CASEBOOK

BUSINESS CLUB,IIT KANPUR

Cases contributed by Student Placement Office, IIT Kanpur

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ACKNOWLEDGEMENT

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INTRODUCTION

Being able to confidently and consistently crack cases is an absolute requirement to get a job in consulting. You may be at the most prestigious school, have a stellar résumé, and be the lead in follies – that will get you the interview. Once you get to the interview however, everyone is on the same ground. To get the job you have to ace every one of the cases.

Fortunately, case interviewing is a skill that is fairly easy to learn with sufficient practice. Even those without a prior business background can do well. Success with cases really just comes down to four key factors: approaching the interview in a confident, friendly and conversational manner; being organized and methodical in your approach to solving the problem; having a solid command of a framework for probing the issues of the case; and practicing until all of the above comes naturally, even under pressure.

When you first start doing cases, they may seem daunting and you may doubt your ability to ever achieve mastery. However, if you practice cases with a partner consistently over the 3-4 weeks before interviews, you will very likely be ready on game day. As with everything, practice makes perfect.

This guide was written to give people to the interview process a primer on what to expect in interviews, ways to approach cases, and how study for them. While you are not likely to get one of these cases when you interview, practicing them will give you a very good idea of what to expect when you get into that interview room.

Good luck and have fun!

BUSINESS CLUB
IIT KANPUR

INTERVIEWER: BCG Round 1st -S. Sajin

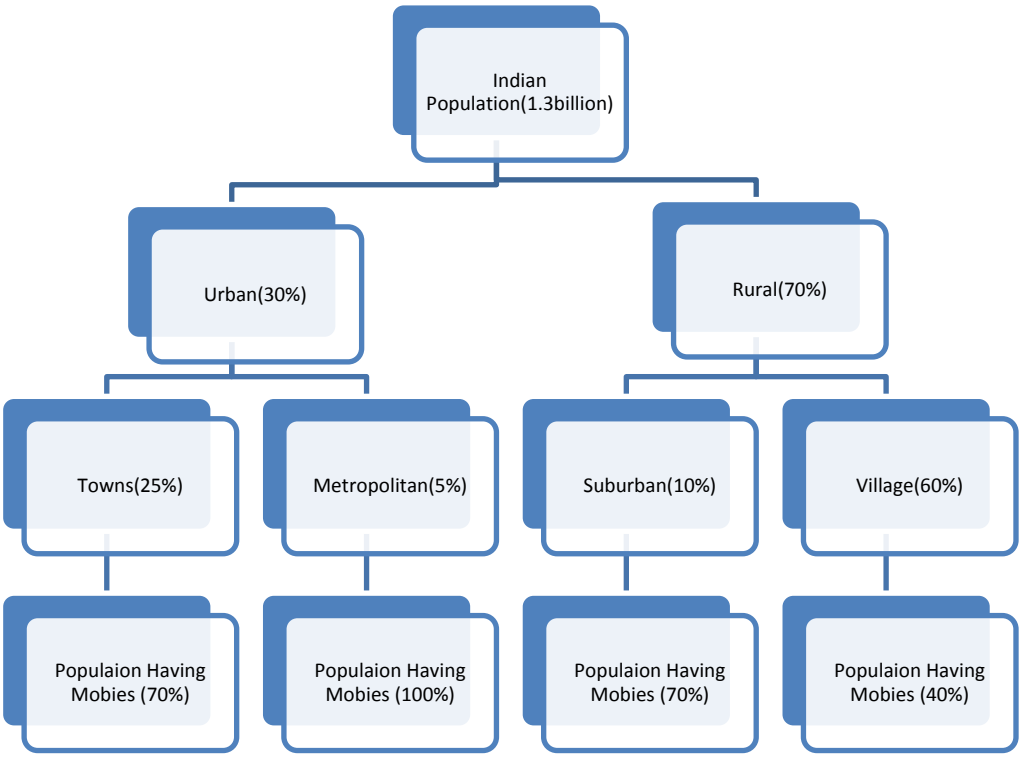
Case-

Estimate the mobile phone sales in India for the next year.

SOLUTION:

Plan of attack-

- We chose a family as a basic unit for our estimation.
- We tried to estimate how mobile phone sale was distributed among families depending upon their place of residence.



Assumptions and Calculations-

- For the Metropolitan we assumed a family size of 4 consisting of 2 children and 2 parents. We also assumed that an average adult in the metropolis changes a mobile phone every 4 years and a child changes it every 2.5 years.
- For the Suburban and Urban families, we assumed a family size of 5 consisting of 3 children and 2 parents. Here we assumed that an adult changes a mobile phone

every 6.5 years and a child changes it every 5 years. The probability of a person buying first phone is assumed to be 0.2.

- For the Rural families we assumed a family size of 6 consisting of 4 children and 2 parents. The average adult here buys the handset every 10 years and a child shall end up doing so in nearly 6 years. The probability of a person buying first phone is assumed to be 0.15.

Metropolitan City

- Total Urban Population=(5/100*130)cr=6.5cr
- Total Adult Population=0.5 * 6.5=3.25cr
- Total Child Population= 0.5*6.5= 3.25cr
- Mobiles changed by adults in one year= .25 * 3.25 =.81cr
- Mobiles changed by children in one year= .40 * 3.25 = 1.30cr
- Hence the total mobile phone sales in metropolitan city = 2.11cr

URBAN

- Total Urban Population=(25/100*130)cr=32.5cr
- Total Adult Population=0.4*32.5=13cr
- Total Child Population=0.6*32.5=19.5cr
- Mobiles changed by adults in one year=1/6.5 * 13=2cr
- Mobiles changed by children in one year=1/5*19.5=3.9cr
- But only 70 % have mobile phones.
  So number of mobile phones sold = 5.9 * .7=4.13cr
- Remaining mobiles sold are those which are bought by people who have no mobile yet =0.2*32.5*.3 = 1.95cr
- Hence the total mobile phone sales in urban area =4.13 + 1.95 =6.08cr

SUBURBAN

- Total Suburban Population=(10/100*130)cr=13cr
- Total Adult Population=0.4*13=5.2cr
- Total Child Population=0.6*13=7.8cr
- Mobiles changed by adults in one year=1/6.5 * 5.2=0.8cr
- Mobiles changed by children in one year =1/5*7.8=1.56cr
- But only 70 % have mobile phones.
  So number of mobile phones sold = 2.36 * .7=1.65cr
- Remaining mobiles sold are those which are bought by people who have no mobile yet =0.2*13*.3 = .78cr
- Hence the total mobile phone sales in suburban area =1.65 + .78 =2.43cr

VILLAGES

- Total Village Population=(60/100*130)cr=78cr
- Total Adult Population=0.4*78=31.2cr
- Total Child Population=0.6*78=46.8cr
- Mobiles changed by adults in one year=1/10 * 31.2=3.12cr
- Mobiles changed by children in one year =1/6*46.8=7.8cr
- But only 40 % have mobile phones.
  So number of mobile phones sold = 10.92 * .4= 4.37cr
- Remaining mobiles sold are those which are bought by people who have no mobile yet =0.15*78*.6 = 7.02cr
- Hence the total mobile phone sales in villages =7.02 + 4.37 =11.39cr

  Hence the net expected sales of mobile phones in India next year is
  = 11.39 + 2.43 +6.08 + 2.11 = 22.01 cr

INTERVIEWER: EXL Round 2nd - Sanjay Chaudhary

Case -

A bank has to develop an automated web interface for a loan scheme specifically catering “small shop owners and businessmen”. This system should be able to suggest the firm if the end user is credible enough to be considered for the loan and what is the risk involved. What should be the information that such a system should ask the end users for in order to make this distinction or classification?

SOLUTION

Following Questions could easily find out the credibility:-

1. Enter the amount you have in their cash, deposit, savings, and checking accounts as of today.
2. Enter the total value of assets held in the names of your (the student's) brothers and sisters who are under age 19 and not university students.
3. What is the total current market value of your investments? (Do not include your home, business, farm, real estate/property, or retirement plans)
4. What is the current market value of your home?
5. What was the purchase price of your home?
6. What is the total current market value of your real estate, such as residential or commercial properties and land-holdings, other than their home?
7. What do you owe on other real estate/properties they own?
8. How much money is owed to you by others?
9. Enter the amount you expect to be repaid by others this year……..
10. How much are your other assets worth?
11. Enter total current market value of your business.
12. Following Questions can also be posed :

- Enter the amount your parent(s) owe on this business.
- Enter the number of people your parent(s) employ in this business.
- Which parent owns this business?
- Enter your parent(s)' percent of ownership.

