airECONsim - Tutorial
You have been hired by an airline, to manage the pricing of flights on a given route. On this route, you have only one competitor.

For now, you have no control over the flight plan (you will, later).

You have to choose the price of seats on flights that will leave at a given date (in 3 months exactly). The two airlines each have 1200 seats for sale on RoundTrips on this route at that time.
Choose the price of your tickets for the first phase (from 3 months to 1 month and a half before departure)
First phase sales: from 3 months to 1.5 month before departure

• Select 54€ as the price at which you will start selling tickets, and validate.
• Do not think too much for the moment, the goal is to get used to the interface.
• Scores will be reset next year.
Alpha Airlines has chosen a price of €43 and has sold 461 seats.

Air Betland has sold 360 seats at €54.

(You will not have exactly the same results, robot decisions and sales are partly random)
You are selling seats for the same flight over 3 phases

- But this is only the first phase, you still have one month and a half (and 2 phases) before departure.
- You can choose a new price for phase 2, based on the number of remaining seats on your flights and on your competitors flights, …
- Proceed to the second phase, ranging from one month and a half before departure to 2 weeks before departure (we will analyse results later in the tutorial)
Time Line

Round 1
1stdep-12 1stdep-6 1stdep-2 1stdep
Phase1 Phase2 Phase3

Round 2
2nddep-12 2nddep-6 2nddep-2 2nddep
Phase1 Phase2 Phase3

Année

Departures are in red, price choices in black
You are now in the second phase of sale: flights departure gets closer and your tickets and those of your competitors are selling quite well: Choose a new and higher price: 61.
Results for the second phase: Air Betland has sold 338 seats at €61 and Alpha Airlines has sold 384 seats at €45. There are only 488 and 393 seats to sell for the third and last phase.
• The third phase, corresponds to the last 2 weeks before departure and is the last opportunity to sell remaining tickets. After that phase, planes will take-off and unsold seats are lost.

• Choose a price of € 90 for this third phase.
In the 3rd and last phase, Air Betland has only sold 310 seats out of the 488 that were still empty at the end of the second phase. Its flights take-off with 178 empty seats.
Remark

• Air Betland’s flights take-off with 178 empty seats.

• Is it a shame? 
  – Yes and No. Take a look at the profits in the upper-left corner of the screen.
Now you can check synthetic results …
It’s up to you!

Proceed to the second round
You are now selling seats for a new departure date

• You are back to the first phase (of a new round). Once more, you have 1200 seats to sell (on flights that are currently empty).

• Here is some info:
  – If both airlines choose a price of €50 during all 3 phases, each company will sell "approximately" 350 to 400 seats per phase.
  – For each passenger, you will pay €4 airport taxes.
  – The remaining costs are fixed (in the short run) and do not depend on the number of tickets sold: €48380.
Fixed costs/Variable costs

• In the short-run, part of the cost (here 48380€) does not depend on the number of seats that are sold and you will have to pay that, whatever your choices. These costs are called « fixed costs »
• They may come from aircraft leasing, wages, fuel, taxes that are based on the number of flights (and not on the number of passengers), ..., that is from costs that depend on decisions that can modified in the long or middle-run, but not in the short-run (if you are leasing an aircraft, you can not cancel the lease at the last moment without paying a penalty).
• (You will soon have control over long-run decisions, but not yet)
Average cost

• For your information, if you sell 1000 out of your 1200 seats, the average cost by passenger will be about € 52.38

• If you sell all of your 1200 seats, the average cost by passenger will be € 44.32

• On the other hand, each additional seat sold will only increase costs by € 4.

• So, what should you do if a tour operator contacts you one day before departure and offers to buy 100 seats that have no chance to be sold, for a price of €15?
Business/Leisure passengers

• Last info: The closer you get to the departure, the greater the proportion of "business" passengers

• On the average, business passengers pay less attention to price than leisure passengers, and often know later that they have to travel (or at what time they have to travel)
  – (price tends to be less important for them when compared to other characteristics, such as the convenience of the flights)

• So, what should you do with this information?
• It’s up to you to choose prices over the three phases of round 2. Try and beat your robot-competitor!

• Then proceed to Year 2.

• Remark: At any time in the tutorial or in the game, you can check all past (synthetic and detailed) results, by clicking on « Results » in the title bar.

