Bocconi Students Consulting Club
2020 Case Book

An Introduction to BSCC

Founded in **2013** at Bocconi University, the **Bocconi Students Consulting Club** is a fully accredited student organization whose goal is to inspire interest and knowledge related to the consulting industry among members and non-members.

We do this by **sharing experiences** from current members and alumni in **club sessions** and organizing **networking events**.

We consist of **over 40 active members** and more than **200 alumni** who collectively come from over **15 different countries.**

Acknowledgements

We would like to thank the partners and alumni currently working in the consulting industry who helped us to prepare this case book. The information they provided from recent cases they completed or administered formed the basis of several practice cases and ensured that the finished product is up-to-date, relevant, and helpful to those looking to begin their consulting career.

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Contents

How This Casebook Works

How to Use This Casebook

Purpose of This Casebook

To help consulting applicants prepare for the case interview stage of the application process.

How to Navigate each Case

Important information is located on the left-hand side of each case

Case Type:
Quant/Qual | Type | Industry

Description:
Company Overview

Difficulty Rating:
Easy - Moderate - Challenging

Page number is at the top right corner

The map indicates the location.

The description gives the purpose of the case and what information it is testing.

The information can also be viewed at the top right corner of all subsequent pages.

The difficulty rating is relative to the other cases in this case book

How to Administer Cases

The person administering the case should first read the problem statement to the interviewee, then reveal information if requested. He/she should prompt the interviewee at his/her own judgement.

The Blue sections include all information that only the person administering the cases can view. The Pink sections include information that both people can view.

Problem: the main question the interviewer should consider
Information to Reveal if Prompted: this information can be revealed to the interviewee at his/her request
Merits: bonus points if mentioned by the interviewee
Demerits: mistakes that would detract from the interviewee's performance
Suggested answer: the case administrator should use this as a guide to score the interviewee's response

How to Score a Case

Communication and Presence

Does the candidate demonstrate a sound and frictionless flow of speech and connects to the interviewee?
Does the candidate communicate when he does not understand a piece of information?

Energy and Fit

Does the candidate convey a sense of interest and enthusiasm?
Is the candidate able to connect on an emotional level?

Analytical and Problem Solving Skills

Does the candidate follow a sound logical pattern in his analysis?
Is the candidate able to structure a bigger problem into smaller parts?

Business Acumen

How well can the candidate demonstrate business judgement?
Where does the candidate show strategic thinking?

Creativity

Is the candidate able to come up with unconventional solutions?
Does the candidate show the ability to think outside of the box?

Common Sense and Practicality

How functional are the solutions developed by the candidate?
Does the candidate think solution-oriented and not lose themselves during the case?

Score Sheet

Communication and Presence

1 2 3 4 5

Energy and Fit

1 2 3 4 5

Analytical and Problem Solving Skills

1 2 3 4 5

Business Acumen

1 2 3 4 5

Creativity

1 2 3 4 5

Common Sense and Practicality

1 2 3 4 5

Notes:

Positives

Negatives

Market Sizing

Type to Learn

Problem

Estimate how many words the Bocconi student body types in a day (Hint: Analyze the problem *temporally*, and make sure to consider the different types of electronic tools Bocconi students may type with ie. Laptops, phones and tablets).

Assumptions

1. The student population at Bocconi is around ~14,500 students
2. The average Bocconi student wakes up at 08:00 and goes to bed at 00:00. (16 hr day)

Laptops

1. The average Laptop typing speed is 45 words per minute (WPM)
2. When students are *working* on their laptops typing takes up 30% of their time.
3. When students are *"chilling"* on their laptops typing takes up 15% of their time.
4. Students spend on average 6 hours a day working and 4 hours a day "chilling"

Phones and Tablets

1. The average phone and tablet typing speed is 35 WPM
2. Students are on their phones or tablets for 10 minutes an hour
3. When students are on their phones, typing takes up 30% of their time

Key Things to Consider

- Even if students are USING their phones or laptops, they may not be actively typing words (consider utilization rate)
- Students type words on a variety of tools such as laptops, phones, and tablets
- The typing speed on a phone most likely differs to the typing speed on a laptop keyboard

Type to Learn (Continued)