INTERVIEWER: BCG Round 1st -Mohit Mittal

Case:

To study and analyze the reasons behind the varied profit margins of a steel company, in two markets namely Indian and European markets.

SOLUTION

Plan of Attack:

We will analyze the reasons by using our Profit Cost Model which states that

Profit=Revenues-Cost

Hence in order to maximize profits, and hence profit margins, we need to maximize the revenues and/or reduce the cost.

Our approach would be to look for profits on a long term basis.

1. The factors that affect the revenues are-
    - Demand
    - Sales
    - Competitors
    - New entries in the market
2. The factors that affect the cost are-
    - Cost of raw material-Iron ore
    - Suppliers
    - Cost of Production
    - Transportation/Import-Export Cost(for European markets)

European Markets Analysis

- Revenues
    - Demand-Due to economic crisis in Europe, as told, the price of steel had gone up by 20%, leading to a reduction in demand by those companies/customers using steel as raw material in their own companies.
    - Sales: as a result of the reduction in demands, the sales also saw a drop as the other companies who were the customers of this company decreased their demand to some extent.
    - Competitors: Not mentioned clearly
    - New Entries in Market: Since, the company is fairly new into the European market, the profit margins will take some time to reach a certain level. The

company will take some time to develop the trust in the market and have a substantial market share.

- Cost
  - Cost of iron ore: Prices of iron ore increased by 10%. This added to the final cost of production.
  - Suppliers: since the Indian Government did not allow the export of iron ore. Hence the company in order to get the raw material has to pay heavy import duty and other overhead charges.
  - Transportation(/import –export charges): As mentioned the company had to pay some heavy import-export duties as there were no iron ore mines in Europe.

Indian Market Analysis:

Being a leading Steel manufacturing company in India, it had no major issues regarding new entries to the market and competitors. Also as it was told that the demands and sales were going fine but the profit margins from the European market were less than those from Indian market. The cost of Production in India was also fairly in accordance to the market condition at that time.

Suggestions and recommendations:

Keeping in mind the assumption that we are aiming for profits on long term basis we would suggest that-

- The company should go further and buy an iron ore as it would help to reduce the cost of raw materials to certain extent. In case the company continues without buying an iron ore the effective cost of production would remain high.
- The company should also now try and increase its market share in the European Market by not increasing prices steeply. Since the European markets are going through a phase of economic crisis, it would be a good time for the company to increase its market share by selling quality products with prices a little lower than those of other established companies there. The increase in market share would help the company in future when the crisis conditions no longer exist and hence compete with the present leaders in European market in the future. The ownership of iron ores would help it expand itself in the European markets
- If possible the company should also try and look for other avenues for expansion in Indian Market like stepping into the manufacturing of other alloys from iron ore etc.
- The company can also consider the idea of collaborating with another company that is well established there in order to earn some good profits from the European market. The idea of collaborating with another company would help it to get a good idea of the specific demands of the market and other factors that affect the market.

INTERVIEWER: EXL Round 1st - Sanjay Chaudhary

Case:

A mobile phone company has to launch a new phone which is similar to the iphone in features and is a little less expensive. To make it popular, the firm decides to offer a scheme to students of IIT Kanpur which they can avail by using a coupon and get a discount of Rs. 4000 on the actual cost. Your consulting firm is asked to find those 100 students from the 3000 odd strength of IITK who should be given that coupon or in other words who are more likely to avail that offer.

SOLUTION

Plan of attack:

- We divided the students of IIT Kanpur into various groups based on their parental income.
- Then we will identify no. of students interested among them based on some factors.
- Hence, we would distribute the coupons among the students.

The major thought process involved in our study is that we distribute the coupons so as to create a niche for the company and try to put it into competition with the iPhone.
So, rather than just catering to a specific section we wish that the company reaches out to each and every section of the student community.

Assumptions & Calculations –

- The percentage distribution of students is as follows :

Group No.	Parental Income	Percentage of students	No. of students
i)	Less than 5 lacs	55	1650
ii)	5 – 10 lacs	25	750
iii)	10 – 50 lacs	17	510
iv)	Above 50 lacs	3	90

- Interested students have been assumed relating to the following factors:
    - Group i) The students of this segment avail a number of scholarships on means basis like MCM and SBF.The brand value is not an issue for them but price is a deciding factor in purchasing a mobile.
    - Group ii) Here the deciding factor comprises a bit of cost as well as a bit of brand value.
    - Group iii) This people look for brand value.

- Group iv) This group is mostly influenced by attractiveness of the product but some of them might look for less expensive product.
- We have assumed that company is issuing coupons to popularise their product so it would be beneficial for them that it gets popularised over the whole campus so we can limit circulation of 1 coupon to each wing.
- Apart from this, those students who have got internship would be more preferable for the company as they would be more willing to buy it.

- Expected % of student interested in buying the phone :

Group no.	% of students	No. of students
i)	5	83
ii)	15	112
iii)	30	153
iv)	20	30

- Out of the above four groups the major portion of market will be occupied by Group iii).
  So we will provide maximum number of coupons to this group.

  Accordingly, the distribution of coupons is as follows:

Group no.	No. of coupons
i)	10
ii)	30
iii)	50
iv)	10

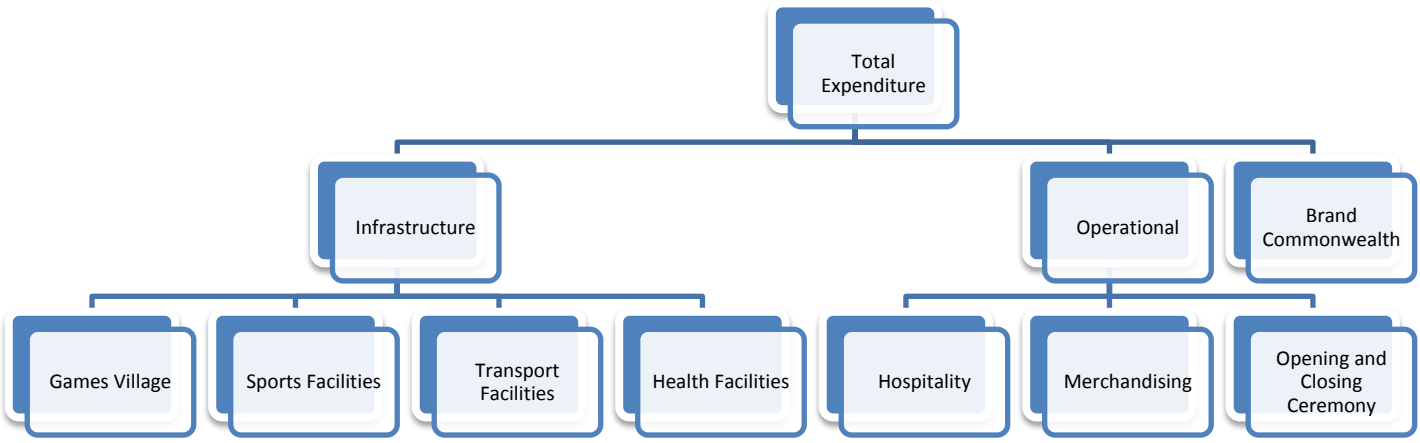
INTERVIEWER: McKinsey – Round 2nd -Mohit Mittal

CASE:

Estimate the budget of Commonwealth Games 2010

SOLUTION

MODEL ASSUMED



TOTAL EXPENDITURE

Plan of Attack

- I am trying to calculate the cost commonwealth spent on each athlete on this model (i.e. considering an athlete as a basic unit).
- Assuming double room flats were provided to each athlete with all the facilities like washing machine, refrigerator and state of class sanitation facilities were provided. So an estimated cost of a flat of 2 room (i.e. 2000 sq. feet) is around 40 lakhs considering all the basic amenities.

