to give some indication of what type of initial fare structure to apply in the different markets, and that it would also need a continuous feed of information from its sales offices. The initial reaction was one of some panic and asking the planning department for competitive information.

“We do not have regular information about competitors. I have repeatedly asked the planning department for competitor information, but without any success. We don’t know how or where to get that sort of information. Marketing reports are just too expensive, and we haven’t the structures in place to process that information to our benefit. Our market segmentation is just non-existent. It is based on hunches and intuition rather than concrete information” (Network Manager - Air X).

The planning department’s plans were simply based on the revenue results from each sales office, which were in the form of financial spreadsheets containing only numbers. Based on this information, with no qualitative information to explain variations in sales, the planning department simply dictated the budgeted sales objectives to the sales offices based on what the company would like to happen, instead of what the markets dictated.

“We negotiate targets with our delegates [sales managers] once a year. These are based on our business plan. The targets are imposed ‘top-down’, depending on the variations from the previous targets, rather than based on information provided by the delegates” (Commercial director - Air X).
"Our business plans are derived from past plans and variations of results from objectives. We have three business plans. A more general business plan, what we call a strategic plan - similar to a sort of mission statement, devised and written by one person, archived and read by no one. We also have an ‘exploration plan’ which is more specific in content. It says things like ‘We should increase focus on Africa, or America, reduce operational costs...’ It is devised by a small group of two or three people, and very rarely read. Finally we have the most specific of plans: it contains specific operational objectives for the year; e.g., we will increase capacity on the LIS-LHR route by 10 per cent, etc. That plan is our an operational guide, and is used often in meetings to compare progress” (Sales Manager - Air X).

At this point, the project team realised that the planning department was the wrong source from which to solicit market information, and that it would have to tap directly into the sales offices which managed the markets. To assist in the calibration of the system and in providing complementary market information to run the system, Air X is now consulting both the route managers about what information they need from the markets, and the sales offices about what market information they possess which may be useful to the route managers and market planners.

"The market information we need here is clues about variations in sales to different destinations. Competitive information stuff, things like competitors’ offers, change of schedule, new guys in the area [new entrants], etc. ...These are all things that the sales offices, and especially the promoters, are exposed to in their day-to-day jobs, but which is not reported. ...I think it is because it is very ad hoc and less formal stuff, also because the guys in the field do not have the incentive or the motivation to report that information. When I talked to them, they said that sometimes they report it when it is pretty major things, but the guys at head office just have no idea what to do with it!” (Consultant - Consulting firm employed by Air X).

In this integration effort, another problem materialised. Air X’s sales office managers are typically people who have been in the company for a long time and who have been offered these positions as a recompense for their work and through their influence in the company. The sales office managers have traditionally been regarded more as ambassadors of the country than as commercial managers. Air X has problems in controlling the activities of its sales offices.
"Sales delegates are pretty influential people in this company. Large variations from the sales objectives are very rarely questioned or investigated, and when they are, they normally blame it on the sales targets" (International Sales Manager - Air X).

"The two most powerful staff in this company are pilots and delegates. Delegates are individuals who went through the ranks, many for 10-20 years, not necessarily in a functionally related position, before they are promoted to delegates. They have enormous high level influence and power in the company. Delegates can be monitored, but are very difficult to control" (Commercial Director - Air X).

To counter this, the company is hiring new sales managers who will be replacing the existing managers, (whose average age is close to 55) after undergoing a training program to give them experience in the sales areas. The market planning of the company was not congruent with the market conditions because of the lack of competitive information, but on the other hand the sales office managers did not procure, or report the information because they had no incentive to do so.

There were no effective communication channels for that information to reach the market planners, who in turn did not know how to use it. So, the inadequate sales targets were causing poor motivation of the sales office managers to procure competitive information in the knowledge that the information would not used by the market planners. Opening a much needed communication channel between the route managers and the sales office managers also proved a difficult task.

"We need more information about markets and competitors' tactics. The delegations should in theory be good sources of this information, but in practice we receive little or no information from them. Most are almost like normal travel agents with little or no connection to [Air X]" (Route Manager - Air X).

"The system was very inconvenient for the organisation of [Air X]. It exposed many problems, and provided us with tools for performance evaluation, which is something people fear, even though they want performance prizes. Route managers do not have strong relationships with sales offices and delegates in terms of information, but carry all the responsibility. Now that cannot continue!" (Network Manager - Air X).
"Sales delegations report directly to the commercial director, and they are horizontal to the route managers. This is a lack of delegation which makes the flow of information from local markets onto the route managers very difficult" (Consultant – Consulting firm employed by Air X).

There are frequent joint meetings between the route managers, market planners and the sales office managers in order to build a communication channel for competitive information. In these meetings, there is an acute communication problem - route managers talk of subclasses of Y and C, tolerance levels, seat buckets, historical trends, statistical probabilities; and the sales managers talk of more budget for travel agencies' commissions, competitive sales programmes, promotion efforts, etc. The route managers and the market planners instinctively want the sales managers to quantify the qualitative information they have, because it is what the revenue management system requires, and the sales managers want the route managers to talk in airline sales language. Here, Air X learnt yet another lesson - blending technical and quantitative information with qualitative information is difficult.

"I think route managers should have sales experience out there in the market. I think I can never be at my best if I haven't seen or acted at the other end of the market. At the moment, for example, I do not know how to interpret the advice of the various sales delegates, or indeed what kind of information I can expect from them, or know what kind of information they have access to in the market, or what influence they can have over demand or yield. ...At the moment, sales delegates are more like ambassadors of [country], rather than commercial sales managers" (Route Manager - Air X).