Total Bocconi Students
14,500

Type of Electronic Tools Used
Laptop, Phone, Tablet

Laptop

In What Way is it Used?
Work, Chilling

Work
Hours Spent Working: **6 hrs/day**
Time spent typing: **30% / hr**
Typing Speed: **45 WPM**

= 6 x .3 x 60 x 45
= 4,860 words / day

Chill
Hours Spent Chilling: **4 hrs/day**
Time spent typing: **15% / hr**
Typing Speed: **45 WPM**

= 4 x .15 x 60 x 45
= 1,620 words / day

Phone / Tablet

In What Way is it Used?
Chilling

Chill
Hours Spent Chilling: **10 min/hr**
Avg Day Length: **16 hrs**
Time Spent Typing: **30% of total**
Typing Speed: **35 WPM**

= 10 x 16 x .3 x 35
= 1,680 words / day

Solution: [(laptop work) + (laptop chill) + (phone/tablet chil)] x total amount of students
[(4,860 words / day) + (1,620 words / day) + (1,680 words / day)] x 14,500 = 118,320,000

Gas Station in Italy

Problem

Estimate the number of gas stations in Italy.

Key Things to Consider

	Demand Side	Supply Side
Total Market	**How many gas stations are demanded by drivers?**	How many gas stations can be presented?
Familiar Subset	How many gas stations are demanded in Milan?	How many gas stations can be presented in Milan?

Assumptions

- 4 pumps per station
- 5 minutes per car
- 16 opening hours per day
- 15% utilization rate
- 40 liters per car
- Italy population: 60M
- 3 persons per household
- 1 car per household
- 2 types of driver: Frequent (80%), Occasional (20%)
- Yearly frequent car consumption: 400L
- Yearly occasional car consumption: 150L
- 50K truck with 10,000L yearly transportation
- 300 industrial site with 10M L yearly demand

Gas Station in Italy (Continued)

Total Gas Station
= Liters sold / Average Capacity
= (3.5B + 7B) /1.68M = 6.25K

Liter Sold (per year)

B2B
# of truck: **50K**
Yearly transportation: **10,000L**
Industrial site: **300**
Industrial site yearly demand: **10M L**

= 50K x 10 K + 300 x 10M
= 3.5 B

B2C
Population: **60M**
person per household: **4**
car per household: **1**
Number of cars
= 60M / 3 * 1
= 20M
Yearly frequent car consumption: **400L**
Yearly occasional car consumption: **150L**
Frequent: Occasional: **80:20**
B2C gas consumption
= 20M * 400 * 80% + 20M * 150 * 20%
= 7B

Average Capacity
Pump x Velocity x Utilization

Pump: **4/station**
Speed: **5 minutes/car**
Opening: **16 hours**
Utilization: **15%**
Gas tank: **40 L**

= 4 x 60 x 16 / 5 x .15 x 365 x 40
= 1.68 M

Berlin Main Station

Problem

How many people travel through Berlin main station every day?

Suggested Approach

Trains / Long-Distance

12 platforms / 0.5 hrs * 17 hrs = 408 trains / day

408 trains * 500 capacity * 70% utilization = 142,800

Metro / Within city

6 platforms / (1/12) hrs * 21 hrs = 1512 trains / day

1512 trains * 250 capacity * 40% utilization = 151,200

~ 300,000

Merits

- Dividing into trains (long-distance) and Metro (within city)

Demerits

- Approaching the market size via different reasons to use train services

Chewing Gum in the US

Problem

What is the size of the US chewing gum market?
(Bonus: How many kilograms of gums are consumed in the US yearly?)

Merits

- Setting up formula including all 3 elements
- Starting from a consumer-based approach

Suggested Approach (Easy Method)

US citizens only:
% of population eating gum * number of packets bought per person per year * avg price of packets in the US

Assumptions

- % of population eating gum = 50% (exclude who who don't like it, are allergic, prefer other substitutes, are not old enough)
- number of packets bought per person per year = days of the year / (average number of gums in a pack / average number of gums eaten daily by one person) = 365 / (20/2) = 37
- avg price of packets in the US is $2

Solution

= 200M * 37 * $2 = $14.8B

Chewing Gum in the US (Continued)

Suggested Approach (Moderate Method)

US citizens AND tourists
Formula = Market sizing in US + avg number of visitors in US yearly * % of tourists buying gum * avg price of gum in US

Assumptions

- Average number of visitors in US yearly = 80M
- % of tourists buying gum = 50% (use same assumption as before)

Solution

= $14.8B + 80M * 0.5 * $2 = $16B

Merits

- Realizing there is also a non-US citizens analysis to be done

Demerits

- Simply adding a number without repeating the market sizing done before

Chewing Gum in the US (Continued)

Suggested Approach (Hard Method)

(Bonus: How many kilograms of gums are consumed in the US yearly?)