- Each athlete shared an expenditure on state of art sports facilities for practice, training, and sports conduction facilities. This was estimated to be around 700 crores.
- Health Facilities on each athlete was assumed to be 10 lakh per athlete as they were provided with the best of doctors with free medicinal and hospital cost.
- Transport Facilities included all the transport and tourism facilities availed to the participants which also includes metro. Thus it would have incurred a cost of around 3500 crore. (Including Road and Highways).
- Hospitality on each athlete was a heavy burner in the pocket of games and included celebrities quotient, diplomats by providing Hotels, Book Stores, Food Facilities, Entertainment, Security would have led to a cost of 5 lakhs per day i.e. 0.6 crore(1 days commonwealth Games)
- Opening and closing ceremony has been allotted a significant pie of budget. The expenditure include 200 crores cost of each ceremony.
- Merchandising for Commonwealth Games was another source of expenditure which covered kits provided to each and everyone involved with Commonwealth Game including T-shirts, soveiuner etc. The total cost of this Merchandising was 20 thousand per participant and around 0.5 lack people were distributed the kits which makes the total cost to be 1000 crore.
- The total cost on Brand Commonwealth was 500 crore which is broken up as 200 crores for PR and 300 crores for Marketing.

SOLUTION

The total cost per head athlete comes out to be

- 20 lakh- Housing
- 10 Lakh- Health
- 0.6 Crore- Hospitality

Total Expenditure over each Athlete = Rs. 1.5 Crore
There were around 7000 athlete participating
Total Cost = 7000*1.5 = 10,500 Crore

Other Costs Incurred:

- Cost of Transportation facilities = Rs 3500 crores
- Cost of Merchandising= Rs. 1000 Crores
- Cost of Opening and Closing Ceremony= Rs. 400 Crores
- Cost of Advertisement = Rs. 500 Crores
- Cost of Infrastructure Facilities = Rs 700 crores

Net Budget= Rs.12,400 Crore

(P.S. - Inclusive of Non-Sports Related Infrastructure Development)

INTERVIEWER: BCG 1st ROUND - Sonam Goenka

CASE

To improve the conditions of the road between Kanpur and Lucknow.

SOLUTION

Total distance between Lucknow and Kanpur= 83km.

ASSUMPTIONS:

- We assumed that nearly 40% of the road is in a dismal condition and needs instantaneous repair. This accounts for nearly 35km of the total road.
- This leaves nearly 50 km of the road in usable conditions.
- We assumed the cost of repair as nearly 2 lakh rupees per kilometer of damaged road.
- This leaves us with a basic cost of 70 lakh rupees for the total damaged road strip.

Plan of Attack:

- We intend to create a system which is revenue generating and is healthy enough to generate cash flows, which shall not only cover the assumed costs, but also enable the homeostatic future development of the logistical facilities in this region.

Proposed Solution:

- For this we suggest a **Self Revenue Generating Model** wherein the cost of repair and upkeep shall be funded via the implementation of transport services between the 2 cities.
- We shall ply a set of 4 Double Decker buses between the 2 cities and the revenue thus generated shall be ploughed back in the repair of the damaged and the upkeep of the rest of the road.
- Calculation-
- Cost of each Double-Decker bus = 15 lakhs
- Cost of 2 Double Decker buses = 15*2 = 30 lakhs
- Mileage of each bus = 10km/lit.
- Total petrol consumption = 8 lit.
- Cost of petrol = 47 Rs./ lit.
- Total Fuel Cost = 47*8 = Rs.400
- Ticket cost per person = Rs. 60
- Total number of passengers per bus per trip = 80

- Total revenue per bus per trip = 80*60 = 4800Rs.
- Net profit = 4800-400 = 4400 Rs.
- We shall ply 6 such one way trips per bus and we have 2 such Buses to our disposal.
- Hence total profit generated per day = 4300*2*6= 51600 Rs.
- Therefore total profits for a month = 50000*30= 15 lakh Rs.
- Total expenditure for self maintenance of bus = 1 lakh Rs.
- Total expenditure for maintenance of other buses= 2 lakh Rs.
- Total expenditure for maintenance of roads = 1.5 lakh Rs.
- Total contribution to development fund = 1.5lakh Rs.
- Hence self maintenance of 2 Buses = 2 lakh Rs.
- Total expenditure for maintenance of 2 buses = 4 lakh Rs.
- Total expenditure for maintenance of roads for 2 buses = 3 lakh Rs.
- Total contribution to development fund by the 2 buses = 3 lakh Rs.
- Hence total funds utilized for a month for all the buses = 2+4+3+3= 12 lakhs.
- Wages of 1 bus driver= 20,000 Rs.
- Total wages for 2 bus drivers= 40,000 Rs.

Total funds spent from 1 cr. = (70+30) = 1 crore.
This leaves us with 4 Lakhs from the bus trips in the first month. This money shall be used to open Information Kiosk's at regular intervals which shall enhance the overall travelling experience for the passengers and in turn aid our revenue model. Hence, our model is completely structured.

If the interviewer asks for a shorter solution:-

1.) Shifting of Kanpur Bus stand from main city to reduce Traffic log time and increase mobility.
2.) Improve Roads
3.) Create Flyover from GT road to Lucknow connecting road to lessen time from Kanpur to Lucknow as it can skip the city Kanpur and its Traffic on the way.

INTERVIEWER: BCG 1st ROUND - Sonam Goenka

Case

To store the milk in warehouse or not?

Assumptions

- We assumed that the company sells 1 lakh bottles/day
- Also assuming that the selling price is Rs. 15
- The respective manufacturing, processing and storage costs have all been assumed.

Plan of attack

We intend to calculate, adhering to our above mentioned assumptions, the profits pertaining to each case and then only substantiating our results.

We are basing our case on the **Profits = Revenues – Costs** model.

We divided Milk distribution in the following ways:

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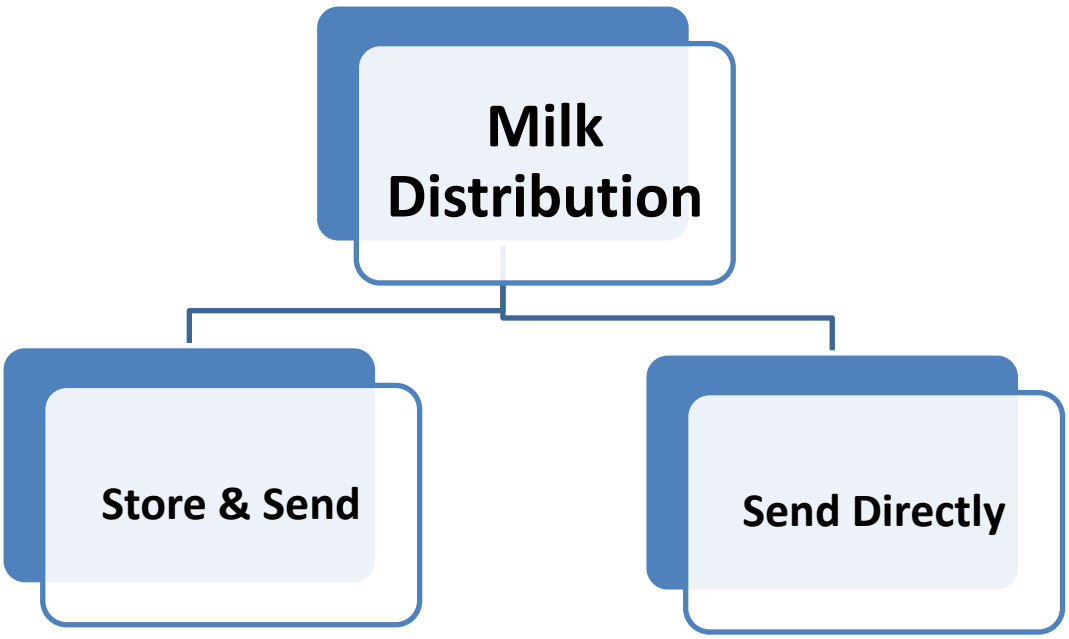


Cost analysis for storing and sending milk (per bottle)-

- Here, the extra amount produced can be accommodated in storage and not simply wasted. Thus wastage is less over here.
- Manufacturing Cost= 6 Rs. (This happens because of economies of scale)
- Transportation cost for transporting the bottle to the warehouse= 1Rs.
- Transportation cost for transporting the bottle from the warehouse to the retailer= 1 Rs.
- Cost involved with storage of milk bottle= 2 Rs.
- Cost involved with wastage due to unconsumed stock= 0.5 Rs.
- Thus, total cost in production, storage and distribution= 10.5 Rs.

