Case: Mexico City Airport Taxi Services

McKinsey, Round: 1

Problem statement narrative

The authorities of the Mexico City airport have decided to issue 2,500 new taxi permits for $1,000 each. These permits authorize a taxi to service arriving passengers. Your client has a taxi fleet in the city but does not service the airport. He has excess capacity (meaning he has cars and drivers available). He has asked you to determine if he should buy those new permits. If so, how many should he buy?

Overview for interviewer

This is a profitability case, so the formula P = R-C should be brought up by soon in the discussion and guide any framework proposed by the candidate.
Use the discussion to guide candidate towards determining the possible revenue to be made and to talk about costs to determine profitability.

After the candidate presents his/her framework, give candidate the handout containing information needed to solve the case. The challenge with the handout is that it contains a lot of information which the candidate will need to process quickly to be able to use through the case.

Case Type: Profitability / Operations
Case Style: Command & Control

Information to be provided upfront (hand candidate attached exhibit)

All the information is given to candidate on the handout. If candidate asks data again refer him/her to the handout.

- Airport handles 42 million passengers yearly.
- There are 5,500 taxis operating in the airport.
- On average a taxi takes 60 minutes to drive passenger and return to airport for next pick up.
- On average a passenger pays $200 cab fare via regulated rates.
- On average 40% of domestic flights passengers and 80% of international flights passengers use taxis.
- 30% of daily demand occurs between 6:00 a.m. and 10:00 a.m., 40% occurs between 6:00 p.m. and 10:00 p.m.
- Assume each passenger uses one cab.
- On average each taxi requires $8,000 yearly on maintenance.
- Taxi drivers keep 50% of the fare.

Potential Issue Tree & Approach to Solving the Case

Key elements of analysis to solve the case

Estimate daily demand for taxis	Estimate possible revenue	Estimate possible profits
Estimate the number of passengers arriving each day Estimate passengers that will require taxis Is this demand being met?	Demand not being met daily: 500 passengers in the morning + 8,000 passengers in the evening = 8,500 passengers needing service x $200 = $1,700,000 daily revenue Yearly Revenue = $571,200,000	List possible costs: permits, car maintenance, drivers salary, gas, car repairs, etc $P = R - C$ Profit = Revenue – maintenance repairs – driver commissions – permit cost $P = 571,200,000 - (\$8,000 \times 2,000$ taxis $- 285,600,000 - (\$1,000 \times 2,000$ taxis$) = 267,600,000$
Possible follow-up and guidance to interviewer	**Possible follow-up and guidance to interviewer**	**Possible follow-up and guidance to interviewer**
See following slide. Assume that passenger volume is equally distributed through the year / week / day. Assume that 50% of passengers are from domestic flights and 50% international flights.		Tell candidate to consider only permits costs, car maintenance and drivers salaries (the numbers for these costs were given to candidate at the beginning of the case interview on a piece of paper)

Question 1 – Math

Math Question

Estimate the daily demand for taxis. Is this demand being met? If not, how many more taxis are needed?

Overall approach, good shortcuts & solution

Estimate the number of passengers arriving each day:
- 42million/12 months = 3.5 million passengers monthly
- 3.5 million passengers / 4 weeks = 875,000 passengers weekly
- 875,000 passengers / 7 days = 125,000 passengers daily

Estimate passengers that will require taxis:
- 62,500 domestic passengers x 40% of domestic use taxis = 25,000
- 62,500 international passengers x 80% of international use taxis = 50,000
- Total passengers demanding taxis daily = 75,000
- 6am – 10am = 22,500 passengers need a taxi (= 75,000 x 30%)
- 6pm – 10pm = 30,000 passengers need a taxi (=75,000 x 40%)
- Non-peak hours = 22,500 passengers need a taxi (=75,000 x 30%)

Is this demand being met?
- From 6 to 10am, each taxi makes 4 trips (average trip takes 60min). If we have 5,500 taxis operating then capacity serves 22,000 passengers. Excess demand=500 passengers. 250 domestic x 40% = 100 passengers + 250 international x 80% = 200 passengers for a total of 300 passengers needing a taxi / 4 rides per hour = 125 taxis needed to meet excess demand.
- From 6 to 10pm, using the same logic capacity meets 22,000 passengers: 5,500 taxis operating thus excess demand = 8,000 passengers (need 2,000 taxis).
- During non-peak hours (16 hours) 22,500 passengers will need a taxi. With 5,500 taxis in operation there is capacity to serve 88,000 passengers during that time. In that time period there is excess capacity.

To service demand not being met in the morning and night periods **2,000 taxis are required**.

Information to provide up front

Information needed to solve case is given on the handout, which should have been given to candidate early in the case

Provide information if asked

Assume that passenger volume is equally distributed through the year.

Assume that 50% of passengers are from domestic flights and 50% international flights.

Assume all existing taxis can run during peak hours and that maintenance is a minimal time commitment.

Mexico City Airport Taxi Facts & Assumptions

- Airport handles 42 million passengers yearly

- There are 5,500 taxis operating in the airport

- On average a taxi takes 60 minutes to drive passenger and return to airport for next pick up.

- On average a passenger pays $200 cab fare via regulated rates

- On average 40% of domestic flights passengers and 80% of international flights passengers use taxis.

- 30% of daily demand occurs between 6:00 a.m. and 10:00 a.m., 40% occurs between 6:00 p.m. and 10:00 p.m.

- Assume each passenger uses one cab

- On average each taxi requires $8,000 yearly on maintenance

- Taxi drivers keep 50% of the fare

Sample Recommendation

Recommendation	Client should buy 2,000 permits based on the potential yearly profit of $267,600,000 from excess demand at the airport.
Risks	Possible retaliation from other tax companies, such as entering other markets where the client operates and stealing clients. There is no guarantee airport will not allow additional permits in the future which could increase the number of taxis at the airport.

BONUS

There is no guarantee that all excess demand will be serviced by client cars, especially because if he is buying only 2,000 permits, another taxi company can buy the remaining 500 permits and compete for the excess demand that isn't being currently served.
An option would be to buy all 2,500 permits, and using only 2,000 taxis (blocking another tax company from buying 500 permits) that would reduce profits to $267,100,000 (just subtract from profits the cost of buying the additional 500 permits).