



Air Transport Symposium in Nigeria

**Abuja, Nigeria
28 to 30 April 2008**



Information Paper on Variance Analysis in Airlines



Variance Analysis in Airlines

Modern airlines have seen an exponential increase in the number of passengers uplifted, routes they fly, currencies in which they transact, multiple fare types and discounting levels to name just some of the complexities in which today's airlines operate. Such an overload of complex data makes the manager's job to dig out value from it, such that the airline becomes competitive extremely difficult and challenging. This article examines how a systematic data collection process and supporting variance analysis will facilitate decision making and make the airline more competitive.

Variance analysis has myriad forms ranging from simple to complex measures but its basic treatise is simple – compare actual revenue or costs with budgeted or like period figures to establish variances. Once established the actual reasons for the variances are determined such that managers are empowered with the right information to correct deficiencies if any and or to take decisions that will enhance competitiveness and improve profitability. Variance analysis is thus the set of procedures adopted by managers to assist them in understanding the sources of variances between compared data.

Variance analysis of physical parameters

Airline in its cyclical scheduling program will determine the routes that it will operate, the frequency of operations and the aircraft type that will be used for the operations. From this data the airline can arrive at the aircraft type wise route group wise breakdown of various capacity parameters that the airline has planned to operate for each day, week and month of the period for which the schedule is drawn up by the airline. These capacity parameters will be Kilometers targeted to be flown, Flying Hours, ASKM and ATKM.

Once the operations for the scheduled period commences, the airline will capture the actual operational parameters for each flight in that scheduled period. This data usually comes from the copies of the pilot reports filed by flight officers with their Operations department and contains Flight No, sector operated, aircraft type /Registration Number, Time, date of operation and Fuel qty. uplifted. The data from pilot report could also be entered by pilots electronically and forms the basis of determining actual capacity parameter that will be used for conducting variance analysis with targeted capacity data of the same month for each route group operated by the airline.

The reasons for the variances between actual and targeted capacity data could be one or more of the following –

- ❖ Cancellations and rescheduling.
- ❖ Aircraft maintenance checks that were not planned for.
- ❖ Differences in aircraft type used for operations than what was scheduled.
- ❖ Speed differentials.
- ❖ Payload restrictions.
- ❖ Difference between actual seat/payload configurations compared to that planned.

Understanding the reasons for the variances in capacity will enable the airline to track variances in traffic due to variances in capacity for each route group, its impact on revenues, costs and profitability thus facilitating decision making on optimal deployment of capacity. Handling variances in speeds will also help in minimizing fuel burn and costs wherever practicable.



Air Transport Symposium in Nigeria

Abuja, Nigeria
28 to 30 April 2008



Variance Analysis of revenue data

Very often Manager's are presented with Revenue data spanning two periods. This could be Passenger revenue figures of a period (month/Year) compared to budgeted passenger revenue figures of the same like period or similar like period of the previous Year .To give some examples CY 2005 over Budgeted CY 2005, CY 2005 over previous year 2004, month i.e. Nov 2005 over Nov 2004 and the like depending on which period comparison is of interest to management. It is crucial for the manager to discern why the variances in revenues occur so that necessary corrective action is taken where necessary and or steps taken in the right direction that are showing signs of increasing revenues are continued with or further enhanced.

The basic document from which the revenue data is collected is the passenger ticket document, the revenue is booked as and when uplift occurs using standard Revenue Accounting guidelines which will involve among various things proration of multi coupon tickets, accounting for commissions, adjustment for interline claims, provisos, SPA and special discounts as and when applicable. It will also involve dealing with transaction exposure so as to account for sales in foreign currency into home currency of the airline. Many airlines use specific application software to account for their revenues. The end product of the processing will be statements indicating period comparison between passenger revenues covering different route groups operated by the airline. The statement simply indicates whether there had been a growth or otherwise in revenues of different route groups and of course overall total passenger revenues between the periods being compared. There is no indication to the manager as to why this variance (growth or otherwise) occurred for each route group between the periods compared and as such are not useful for decision making to increase revenues. To understand the reasons for the variances between actual revenues and revenues being compared across different route groups, the same needs to be classified under three major categories.