Hence, Net Profit = 15-10.5 = **4.50 Rs. Per bottle**

Cost Analysis for sending milk directly (per bottle)-

- Note that - This part would be accompanied by decrease in no. of bottles produced as the company would produce regularly and according to markets' demand (though probably with some margin extra) as they don't have storage facilities available to them.
- Manufacturing cost = 7 Rs.
- Transportation cost for transporting the bottle to the retailer = 1.5 Rs.(definite decrease in transportation cost)
- Cost involved with wastage due to the unconsumed stock = 1.5 Rs.
- Thus, total cost in production, storage and distribution = 10 Rs.

Hence, Net Profit = 15 – 10= **5 Rs. Per bottle**

Conclusion:

Thus we have arrived at the conclusion that directly sending milk to the storage shops is the beneficial solution for us in this case. It would increase our revenues and thus ensure the profitability.

INTERVIEWER: McKinsey, 1st Round: Deepanshu Arora

Case

Guesstimate the Annual Budget of IIT Kanpur. Make all reasonable assumptions.

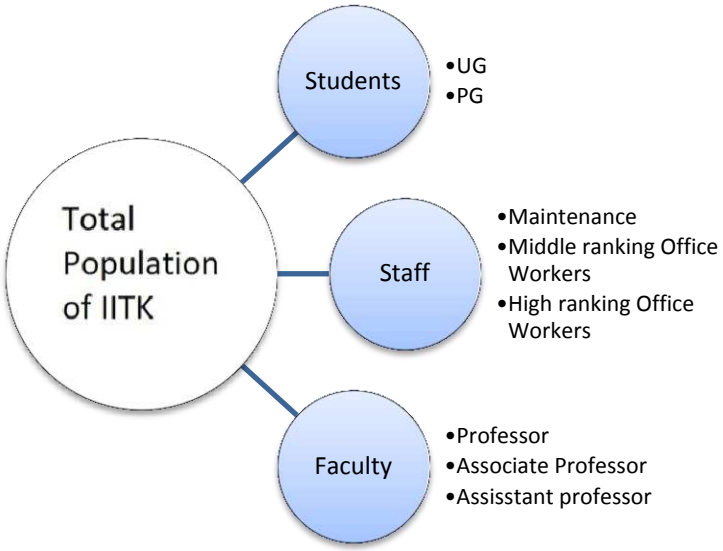
Solution

As for all guesstimation cases the most important part is the structuring of the case. Here also, multiple structures are possible. We shall proceed with the simplest possible structure.

Let us assume IITK to be a non-profit organization. Then all the revenues generated would be equal to the costs of operation, which would again be equal to the Total Budget for the year. For simplicity reasons we would proceed from the costs side.

Let us proceed with calculating the total operational costs.

1. Divide the complete population into 3 sectors. Students, Staff & Faculty.



2. **Student:** On an average the total amount of money spent by the institute on an Individual student, during his complete stay is about 4 lakh, Therefore annually Institute spends about 1 lakh on every student. (Total 4200 students)
3. **Staff** : Can be further divided into 3 categories (Total 1000)
    a. **Maintenance**: 650 people, 10,000 pm.
        1. 10 halls – 15 mess workers + 15 hall maintenance worker.
            = 300
        2. 50 labs – 3 lab maintenance worker each.
            = 150
        3. 5 Main Academic buildings – 15 maintenance workers each
            = 75
        4. Security Guards - approximately 75.

5. Miscellaneous workers - approximately 50.
   (Maintenance workers for all other random task)
   Therefore, total number of workers = 650.

b. **Middle Ranking Office workers**: (Including people like, Jr. Lab Assistants, People working in Hall/LHC offices.) 250 people, 20,000 pm.
   1. 10 halls – 5 Hall Office workers.
      = 50
   2. 50 labs – 3 Jr. lab Assistants each.
      = 150.
   3. Miscellaneous – 50.
      (People working in LHC, DOSA office and other Academic Buildings)

   Therefore, total number of workers = 250

c. **High Ranking Office Workers**: (Including people like, sr. Lab Assistants, People working in DOSA/DOAA offices.) 100 people, 30,000 pm.

   1. 50 labs – 1 Sr. lab Assistants.
   2. Miscellaneous - 50.
      (People working in DOAA office, Faculty building, Library, etc.)

   Therefore total number of workers = 100.

4. **Faculty**: The Annual salary of a Faculty would depend on its rank. (Total 300)
   a. **Professor -** 15 lpa.
   b. **Associate Professor - 12** lpa.
   c. **Assistant Professor -** 9 lpa.

      There are 12 departments in IIT Kanpur - Each department has approximately 8 professors, 8 associate professors, and 10 Assistant professors. So there are 90 professors, 90 Associate professors, and 120 Assistant professors.

Calculations: 4200*1 + 650*.1*12 + 250*.2*12 + 100*.3*12 + 96*15 + 96*12 + 120*9 Answer.

= 9890 Lacs => 100 crores (Approx.)

INTERVIEWER: *BCG, 2nd Round- Sonam* Goenka

CASE

A telecom Industry wants to establish its retails shops in Villages. List the factors which would be instrumental in deciding which villages to choose.

SOLUTION

To tackle this kind of cases, the best way is to proceed using Intuition and Supply & Demand Model, and thereafter checking your solution using either of the 4P framework.

Possible Factors are listed as follows:

1. **Distance**: Clearly the Demand would be much more in places with a higher level of awareness, Also it would be easy to provide facilities if they are opened closer to major cities and towns.
2. **Population** : More the Population, Larger would be the number of customers.
3. **Income Profile of Villagers** : The villages in which the people would be having a larger Income. Example: Like if a village is situated close by a Production Plant, then most of the people would be employed in that plant, and in that case, The Income Profile of the concerned village would be much higher.

More factors can be listed using the **4C** and **4P** framework. Also, to check the validity of the listed factors, again the above mentioned frameworks can be used.

INTERVIEWER: BCG, 1st Round- Mohit Mittal

CASE

Suggest 3 measures you would take to stop suicides in IIT Campus.

SOLUTION

Not a case really, can be solved by empirical intuition nonetheless.

If we look closely, then all the suicide cases which have come forward are solely due to academic pressure. And on further Inspection, it is evident that the academic pressure at the later stages of the curriculum becomes much greater and in most of the cases this has been the root cause of suicides.

Measures Proposed:

1. To promote Healthy Interaction between Professors and their Research Students, Open Sessions could be arranged to encourage the students to discuss their problems freely with the Professors.
2. Promoting interaction within halls by organizing various activities, as this would serve a nice way of opening-up the Fresher's.
3. Session with Counsellors and Motivational talks by well-renowned speakers must be organized regularly, to always keep the Spirits up.

INTERVIEWER: Opera Solutions, Final Round- Avirishu Verma

CASE

A service provider for mobile phone applications is planning to include video streaming facility along with GPRS. What should be the price of this facility?

SOLUTION

The Pricing for this product needs to be done carefully, as the penetration level of this Industry is still very less, Hence the price margin needs to be chosen after careful market research.

As not many players have entered this market, it would be nice if the company prices competitively to capture a large portion of the market share.

The customers can be divided into two major sectors, Regular and Occasional users. The Pricing of this service should be done so as to cater to the needs of all kinds of customers, as the occasional customers would only use the service once in a while and would only buy the short-term recharges for this service.

For the regular users, the pricing could be done on a post-paid basis, as that would be much more convenient for them.

INTERVIEWER: BCG, 2nd Round- Kashvi Trivedi

CASE

A washing machine manufacturing company wants to enter the Indian Market. Estimate the number of washing machines they would sell, assuming their market share to be 2%?

