Indus Insights Recruitment Process

2015-16

Recruitment Process

- Pre Placement Talk
- Aptitude Test
  - Written analytical test
  - Evaluates logical reasoning and data interpretation
  - Calculators are allowed
- Multiple Interview Rounds
  - Guesstimates (sample questions present in the presentation)
  - Case studies
  - Behavioural Interview
- Final Offer

Guesstimates

- Guesstimates, as the name suggests, are estimates based on guesswork
- There are no right answers in a guesstimate; you need to work with logic and assumptions
- Listen to the question and then determine how to approach the case – demand side or supply side
- Usually judged on – structure, segmentation, assumptions, calculations, and communication
- Examples:
  - Estimate the annual revenues of Delhi airport
  - Estimate the number of ice-cream cups sold annually in India
  - Estimate the annual revenues of Airtel in India
  - Estimate the number of petrol pumps in India
  - Estimate the weight of a Boeing 747

Things to keep in mind

- Structure
  - Lay out the overall approach of the guesstimate
  - This is the difficult part of the case and most crucial
- Segmentation
  - Segment the sample whenever possible; Throws light on the depth of your thinking
  - However, do not get bogged down in the details; Think from a macro level
- Assumptions
  - Do not throw numbers from the air
  - Always base your assumptions on some facts; They might be off but must have ground
- Calculations
  - Try to think quantitatively and demonstrate you are comfortable with numbers
  - Using calculators is not advisable; Use easy numbers
- Communication
  - Be communicative and speak your thoughts
- Be coachable
  - Listen to the interviewer's feedback; Are they trying to bring you back on track

Sample Guesstimates

Annual revenues of Delhi airport

- You will find it difficult approaching this problem from the demand side
- Let us try solving it from the supply side
- Some important questions that you should think of
  - What are the sources of revenue for the airport?
  - What is the major source of revenue?
  - What are the major factors affecting revenue?
  - How to quantify different factors affecting revenue?
  - What are different types of fees charged to airlines?
  - What are other factors (not directly related to airport infrastructure) that will contribute to the airport revenue?

Step 1: Identify sources of revenue for airport

- While attempting a guesstimate, a structured approach right from the start is essential to avoid confusion later
- To begin, you might want to imagine yourself travelling by air
  - Travel to airport by a cab who then parks it → Car Parking
  - You walk inside the airport lounge and notice shops → Rent of retail outlets
  - You notice airplanes parked → Aircraft parking charges
  - Your flight takes off → Aircraft takeoff/landing charges
- This kind of an approach is not a rule but might facilitate structured thinking and would help build an exhaustive case
- Each of these categories can be considered as separate guesstimates and then be added to estimate the overall revenue
- You may not have a lot of time, so start with the most important source first
- For simplicity we will only solve two major streams: Revenue from takeoff / landing and retail outlets

Step 2: Aircraft takeoff/landing fees (1/2)

- Identify factors which will contribute to revenue from takeoff/landing
  - Revenue = Total units (No. of aircrafts) X Per unit charge (Fees per landing/takeoff)
- In order to estimate the total number of aircrafts, rather than taking a random guess, first break the time span into segments as frequency of aircrafts is dependent on time
- For simplicity, lets consider that there is just one runway
- You may assume the frequency in these segments based on your experience

	Low	Medium	High
Time	11 PM to 5 AM	5 AM to 11 AM	11 AM to 11 PM
Frequency of flights	20 minutes	10 minutes	6 minutes
No. of flights in an hour	3	6	10
No. of flights in the slot	18	36	120

- Therefore, total no. of aircrafts operating in a day = 18 + 36 + 120 ~ 175

Step 2: Aircraft takeoff/landing fees (2/2)

- Estimating the takeoff / landing fees is difficult
- Therefore, let us try to estimate the revenues from a single flight and assume a percentage of it as takeoff/landing fee
- An average aircraft has ~50 rows with ~6 seats in each row
  - Price of a ticket ~INR5,000
  - Revenue from a single flight= $50 \times 6 \times 5000$

$$= \text{INR}15{,}00{,}000$$

- Airport development fees are usually ~5% of this amount and could be assumed to be takeoff/landing fees
- Takeoff/landing fees $= 5\% \times 15{,}00{,}000$

$$= \text{INR}75{,}000$$

- Total annual revenue from take-off/landing= $75{,}000 \times 17 \times 12$

$$= \text{INR}15{,}75{,}00{,}000$$

Step 2: Revenue from retail outlets

- Calculating the revenue from retail outlets and advertisements entails the following steps
  - Assume the terminal to be rectangle with a given length and breadth
  - However, most of terminal is used for passage, check-in counters, sitting arrangements, etc.
  - Hence, make an assumption on the proportion of terminal area available for retail outlets
  - Use a suitable rent per unit area to calculate the rent
- Annual revenue from retail outlets =

$$Terminal\ area \times Proportion\ of\ terminal\ available\ for\ retail\ outlets \times Average\ size\ of\ a\ retail\ outlet \times Rent\ per\ unit\ area$$

Bonus Points

- The candidate will earn bonus points by including some exclusive points in their structure such as
  - Mentioning other streams of revenue like advertising, paid Wi-Fi, services to the airlines etc.
  - Segmenting the revenues by domestic and international travel
  - Segmenting the retails outlets by space; Larger spaces like business lounges and smaller spaces like food stores etc.
  - Segmenting the retails space rentals on location of the outlet in the terminal area
  - Identifying and comparing different approaches to estimate the same result; For example the aircraft parking charges can also be calculated using average weight of an aircraft and parking charges per unit weight[1]

1. This is the process how charges are actually calculated.

Number of ice cream cups sold in India annually

- To answer this question, we can either work from demand side or supply side
- Let us try approaching the problem from demand side
- Some important questions you should think of
  - Which is the major segment of population in India that consumes desserts?
  - What are different options in desserts except for ice-cream?
  - How to quantify the factors on the basis of which we can classify the dessert eating population?
  - What are the factors on which ice-cream sales depend?
  - What proportion of the total ice creams are packed in cups?