1. Variance due to transaction exchange differences.
2. Variance due to Yield
3. Variance due to traffic.

Variances in revenues due to transaction exchange differences

An airline is usually exposed to sales transactions in multiple currencies that are different from its home currency. The airline will usually capture currency of collection while processing tickets in its revenue accounting system and the same will be used to determine foreign currency component and multi currency mix of sales for every route group operated by the airline. Accounting of such multi currency transactions into home currency of the airline for sales of each month is usually based on monthly booking rates of exchange adopted by the airline and the sales liability so initially created is squared off and written to revenue as and when uplift occurs using the same monthly booking rate that was adopted while accounting for the sale transaction. Variances in booking rates between the periods being compared when applied on different currencies forming part of sales for the route will tell the manager how much of the increase or decrease in revenues was due to fluctuations in exchange rate. Having understood the major foreign currencies that are a critical component of revenues in a route group, the manager must decide whether impact on revenues due to such fluctuations is material enough to warrant currency risk management. If so decided then there are several alternatives available with management to manage currency risk. When an airline has revenues denominated in a currency other than its home currency what it has in essence is assets denominated in foreign currency. One way of managing currency risk is to have a natural hedge by creating an appropriate long term financing in foreign currency and undertake foreign currency swaps especially if the airline sees the likelihood of such foreign currency revenues being an integral part of its long term strategy. If financing is not deemed to be appropriate or necessary at this juncture alternatives like forward contracts or currency put or call options may be adopted to manage currency risk. The important thing here is that the airline has to weigh the benefits of adopting hedging and



Air Transport Symposium in Nigeria

Abuja, Nigeria
28 to 30 April 2008



seeing reduction in variances of future cash flows that improves planning capability of the airline with the willingness of the airline to take directional view on the exchange rate movement over the exposure period and willingness to accept downside risks if the directional view is wrong. However even if the airline decides to remain unhedged it is necessary that it is able to isolate how much of the differentials in revenues for a route group is due to fluctuations in exchange rate so that the same could be used as a source of competitive advantage by the airline. If an airline finds its home currency on a route depreciate against an important foreign currency component on that route (usually bookings made from the return leg) it can decide to take a short term view and increase profitability by benefiting from the appreciating foreign currency, however if it feels that long term trends point to a depressed home currency with home currency costs not increasing commensurately with level of depreciation in home currency, the airline can alternatively decide to benefit from this arbitrage in economic exposure. It could decide to cut fares denominated in that appreciated foreign currency and take away market share. This will put pressure on the competing airline on that route whose home currency has appreciated to match price in order to keep market share or lose market share and lower total profits. For all these aforesaid reasons that impact competitiveness, profitability and the planning process it is necessary especially if foreign currency component of sales is significant that the airline sets up a currency reporting system that tracks exposure and analyze variances as they develop for each route group it operates.

Variances in revenues due to yield

The variance in revenues after excluding above mentioned exchange fluctuations could in turn be further broken down for each fare class and type as occurring due to –

- ❖ Changes in commission and special discount rates.
- ❖ Real increase or decrease in fares.

The aforesaid reasons for differences in yields with the period being compared will help the analyst in determining whether steps taken to increase yields or traffic are bearing results or need to be reviewed.

Variances in revenue due to traffic

The variance in revenue due to traffic can be further analyzed as being -

- ❖ Due to increase/decrease in capacity offered.
- ❖ Real increase/decrease in traffic due to increase/decrease in load factors.

A variance in traffic may be misleading since it may occur due to increase/decrease in capacity offered vis-à-vis the period being compared with. Usually an increase in frequencies i.e. capacity will see increase in market share assuming that there is no corresponding increase in capacity offered by competing airlines on the route being analyzed. Similarly cancellations and pulling out of a route will see decline in traffic. It is therefore necessary to isolate the traffic variance as being due to capacity offered differentials and arrive at real traffic variance due to increase or decrease in load factors keeping capacity at the same levels of the period being compared. The real variance in traffic after excluding impact of capacity differentials is to be arrived at for different fare classes and fare types therein for the route group being analyzed.



Air Transport Symposium in Nigeria

Abuja, Nigeria
28 to 30 April 2008



Cross verification across yield and traffic variances

Variance analysis isolating the reasons for revenue variance due to yields and traffic cannot be looked at in isolation. For effective decision making they should be looked at holistically along with other decisions taken by the management to increase traffic. If fares in certain fare types and classes of a route were dropped to stimulate traffic then there should be a more than commensurate increase in traffic to compensate for the decline in yields. The net differential between variances in revenue due to yields as arrived at earlier and traffic should therefore be a positive impact on revenues of the route and fare type/class being analyzed failing which management will have to look into the feasibility of stimulating traffic by dropping yields and look at other options to increase traffic. To illustrate a positive real traffic variance after excluding impact of capacity offered differentials indicate that the airline has been successful in stimulating traffic on the route being analyzed which in turn could be due to lowering fares (yields) but also due to other measures like better schedule timings or a better differentiation and product offered or a combination of all these factors. Understanding how much of the increase in traffic was due to yield variances will help the management to determine effectiveness of other measures taken to increase traffic so that the same could be persisted with or improved upon to enhance competitiveness and revenues for the airline.