SOLUTION

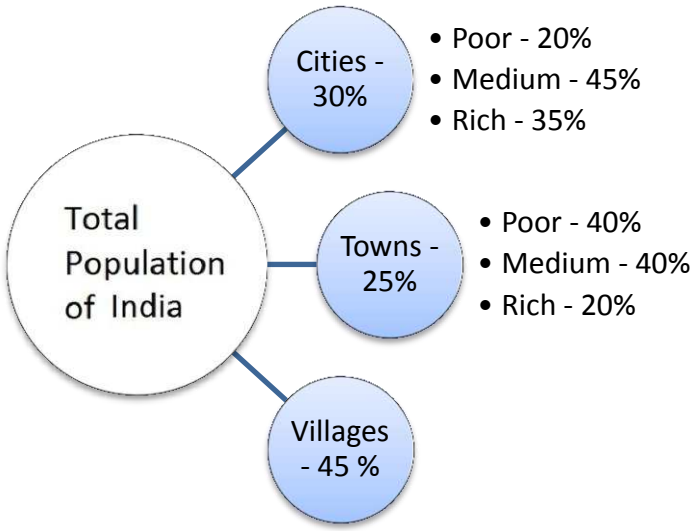
Simple Guesstimation. Should be proceeded from the demand side, for simplicity reasons.

Major users: **Household** and other small scale Commercial users (Very small ratio.).

Estimating the number of Machines:

Total Population: 120 crores.

Population Distribution Cities: 30 % Towns: 25% Villages: 45% (Assumption based on the recent information from the latest Indian Demographics.)



ASSUMPTIONS :

1. Every family has on an average 4 members.
2. In Villages : 1/100 families have washing machines.
3. In Cities :
    a. Poor : 20% - 1/50 families have washing machines.
    b. Medium : 45% - 4/5 families have washing machines.
    c. Rich : 35% - 1/1 families have washing machines.

4. In Towns:
    a. Poor: 40% - Minimal.
    b. Medium: 40% - 1/5 families have washing machines.
    c. Rich : 20% - 4/5 families have washing machines.

Total number: (Calculating from the above data) 8.37 crores washing machines in India.
Average age of a washing machine – 8 years
Market Share – 2 %
Therefore, Total washing machines sold = 8.37*(1/8)*(2/100)
= 2.09 lakhs
Now this is the number machines sold to the customer sold to the customers who actually came to replace their washing machines,
Calculating the number of washing machines sold to the customers who purchased washing machines for the first time :-
Average Growth rate of Market :- 10 %
Therefore, New customers = 0.837 crores
Market share = 2%
Therefore, Washing machines sold to new customers = 1.67 lakhs

Therefore, total machines sold = 2.09 + 1.67 = 3.76 lakhs

INTERVIEWER: *BCG, 2nd Round- Kashvi Trivedi.*

CASE

The client is a Ready-to-use Concrete producer and is recently facing a decline in profits. Find the reasons and propose a solution.

SOLUTION

One should proceed by asking relevant questions and after gathering sufficient information, Proper summarization be done, and based on the key findings one should propose a feasible solution.

Proceed with the basic equation **Profits= Revenues – Costs**.

Gather facts:

Analyzing costs first,

1. Raw Material? Are the sources nearby or the transportation costs are too high?
2. Have there been any substantial changes in the prices of the raw material?
3. What are the companies' operational costs? Has there been any major change in Labour prices?
4. Are the transportation costs too high for delivering the final goods?
5. Has there been any major technological development?

Talking of Revenues,

1. Have the sales declined?
2. Has the company priced its product too aggressively to generate more profits?
    a. Has the company lost market share because of the same?
3. What about the Demand and growth of this sector?
4. Has there been a general slump in the market, or has the share of only this company decreased?
5. Competition?
    A. Are there any major players in the market, or is it fragmented?
    B. Has the competition increased in the recent years?

Laying out the answers:

- Use the profitability framework, Analyze as to why the profits are declining, carefully focus on the Revenues and costs.
- Understand which factor under revenue or costs is driving the decline in profitability.

Taking into account the answers to these questions, we can summarize our Key Findings for such cases, and then solutions can be proposed solving the major issues which would have been encountered in the above analysis.

INTERVIEWER: McKinsey-Deepanshu Arora

CASE

A has a family business whose profit margins are decreasing. Suggest how would you go upon improving it.

SOLUTION

Profit=Revenue – Cost

ASSUMPTIONS

- Business is well settled in the market.
-

Case 1: No Competitors

- Cost- Raw materials, Fixed Cost and Distribution channel. We have to decrease costs.
- Get your raw materials through different channels
- Proper channelization of finished products
- Increase prices as we are the sole players in the market
- Market skimming strategy
- Analysing supply-demand
- Focusing more on expansion
- Improve technology

Case 2: With Competitors

- Assuming equal Market share(to be asked to the interviewer)
- Market growth rate (to be asked to the interviewer)-Look out for possible opportunities and make maximum profit, innovative in that field.
- Improve product placement in the market
- Cost- Raw materials, Fixed Cost and Distribution channel. We have to decrease costs.
- Get your raw materials through different channels
- Proper channelization of finished products
- Get your raw materials through different channels
- Improve Technology

INTERVIEWER: McKinsey- Sonam Goenka

Case:

Company A manufactures tyres wants to increase its revenues by 20%.It manufactures 3 types of trucks.

Assumptions:

- All segments have equal profit and losses.
- Supply and demand is regular.
- Market growth is same in all 3 types of trucks and it is increasing.

Solution:

Competitors present

- Analyzing revenues for all three truck types: Profit=revenue-cost considering various factors in mind-competition in all three each segments, pricing strategy, market placement
- Study in Market growth and entry of new players in the market.
- By Reducing cost in all three types of trucks :
  - ❖ Reducing workforce: By hiring more skilled labour.
  - ❖ More of better machinery which wastes less of input.
- Analysis of supply and demand so as to cut short inventories.

Competitors not present

- Analyzing revenues for all three truck types: Profit=revenue-cost.
- Increase the price of trucks.
- Study in Market growth and preventing entry of new players in the market.
- Brand value improvement through improved service and endurance of trucks.
- Possible collaboration with Insurance companies to truck drivers from rural areas.
- By Reducing manufacturing cost in all three types of trucks :
  - ❖ Reducing workforce: By hiring more skilled labour.
  - ❖ More of better machinery which wastes less of input.
- Analysis of supply and demand so as to cut short inventories.
- Planning according to new players entering the market.

INTERVIEWER: Opera solutions: Prateek Gupta

Case:

If you have to buy a franchise license for an IPL team, how much would you pay for the license?

Solution:

Profit=revenue-cost

Assumptions:

- The team contains 18 players.
- An average team comprises of two bigwigs, 3-4 good players and rest fairly good players.
- Assuming profit=200 crores .

Solution

- Possible sources of cost
  - License fee
  - Buying players-2 main players-14+12 crores , 34 crores for the other players(16 players) for three years, for 1 yr- 11 crores
  - Payment to players- 2main players-12 crores per season, rest 8 crores for 16 players
  - Payments to staff like physiotherapists, managers, coaches, cheergirls – 50 lakhs
  - Stadium rent – 5 crore
  - Advertising through print media, and television – 25 crore
  - Total-61.5 crore + license
- Revenue generation:
  - Broadcasting rights-35 crores
  - Selling merchandise -7 crores after merchandise sponsor takes its money
  - Main sponsor – 25 crores including travel,merchandise, kit, radio, shoes etc. sponsors
  - Selling stadium tickets…around 60,000 per match-
    (200 average ticket price *60k capacity*8matches=9.6 crore)
    Total Revenue-77 crores

Profit(estimated)=20 crore

License Fee=35.5 crore per year

INTERVIEWER: I3 Consulting round 2: S Sajin

Case:

Discuss the performance parameters for a mobile phone company

Solution:

- Competitive advantage
    - Introducing products in multiple segments
    - Keeping prices low
    - New technologies introduced
    - Customer Satisfaction
    - Whether the company does delivery on door or not
- Market Capitalization- Analysis of market share in different segments
- Openness towards new technology
- Mobile phones available at many places-easily accessible.
- Selling phones through different channels
- Openness towards possible collaborations / acquisitions
- Presence in the market over the years
- Good Service both in rural as well as urban areas
- Good network of raw materials i.e. procuring raw materials through different channels
- Performance in the stock market(if it is listed)
- Inventories present at any particular period of time

INTERVIEWER: McKinsey 1st round- Ravi Prakash

Case:

What is the probability of India winning the FIFA 2020?

