Legacy carriers have used modern IT systems to evolve their revenue management strategies. This has allowed them to exploit new streams of potential revenue and lower their total cost of sales. Low-cost carriers have lower overall sales & marketing costs.

Low-cost & legacy airline revenue strategies & cost of sales

The success of low-cost carriers (LCCs) and the financial distress facing many network carriers can be attributed to various factors. One of these is the difference in revenue generated from different revenue management (RM) systems, and another is the difference in cost of sales the two types of airlines have.

Traditional RM system

Traditional or legacy airlines have had to adopt and develop new RM systems to offset declining yields and maximise revenue per flight.

Legacy carriers used complex and confusing fare structures designed to take advantage of the fare-paying potential of every passenger. The traditional underlying RM philosophy was to tailor every passenger's unique level of demand by setting restrictions to exploit their spending potential. "The traditional RM model assumes that the fare conditions associated with the different fares effectively segregate the demand by booking class (BC)," says Paul Rose, director of revenue management at SITA. "It then forecasts the demand for each BC at each point in time prior to a flight and allocates a number of seats to the various BCs based on the forecast demand for each BC and the average revenue for each BC. Price and competitive factors are ignored or assumed to be unimportant in traditional solutions."

Air Canada, which emerged from 18 months of bankruptcy protection in September 2004, blamed Air Canada's financial problems on its fare structure of 42 different fares.

Another feature of the network carriers' old-fashioned RM system was focus on maximising revenue on all legs in an airline's network. An example is the moveable curtain module, which tried to maximise the revenue from first and business classes. This was adopted by most major network carriers 10 years ago, but subsequently came to be regarded as a problem for seat assignment during check-in, passenger handling operations and catering, and so was abandoned.

The emergence of LCCs, however, has forced network carriers to change their RM philosophies. LCCs' fare structures differ from those of the network carriers' in two areas: lower price and a simple fare structure. jetBlue, for example, uses only four fares. Southwest Airlines's fares, for example, are only 60% of those charged by the legacy airlines. "The RM philosophy underlying the LCCs' fare structure is a simplification of the RM model," says Rose. "Many LCCs have few or no fare conditions (for example, advance purchase or a Saturday night stay), which attempt to segment passengers with different purchasing behaviour. LCCs offer different fare levels with similar conditions. The only factor that causes a passenger to buy a higher or lower fare is availability. A passenger can therefore buy the lowest fare if it is available. LCCs typically have a range of fares with the same conditions, which are controlled using simple rules regarding the speed at which the flight is selling and the remaining space available. The RM systems used by LCCs are so straightforward that in some cases they only use simple computer systems, or even standard software such as Excel."

Simple fare structures and RM systems have boosted LCCs' profit margins and helped them win market share from network airlines.

In contrast with the success of LCCs, the network carriers have suffered from eroded revenue streams. According to the US Department of Transport net passenger yields declined by about 40% from 1981 to 2001. Network airlines have therefore had to evolve and revolutionise their RM philosophies and systems to restore their market presence.

New distribution channels

With their RM systems being restructured, network carriers have also rebuilt their distribution and marketing channels. In the past network carriers mainly relied on global distribution system (GDS) providers and travel agencies to distribute their tickets because it was not feasible for them to build a distribution network that covered global markets and reached all travel agencies. At that time the major GDS providers, such as Sabre and Abacus, controlled the global market and charged the airlines about $4 for every transaction.

Travel agencies played a role as the airlines' global representatives to market their fares and advise travellers on price and itinerary. The service for the airlines was expensive, since they had to pay for every ticket sold by the agencies. The network carriers attempted to establish their own booking offices and call centres to reduce their dependence on the travel agencies and the commissions paid to them, but these efforts did not yield substantial outcomes. For most network carriers in Europe and North America, the revenue generated from call centres has declined to about only 20% of all revenue. The distribution and marketing costs were so high that the financially distressed network carriers had to consider how to reduce the costs by all means.