To further illustrate more carriage in higher fare class may be due to better improved differential service offered by the carrier at additional costs compared to what it offered in the earlier period being compared with. In this case cost variance analysis will tell the carrier how much extra cost it incurred to provide improved service and whether the variance in traffic of the higher fare class justifies the additional costs incurred. Another illustration will be where the airline has introduced fare types to optimize passenger segmentation with differential service, restrictions and or fare variances being the drivers to achieve optimal segmentation and revenues. Variances in traffic for different fare types in a fare class and cross verification with yield variance and costs variances to service each fare type will tell the airline the net impact on its revenues and whether its efforts in introducing new fare types with varying restrictions are bearing results of increasing net revenues through effective segmentation of passengers.

Variance Analysis of operating costs data.

The Variance analysis of operating costs data is essential to not only identify potential areas of cost control but also to ensure that the costs incurred to generate traffic are delivering results. To do so the operating costs variances should be looked at in tandem with the variances on the revenue side as was explained earlier.

Operating costs for individual account heads like fuel, landing costs, passenger amenities etc the variances can be broken down into the following broad categories –

1. Variances in operating costs due to exchange variances
2. Variances in operating costs due to changes in unit rates and or units.
3. Variances in operating costs due to changes in capacity offered.

Variance in operating costs due to exchange variances

The airline is exposed to operating costs in various currencies that differ from its home currency. Unlike foreign currency assets and liabilities where a restatement of the same helps the airline to automatically determine the exchange gains/losses to be reflected in the income statement no such exercise is usually carried out for expenditure items. As such the impact on the airlines bottom line due to exchange variances in cost items are masked. It is essential for the airline to capture through



Air Transport Symposium in Nigeria

Abuja, Nigeria
28 to 30 April 2008



its accounting process the periodicity of foreign currency payments and the currencies involved so as to determine the gain or loss the airline has incurred due to variances in exchange rates against the period being compared. If the airline from such exchange variance analysis determines that the impact on its bottom line is significant or has the potential to be significant in the future then exchange risk management will become essential.

Variance in operating costs due to changes in unit rates and or units

The variance in operating costs due to changes in the unit rates and units is to be arrived at keeping capacity offered at the same levels as the period being compared with. Increase in unit rates is justifiable in some cases, to give one example change in schedules that necessitates a landing in peak time will increase the unit rate for landing. For others where the increase in unit rates is not so justifiable, the same needs to be investigated keeping in mind the market rates and if possible renegotiated especially when the market rates are not in symmetry with the increased rates sought by the vendor. Increase in units where capacity is at the same levels as the earlier period usually indicates possible wastages unless otherwise justifiable. For e.g. increase in meals uplifted may be due to increase in traffic though capacity is at the same levels as the period being compared with. Similarly better quality of units being served and the resultant higher costs has to be justified by increase in traffic and cross verified against the revenue traffic variance analysis explained earlier. The net impact of increase in revenues due to traffic and increase in costs due to better quality units offered should be positive otherwise the feasibility of continuing incurring higher costs has to be looked into by the airline management. For other cases involving higher unit consumption where the capacity offered is constant, the same needs to be analyzed carefully to prevent avoidable wastages and maximize cost control initiatives of the airline.

Variance in operating costs due to capacity offered

Additional capacity offered by the airline either due to changes in frequencies or aircraft type with the period being compared with will result in variances in operating costs. These variances will have to be looked at not in isolation but jointly with revenue variances due to traffic on account of changes in capacity offered as was discussed earlier to determine whether the airline has gained or otherwise due to changes in capacity offered.

Summary

A systematic variance analysis will help the airline to identify whether decisions taken to increase revenue traffic are paying desired results and could be persisted with. If the decisions are not delivering the desired results, variance analysis will help in the early identification of the inefficacy of the decisions taken and enable the airline to focus or drill down to the micro areas that need to be corrected. On the operating costs side variance analysis will help the airline to exercise cost control besides providing inputs to management as to the costs of their decisions to increase revenue traffic thus helping them to get a holistic view of the impact to profitability of their decisions. Finally Variance analysis is a good platform to keep track of exchange variances and manage exchange related risks. While all airlines irrespective of their size practice some form of revenue analysis, the level of detail and investments in technology if required will depend on the size of the airline and the transaction complexities it faces in its daily working. A well planned and relevant variance analysis could well be the difference between management having the right information streams to take successful decisions that enhances the competitiveness and profitability of the airline in these times of excess capacity, pressure on yields and skyrocketing costs.