Step 1: Classify the population

- The total population of India is 1.2 billion
- Assume that 40% people cannot afford desserts due to poor standards of living or health problems such as diabetes
  - Therefore, the total dessert eating population in India is 720 million
- Now, classify the population into different age groups and assume suitable values for percentage of people eating desserts in each of the age groups
  - Assume the population to be uniformly distributed within each age group. Therefore the percentage of people lying in the age group 0-10yrs = (10/80)*100 = 12.5%
- There are alternatives to ice creams in India such as chocolates and other traditional Indian desserts
  - Hence, assume that 1/3 of the dessert eating population in India eat ice creams
- Make sure that all the assumptions are justifiable as well as relevant to the problem

Step 2: Calculate the number of ice cream cups sold using suitable assumptions

Age Group	0-10 yrs	10-30 yrs	30-60 yrs	>60 yrs
Percentage of population	12.5	25.0	37.5	25.0
Percentage of dessert eaters	90	80	60	50
Average no. of ice creams eaten per month	2.0	1.5	1.0	0.5

- No. of ice creams sold in a year

$$= Population\ of\ India \times \left(\sum \begin{bmatrix} (Percentage\ of\ population\ in\ respective\ age\ group) \times \\ (Percentage\ dessert\ eaters) \times \frac{1}{3} \times \\ (No.\ of\ ice\ creams\ eaten\ per\ month) \times 12 \end{bmatrix} \right)$$

$$= 720\ million \times \frac{1}{3}(0.125 \times 0.9 \times 2.0 + 0.25 \times 0.8 \times 1.5 + 0.375 \times 0.6 \times 1.0 + 0.25 \times 0.5 \times 0.5) \times 12$$

$$\sim 195\ million$$

- Assume that out of the total ice creams sold, 10 % are packed in a cup. Therefore, total number of ice cream cups sold in a year = 0.1 × 195 million = 19.5 million

Bonus Points

- The candidate will earn bonus points by including some exclusive points in their structure such as
  - Segmenting the population on income level first and then segmenting it on age
  - Seasonal effect: The number of ice creams eaten in summer season might be different from that in winter season
  - Non linear distribution of population: We have assumed the population of India to be uniformly distributed in different age groups; Percentage of people within each age group can be redistributed according to the real scenario
  - Geographical analysis: People living in the colder states in India might be eating fewer number of ice creams

Annual revenues of Airtel in India

- Approaching this problem from the supply side does not seem reasonable
- Let us try solving it from the demand side
- Some important questions you should think of
  - What are the different sources of revenue for Airtel?
  - What are the major sources of revenue?
  - How to classify the population in order to estimate the number of people availing each type of services?
  - Who are the other service providers and what is the market share of Airtel for the different services that it provides?
  - What can be the additional sources of revenue?

Step 1: Identify sources of revenue and delineate a structure to solve the problem

- The revenue revenue streams for Airtel can be classified as under
  - Landline services
  - Mobile Phones
  - Internet
  - TV
- Structure the problem by classifying the population suitably
  - The total population of India is ~1.2 billion. Considering an average family size of 4, we have around 300 million families
  - Divide the population into three segments on the basis of income levels – Economically Challenged, Middle Class and Higher Class
  - Now for each of the revenue streams, assume a suitable proportion of families using these facilities and the number of units for each of the three income groups
- Assume a suitable market share of Airtel for each of its services after considering the other competitors present in the market

Step 2: Classify the population using justifiable assumptions

S.No	Revenue Streams		Income Levels		
			Economically Challenged	Middle Class	Higher Class
1	Landline	Percentage of families	20%	70%	100%
		No. of units/family	1	1	2
2	Mobile phone	Percentage of families	40%	100%	100%
		No. of units/family	1	2.5	3
3	Internet	Percentage of families	5%	40%	100%
		No. of units/family	1	1	1.5
4	TV	Percentage of families	20%	60%	100%
		No. of units/family	1	1	2

Step 3: Calculate total revenue using the assumptions

- Annual revenue for any particular stream =

$$\sum \left[\begin{array}{c} (Families\ lying\ in\ a\ particular\ income\ category) \times (Percentage\ of\ families\ using\ the\ facility) \times \\ (Average\ monthly\ rental\ for\ the\ particular\ income\ category) \times Market\ share\ of\ Airtel \times 12 \end{array} \right]$$

- Total revenue for Airtel can thus be calculated as sum of revenue for all the four streams
- Overall revenue will also include value added services, mobile internet and revenue from other initiatives such as “Airtel Money”
- Note that This is the revenue collected only from the households
- The revenue from offices and other sectors can be calculated using a similar approach

Bonus Points

- The candidate will earn bonus points by including some exclusive points in their structure such as
  - Offices : Revenue structure included only the households; However total revenue would also include offices and other similar places
  - Seasonal effects: Revenue from the mobile phones and landlines would increase during the festive season
  - Occupation of people : Extent of usage of mobile phones and internet would also depend upon the occupation of the person
  - Defaults: Some people would default on their payments; The total revenue estimated has to be adjusted for those defaults