

While the high growth rates of freight traffic are commonly discussed, freight yields have been weak for many years. Most freight carriers are in a weak bargaining position, but also use too many steps in their sales processes. Adopting the right strategies and using modern systems can improve airlines' revenues and reduce their costs of sales.

Strategies and systems for improving freight yields

Air freight volumes have bounced back since 2003. It is expected that over the next 20 years world air cargo will grow at a rate of 6.2% per year. The yield of air cargo, however, has kept declining by an average 2.4% per year since 1985. In contrast with the booming logistics industry, the air cargo business is suffering. What is behind this, and how can cargo airlines manage their revenues and improve yields?

Cargo airline's role

"A complete door-to-door transport journey has many stages, including: pick-up at the shipper's location; transporting the goods to the gateway airport; preparing all airbills and customs documents; contracting with the airlines for transport; recovering shipments at the destination airport; clearing shipments through customs; making final delivery to the consignee; and handling any damage claims once the consignee has inspected the goods," says David Hoppin, principal at Mergeglobal, a consultancy specialising in transport economics and strategy based near Washington, D.C.

There are therefore four parties involved in the whole process: the shipper; the forwarder; the airline; and the integrator. The forwarder and integrator both arrange all the legs of the transportation, with the integrator also transporting the cargo. "Integrators, the companies that operate vertically-integrated air and ground networks that move shipments from origin to final destination, were created since it was not possible to effect overnight delivery using the established airlines, simply because there were relatively few late-night flights," explains Hoppin.

The leading integrators in the world are Fedex, UPS, DHL and TNT. The top

20 integrators have controlled over 50% of the global air cargo market in terms of product, capacity utilisation and pricing. They also control the door-to-door and distribution centre segment for air cargo, which is where most of the added value lies. Although there is often competition between the forwarders and integrators, the integrators have to collaborate with the forwarders in some regions where the integrators have not established a strong presence, or have been regulated in expanding their business.

"Normally 50% of the revenue contributed by a shipper goes to the cargo airline that transports the goods. Another 20-30% is for warehousing, including wrapping the goods, preparing the necessary documents and so on. A further 10% of the revenue is spent on inventory, which is the capital cost derived from the time of transportation. The last 10% to 15% goes on management, including head count and other expenses," says Jiajie Tao, vice general manager at Shinyun (Shanghai) Transportation Ltd.

Although the cargo airline accounts for the biggest share of the transport dollar paid by a shipper, the profit margin for the cargo airline is very thin, averaging about 5%. The integrator achieves slightly higher profit margins than the cargo airline, and the forwarder the highest profit margins of the three.

"Increasingly, forwarders also offer value-added services like warehouse management and minor product repairs to generate more revenue from customers, making it more difficult for them to switch to other forwarders," says Hoppin. "Compared to the airlines, forwarders enjoy high profit margins, and capture a disproportionate share of industry profits when taking into account the airlines' investment in hard assets and the attendant risk."

Causes of declining yield

"The real problem is that the airlines as a group have generally suffered from a lack of pricing power, due primarily to excess capacity," says Hoppin. From 1990 to 2004 ACMI-based capacity increased by an average of 17.9% per year. "Over-capacity is only one reason for cargo yields declining over a 20-year period. The others include: expansion of low-price capacity generated by passenger aircraft, since many passenger airlines operate large widebodies and consider cargo space to be a virtually costless by-product of their core business, and so heavily discount to generate incremental revenue; expansion of low-price capacity generated by trucking companies within North America and Europe, since trucks are far less expensive to operate than aircraft and can be surprisingly fast because they go directly from shipment origin to final destination; and longer average journey lengths. Since the Asia Pacific became the world's manufacturing centre, both revenue and cost per kilometre naturally decline as shipment distance increases. This reflects the fact that there are a lot of fixed costs involved in launching a flight, so the longer the flight, the lower the cost per km."

Over-capacity is a common problem facing both the passenger and cargo airlines, but the latter have their own specific reasons. For example, logistics expenses used to be one of the biggest costs for manufacturers, accounting for more than 30% of their total expenditure two decades ago. With the development and adoption of modern IT and logistics systems, however, the cost of logistics has been in decline. Nowadays the cost usually accounts for about 15% of the total cost, even though the distance between manufacture base and HQ or market has significantly increased due to



manufacturers transferring their factories to developing countries.