US citizens and tourists:
Avg weight of one gum * avg # of gums eaten per year per person * #of Americans eating gum + # of tourists eating gum * avg weight of one gum * number of gums per package

Assumptions

- Average weight of one gum = 2g
- Number of gums per package = 20

Solution

= 2g * (37 * 20) * 200M + 40M * 2g * 20 = 312 Kg

Merits

- Measuring the market sizing not only from a revenue approach but also from a consumption one

Demerits

- Not being able to transform efficiently from grams to kilograms

Coffee in Singapore

Problem

Estimate how many cups of coffee are purchased in Singapore per day.

Assumptions

Use a top-down approach by first estimating the size of the total market in Singapore and breaking down demographics.

1. The total population of Singapore (residents and citizens) is 5.5 million
2. Singapore has a large population of working professionals, therefore assume a 3:1:1 ratio of those aged 25-62: under 25: over 62
3. Several assumptions have been made on 1) beverage preference 2) purchasing ability 3) frequency of purchase 4) alternative access to coffee

Key Things to Consider

- Retirement age in Singapore is 62
- Singapore requires two years of mandatory military service for male citizens
- Certain demographics have less disposable income than working professionals, and are more likely to not drink coffee or make it at home
- Tea is a rival popular caffeinated drink in Asia
- Some workplaces provide free coffee for employees

Coffee in Singapore (Continued)

Total Population of Singapore
5.5 million

Demographics by Age

under 25
1.1M

University Students 17-25
(9 years/25)*1.1M = 0.396M
Percentage who drink coffee: **40%**
Percentage who purchase: **30%**
3 cups per week (.43 cups per day): **80%**
1 cup per week (.14) = **10%**
7 cups per week = **10%**
= (.4 x .3)*396K =47520 purchases and drinks coffee
=47520*.8*.43 = 16,350 cups
=47520*.1*.14 = 665 cups
=47520*.1 = 4752 cups
= 21767 cups sold/ day

25-62
3.3M
1.65M in white collar professions
Percentage of white collar who drink coffee: **50%**
Percent who purchase: **60%**
Percentage of blue collar: **20%**
Percent who purchase: **70%**
Assume 0.8 cups purchased per day.
White collar
=.6*.5*1.65M*.8 = 396000
Blue Collar
=.2*.7*.8*1.65M = 184800
= 580800 cups sold/ day

over 62
1.1M

Percent who drink coffee: 10%
Percent who purchase: 20%
Assume 0.4 cups purchased per day.

= .1*.2*.4*1.1M
= 8800 cups sold/ day

Solution: 21767+580800+8800 = 611367 cups sold each day in Singapore

Full Length Cases

You Are One Tough Cookie

Case Type:
Quant/Qual | Industry Landscape | F&B

Purpose:
To test the candidate's ability to identify relevant insights from a large volume of provided information

Difficulty Rating:
Easy - Moderate - Challenging

Problem (Part 1)

Your client is US-based manufacturer of branded cookies, Popperidge Farm.

Determine how large the overall US dry snack market is in USD.

Suggested Approach

(# of US Households) x (Avg. $ spent on cookies/month) x 12 =
(126M) x ($10) x 12 ~ **$15.12B**

Assume:
- (US Pop.) / (Avg Household Size) = # of US Households ~ 126M
  - US Population ~300M
  - Avg Household Size ~3 People
- (Price) * (Quant) = Avg. $ spent on cookies/month ~ $10
  - Avg bag of cookies price ~ $5
  - Bags of cookies consumed monthly per household ~ 2 Bags

Solution

The US cookie market is around $15B USD

You Are One Tough Cookie (Continued)

Problem (Part 2)

Assume the cookie market is actually $20B USD. Recently, private label cookies (those carrying the name of the *retailer*) have entered the market. (Key: B= Branded, PL = Private Label).