Solution:

Assumptions:

- 32 teams qualify for the world cup
- 200 teams participate (are ranked in total)
- India is ranked at 160
- Assuming India competes in moderate round robin groups
- High ranked teams participate in the world cup. Ranking < 30
- Using round robin format containing 4 teams in 1 group and then knockout in FIFA WC (In a round-robin tournament, all playoff contenders play each other an equal number of times)
- 4 teams qualify from Asia
- 40 teams participate for WC qualifiers from asia
- High ranked teams participate in Asian qualifiers- ranking < 70
- Using round robin format containing 5 teams in 1 group and then knockout in Asian qualifiers
- Qualifiers to participate in WC Asia qualifiers occurs in knockout fomat
- 30 low ranked asian teams participate in it.
- 2 qualify to participate for WC qualifiers from asia.
- India is highest ranked amongst the low ranked 30 asian teams .

Solution:

- Probablity that India will qualify for the Asian qualifiers- 0.6
- Probabily that India will qualify if it is in a
    - Easy group- 6/20
    - Moderate group- 4/20
    - Group of death – 1/20
- 4 knockout rounds after round robin with probability of india winning -1/4in each

  Total probability of qualifying from asia= 0.6 * 4/20 * 1/4 *1/4 * 1/4 *1/4=1/4500

  High ranked teams participate in the world cup. Ranking < 30
- Probablity that India will qualify the round robin format(it is in a moderate group)- 3/20

- 4 knockout rounds after round robin format, probability of india winning - 1/32in each

  Total Probability of India winning FIFA WC= 1/4500 * 3/20 * 1/32 *1/32 * 1/32 *1/32

  =1/31457280000

INTERVIEWER: Opera Solutions: Kushagra Gupta

Case:

An ATM manufacturer company wants to enter Indian market. Should it go for it?

Solution:

We start analysing by taking into account the total no. of ATMs in India and at what rate they are growing.

ATM density in any region depends on the development and demographics of that region. So, we would classify the areas as follows:

Tier 1: There are big metropolitan cities of India.

Tier 2: These are cities with very good banking facilities and but not as developed as compared to Tier 1 cities.

Tier 3: This includes very small cities and towns and semi urban areas where ATM transactions are not that high but fair enough to contribute.

Non-transaction area: This includes wastelands, vegetation, forest cover, small villages etc. where ATM transaction rarely takes place we are not at all interested in such areas, since growth potential is negligible in these areas.

Total Area of India = 2 M km^2

Non Transaction area = 70% (Reasonable Assumption)

Remaining area = 0.6 * 10^6 km^2

	TIER 1	TIER 2	TIER 3
Percentage of remaining area	30%	40%	30%
ATM density	2 per10 km^2	1 per 10 km^2	1 per 50 km^2
No. of ATMs	$0.3*0.2*(0.6*10^6)$ = 36000	$0.4*0.1*(0.6*10^6)$ = 24000	$0.3*0.02*(0.6*10^6)$ = 3600
Growth Rate (annual)	5%	15%	10%

From above table;

Total No. of ATMs in India = 36000 + 24000 +3600 = 63600

Growth in ATMs (annual) = (.05*36000) + (.15*24000) + (.1*3600) = 5760

COMPETITION ANALYSIS: At present there are only three prominent players in the market and number of ATMs being added per year is quite high. So, the company must begin operation in Indian market.

INTERVIEWER: BCG- Mohit Mittal

Case:

To locate a cement plant

Solution:

Plan of attack : Structure consisting of -

- Profitability of the business in different locations.
- Investments to be made.

Analysis will be based upon

- Fixed cost - Labour cost, cost of machinery, cost of land.
- Variable cost - Cost and availability of raw material, distribution cost.
- Targeted customers.
- Distribution channels.
- Competitors.

Gather Facts:

- Whether the client is a new player? *No, he's already in this business and wants to find a location to setup a new plant* .
- Whether there were any location preferences? *There are three options - Wadi, Chanda, Karapa.*
- Are there any specific reasons for choosing these locations? *All these sites had limestone mines, which was a major raw material for the manufacturing of cement.*
- Is there any difference in the quality of limestone available in these places? (This question should be asked from the interviewer for a better analysis)
- How effective is the distribution channel in these locations ? *Establishing a distribution channel in any of these locations is not a big issue.*
- Who are the targeted customers? *the plant had to be 1 million tonne capacity plant with half of the cement supplied to Mumbai, one third to Bangalore and the rest (one sixth) to Hyderabad.*

Also the locations from these places are given below-

District	*Distance from Mumbai(km)*	*Distance from Hyderabad(km)*	*Distance from Bangalore(km)*
Wadi	567	200	547
Chanda	923	426	1013
Karapa	1191	490	889

- Are there differences in the cost of resources? Cost of land, procuring machines and hiring labour is same for all the three locations.
- What about competitors? *Assume no competition.*
- Is the transportation cost same in all the three districts? *Yes, as it is to be transported by train*.
- Information regarding the location of coal mines in Chanda was also given during the interview but, since no information about the presence of coal mines near other districts is given we cannot take this under consideration.

KEY FINDINGS:

- Profitability of existing plants is not an issue over here, the only concern is about expansion.
- As other factors like fixed costs, availability of raw materials and setting up of distribution channels are same for all the three locations, analysis is done on the basis of distribution of final product (cement) to the targeted customers.

ASSUMPTION:

- The transportation cost for 1 tonne of cement be Rs 100/km which is same for all the three districts (as mentioned above).

DISTRICT	TOTAL TRANSPORTATION COST (Rs)
Wadi	(0.5*567 + 0.33*200+ 0.17*547) *100=44249
Chanda	(0.5*923+0.33*426+0.17*1013) *100=77429
Karapa	(0.5*1191+0.33*490+0.17*889) *100=90833

- *WADI has least cost of transportation.*

RECOMMENDATION:

Therefore, the cement plant should be setup in Wadi.

INTERVIEWER: I3 Consultancy- S Sajin

Case:

No. of Golf Balls in air in US on a SUNDAY morning.

Solution:

Total population of US: 350 million.
Let us first divide the population in three groups as follows:

(**Assuming life span to be 80 years in US**)

Age Group	%age of total population	%age of people of that age group who play Golf	%age of people who turn up on the particular Sunday
0-20	30%	2%	30% (17 Sundays a year)
20-40	30%	30%	60% (Not as punctual as 40-80, work and outing plans with family)
40-60	25%	20%	80% (This population is most punctual)
60-80	15%	10%	60% (Physical fitness affects punctuality)

On solving,

Age Group	People playing on that Sunday
0-20	.3*.02*.3*350M = 0.63 M
20-40	.3*.3*.6*350M= 18.9 M
40-60	.25*.2*.8*350M= 14.0 M
60-80	.15*.1*.6*350M= 3.15 M
TOTAL	36.68 M

Now, Golf can be played in twos, threes and even as an individual hobby, but playing in twos is the most popular.