When logistics accounted for 30% of manufacturers' costs, cargo airlines could get more revenue. In addition, the undeveloped logistics system of 20 years ago meant that shippers had to negotiate with the parties involved in the process one by one, which gave the cargo airlines stronger pricing power than now. With the emergence of big forwarders and integrators, shippers now negotiate with the forwarders and integrators to reduce logistics costs, rather than the airlines.

"Big shippers now only send a Request for Proposal (RFP) to big forwarders or integrators. The forwarder that wins the bid sends the RFP to the cargo airlines," says Heieh Chao Wen, vice president of cargo at Air Macau. "It is very hard for cargo airlines to get transportation business directly from the shippers, so the cargo airlines must establish an alliance with the forwarders. Obviously the forwarders need to have a strong and stable collaboration with the air cargo airlines to win the bids from big shippers. This is a mutually-dependent relationship, but cargo airlines, especially the small ones, have little leverage with the big forwarders."

Furthermore, with the manufacturing base transferring from Europe and the US to developing countries, such as China, Thailand and Malaysia, the logistics process is becoming more complex than ever. "Cargo airlines focus on airport-to-airport (A2A) transport of freight. Forwarders focus on originating freight shipments from shippers, and on arranging all aspects of the door-to-door

journey. Big forwarders also offer a variety of other, non-transport, services under the title of logistics, such as inventory management," says Hoppin.

Specialisation and the division of labour has therefore become more important and necessary than ever. Cargo airlines lack the necessary network, expertise and resources to complete the whole procedure, and so rely on the forwarders to do it. This is another reason for cargo airlines' declining yield.

Cargo airlines' efforts to generate more revenue from the transportation process and improve yield fall into two areas: discovering new markets, redefining their businesses and rebuilding their relationships with the freight forwarders and integrators; and using modern information technology to reduce cost and manage revenue.

Transformation

Individual cargo airlines are therefore having to be bold to survive in the harder business environment. Expansion into emerging markets is one route to overcoming declining yields. Manufacturing work has been transferred to China in recent years, and the cargo business is booming on the international routes to China as a result. The yield from the region's international cargo business is about 30% higher than that from other regions. The cargo volume also maintains an annual growth rate of more than 10%. The air cargo incumbents have consequently been transferring their capacity to this new market and expanding it. Lufthansa

The main problems resulting in weak freight yields are over-capacity and freight carriers having weak pricing power. Shippers negotiate with forwarders and integrators, rather than the airlines.

Cargo, Evergreen, Singapore Airlines and Korean Air have formed joint cargo airlines with Chinese carriers, and will transfer their freighters to these airlines or purchase new ones.

Another approach is to become a niche cargo airline, such as First Airlines, which operates between Ottawa, Montreal, Winnipeg, Edmonton and 24 communities in Nunavut and Nunavik without any rivals. While other Canadian airlines are struggling for survival, the airline is enjoying its monopoly in this region and is preparing to acquire more aircraft in the next two years. Air Macau is another typical example. It is the only carrier that has the right to fly directly between Taiwan and mainland China, without changing aircraft, but requires a technical stop at Macau Airport. This routing saves significant turnaround and cargo transfer time, and is therefore popular with forwarders. Previously, freight going between Taiwan and mainland China had to transit via Hong Kong and it was a requirement that freight changed aircraft, whatever airline was being used. Since Air Macau launched these services in April 2004, its cargo volumes have increased by 170%.

A third option is to vertically integrate the cargo airlines with a regional integrator. In regions where there are no strong forwarders or integrators, and the cargo business is booming, the cargo airlines there may have a chance to transform themselves into integrators. China Southern is considering turning its cargo department into an integrator, which will be mainly based in the Pearl River Region, one of the most prosperous regions in China. This would give the airline the opportunity to earn revenue that would otherwise go to the forwarders. Due to investment in the aircraft, trucks and other infrastructure, however, the profit margin will not reach the same level enjoyed by the forwarders.

