YIELD MANAGEMENT 1

Service management

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The beginning of the management approach

- 1978, “Airline Deregulation Act”, i.e. price liberalization in the airline field;
- Uprising of new companies with lower prices:
  - Risk for traditional companies related to new competitors’ aggressive strategy;
  - Wider airline market, thanks to new customers who before were not willing to pay the high prices of airline transportation and therefore choose trains or cars.

The beginning of yield management approach

- In this backgroung, American Airlines is bound to high fixed costs that make very difficult reducing prices
- **Idea**: saturate seats' capacity offering at lower cost some of the unoccupied seats
- It has been necessary to determine seats' best allocation bewteen economy and business classes in order to avoid the cannibalization effect, i.e. having customers willing to pay high prices who buy low costs seats

The beginning of yield management approach

- To avoid rate cannibalization → **service diversification**

  (eg: rate with restrictions..)

- The biggest difficulty was to allocate capacity to the different classes offered per flight, in order to avoid under/overestimation of airplane's tickets

  Informative system and allocation model are fundamental to keep track and determine rates and allocations

- From the introduction of this management system, revenues have been increased of 1.5 bill$ in 3 years

Yield management

Yield management exploits information of customers' behaviour obtained by operations departement while delivering the service.

This allows to improve the competitiveness of the company.

Yield management

Acts in a integrated way on demand and capacity

In order to

“Sell the right capacity, to the righ customer, at the right time at the right price”

so to

MAXIMISE PROFIT

Yield management

Y.M. systems refer to strategies and tactics used by a certain number of companies to manage the allocation of their capacity to different rate's classes in order to maximize their profitability.

The main goal is to maximize the capacity utilization rate in order to reach a profitability as close as possible to the maximum achievable one.

Therefore, Y.M. is a systematic approach to maximize profitability by offering prices differentiation to potential clients.

Yield management applications

Various successfull implementations, in different field:

- Hertz (1-5% annual profit increase)
- Royal Carribean Cruise Line (20 mil.$ increase per year)
- Oriental Oberoi (asian hotel company, 230 mil. € profit increase)
- Chevy Mexican Restaurants (5% annual profit increase)
- World Cruise Line (USA and EU cruises, annual profit increase >180 mln€)

Application areas are constantly increasing

Companies adopting Yield Management

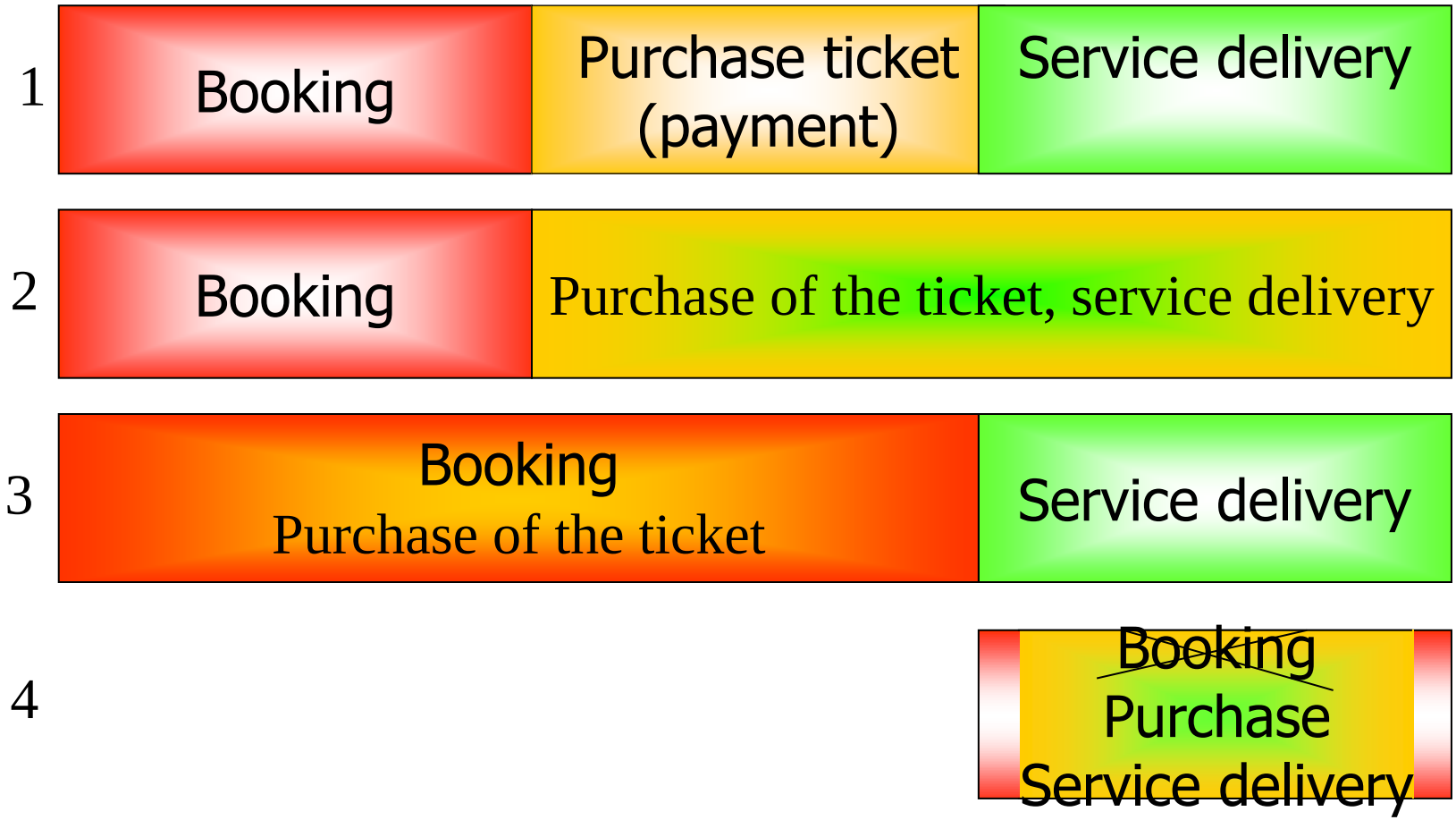
- Transport
  - Airline companies, naval transportation, railway companies
  - Rent a car companies
- Entertainment
  - Tour operators
  - Cruise boat
  - Golf course, Movie theater, Advertising
- Hotels, restaurants