The first generation of LCCs faced a similar problem in distributing and

marketing their tickets. They did not use GDS for two reasons. The first is that they could not afford the high charges. If Southwest Airlines used GDS to distribute its tickets, for example, its distribution cost would be 60,000 times its current distribution costs. The second reason is that the LCCs have small route networks, and do not provide connecting services. For LCCs these features make GDSs useless as well as expensive distribution channels.

First-generation LCCs had to rely on travel agencies to market their tickets, however. In 2000 about 28% of Southwest's tickets were sold by travel agencies. The commission paid to the travel agencies was equal to 0.07 cents per available seat-mile (ASM). Though significantly lower than that paid by the network carriers, the commission paid by the LCCs remained a big burden.

Fortunately the Internet boom and evolution of information technology provided both LCCs and legacy carriers with opportunities to improve their distribution and marketing channels, as well as reduce the cost of sales.

Comparing RM philosophies

Though challenged by LCCs in almost every market, network airlines have the advantage of strong route networks, connecting services, premium and economy classes, and frequent flier systems. The network carriers make full use of these advantages to maximise revenues. "Basically our RM philosophy is to maximise network revenue through optimisation of discount seat allocation, network traffic selection and overbooking," says Tony Robertson, manager of revenue management at Air New Zealand.

"We have embraced a strategy from a flight management point of view that we believe competes more effectively with the LCCs," says Robertson. "In addition we will be upgrading our RM system shortly so that it does a better job of forecasting and optimising in unfenced fare environments."

Connecting passenger revenue

The network carriers' first unique revenue source is connecting passengers. A network carrier is normally based at a hub, which provides it with connecting flights. The key RM challenge facing a network carrier is to determine which level of demand from point-to-point and connecting passengers can generate the highest revenue. Their philosophy is that a fare value is determined for each level of forecast demand. These fares are based on historical usage, as well as current fares selling in the marketplace. The forecasts and associated fares are used by the network optimisation algorithm to determine which booking should be accepted to maximise overall network revenue. Some network carriers try to boost connecting revenue by optimising their RM systems.

Revenue generated from connecting passengers is not a consideration for LCCs, who want to increase aircraft utilisation through point-to-point services. The cost of serving connecting passengers is almost twice that of serving a local passenger. The heavy investment in upgrading RM systems also dissuades LCCs from providing connecting services.

Worldwide IT providers have been producing various software solutions, such as Sabre's AirMax, Pros's O&D 2.0 and Lufthansa Systems's PNRPro, to meet the network carriers' enthusiasm for connecting passenger revenue. AirMax's origin-destination mode explicitly recognises over 100 million combinations of origin-destination connections, itineraries, and booking classes. Implementation of Pros's O&D system has allowed its client airlines to realise a 1% to 2% revenue gain over a traditional leg-based system. Lufthansa Systems's PNRPro reduces forecast error on overbookings by an average of 25% compared to other leading RM systems.

Pricing

Unlike LCCs, some network airlines try to protect seats for last-minute but high-value passengers through their RM systems. "We are trying to get these passengers either through the forecast and optimisation process, or through manual controls implemented by analysts via the RM system. Revenue gain is tough to estimate, but would easily be in the millions of dollars," says Robertson.

Another function of network carriers' pricing systems is to optimise the planning of future discount versus full-fare seat allocation. This function has been available in several systems. "This is the basic feature of Manugistics technology, which has been proven to increase revenue by as much 15%," says Rod Collier, director off revenue management at Manugistics.

Although the legacy airlines have the advantage of their networks, their efforts to improve revenue will be futile if they are unable to commit to do pricing well. Under the LCCs' low fare attack, the network carriers are divided into two groups. The first group comprises airlines that simply dispensed with some or all of their booking restrictions. Delta Airlines and American Airlines, among others, did this in early 2005 for US domestic flights. This results in fare structures that are easier for passengers to understand, but the airlines have given up their control of the pricing and have to follow the LCCs' prices.