The fourth option is for a cargo airline to become a sub-contractor of a big forwarder or integrator. This means the cargo airlines only focus on the transportation process and achieving the reliability required by the forwarders or integrators. The cost and profit margin

Research by Unisys discovered that the operating process of transporting air freight using traditional methods, usually involved 40 steps. Some of these were unnecessary. FedEx & UPS follow a mere 11 steps in their processes.

are calculated and known even before the flights. The profit margin might be lower than that of an independent cargo airline, but the collaboration can minimise the business risk, which small airlines cannot bear in the downturn. This has been more and more accepted by small cargo airlines in North America and Latin America. Astar, ABX and several other previously independent airlines are now the airline sub-contractors of DHL. In 2003, ABX reported a net loss of 38.49%, but as a result of becoming DHL's sub-contractor, this carrier recorded a net profit margin of 3.07% in 2004. "Cargo airlines are not always at a disadvantage before an integrator or forwarder. The integrator needs an airline which has a big route network and suitable frequencies to match its operational demand and ensure the delivery reliability. If a cargo airline has the strength, it has more bargaining power," says Heieh.

The fifth option is for a cargo airline to diversify its goods and revenue source. "Cargo airlines have tried for years to increase revenue through specialised services like transportation of live animals, and time-based segmentation of the basic airport-to-airport transport product. In many cases these initiatives increased airlines' overheads as well as their gross revenue per kilogram, so profitability failed to improve measurably," says Hoppin.

IT solutions

No matter what strategy cargo airlines would like to adopt, they need to seek help from modern IT solutions. In a Morgan Stanley Dean Witter survey on freight carriers, some 44% of respondents said that a freight transportation provider must have e-connectivity to bid for their business. Modern IT can help the cargo airlines in two aspects.

One is to reduce the cost incurred during the cargo transportation process. Research conducted by Unisys has discovered that the operating process of transporting freight using traditional methods commonly involved 40 steps, some of which were unnecessary. Traditional methods also gave airlines



limited access to information. In comparison, integrators such as FedEx and UPS followed a mere 11 steps, with four quality steps included and no points of redundancy. Making efforts to simplify the process and reduce the costs are the first priority for cargo airlines, and include: using the Internet to drive lower distribution costs; using e-Airwaybills to remove carriers and realign shippers' responsibilities and liabilities; using document imaging services to remove the cost of handling paper; using radio frequency identification (RFID) and electronic product code (EPC) technology to enable electronic audit, and cargo security, and to automate item level tracking with lower process costs.

As an example, about 38% of Cathay Pacific's cargo bookings worldwide are currently made over its cargo Internet portal. Its aim is to move towards e-airway bills and a paperless cargo operating environment. China Southern has been using Tangji, a software solution that it has developed, to exchange airwaybills with US customs since last year. This software can save about \$0.8 million each year, which was the amount paid to forwarders for the billing service.

Various software solutions can assist airlines in simplifying processes and reducing costs. SITA Air Cargo is the basic software that provides database and other basic functions to cargo airlines. The system's links to cargo revenue accounting (CRA) and unit load devices (ULD) management modules enable single data capture and seamless sharing of data between applications. The system centralises the control and allocation of all flight capacity under the management

of a central reservations office and its branch office. Master flight records are created in the system by an on-line schedule change facility for entire schedule periods. Flight capacity can be reserved for the use of regular traffic and feeder stations, leaving any unallocated space as available for sale. Allocations can be set to be released automatically or manually. Booking requests can be processed via on-line system access, by electronic message from a business partner, or via an internet booking facility. Successful booking requests create a record and generate the IATA agent and shipper details, the published and net rates and charges and payment code. The system will also calculate the airline's revenue on the record.

The system's second function is airwaybill data management. It can capture the airwaybill data at the earliest opportunity in the life of a shipment. If a booking has been made for the shipment, the data capture process commences at the reservation stage. Otherwise the process will begin when the cargo is first received at an automated station or upon receipt of an electronic airwaybill.