Ideal Characteristics for Yield Management

- Fixed Capacity
- Ability to Segment Markets
- Limited capacity for different Market segments
- Perishable Inventory
- Product Booked/Sold in Advance
- Uncertain Demand
- Low Marginal Sales Cost and High fixed costs
- High Capacity Change Cost

مارجینال کاست هزینه ی ای که به ازای یه اردر اضافه گیرت میاد

Possible processes



Yield management tools

1. **Capacity allocation**
    1. Price policies
    2. Demand forecast
    3. Protection policies (e.g. protection level)

2. **Overbooking**

Capacity allocation and segmentation - Rif. Situation 3

Ideally, customers are clustered according to their willingness to spend

Group	Price to purchase
C1	€ 230
C2	€ 180
C3	€ 160
C4	€ 120
C5	€ 40

Deterministic

Group	# persons
C1	20
C2	30
C3	40
C4	50
C5	50

Number of available seats : 110

Capacity allocation and segmentation

X_j= Number of tickets allocated to class j

M_j= Unit margin for a sale to class j

N_j= Number of persons of class j

C= Overall capacity

$$\max \sum_j M_j x_j$$

Subject to

$$x_j \le N_j \qquad \forall j$$

$$\sum_j x_j \le C$$

For this example:

X_1=20

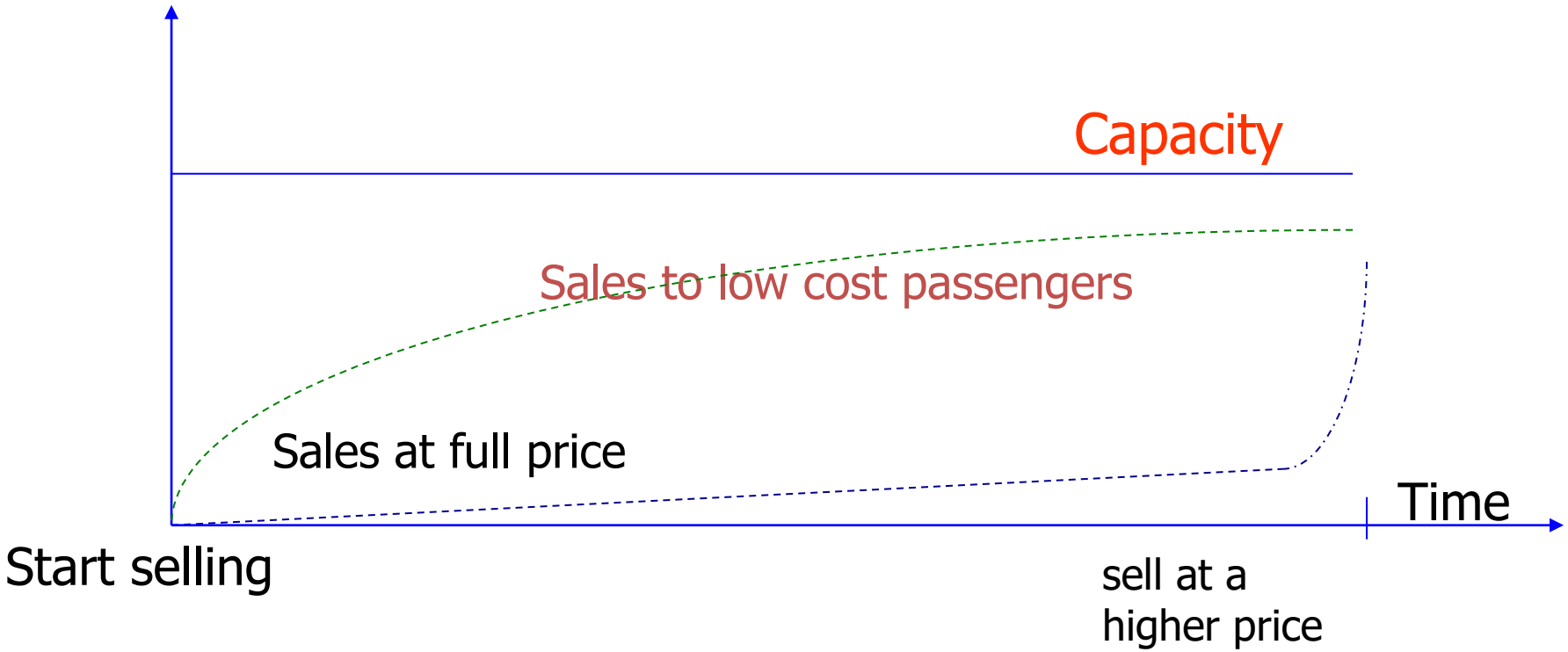
X_2=30

X_3=40

X_4=20

X_5=0

Capacity allocation and segmentation



Capacity allocation and demand forecasting

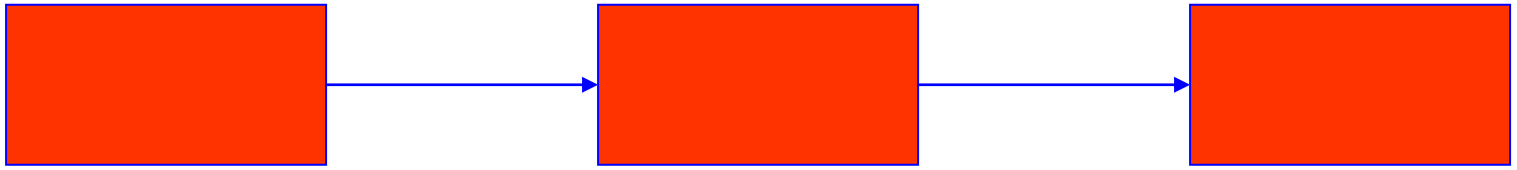
- Data
- High detailed level (origin, destination, rates, day of the week, timetable)
- Quantities to keep track of:
  - Demand per each categories/rate/period
  - Demand elasticity

- Forecast difficulties
- Seasonality
- Trend
- Special events