It was in attempting to use the revenue management system that Air X realised that revenue management was not just a 'push button' technology, but that it actually required a considerable re-structuring of the company. Air X had to become technically competent in the use of the system, but most importantly, to put strategic thought into the system in order to perform the revenue management
activity. To formulate most of these strategic thoughts, Air X requires information which lies outside its organisational boundaries and which is not neatly codified to fit the system. Also, competitive information is not process-driven or routine; it is event driven. So, there has to be a communication channel that is constantly open and flexible in the type of information which it carries. There has to be a way of blending the competitive external information with the technical internal information at head office in order to make the result useful and intelligible to market planners and route managers. This caused problems for the organisation's existing hierarchy and processes. The company is being forced to think strategically - something which it is clearly not accustomed to doing - in order to feed the system with the right information to operate and complement the statistical predictions of the system. This is essential if Air X is even to begin extracting benefits from the system.
10. From Practice to Theory

Using the airline industry as the foundation for the research instead of conforming to a particular discipline or stream of literature has produced findings which further the understanding of the link between information and strategy simply by determining what uses airlines make of information, how and why. The main findings of the empirical research will be the foundations for the discussion of this chapter. These can be summarised as follows:

- Airlines tend to resist the acquisition and use of external information and to concentrate on the internal quantitative information for strategy. The trend towards valuing external information has followed the intensification of competition provided by deregulation. However, the difficulty in blending internal information with the external is still evident.
There has been a clear evolution from using information for efficiency to using information for strategic flexibility. The CRS was created to automate the task of making a reservation, but has since evolved to automating the travel agents, and to generating vital competitive information for airlines which is used in frequent flyer programs, revenue management systems and management information data tapes.

Retail automation has given travel agents strong bargaining power. Airlines began giving financial incentives to travel agents for shifting market share, biasing the information travel agents provide consumers, but creating a set of less obvious market forces which are difficult to monitor.

The sophisticated computer systems developed by the airlines, such as revenue management systems, need to be supplemented by external market information in order to be useful. This type of information is acquired informally by sales representatives from travel agents, but finds entry to the organisation difficult.

Airlines feel great difficulties in using external information. This is illustrated by the case study of Air X, which have experienced tremendous difficulties in using the external information needed to supplement a recently acquired revenue management system.

This chapter will serve to expose the theoretical underpinnings of the research and to use theory to conceptualise and discuss the issues found in the empirical
research. The research was empirically led in order to avoid the limitations that following a single theoretical strand would impose. Hence, the research does not follow the convention of identifying a single appropriate academic discipline, then reviewing the various theories and works within it, and building a research approach from the review of a single literature. This unconventional approach has been followed because there is no obvious single theoretical foundation to examine the strategic use of information in the airline industry. Instead, there are several perspectives from several academic disciplines which support this research.

Choosing industrial economics as the theoretical perspective for this research, for example, would have produced useful results about the mechanics of the industry (Boulding, 1966). However, industrial economics is largely concerned with the use of more conventional resources, such as technology, capital, labour, concentrating on maximising the economic returns of the firm and the economic efficiency of the industry. These matters are important, and are dealt with in the development of the airline industry, but they are not fundamental to this thesis. Information is not actively considered as a fundamental resource in industrial economics. Indeed, many economic models require the assumption of perfect information. Although facing the problem of imperfect information has meant increasing the dynamics of economic models (Lamberton, 1971), the use of information is not a central subject of debate within this discipline.

The strategic management perspective sees strategy as the relationship between "the organisation’s resources and the environment. But academic debate in this
Discipline concentrates on looking inside the organisation to find answers to deal with the uncertainty and diversity of the environment. It is the convention in this discipline that in order to produce strategic change to adapt to the environment, the structure of the organisation and the processes of making strategy must be changed. Whilst these are important factors in the functioning of organisations, they alone are incapable of making and sustaining an organisation's competitiveness. The strategic use of information is an underlying assumption in strategic theory since it assumes that to achieve competitive advantage firms need to know something their rivals do not. But such theory dedicates little attention to where and how this knowledge is acquired. Choosing the strategic management perspective as the sole theoretical basis of this research would perhaps produce results to optimise the structure and strategy processes of the organisation, but would ignore a vital aspect - the use of external information.

Information systems literature deals with the importance of information systems to the organisation. It provides examples of the benefits of information systems to companies, and of their contributions to competitive advantage. It gives useful recommendations on developing and implementing information systems. There are streams of literature in this discipline that go much beyond the merits of information systems as a means of automation, such as management information systems, or strategic information systems. These recognise the importance of information as a resource, but are well aware that the information system by itself cannot provide competitive advantage, and that strategy also requires information other than that contained in the systems or in the organisation itself.
In contrast to the lack of focus on the strategic use of information in any academic discipline, the airline industry is fully aware of its importance. The airline industry is a rich environment in which to study the strategic use of information. Airlines have to be extremely responsive in competitive markets. They possess very sophisticated information systems which emphasise the use of information as a resource rather than a mere means of automation. These systems are very useful in supporting strategic decisions, but airlines also recognise very well the importance of acquiring and using external and informal information to make strategy. This information is essential to make full use of the sophisticated systems by supplementing their contents. It is also needed to supplement the internal and formal information of the organisation to produce the total information package required for strategic change. The airline industry, rather than a single stream of literature, was chosen as the foundation for this research. The positioning of this chapter at the end of the empirical parts of the thesis emphasises that the research was guided by practice and supported by theory. This section will demonstrate how various streams of literature provide the foundation for this empirical research on the airline industry.

10.1 Notions of information

One major epistemological question concerns the role of knowledge in social systems, both as a product of the past and as a determinant of the future (Boulding, 1966). Academic debate has long recognised the importance of
information and its trade for the firm and the development of economic activity in
general. There is plethora of perspectives. Economists talk about symmetric and
asymmetric information for market efficiency, sociologists debate the influence of
power and culture on the communication of information and group relationships,
technology policy specialists discuss the diffusion of technical information and
inter-firm co-operation, and information technology people talk of strategic and
management information systems. Each perspective has its own merits and is
moulded by the purposes it fulfils.