Therefore, no of Golf balls used = 0.5 * 36.68 M = 18.34 M

Now a golf player hits, on an average one shot per 3 minutes, out of which the golf ball is in air for 10 seconds, which implies for an instant, the probability of a ball to be found in air is 10/180 = 0.055

Hence no. of Golf balls in air = 0.055 * 18.34 M = 1.008 M

INTERVIEWER: Diamond Consulting- Pratik Vimal

Case:

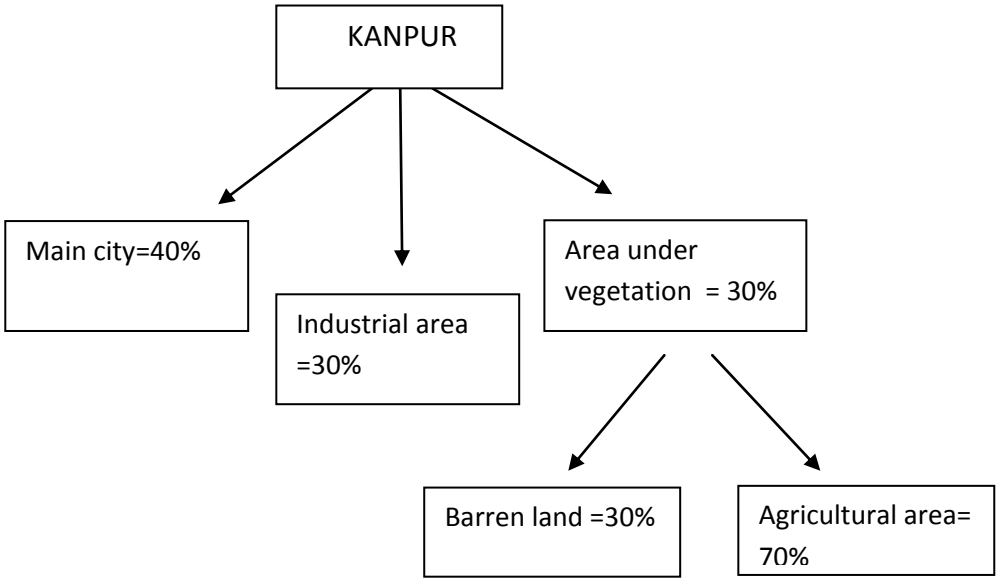
Estimate the number of crows in Kanpur.

Solution :

(Assuming area of Kanpur to be 150 km*km)

Major assumptions-

- Its night time and all the crows are resting on their nests.
- All the nests are located on the trees(not on rooftops or electric lines)
- Each tree has only 1 nest.
- A nest houses 3 crows.



MAIN CITY: (assuming 1 tree to be present in every 1000 m*m)

- Area is 0.4*150=60 km*km
- Out of 10 trees only 1 tree has nest.

Total nest=6000
NUMBER OF CROWS IN MAIN CITY= 6000*3= 18000

INDUSTRIAL AREA :

- Very less trees.
- Crows do not have food.
- So the number of crows can be neglected.

AREA UNDER VEGETATION :

- No trees in barren area.
- Good food availability in agricultural area so more number of nests per 10 trees. More number of trees.
- Trees available only at boundaries of field or along roadside.
- 1 tree in every 400 m*m.
- 1 out of 5 trees have a nest.

Area under vegetation = 150*0.7*0.3= 31.5 km*km

NUMBER OF CROWS IN VEGETATION AREA= (31.5 * 10^6/400)*(3/5)= 47250

TOTAL NUMBER OF CROWS= 18000+47250

=65,250.

INTERVIEWER: Diamond Consultancy- Ravi Prakash

Case:

Our client is a pharmaceutical company. For past two years, its profits are on a decline. How would you guide it? The constraint was that prices were sacrosanct.

Solution:

Let's start with the basic equation: Profit=Revenue-Cost. Since the company's profits are declining only in the past two years, either the revenue is decreasing or the cost is increasing. Let us analyse each of them separately.

Revenue :

1. Market Share: The share of the company amongst the other players in the market has decreased. This could be because of the following reason:
    - Arrival of new competitor: In this case, The company should spend more amount of money on advertisements than it used to do till now. It should publicise its product well.
    - Better marketing tactics of the other players: Again, the company should focus on marketing
    - Better quality of products made by competitors: The reason could be that the quality of the company's product is not up to the level in the market, and so the company should focus on Research and development, and improve the quality of its product. Another solution could be that the company should try and collaborate with some other company, who manufacture better quality product and it can sell them under its brand name
2. Market Size: This could be the case when the overall market has shrinked , i.e even the other players in the market are having declining profits. The reason behind this could be:
    - Demand of a particular product(s) that the company is selling has decreased and that product(s) are not selling nicely in the market as they were before. The solution could be that identify the product(s), decrease (or if possible) stop the production of that product, and spend more on products that are selling well.

Cost:

- Cost of production could be increasing may be because the company does not have advanced technology to produce goods at a cheaper

rate. In this case, i would suggest the company to focus on research and development, and try to develop new technology. Cost-cutting also can be another method to reduce cost. Another solution could be to collaborate with the other companies that have the technology to produce goods at a cheaper rate.

INTERVIEWER: EXL SERVICES- Pranav Pandit

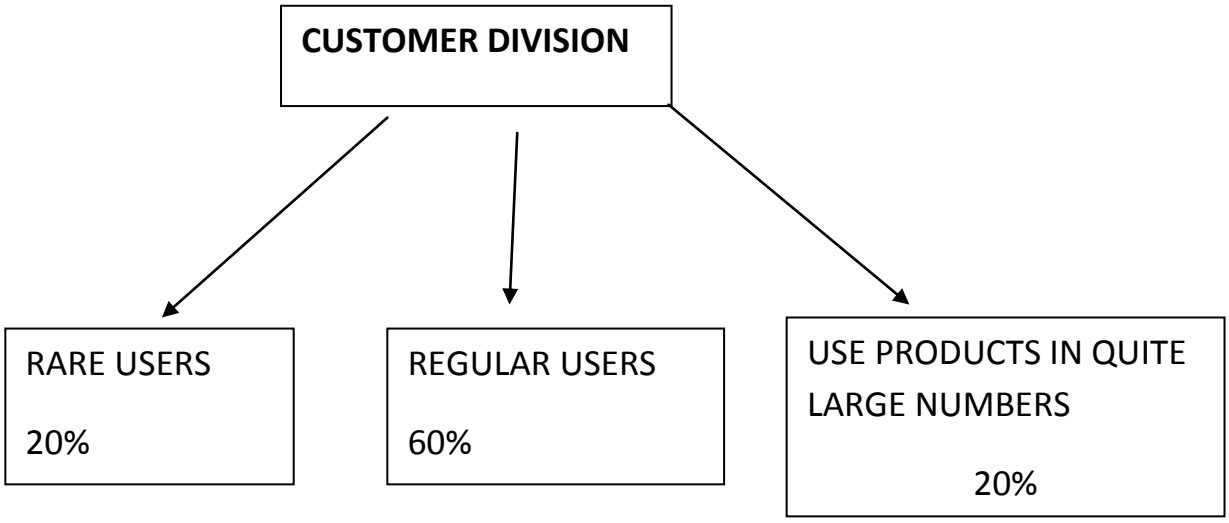
Case:

A company wants to send promotional e-mails to its customers. How much is enough?

Solution:

Grab Facts: Following questions need to be asked from the interviewer -

- Promotional e-mails are of which type?
- Is any particular customer segment targeted?
- Does the company know about the details of its customers beforehand?
- Is this company a new player in the market?
- What type of competition is prevalent in the market?



ASSUMPTIONS:

- Only those customers have been considered who have access to e-mails.
- Promotional events will be sent only to those customers who have used the services at least once.
- The e-mails will be regarding new and existing products or services provided by the company.
- Since 20% of the customers use products in quite high number, it is likely that they will be interested in the entire range and will be willing to use(brand specific). So, around 10 mails are sent to them per month.

- For regular users, the number of mails sent will be around 7 per month as it is less likely for them to go for only this particular range of products (they are not very much interested in this particular brand).
- For rare users, 4 mails will be sent per month as they seldom use the company's products.