- Competitors actions
- Small variations in a variable can have large effects on others

Protection level sizing

	Ticket full	Ticket discounted
margin	Mf	Md
Averge quantity	X1	X2

Event sequence



Demand for discounted seats.

Accept/reject request for discounted seats

Demand for full price seats

S_1=Protection level

A_2=C-S_1 Capacity allocation, low cost.

Capacity allocation

Objective:

defining the share of capacity to dedicate to **full price** paying customers

The Yield Management Game

Situation

- It is possible to classify clients into clients willing to pay full price and clients willing to pay discounted price (simplification: only two categories).
- Potential clients come from different sale channels and therefore the revenues are different for the Hotel
- Not all who have booked will actually show up

Goal

Profit maximisation for the hotel you work for.

The Yield Management Game

سوالات اینه؟

Decisions

- Define how much capacity you want to protect
- Define how much overbooking you want to have
- Define a guideline to decide which requests you will accept and which one you will refurse

- For each request, you have to accept it all, or refuse it all

The Yield Management Game

NUMBER OF ROOMS=100

WALKING COST= 500€ کاست پروندن مشتری

Average NO-SHOW=20%

St. Deviation=3

DISCOUNTED PRICE DEMAND:

Demand **over** exceeds capacity

Average price = 300 €

FULL PRICE DEMAND:

Demand (purchase) follows a normal distribution with average= 43 and standard deviation= 6

Average price = 1100 €

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