Inequalities of information are both the stuff of economic activity and a source of
difficulties for its participants. Inequalities of information generate uncertainty,
allowing for speculation in the value of products and inaccuracies in the
calculation of levels of risk. Professional activities owe their economic function
to the inequality of information between the professional and his client; what the
latter is buying is most of all the superior knowledge of the former (Arrow, 1984).
Schumpeter (1934; 1942) criticised the focus of his peer economists on rigid
patterns and invariant conditions. He argued that the sort of competition that
mattered came from innovations, and that the effect of an innovative act of an
entrepreneur, and the response of the economy to that effect, was responsible for
economic evolution. To innovate, to do something new or differently,
information is required. Lamberton (1993) claims that it was a step forward in
economics to split assumptions of asymmetry of information into asymmetry in
information, and asymmetry in the ability to gather information. He advises that
trade-off possibilities between other components, such as inquiring, gathering,
processing, computing, communicating, and deciding, must also be considered in the study of organisations.

So, what is information? Information is normally seen as being constituted by sets of data. As Maguire et al. (1994, p. 20) explain, "though the dividing lines are quickly blurred in practice, the usual hierarchy is that the term data refers to isolated items that build up into information, which in turn contributes to knowledge". Arrow (1984, p. 168) considers information to be the negative measure of uncertainty. In a statistical concept of information, he calls a signal "any event capable of altering the individual's probability distribution; in more technical language, the posterior distribution of signals conditional on the observation of one may, in general, differ from the prior," and claims that "This transformation of probabilities is precisely what constitutes the acquisition of information." Beckett (1971), defines information as the gap between what is known at the moment, and the level of knowledge that is achieved after receiving the next message.

But information *per se* does not reduce uncertainty, it can be much more than the mere negative measure of uncertainty. Macdonald (forthcoming) argues that "It is a truism that information reduces uncertainty; it is less appreciated that information is also required to deal with uncertainty that cannot be reduced."

Information, when used, often raises more questions than it answers. Received information may therefore be used to draw awareness to different avenues of uncertainty, which in a sense is creating uncertainty. Maguire *et al.* (1994, p. 122) observe that "A corollary is seen in that the difficulty of posing a question is
proportional to one’s lack of knowledge of the topic.” Casson (1995) reasons that information is a resource because it helps improve the quality of decisions which affect the utilisation of other resources. Bartlett and Ghoshal (1994, p. 80) illustrate the socio-economic shift which gave emphasis to the role of information as a resource for strategy:

“In the benevolent high growth environment that followed World War II, strategy, structure and systems offered much needed discipline, focus and control. Today’s economic environment is different. Overcapacity and intense competition are the norm in most global businesses. The lines separating businesses have blurred as technologies and markets converge, creating new growth opportunities where traditional business intersect. And most notably, the scarcest corporate resources are less often the financial funds that top management controls than the knowledge and expertise of the people on the front lines.”

Although the concept of information as a resource seems the most useful in this research, there is no ready answer to the question of what information is. What is clear is that the value of information depends on the benefits that flow from its use (Marschak, 1974). As information is used, it can become more valuable as more potential uses are realized and its meaning better understood (King et al., 1989). Information and the organisational capability to handle information have been recognised as capital, and expenditures on information are expected to generate future flows of income (Lamberton, 1965; Weizsäcker, 1984). But appropriating investments in information requires the creation of organisational capabilities to enquire, communicate and decide (Lamberton, 1989). However, information has peculiar economic characteristics, making market transactions inherently difficult. Therefore, information is a resource which organisations cannot easily buy in accordance to their needs, like raw materials, machinery or labour. Information is intangible and hard to price. It is hard to demand, because the buyers do not know what it is that they do not know. It is hard to sell, because sellers cannot display
their wares without giving them away in the process. It is characteristically expensive to produce, but cheap to reproduce. When sold, it remains with the seller (Macdonald, forthcoming). It can also be costly to receive, and requires an irreversible investment by the receiver in order to understand and use it (Arrow, 1984).

Exchanging information instead of buying and selling it overcomes much of the uncertainty and the problems of pricing in market transactions (Rogers, 1982). Informal information networks are good means of producing some equilibrium in the exchange of information (von Hippel, 1987). The common interests of network members ensures the relevance of information and filter out members who are not providing or receiving adequate value for their information (Macdonald and Williams, 1992). However, the characteristics of information and those of organisations suffer from a high degree of incompatibility. And organisations have difficulties in exchanging information with the outside world. They tend to prefer internal information or attempt to internalise the external by seeking ownership and control of information, just as they would do with any other valued resource (Forsgren, 1989). The difficulties of trading in information tend to leave organisations open to random influences, while successful pursuit of efficiency tends to lead to unresponsiveness to change (Arrow, 1984; Lamberton, 1992).
10.2 Information and Strategy

Several typologies of firms in an industry have been set forth in the strategic management and organisational behaviour literature. The general proposition is that the fit between strategy and its context, whether it is the environment which changes (Hofer, 1975; Prescott, 1986) or the organisation structure (Chandler, 1962; Rumelt, 1974), has significant implications for the performance of firms. Mintzberg (1979) and Thompson (1961) showed how structure can influence strategy and decision-making while hindering adaptation to the external environment. Chandler (1962) argued that different strategies required different organisational forms to support them. His view was that structure follows strategy. Contingency theorists argue that the form an organisation takes is a function of the environment (Lawrence and Lorsch, 1970). Mintzberg, Millar and others talk about organisational configurations that bring strategy, structure and context into natural co-alignment (Millar, 1986, 1987; Millar and Mintzberg, 1984). One recurring message in strategy literature is that organisations must adopt a form that is appropriate to their strategy and to the competitive environment in which they exist.

Two well-known theories of business strategy recognise commonalities amongst firms in the way they compete, and provide notions of strategic groups: those of Miles and Snow (1978) and of Porter (1980). Miles and Snow (1978) view the firm as a complete and integrated system in dynamic interaction with its environment. Their representation of four types of competitive strategy (Defenders, Prospectors, Analysers and Reactors) emphasises the firm’s response
to competitors' actions and changing environmental conditions. Porter (1980) argues that there are two basic types of competitive advantage: cost leadership and differentiation. Whilst cost leadership means producing and distributing products more efficiently than competitors, differentiation means the ability to provide unique and superior value to the buyer by offering product features different from those of rival firms. Although they are two extremes of a continuum, both strategies imply that the firm knows something its competitors do not. The former emphasises efficiency and the latter emphasises flexibility. Successful entrepreneurship is based on superior information (Punset and Sweeney, 1989), and the strategic use of information in the competition of firms is an underlying assumption in strategy. Yet it receives little attention from strategic theorists.