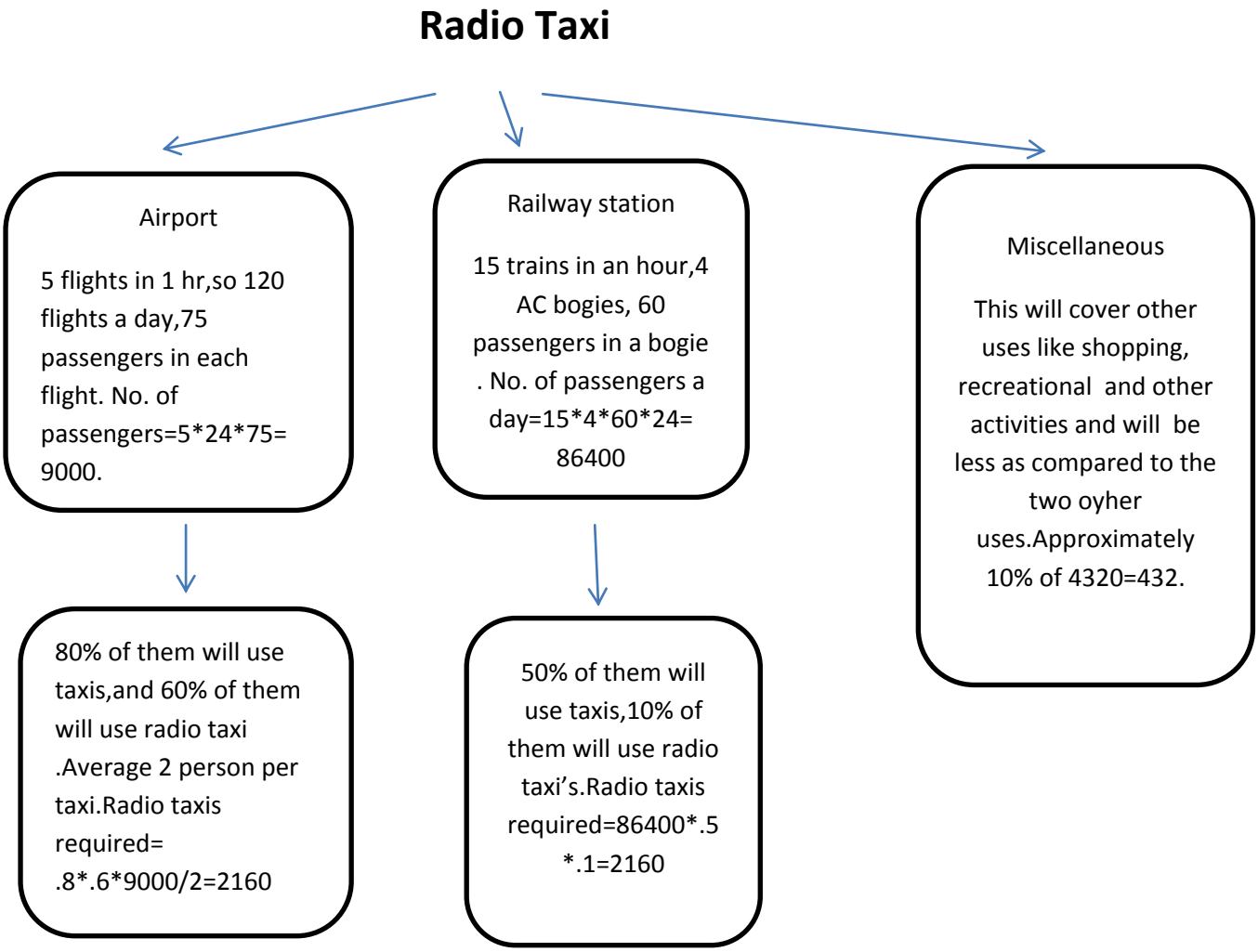
TOTAL NUMBER OF MAILS (per month per customer) WILL BE THE WEIGHTED AVERAGE= 0.2*4 + 0.6*7 +0.2*10= 7

ALTERNATE SOLUTION: A survey can be conducted to ask the customers themselves about the amount of information (on their products and services) they think should be provided by the company and what should be the frequency of e-mails being sent to them.

INTERVIEWER: BCG- Deepanshu Arora

Case:

You have 10 crore rupees to invest in a radio-taxi business in Mumbai. Would you do it?



Total=2160+2160+432=4652

SOLUTION

Assumptions:

- 5 flights land/leave in a hour at Mumbai airport,carrying an average of 75 passengers.
- 20% of the passengers have someone to receive/drop them.80% will require taxi,and 60% of them will opt for radio taxi.
- 15 trains arrive/leave Mumbai Railway station in an hour .Each train has an average 4 AC bogies,carrying 60 passengers each.

- 50% of the passengers will take auto,local train,or have someone to receive/drop them.50% people require taxi,and 0% of them will opt for radio taxi.
- For Miscellaneous uses,people rarely use taxis and further radio taxis are even rare.We take it approximately to be 10% of the sum of airport and station.

Calculations:

- Radio taxis presently in Mumbai=1500
- No. of trips per taxis per day=3.1
- Cost per km=Rs 80 per litre/average 13(traffic)=RS.6.1
- Average km per trip=10
- Revenue=Rs.3.1*(17-6.1)*10=Rs.337
- Revenue per month=337*30=Rs10000
- Paying the driver=Rs5000
- Depriciation per month=100000/12=Rs.8300

I don’t think this is a profitable business and I wont invest in this

INTERVIEWER: Mckinsey, Round 2 - Ravi Prakash

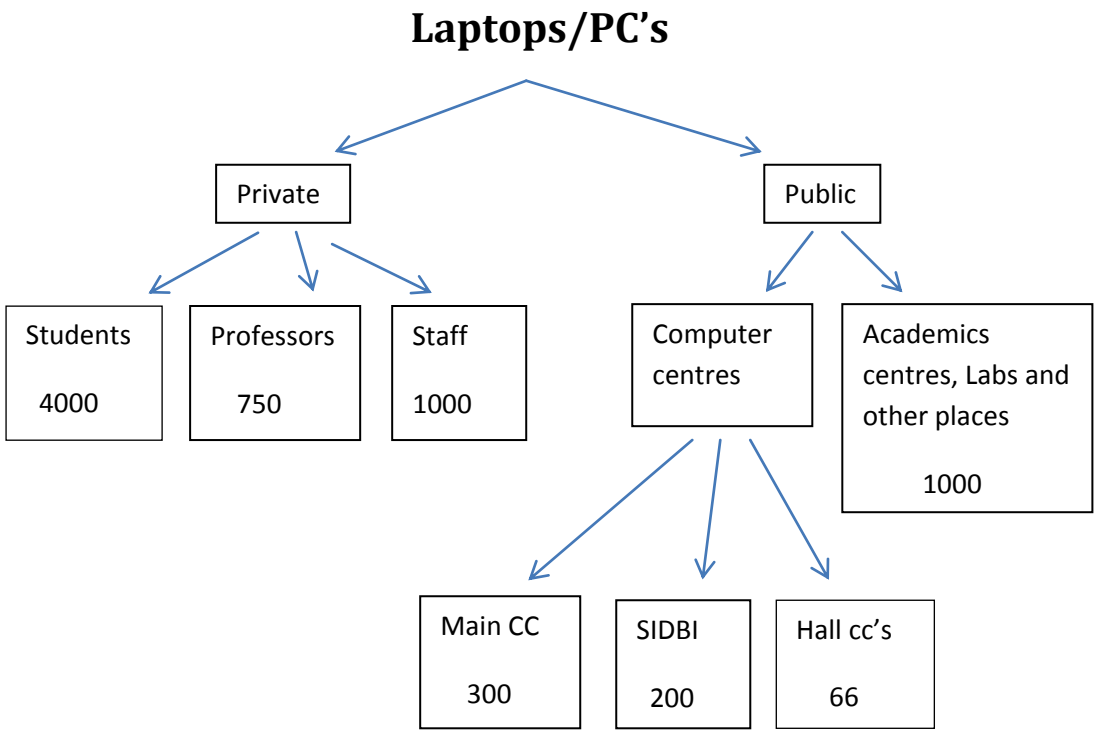
Case:

Estimate the total repair bill for computers in IITK per year .

Assumptions:

- Approximately 25% of the computers/laptops need repair in a year, and average cost of repair is Rs.3000. Therefore, yearly expense of repair of pc per year per pc is Rs 750.
- 5000 students in IITK,there are 800 freshers who do not have laptops and taking 95% of the remaining people to have laptops/desktops
- Around 400 professors-All of them will have their own laptop, one desktop at office as well as 50% of them will have another pc for their family
- 1000 staff-lab in charge, assistants, Senior coaches, each of them having 1 pc
- Main CC-300 pc's,SIDBI building-200 pc's.In every hall there are 5 computers in hall cc and 1 in hall office,and there are 11 halls of residence
- 1000 computers in labs, academic centres and other places

Now, let us estimate the total number of pc's



Calculations:

- Students:5000-800=4200,.95*4200=4000
- Professors:300*2.5=750
- Staff:1000*1=1000
- Hall cc:6*11=66
- Computer Centres=300+200+66=566
- Private:4000+750+1000=5750
- Public:566+1000=1566
- Total number of PC's =5750+1566=7300
- Repair bill=7300*750=Rs 55 lakhs approx.

THE END