For example, they may close the lowest booking class for a particular route because a competing LCC is already demanding a higher price. So

why, therefore, cannot the network airline try to make more as well? When an airlines does this, however, it also closes the booking class for all connecting flights. This is because a GDS assembles flights from A via B to C by stitching together the segments 'A to B' and 'B to C'. The traditional system still applies to intercontinental flights. Conflicts can therefore arise quickly if it becomes necessary to open a lower booking class for the entire route from A to C. If the cheap class is opened for one segment, then the airline makes less on this route than it could otherwise. But if the class remains closed, then it is hard to sell the entire flight, thereby causing the airline unnecessary financial loss.

The second group tries to combine the fare systems adopted by network carriers and LCCs. Some of the 26 booking classes adopted by most network carriers have been abandoned. The airline replaces these with straightforward prices with few restrictions. This type of fare structure appeals to price-sensitive customers, while the remaining booking classes appeal to established customer types. This is how Lufthansa's German domestic fares work. Since winter 2002/03, Lufthansa has offered set, tiered prices for a portion of its available seats. Flyby fares used by Lufthansa have offered uniform, cheap prices for flights from Germany to 22 countries. There are four fare tiers, with simple restrictions, whose availability depends on how far in advance they are booked. The 26 traditional booking classes are being used at the same time.

An underlying flaw of this strategy, however, is that the scope and prices of the individual classes are set before sales begin. In other words, this strategy is just

aggressively marketing early-booking discounts, which have always existed.

In summer 2005, Lufthansa Systems intends to counter these two strategies with a system called 'ProfitLine/Yield O & D'. The basic idea is to install tiered prices parallel to the booking classes in the yield management systems of network carriers, together with a system which sends customer requests to one system or the other. This would make it possible to sell tickets for the same flight using both pricing strategies. In order for this to work, the system has to assign the right price range to a customer based on information from the customer's query. It can then produce the current price in the correct range. It will not be 100% perfect, but it will work better than the single price range of low-cost carriers. Higher revenues will then be possible. This is the dynamic side. The traditional procedure with up to 26 booking classes will also remain completely unchanged.

"It may be advantageous for a carrier competing with LCCs to be able to offer some of its inventory on a similar basis, particularly when it has excess capacity," says Rose. "The enhancements that we have implemented offer two primary ways of controlling discount BCs. The first is the RM rules that open/close BCs, and are based upon booking-load factor, projected load factor and time until departure. The second is an optimisation algorithm which estimates the lowest BC that should be opened, based on a forecast level of demand considering alternative fare levels and sensitivity of demand with respect to price (fare elasticity)."

SITA has recently purchased SMG, whose products have been integrated into SITA's airfare portfolio of airline pricing

solutions. These systems allow fewer resources to be used, and more importantly allow greater market penetration to be achieved by covering all markets on a regular systematic basis. The solutions also provide for Internet web-based fares to be captured from LCCs, which do not typically distribute their prices through the traditional channels of ATPCo and/or SITA.

"Via our systems Predict and LPD (Level Prognosis Database), the airline will have a full overview of the expected future demand, as well as the current booking situation compared with historical booking statistics and demand," says says Frank Heitmann, managing director at CSC Airline Solutions. "With Predict, you can see how the booking flow up to departure develops compared to the booking flow for previous flights. By comparing these figures, and the expectations for the flight, you will have the best possible basis for a decision if to change the pricing set-up by including campaign fares or any other alternatives. As Predict reports are easily presented in a large variation with graphs and numbers, they give a quick overview for all organisational levels within the airline. Predict and LPD are therefore management tools to be used for decisions from top management for revenue management."

Overbooking

As the network carriers' tickets remain refundable, these airlines have a high passenger no-show rate. Common wisdom holds that the only way to compensate for no-show passengers is to sell more tickets than there are seats available. This means an airline can achieve more revenue by overbooking. Another rationale for network carriers' overbooking policy is that various booking classes are set up, which means that some booked passengers will not show up for each class. Airlines can therefore allow overbooking at each class to maximise revenue. The industry standard is to allow 5% to 10% overbooking. Before 11th September 2001 American Airlines stood to maximise profits by selling about 1.171 times as many seats as there were available. The downside of these policies for airlines is higher overbooking rates,

operational processes and ticket distribution systems. With the network carriers' finances deteriorating, their main focus has been to narrow the gap between their costs and the LCCs' with new information technology. LCCs also try to reduce their costs with new software solutions.