The airline industry is an extremely turbulent environment. The deregulation and liberalisation processes have eased entry barriers considerably in many important markets and allowed greater ability of airlines to adjust the capacity they offer and their prices. The seasonal nature of the business and its dependency on disposable income make it a very cyclical industry. The combination of the highly perishable nature of the product, the high fixed costs and the strong price sensitivity of passengers means that airline competition is aggressive, and that the margin for strategic errors is minimal. Efficiency is very important, but the need for market information and for the strategic flexibility to deal with such environmental turbulence is paramount.

Whittington (1993) presents a useful taxonomy of approaches to theories of strategy, which, he considers, differ along two fundamental dimensions: the
outcomes of strategy, and the processes by which it is made. He identified four schools of theorists:

- The Classical School, typified by Chandler and Porter, which gives managers a profit-maximising role in an ordered economic world. Basic economic rules govern the firm's future.

- The Processual School, typified by Mintzberg, Cyert and Marsh, which sees strategy as a social process, a function of the firm's internal tensions.

- The Evolutionary School, typified by Williamson, which sees efficiency as paramount in dealing with an implacable environment where the market, not managers, makes the important choices.

- The Systemic School, typified by Marris, which sees the ends and means of strategy as controlled by the cultures and powers of the local social systems in which it takes place. Managers are mere agents of these complex social systems.

The Classical and the Processual Schools deal with the uncertainty of the environment by concentrating on what goes on inside the firm. The Processualists and the Systemics deal with the uncertainty of the environment by considering it so dominant that only a passive role is left for managers. This clearly leaves little room for the role in strategy of the information acquired from the environment. Christensen et al. (1982, p. 164) define strategy as “the match between qualification and opportunity that positions a firm in its environment”. Strategy is generally perceived as matching the organisation's capabilities and resources to its
environment. But explaining just how the environment’s information is found, screened, acquired, and used by the firm to match itself to environmental conditions is not seen as particularly relevant to strategic theory. Much strategic theory does not concern itself with learning and the acquisition and use of information (Macdonald, 1996).

The general view of management activity is that it is concerned with taking decisions. Categorisation of these decisions seems to be blurred in a continuum from operational, through tactical, to strategic decisions. Differentiating factors seem to be aspects such, as time horizon, longevity, broadness of impact, the concreteness of plans, and the organisational level at which decisions are commonly made (Rumelt, 1979). Some argue that there is good reason to drop the word tactics altogether and to refer simply to decisions as more or less strategic, depending on their importance to the firm’s future (Mintzberg, 1987). Others claim that strategy is a framework within which tactical moves are made and that tactics implement strategy (Steiner, 1979). What is clear is that strategy is made up of decisions based on information. The very recognition that a decision is required implies use of information.

Strategic decision-making is a very complex activity and many strategic decisions are not readily amenable to quantification (Steiner, 1979). In order to cope with environmental change and uncertainty, strategy requires flexibility. Strategic flexibility is an essential principle in strategy. It enforces the interaction between the firm and the environment. It consists of a strategic response to the unforeseen (Eppink, 1978). It enables a course of action to be modified in accordance with
an encountered situation which may deviate from prior anticipations (Hart, 1937). It requires learning, because unanticipated aspects of unforeseen events and surprise occurrences may shift preferences (Shackle, 1938) and invalidate assumptions on which strategies were originally made (McKinsey, 1932). One dimension of dealing with the uncertain environment is to improve the organisation by organising “transactions within governance structures that have the capacity to work things out“ (Williamson, 1985, p.79). The other is clearly to identify what it is that needs to be worked out. This implies the acquisition of information from the environment to identify events which were unforeseen by the organisation and to mount adequate responses to these events. Strategic flexibility implies the identification of need or opportunity to do something different and refers to the firm’s ability to modify its strategies, to perform strategic change. The ability to acquire new information and knowledge, to make a judgement, to develop new concepts and new strategies to adapt to environmental conditions has been termed 'business intelligence' (Dedijer and Jéquier, 1987). What is clear is that any change requires new information which is most likely to be found beyond the boundaries of the firm (von Hippel 1988).

Internationalisation theory has provided a useful focus for coping with imperfect knowledge and for understanding how firms and individuals obtain information from the foreign environment (Welch, forthcoming). The international business environment provides a useful arena for analysing the means by which firms acquire the necessary information to enter and operate in foreign markets. A variety of studies in different countries showed that informal information networks and transfer mechanisms play a vital role in the process of
internationalisation (Reid, 1984; Benito and Welch, 1993; McAuley, 1993; Welch, 1996). Despite the proliferation of formal means, such as computer databases, decision-makers tend to favour informal rather than formal means of information collection and transfer to cope with the demands of foreign markets. Much of this work was influenced by the Uppsala model, developed by researchers at Uppsala University. The model concentrates on the gradual acquisition of information about the foreign environment and the integration of this information for use by the firm (Johanson and Wiedershein-Paul, 1975; Johanson and Vahlne, 1977). It is concerned with the acquisition and transfer of tacit and embodied information, informal methods of information transfer, and the role of those who give and acquire information. The Uppsala School also explores the role of network relationships in facilitating the multilateral exchange of information (Johanson and Mattsson, 1988). It suggests a fundamental incompatibility between control, change and flexibility. The more information is internalised and channelled within the firm, the easier it is to exert control, but controlling information diminishes its usefulness in the learning required for flexibility and change, both of which require the acquisition and use of information (Holm, Johanson and Thilenius, 1991; Kobrin, 1988). External and informal information is essential for airline strategy (e.g., economic or social events which may affect travel to particular destinations, competitor incentive programs, confidential pricing mechanisms, and reasons for lost sales).