• And do not hesitate to come back to try new decisions and compare outcomes.
Synthetic statistics that are available in the results pages.
Second Year

Peak/Off-peak Periods …
From now on, the second round of each year is in off-peak period: Demand is much lower (about 2/3 of standard demand)
Third Year

First change: Flight Plan
Frequency choice

• This year, you get promotion and now select the number of RoundTrips during peak and off-peak periods (for the type of aircraft, wait for next year).
• Consequently, some of the costs that were fixed (€40380 of the €48380) become variable (in the long-run) and now depend on the number of RoundTrips that you plan each round:
  – Each plane can make one RoundTrip in the peak period round and also one RoundTrip in the off-peak period round (or not, it's up to you to decide if you use the plane during off-peak periods).
  – This corresponds to 400 seats to sell for every RoundTrip.
  – Each RoundTrip costs €9680 and the renting a plane costs €7560 a year
  – You must rent a plane over the entire year even if you do not use it off-peak.
This is really not expensive!

• For curious players, let me precise that the €7560 for leasing an aircraft over the year, must be related to the fact that a «year» in the game only has two rounds (i.e. two departure days). And so, each aircraft only operates two roundtrips over the «year» max.

• This taken into account, orders of magnitude are preserved.
Each plane can operate one roundtrip in peak period and also one round-trip in off-peak period (or not). Corresponding to 400 seats to sell by roundtrip. Each roundtrip costs 9680€ and renting a plane costs 7560€ a year.

Choose the number of roundtrips in peak (round 1) and off-peak (round 2) period...
Frequency choice

You must rent a plane over the entire year even if you do not use it off-peak.

So, if you set two RoundTrips in the off-peak round and three RoundTrips during the peak round, you actually rent 3 planes for an annual cost of € 3*7560. However, one of the 3 planes will only be used during the peak round, so his full annual cost will be accounted to this round. The costs for each round will therefore be:

- 3*9680+2*(7560/2)+7560 for the peak round
- 2*9680+2*(7560/2) for the off-peak round

The remaining costs amount to € 4 per passenger, plus € 8000 of route fixed cost each round (avoidable, only if you select 0 RoundTrips in peak AND off-peak period).

Note that choosing 3 roundtrips in peak and in off-peak periods leads you to the exact same situation that in years 1 and 2.
Average Costs

Does not take into account the € 8000 of route fixed costs.
Impact of flight frequency on demand

• Each passenger has a different preferred departure time, and is willing to pay a little (or a lot) more to leave at a more convenient time for him.

• So sales do not only depend on price, but also on the number of roundtrips ...

• …which is more sensitive for "business" passengers.

• You can visualize flights and passengers’ preferred departure hours as being spread over a circle (that represents a day).
Impact of flight frequency on demand

- Passengers also value other characteristics that are not explicitely detailed in this game.
- For example, to the national flag… or to the distribution network…
- Consequently, if an airline operates 50 roundtrips, while its competitor operates only one, the second airline will still sell a little. You will not manage to capture the whole market.
- When you will play in the real game, you will not be able to operate « too many » roundtrips anyway (if only, because airports landing/take-off capacities are limited)
Synthetic results are now a bit more precise
Third Year

Second change: Quotas and second price
Quotas

• Second new feature in year 3, you can now choose a second price in case the tickets sell faster than expected:

• You may have already encountered the following situation: you have chosen a low price in the first stage and you are surprised to discover that your competitor has chosen a very high price. And you end up selling a lot more than what you would have liked ...

• From now on, you can specify in each phase a sales quantity target above which you raise your prices to a higher level (that you choose).
Here, I specify that if at any time in the phase, I have sold more than 350 seats (at €70), then my price must automatically rise to €98 for the following customers.
Fourth Year

Aircraft Type
Aircraft Size.
Cost/Frequency Trade-Off

• From the fourth year, it is possible to choose between several types of aircraft.
• The main trade-off: larger planes allow you to reduce the average cost if they are filled (saving a portion of the costs, wages, fees, etc ...) ... but involve less frequency if you want to keep the same total number of seats. And less frequency means less sales. It's up to you ...
Fifth and Sixth Years

Last years before the real game begins
The last years of the tutorial

• It's up to you to experiment… It's time to take risks and try (over)ambitious decisions:
  – If you want to try and get the whole demand by planning many flights and a very low price...
  – If you want to see how much demand is reduced if you plan only one flight instead of several...
• Did you try to let your competitor sell all its seats during the first two phases, in order to stay in a monopoly situation in the third phase?
  – Do you think that this would be interesting for you?
  – Do you think that it’s easy?
The last years of the tutorial

• Realize that peak and off-peak profits are connected.
  – Sometimes, to make important profits during peak periods, you may find interesting to make decisions that will induce losses during off-peak periods (for example because the aircraft leased are not very convenient for off-peak demands)
The last years of the tutorial

• What's next?
  – After these experiments, you will have seen everything you need to compete against other human players over several routes, with new aircraft and with a few surprises!
  – with CO2 emissions and environmental policies, seat comfort, congested airports, route openings, mergers,…
https://lud.io

Air Transport Economics game
Energy Economics game
CO2 Emissions and Environmental Policy game
IO game

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