Inventory Control

Network carriers traditionally controlled their inventory on several global inventory control systems (ICSs), such as SITA and Amadeus. The latter represents over two-thirds of all air tickets sold via travel agencies in Central America. Some incumbent airlines have co-operated to build joint ICSs. China's major airlines have joined together to build their own ICS through an IT provider, Skytravel. The ICS providers charged the airlines heavily. For example, Chinese airlines have to pay about $5.6 million for the ICS service to Skytravel. Heavy charges of the traditional ICS and the rise of the new generation ICS built under an open system, have lead to the demise of the traditional ICS.

Since LCCs have never relied on third-party ICS services and have not invested in building joint ICS, they have built their inventory control systems under open systems that can integrate web-enabled reservation and inventory systems which include the Internet, call centres, airport departure control functionality and more. Some software solutions are built specifically to satisfy the unique needs of airlines that implement a low-cost business model or that are in the process of transforming their businesses to streamlined operations. The small investment of up to $120,000 in building an open system is so attractive to LCCs that most build their own.

"Cendant TDS has introduced aiRes, a fully integrated system that replaces legacy architecture with a modular, easily customizable system. aiRes supports passenger reservations, check-in, baggage control and fares. We have designed the system to be open and as such it is easily connected to a variety of online and off-line channels," says Lugli.

Distribution channels

With the exception of GDSs, almost all the existing distribution channels used by the network carriers have been

particularly after 11th September 2001, when airlines reduced seat capacity. "Overbooking brings the network airlines about 5% extra revenue," says Dieter Westermann, general manager strategic department at Lufthansa Systems.

"The network carriers know the benefit of overbooking and want to maximise it," says Collier. "The question facing today's airlines and IT providers is how to optimise overbooking. Overbooking optimisation, which minimises the probabilities of spoilage (unsold seats) and denied boardings (oversales), is a basic function of the Manugistics solutions. We also have a variety of functions based on business rules that help to manage this aspect of an airline's marketing and planning operation. The benefits depend on the airline and its passenger load factor, the volume of seats sold, and the number of customers that do not show. Some airlines have all non-refundable fares, so they would have little use for overbooking. Airlines which cater for business travellers and give a partial refund to no-shows, can reap significant benefits."

"Included in our RM system is also a feature for overbooking based on expected no-show passengers and overbookings that are expected to cancel before departure. Both functions can be activated optionally, and both options can even be activated partly. These overbooking prognosis are, as for the demand prognosis and the booking prognosis, updated on-line," says Heitmann.

To ensure a high load factor, LCCs implement a non-refundable ticket policy. The consequence of the policy is that LCCs' passenger no-show rate is much lower than the network carriers'. If LCCs adopt an overbooking policy, their profits will be reduced by untenable levels of compensation to bumped passengers. Another reason why LCCs are unable to adopt overbooking is that they normally only set up one booking class.

Cost of sales

"The difference in total cost of sales between LCCs and legacy airlines is dependent on the degree to which the low-cost model is embraced. For carriers that distribute exclusively through their websites, with only minimal call center and no external channels, obviously the cost savings are dramatic. For example, $0.30 per booking versus $30.00 per booking for a legacy airline. Few carriers follow the pure low-cost model, with most having some call center and some external channels and a sales force. Legacy carriers are also actively shifting transactions to lower cost channels, with varying degrees of success. Airlines are also realising that it is unwise to focus exclusively on the cost of a distribution channel, due to the fact that different channels can bring different yields. Different channels also offer different values to the consumer. For example, a corporate channel offers the corporate traveller/corporation more value (convenience, control and data), generates higher yields, but comes with higher costs. Even LCCs are beginning to realise that they must evaluate the entire equation," says Flo Lugli, senior vice president of airline solutions at Cendant Travel Distribution Services.