"Tactics is about dealing with hot information, which needs to be acted upon very swiftly. We then aggregate this information up to the top to provide the big picture and to justify shifts in our strategy, through identifying patterns of problems to be solved. 'The formal stuff is just for reference' (Area Manager – Major European Airline)."
No ready prescriptions are offered for rendering compatible the characteristics of the organisation with those of information in order to improve the firm's ability to procure, acquire and use information. However, the Uppsala School does at least address the acquisition and use of information for strategy (Macdonald, 1996).

10.3 Information and the Organisation

Dealing with information is the whole purpose of the organisation (Macdonald, 1996). All organisations process information; they gather information from the environment whatever the products they make or the processes or services they perform (Maguire et al., 1994). Arrow (1979) remarked that specialization in information gathering is the most important economic benefit of the organisation. Profit may even be considered the measure of an organisation's success in the pursuit of information and knowledge (Sweeney, 1975). Mangaliso (1995) claims information is useful to the organisation to the extent that it helps improve decision-making, and hence the operating efficiency and effectiveness of the organisation.

While reducing costs through increasing efficiency is important for firms' competitiveness, they also need a degree of flexibility to innovate, to respond to competitors' actions and to changes in environmental conditions. However, there is a trade-off between efficiency and flexibility. Change requires flexibility. Change, however, disrupts efficiency. Organisational efficiency can be a major
obstacle to organisational flexibility. There seems to be an increased emphasis on using information for efficiency rather than flexibility. Perhaps this is because of such factors as pressures for maximisation of returns to shareholders, managers with short-term contracts, assessed by performance indicators which emphasize efficiency and low cost structures. Re-structuring efforts for privatisation, and modern management methods, such as quality management, management by objectives, and just-in-time production, all point to slimmer and more efficient organisations. The technological development in the airline industry, for example, facilitated vastly the use of information for efficiency. Sophisticated information systems automated many operational tasks such as inventory control and cost management, and can isolate costs or details of operations at the press of a button. This combination between pressure for efficiency and the availability of powerful technology to automate tasks and readily generate an immensity of operational information tempts managers to rely almost totally on operational information for strategy. It is much easier to find, for example, the costs of a flight to New York, than to find the reasons for an increase or indeed a decrease in demand. The airline industry is incredibly information intensive. There is a sea of operational information available inside organisations, with which managers are well accustomed, and which is often the basis for assessing their performance. How can such organisations stand back and reflect about using information differently, or about using different information than that which they already have to produce strategic change?

The resource-based view of the firm conceives a firm as seeking to acquire, hard to imitate, valuable resources and capabilities. This quest for differentiation is a
process that develops distinctive capabilities which differentiate a company strategically, fostering beneficial behaviours not observed in competitor firms. (Amit and Schoemaker, 1993; Leonard-Barton, 1992; Barney, 1991; Lippman and Rumelt, 1982). These capabilities are developed by combining and using resources and/or other capabilities with the aid of organisational routines which imbed organisational knowledge acquired through learning. Consequently they have a strong tacit dimension which makes them difficult to imitate (Nelson and Winter, 1982; Grant, 1992). Quinn and Friesen (1992) list three characteristics of a learning organisation: (1) it must have a commitment to knowledge by promoting methods to encourage the collection and dissemination of knowledge and ideas throughout the organisation, including research, discussion groups, seminars, hiring practices; (2) it must have a mechanism for renewal, promoting an environment where knowledge is incorporated into practices, processes and procedures; (3) it must possess an openness to the outside world by being responsive to what is occurring outside it. Argyris (1976) identified two types of learning that can occur in organisations: adaptive learning and generative learning. Adaptive learning can be, for example, comparing budgeted against actual figures and taking appropriate action. Generative learning, however, requires new ways of looking at the environment, challenging assumptions, goals and norms. The key message is that the learning organisation requires new skills and capabilities.

Itami (1989) argues that invisible assets, which are based on information, are the only source of long term competitive edge for the firm and that research and development as information-gathering activities add to the invisible asset base of the firm by producing a flow of information. Itami (1989) also advises that
information received from the environment must not be merely stored within the firm, it has to be transmitted to appropriate decision-makers quickly and accurately. It has to be used in strategic decisions. However there is considerable difficulty not only in acquiring such information, but in relaying strategic information to the top without diluting, distorting and delaying it (Bartlett and Ghoshal, 1994).

Information is a source of power in organisations (Pettigrew, 1972). Power gives control and control is necessary to keep the organisation together. This enforces top management's preference for internal and operational information, which poses no threat to power and control. Most information that is generated and processed in an organisation is subject to social and political biasing. Information is gathered and communicated in a context of conflict of interests. Often information is produced in order to persuade someone to do something to suit a particular interest. Information can be used as an instrument of power. This undermines rationality (Feldman and March, 1981). Acquiring external information not easily controllable by the hierarchy of the organisation may undermine power structures and social systems. Efficiency-type knowledge, according to Nelson and Winter (1973), is stored in routines, which are interdependent combinations of human skills, organisational attributes and technology. Effective maintenance of the interdependencies, and thus the stability of routines, requires a kind of organisational truce. The fragility of the truce and the individual vested interests that depend on it make anything that looks like a new initiative subject to scrutiny, and often de facto foreclosure. Suggesting that the organisation needs new information sources is therefore something which
many managers have no great incentive for doing. It is tempting therefore, to let operational information become the foundation for strategy. Such information is familiar and therefore easier to manipulate.

Command of information and of information sources inspires confidence and represents competence. Decision-makers who are persuasive in securing acceptance for their decisions will request information, gather information and cite information. Thus, the gathering and use of information in an organisation are part of the performance of a decision maker, or of an organisation trying to make intelligent decisions, recognising very well that the assessment of that intelligence is heavily procedural and normative. External and unusual information is inconvenient. The belief that more information characterizes better decisions engenders a further belief that having information in itself is good, and that a person or organisation with more information is better than a person or organisation with less (Feldman and March, 1981). The trend in organisations is therefore for information creation and retention, not for information acquisition (Lundvall and Johnson, 1994). There is a great deal of evidence that almost all organisational structures tend to produce false images in the decision-maker, and that the larger and more authoritarian the organisation, the better the chance that its top decision-makers will be operating in imaginary worlds (Boulding, 1966).