The next function is outbound handling. Once the full shipment data have been captured and validated, a hard copy airwaybill can be printed. The system also can conduct the in-bound handling. A printed notification of arrival can be generated by the system on demand. The airwaybill record is updated to reflect delivery or collection details for the complete or partial shipment. The system has the function of commercial management. Agent files are created for all agents and customers, and contain



general information and commercial information, such as monthly targets and commissions. Airwaybill-controlled stock issued to agents and customers is automatically linked to the file, so when the controlled airwaybill departs on a flight the net revenue will be added to a running total of sales for the month.

Cargo revenue management

IT systems are also used to manage and improve cargo revenues. Although various types of software are on the market for managing cargo revenues, the need for a sophisticated software solution remains controversial. Opponents maintain that cargo airlines only get business from forwarders and hence have a small customer base. The revenue trend is predictable and the cargo revenue management system is not as important as their passenger counterparts.

The supporters of cargo revenue management systems, such as Gregory Hendricks, vice president and managing principal at Unisys, maintain that these freight forwarders are repeat clients and the carrier-freight forwarder relationship can significantly affect profitability. Even the individual behaviour of a single freight forwarder can affect the profitability of a flight segment. It is therefore important that revenue management analysts compare how a specific customer contributes to overall system profitability through high volumes, versus profitability on any one lane segment or flight.

Other key issues are also stressed. The first is that cargo capacity is less 'fixed'. First, cargo is three dimensional – often viewed in terms of weight, volume, and number of fixed container positions (for

widebodied aircraft). Any one of these dimensions can be a limiting factor depending on the density of the freight, stacking efficiency, and the corresponding aircraft restrictions. Second, each of these dimensions available differs on a flight-by-flight basis, particularly on passenger aircraft.

The second is that booking lead times are shorter. Most cargo bookings are taken within a short timeframe, with a large percentage of them being made within 24 hours of departure. This presents a challenge to cargo revenue management analysts who must make inventory management decisions within short timeframes. One advantage, however, that cargo revenue management analysts have over their counterparts on the passenger side, is that they can take more decisive actions within this short time period. Because they are typically dealing with a much smaller customer base and usually through cargo sales agents or forwarders, they can rapidly influence demand through pricing and promotional activities.

The third issue is that although clear demand patterns exist, demand still varies widely from flight to flight. This increases the need for management analysts to actively monitor and review the situation.

The fourth is that cargo airlines have strong network characteristics. For the most part, cargo cares less about routeing, although there is increasing focus on meeting commitments. Some carriers are also actively promoting time-definite services that define arrival times, while giving the carrier more flexibility on how a shipment gets there. The best revenue management approaches support this network of routeing options, by allowing analysts to make trade-offs

Sabre and SITA produce software for air cargo revenue management. SITA Air Cargo provides sales & reservations price quotations and calculations. China Cargo Airlines signed a \$9 million contract for the system and became the first user in China.

among routeings that meet the delivery time requirements. This then gives the revenue management analyst greater flexibility to reserve direct flights for high-value, time sensitive cargo and route less valuable cargo on lower demand flights.

Among various software solutions to assist cargo airlines in improving revenue, the prominent ones are SITA Air Cargo Manager and Sabre CargoMax Revenue Manager. Besides the basic functionalities provided by SITA Air Cargo, this software solution provides sales and reservations, price quotations and calculations, manages aircraft flight schedules, allocates aircraft space, and schedules aircraft maintenance. China Cargo Airlines signed a contract valued at \$9 million in 2005 to get the service and became the first user of this system in China.

Sabre CargoMax Revenue Manager helps an air cargo operation increase profits through effective cargo space management. The models estimate the capacity of each departing flight and determine the most profitable space allocation of various cargo products. With this system, a cargo airline can accurately plan cargo loads for maximum revenue by forecasting available cargo capacity by market, segment, equipment type, and day of the week and time of day. It can also capture additional revenue and reduce offloads through an optimised overbooking function that considers booking behaviour, and improves service quality by pro-actively identifying revenue streams and potential service failures.

Summary

Like passenger airlines, cargo airlines are transforming their structure and adopting modern IT to survive and succeed in a harder business environment. However, unlike passenger airlines, which have considerable room to reduce cost and increase revenue, cargo airlines may not be able to generate as significant a result due to constraints from the freight forwarders and integrators. **AC**