It is estimated that 65% of LCCs' cost advantage over the network carriers comes from savings in scheduling,

jetBlue estimates that its IT system cut the number of technology staff it needed to hire by 40-50%. jetBlue only spends 1.5% of its revenue on information technology.

employed by the LCCs, but the percentage of revenue generated from different channels and the incurred cost vary between the two types of airlines. Southwest Airlines, for example, generated 38% of revenue from the Internet, 28% from travel agencies, and 28% from reservation centres in 2000. In 2004, the revenue generated from the Internet had increased to 59% and that from travel agencies and reservation centres had declined to 13% and 18%, respectively. Southwest reduced its headcount per aircraft from 85 in 2003 to 74 in 2004 as a consequence. From December 2003 Southwest stopped paying commission to travel agencies and saved $5.38 million as a result.

To help the airlines significantly reduce their distribution costs, the IT providers have produced various systems. Among these, Lufthansa Systems's FACE is prominent. FACE allows airlines to freely choose their favourite distribution channels, which makes airlines more flexible and allows them to respond faster to market changes. FACE provides open interfaces, thus ensuring seamless data communication between different technology platforms, including airlines using different IT systems.

e-ticketing

The most active users of e-ticketing are LCCs, because of the considerable cost savings to be had. More than 90% of Southwest Airlines's passengers use e-tickets, while jetBlue only issues e-tickets.

IATA estimated that the airlines could save up to $12 from every e-ticket compared to a paper ticket. The saving, however, is more significant when the investment in building a system to issue e-tickets is considered. LCCs are able to issue e-tickets with weblogic 8.1 software, IBM Mainframe and other accessories, for an attractive total outlay of no more than $2 million.

Network carriers' distribution channels enable them to issue e-tickets without much effort. Being networks, however, they face two inherent obstacles. The first is that they are unable to provide service at airport stations that are unwilling to invest in the necessary equipment for e-check-in. China Eastern Airlines issues e-tickets for most domestic routes, for example, but they remain unavailable in some overseas stations. The second is that it is difficult for

network carriers to standardise e-ticketing with their alliance members. OneWorld is the only alliance that has completed cross-member e-ticket interlining. This will generate a cost saving of about $65 million per year for the whole alliance.

"For internet reservations and eBookings, the airline will have an on-line opportunity for the customers to do their bookings and search for alternatives without any involvement from staff. Via eBooking, the customer is able to search for alternatives related to time of departure, fares, rules and services. The eBooking system is on-line connected to the Reservation system and the Yield optimisation system. It will show the availability according to the demand on each individual flight at any time. The updates of prices are easily made by the airline, and will also be shown at the time the airline decides to release the update," says Heitmann.

Revenue accounting

Revenue accounting had been a headache for the network carriers before the adoption of the modern IT systems, because the processing time for paper tickets took several months. Airlines also had to employ large numbers of staff to manually complete the accounting job.

This job has become much easier with modern IT systems. Modern revenue accounting systems mean that many airlines have not needed to significantly increase their revenue accounting staff, despite some recording double-digit annual traffic growth rates.

The revenue accounting process has also been shortened to between two weeks and one month, which has

improved airline's cashflows. Network carriers, however, remain weaker than the LCCs in terms of the cost savings from revenue accounting. Due to the high percentage of e-tickets issued, LCCs can realise their revenue and complete the revenue accounting at least one week earlier than network carriers. The application of information technology also means the average headcount of LCCs' accounting staff is only one third of network carriers'.

The intensive adoption of IT technology continues to strengthen the LCCs' cost advantage to meet the challenge addressed by the declining yield caused by fierce competition and high fuel prices. Southwest's employee numbers have decreased from 31,580 in 2000 to 31,011 in 2004. Its yield per RPM fell by just 0.01 cents to 8.5 cents over the same period. jetBlue estimates that its IT system cut the number of technology staff it needed to hire by 40% to 50%. While the network carriers spend about 5% of their revenue on information technology, JetBlue spends 1.5%.

Summary

Generally speaking, over the past decade network carriers have shifted their RM philosophy from exploiting passengers' purchase potential to bowing to the market and reaping revenue by exploiting their inherent advantage and modern IT. LCCs, however, have been evolving their RM systems by enthusiastically embracing the modern information technology, while their RM philosophy has been unchanged. These efforts have resulted in higher revenue and lower cost for these airlines. **AC**