American airlines developed the computer reservation system to automate inventory control mechanisms, then identified the opportunity to make increased rents and market power (much of which was unexpected) by automating the travel agencies. This generated much information (mainly transaction information).
The increased rent and market power that arose from that automation served mightily to justify the heavy investments and to break the efficiency ‘truce’. It also generated much strategic information about the influence that travel agencies had in customer choice of airlines and about travel behaviours. This information was used to inject an element of strategic flexibility, to segment the markets and to monitor the sales of travel agencies. Other airlines acquired this information and by being able to monitor the sales of individual travel agencies, they too realised the need to acquire external information for strategy, such as reasons for lost sales.

To capitalise on the influence that travel agencies have over customer choice of airlines, and to facilitate the acquisition of this information, travel agency incentive programs were developed. The proliferation in the use of such incentive programs created a set of less obvious market forces. Information about these forces can be acquired only through informal channels. However, because this information is external and unusual to the organisation, it finds entry to the organisation difficult and much of this useful information does not reach managers usefully. Air X’s difficulties in making use of the acquired revenue management system are, to a large extent, related to the difficulties of combining with its own internal information, external market information that is qualitative and obtained informally.

“Far from being alternative allocating structures, each with its costs, markets and firms are complementary and strongly interconnected. ... We have seen firms not simply accumulating and processing information, but engaged in the difficult task of understanding problems, selecting among multiple options, tentatively producing new solutions, all of them things are not included in the original data set” (Bianchi, 1995, p. 198).
The key message is that organisations depend on new uses of information for the strategic change required for dealing with changes in environmental conditions. This, more often than not, means that new information acquired from outside the organisational boundaries is needed (Macdonald, 1995). Ironically, the organisation is fine-tuned to reject external and unusual information, which is the information most important for its strategy. The problems of acquiring external information compatible with that already exploited within the organisation lead to a logical preference for the use of internal information, even for change (Nelson and Winter, 1982). Therefore, managers are often conditioned to use mostly internal information and fill the gaps with their instinct, or feeling.

"You can use what works today as a reference for what should work tomorrow. So, there isn't the precision of data available about the market environment and so you have to use the informal stuff to fill the story, and to give you the justification, or to give you the sense that you're making the right decision. It's about telling a plausible story. On the one hand there is a lot of intuition involved. You're saying 'I think this make sense', or 'I feel this make sense'. It's about feel" (Commercial Director – Major American Airline).

This attitude may not be considered very rational, but it has the virtue of being able to analyse very large systems in a crude and vague way. Rationalized processes can only analyse sub-systems in their more exact fashion, and being rational about sub-systems may be worse than not being very rational about the system as a whole (Boulding, 1966).
10.4 Information and Information Technology

The need for organisations to take a strategic approach to managing investments in information technology has gained attention (Bakos and Treacy, 1986; Earl, 1988; Venkatraman and Henderson, 1992; Porter and Millar, 1985; McFarlan, 1984; Weill and Olson, 1989; Sheppard, 1990; Peters, 1990). This research was strongly influenced by Porter's (1980; 1985) models of competitive forces that affect industry structure. Information systems research, based on these models, began to describe the strategic potential of information systems. Attention was focused on the potential of information systems to affect the competitive forces identified by Porter: the threat of new entrants, threat of substitute products, bargaining power of suppliers, bargaining power of buyers, and rivalry amongst existing competitors. Subsequently, several frameworks were developed to help companies to identify opportunities for such systems. Some researchers, such as Benjamin et al. (1984), Ives and Learmonth (1984), Johnston and Vitale (1988), Parsons (1983) and McFarlan (1984), used Porter's models of competitive forces and competitive strategies (Porter, 1979; 1980). Others, such as Porter and Millar (1985), Rockart and Scott Morton (1984), Ives and Vitale (1988) and Johnston and Carrico (1988) used a valued-added chain analysis to identify strategic opportunities for information systems.

That some investments failed to deliver the anticipated objectives and that some companies became classic examples of how to use information technology for competitive advantage (Ward, Griffiths and Whitmore, 1990) contributed to concentrate analysis on 'if and how' information technology contributes to
business performance. Of vital importance is the interaction between strategy, structure and information systems (Walton, 1989; Rockart and Short, 1989; Venkatraman and Henderson, 1992). Information systems have been divided into two types: competitive information systems and strategic information systems. The former are claimed to improve the costs of firms and the latter to support the creation and implementation of strategic plans (Huff and Beattie, 1985). Several frameworks were designed for strategic planning of information systems (Galliers, 1991; Earl, 1990). Business process redesign also figures highly in many corporate agendas and was considered an evolutionary way of exploiting the capabilities of IT for more than just efficiency gains, to facilitate the redesign of business processes. A business process was defined as a set of related activities that cut across functional boundaries or specialisations in order to realise a business objective (Davenport and Short, 1990; Scott Morton, 1991).

Porter and Millar (1985) identify three specific ways in which the technology affects competition: it alters industry structures, it supports cost and differentiation strategies, and it spawns entirely new businesses. They maintain that the impact of information technology on differentiation strategies is dramatic. This differentiation is chiefly achieved through: customisation of products (through increased automation), increase in the information content of the product, inter industry relationships, widening of the market reach and scope through telecommunications, and a greater centralisation of market segmentation policies.
The impact of information systems in the competitiveness of airlines is undeniable. A variety of software improved airlines’ operational efficiency, assisting in the control of operations and the performance of cost management. Other systems had a more strategic impact. CRS affected airline competition to the extent that intervention was required through regulation. The vast increase in the bargaining power of travel agents and of passengers intensified the rivalry amongst airlines. CRS also generated data which enabled the development of revenue management systems, frequent flyer programs and MIDT. These systems provide very useful support tools for managers in segmenting markets and monitoring sales. But airline managers realise very well the limitations of such systems and of the data they generate. They need unusual information on a non-routine basis in order to make such systems work for the organisation instead of having the organisation working for the systems. Programmed decisions are repetitive and routine and have defined procedures for their handling. Decisions are non-programmed to the extent that they are novel, unstructured and consequential. There is no cut and dried procedure for handling them (Simon, 1977). Information systems seem to produce information which is much more adequate for the programmed problems, but is less appropriate for dealing with non-programmed problems (Argyris, 1971). While the routine operations of the organisation are important sources of information, they are limited in serving the organisation’s higher level managers. To deal with this, managers tend to develop their own information sources - networks of contacts, informers, customers, trade organisations, and other personal sources who feed them external information on an informal, _ad hoc_ basis.
"As regards our strategies, they are pretty much driven by informal information. Formal documented information is old news. We have tried to implement several information systems to formalise our tactics, but somehow the informal medium and methods have always prevailed" (International Sales Director – Major American Airline).

Managers find formal systems of almost any type far too limited for their purposes, and there is considerable evidence that for strategy, managers favour informal sources of information to formal. Aguilar (1967) notes in his study of external information sources, that personal sources exceed impersonal sources in perceived importance by 71 per cent to 29 per cent. Sawy (1985) found that CEOs use external information sources with much higher frequency than internal information sources for strategy. Their reasons for doing so are:

a) The data in the formal system may not be sufficiently rich. For example, Davidson and Trueblood (1970) point out that information on lost sales is often more significant for many decisions than carefully quantified data on completed sales transactions. Yet, formal systems often reject such intangible data.

b) The formal system often ignores important qualitative data. These additional facts must be found outside the system, which generally collects and feeds the manager with information that can be easily measured and processed.

c) In relying on documentation, much information verbal channels can provide is lost. Furthermore, verbal channels allow for the immediate feedback and interaction which managers apparently find so important (Mintzberg, 1973).
d) Formal systems are often weak in providing the external information which managers find so useful (Aguilar, 1967; Gore, 1956; Mintzberg, 1973).

Information is a source of power in organisations and the channels through which it flows replicate the hierarchical structure of the organisation, posing no threat to structure and control (Pettigrew, 1972; 1987). Lambert and Peppard (1993, p. 181) advise that “Information technology must share responsibility for much of the rigidity and inflexibility in organisations. By automating tasks IT cemented hierarchy with reporting systems, and rigidified behaviour through standardization. Indeed, often technology has not resulted in fundamental changes in how work is performed: rather it has allowed it to be done more efficiently. The irony is that IT can also break out of traditional models of organizing and facilitate new organisational forms which previously would have been impossible.”

King et al. (1989) distinguish between information and information technology because they believe the strategic applications of information technology may be quite different from the potential strategic uses of information. While some kind of information technology is usually required to perform the evaluation or filtering function, adding value through increased timeliness or presentation format, a focus on the contents of the information system – the information – can suggest new opportunities that are not evident when the sole focus is on technology. The evolution in information technology from information processing to data development was instrumental in fulfilling management’s need
for cross-referencing and cross-relating data arising from basic operational processes in order to exercise better control. Operational data is extremely useful in providing management with information about the running of the business instead of merely automating the tasks of the business. Also, the development of expert systems, knowledge based systems and decision support systems emerged in order to use the existing technology to provide assistance to top management decisions by imitating the rules and procedures associated with a particular expertise. This technology provides important contributions in supporting managers in their decisions. However, "research showed that a computerized information system is only a small part of the arrangement that needs to be put in place for supporting top-level decision-makers" (Somogyi and Galliers, 1994, p. 24). "The impact of technological change depends on how and why the technology is used" (Somogyi and Galliers, 1994, p. 25).

10.5 Concluding Thoughts

The strategic use of information in the airline industry followed an evolutionary process which generated two main information powers (Monteiro and Macdonald, 1996):

(1) information capability – the ability to store, process and transmit vast amounts of information accurately;

(2) the use of information as a resource, providing both the intelligence behind strategy (MIDT, frequent flyer programs, revenue management systems, local market information) and the means by which strategy is implemented.

Information capability is associated with increasing internal efficiency and is marketed to other organisations, creating interdependencies which are sources of
much incremental revenue and market power. Information used as a resource allows an element of flexibility in strategy.

Neither information power excludes the other. A degree of efficiency is essential to bring the firm’s costs into line with those of competitors, and even the most flexible of airlines has to be efficient. Information capability arises from the internal capabilities of the organisation and its technology. But to use information as a resource, airlines are forced to supplement internal information and capabilities with information acquired from external sources (e.g., market specific events, competitor special promotions, travel agent incentive programs, and confidential pricing mechanisms). Of vital importance in airline strategy is the local market information acquired informally. External information is however a cause of serious difficulties. Blending external information with internal information, and blending qualitative information with quantitative, is something for which most organisations are not prepared, and for which no ready prescription can be offered.

Competition in the airline industry will continue to intensify, putting yet more pressure on airlines' strategic use of information. Several large airlines have forged very powerful alliances and are already exchanging vast amounts of competitive information and know-how. Competition between these mightily powerful airline alliances, together with an inevitably vast development of their strategic thinking will undoubtedly generate a plethora of strategic innovations, changing the face of airline competition. This will make the airline industry an even richer environment to study the strategic use of information.
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APPENDIX I

Interview Guides
Interview Guide for Airlines

1. General Orientation

Basic information about company (routes, size, etc.)

What type of information they use to compete - tactics and strategy (about competitors, markets and customers)

Where they get it from (the external information) - including formal and informal sources

Global vision of information flows within the company and inflows from the outside

If possible, give examples of past strategic decisions and ask what was the rationale behind them and what information was used.

2. Commercial / Distribution Departments

What percentage of your tickets is sold through travel agents?

How is your airline’s product marketed and promoted?

Do you have promoters (sales representatives) that visit travel agents? Are they valuable information sources? For what type of information (market/competitors)? How frequently?
What information do promoters have to carry out their jobs? How do you/they decide which travel agents to visit?

How do you monitor relative travel agent shares, or share of revenue generation? Do you use the Bank Settlement Plan to analyse market penetration?

Who decides what type of incentives should be given to each travel agent?

How do you find out what incentives other airlines are giving them?

3. CRS - Computer Reservation System

What CRS do you presently use? What modules? Why?

To what extent do you depend on the CRS listing criteria for your sales and promotion of the product?

Does the CRS provide you data about markets/competitors?

What type of data do you buy/receive from the CRS you subscribe?

How do you use such information and for what purposes?

4. Reservations

Who decides what CRS to subscribe with what modules?

What do you think constitutes a good CRS?
What is the relationship between the CRS company and the airline? What information do you exchange?

5. Sales Offices and Travel Agencies

What is the role of sales offices in your airline?

What type of information are sales offices exposed to in their markets?

Are your sales offices and travel agents used as sources of market information?

Do they convey market information to headquarters?

What type of information do they provide you?

With what frequency does that information supply take place?

What other sources of market information do you use to analyse and respond to market conditions?

6. Route Management

How does your route network fit in with the airline’s overall strategy?

How do you watch over competitors’ tactics? (On each individual route; Per geographical region)

How are tactics decided on each individual route (frequency, capacity, etc.), how frequently are they adjusted?
What information is used to adjust the strategy adopted in each route?

How are decisions to initiate/terminate routes, increase/decrease frequency or capacity offered, to change pricing and incentive policies, etc. taken? What type of information is used?

[Give an example of a recent change in strategy in a particular market] What information was used to reach that decision?

7. Revenue Management

What do you think is the importance of a revenue management system?

How has revenue management been done in the past?

Did you develop your revenue management system in-house or did you acquire it?

What do you look for in a good revenue management system? What made you select this one?

Who takes the revenue management decisions?

Are they based purely on the recommendations of the revenue management system?

What other information do you use to complement or correct any recommendations from the revenue management system? How do you obtain such information?
8. Management Information

What do you think are the essential management indicators of your airline?

What are their strengths and weaknesses?

Do managers use information other than that contained in the indicators produced internally? What kind?

[If possible obtain internal reports and market statistics] - Do you find this information sufficient to manage your markets?

9. Frequent Flyer Program

No. of members, background information, promotions, mileage awards, etc. What distinguishes it from others?

What sort of information does it store about its members?

What is done with the information? Is it used in marketing? How?

How do you get information about customer satisfaction? How do you process and react to it?

Do you watch what your competitors' Frequent flyer programs are offering? How? Where do you get the information?
Interview Guide for CRS

1. Background Information

No. of airlines, travel agencies using it, products and services offered
annual report (accounts, size, etc.), market share per country of operation.

What is your overall strategy?

What are your short/medium term objectives? Are you targeting particular regions, airlines, etc.?

2. Role of CRS

What do you think is the importance of Computer Reservation Systems for airline competition?

What roles can a CRS fulfil in airline strategy? How do you see it in the future?
What is a CRS company normally used for in practice?

Can a CRS be a source of strategic information (market, competitor, customer information)? Of what kind?
3. Relationship with Customers

What distinguishes your CRS from the others? What are your strengths?

What is your relationship with your owner-airline(s)? What information do you exchange? What advantages does it get from owning you in the face of present CRS regulation (revenue, information, influence, etc.)?

What is your relationship with customer-airlines? What kind information do you exchange (technical support, market/competitor information, etc.)?

How do you promote your products and services amongst airlines? What incentives do you offer?

What is your relationship with travel agents? What kind of information do you exchange?

How do you promote your products and services amongst them? What incentives do you offer them?

Do you have many corporate users?

What products and services do you offer them?

What is your relationship with them? What information do you exchange?
1. Background Information

Market share, size, turnover, scope of operation, specialisation, etc.

Do you have any corporate clients? What services do you offer them?

What computer reservation system do you use? Why?

2. Airline Promotion Efforts

What tactics do airlines use to promote their sales with you?

How frequently do airlines' sales representatives visit you?

What does their work with you consist of?

Do you think this is an effective way of promoting airline products?  
   If no - How would you do it if you were an airline?

3. Airline Incentives

Do larger airlines normally give higher commissions?

Do larger travel agents normally get higher commissions?

Do you think commissions are a good way of influencing your sales?
On what information do you think airlines base decisions to give different commissions to different travel agents? How do they have access to it?

What other incentives do airlines offer?

Do you think the CRS listing criteria is the strongest determinant in selling airline tickets?

Do customers often express general preferences for particular airlines?

Do you think ticket prices are the determinant factors of selling seats? What other things do customers often request?

4. Airline Information Procurement

Do airlines seek to get information about their competitors from you (e.g. other airlines' commissions and confidential pricing)?

Are there any typical patterns of events - changing tactics, retaliations? How frequently do these occur in individual routes?

What do you think of airlines' use of MIDT information?
5. General Industry Trends

What differentiates you from other travel agents?

What do you think are the main capabilities to be successful in this business?

What is your general strategy? How do you watch over your competitors?

What do you see is the current role of a travel agent?

What do you think of airlines' commission capping policies?
Interview Guide for Airline IT/IS Firms

1. Background

Size, turnover, scope of operation. In what markets do you operate? Who is the owner-airline or what is your ownership structure?

What is your relationship with your owner-airline? What information do you share?

Products and services offered.

Who are your airline customers?

2. Market Information

How and where do you obtain information about products or services that airlines need?

What kind of information do you exchange with your mother airline? (which airlines have what systems, IT/IS technical support, etc.?) What advantages does the airline get from owning you (revenue, market/competitor information, etc.)?

What do you think are the advantages of airlines buying systems from you rather than developing their own systems?
3. Competitive Advantage

Inevitably, many airlines end up buying systems from the same vendors, what do you think is the potential for these systems to give these airlines competitive advantage over each other?

What is the importance of revenue management systems/MIDT in the airline industry?

Are the systems that you sell the same as those you have developed for your airline-owner? If no, what are the differences?

Why does your airline-owner allow you to sell the same or similar systems as the ones it uses to its competitors? Does it not threaten its competitiveness?