Are the emergence of private label cookies a threat to Popperidge Farms? If so, *to what extent*?

Information to Reveal if Prompted

Market Overview

- PL cookies emerged 5 years ago
- The overall cookie market has had flat growth over the past five years
- PL cookies currently hold 25% of the market while B cookies hold 75%
- In general, B cookies are higher quality than PL cookies
- There is little excess capacity throughout the market

Macro Considerations

- "Private Label" products have grown increasingly popular in grocery stores
- The economy has been slowing and there is a potential recession coming in the near future

Costs

- Branded: $4.00/bag
- Private Label: $3.00/bag

Prices

- Branded: $5.00/bag (Wholesale), $5.75/bag (Retail)
- Private: $3.75/bag (Wholesale), $4.25/bag (Retail)

You Are One Tough Cookie (Continued)

Information to Reveal if Prompted

Distribution Channels

- Grocery outlets (90% of total cookie sales) : sell branded cookies and carry their own private label cookies
- Mass merchandisers (e.g., Wal-Mart, Sam's): sell only branded cookies

Competitive Landscape

	Pepperidge Farms (only B cookies)	**2nd Major Player** (B and PL)	**Various Smaller Players** (B and PL)
5 yrs ago	60% of B market Sales: **$11.76 B**	30% of B market	10% B market 100% of PL market
2.5 yrs ago	67% of B market Sales: **$11 B**	25% of B market **Entered PL market**	8% B market
Present	70% of B market Sales: **$ 10.5 B**	23% of B market 40% of PL market	7% B market 60% of PL market

You Are One Tough Cookie (Continued)

Suggested Approach

Either revenues or profits have declined. The candidate should first ask about the overall market conditions and Popperidge Farm's performance in the market. Once the candidate has determined that overall cookie market revenues are stable, he/she should determine why Popperidge Farms experienced decreased sales revenues by splitting up demand along each part of the supply-chain.

Manufacturers, Company, Competitors

- Competition doesn't seem to be drastically affecting the firm because it has significantly increased B cookie market share in the past 5 years

Retailer

- Retailers are not affecting demand because: it is advantageous for retailers to sell branded cookies because they provide HIGHER profit margins.

Consumer

So, something must be affecting demand at the consumer level

- Cheaper price?
- Macroeconomic trends?

Solution

While Popperidge Farm has increased its B cookie market share (+10%), revenues have been declining (-10%). This is because the total size of the B cookie market is declining (-25%) as a result of PL cookies entering the market. We believe demand for PL cookies is driven at the consumer level. Thus PL Cookies are a (high/low) threat.

You Are One Tough Cookie (Continued)

Problem (Part 3)

Assume private label cookies pose a threat to profits.

What strategy should Popperidge Farm take to mitigate this threat?

Suggested Approach

High Threat: **Expand into the private label cookie market.**
Since low manufacturing costs are essential to success in the PL cookie market, the client should focus on cost cutting:

- Utilize all existing excess capacity
- Gain maximum product knowledge as quickly as possible
- Understand low cost positions on product ingredients and mix
- Review process improvement/manufacturing efficiency opportunities
- Undertake overhead reduction efforts
- Seek partnering agreements with retailers
- Explore deals with mass merchandisers to enter private labels

PL Cookies are a **Low Threat**: **Stay with branded cookies.**
Success in the branded segment is dependent on differentiation and minimizing the momentum of the private label segment:

- Invest in brand image to support premium price
- Make it difficult to copy product
- Manage price gap — explore price increases where appropriate
- Explore exclusive partnering with mass merchandisers
- Consider alternative distribution channels
- Seek partnering agreements with grocers regarding branded products
- Educate grocers as available

Call Me Maybe

Case Type:
Quant | Revenue Estimation | Retail

Purpose:
To challenge the candidate's math skills, and judge their understanding of the telco industry

Difficulty Rating:
Easy - Moderate - Challenging

Problem

Estimate the annual revenue for a telecom company operating in a city in the Middle East.

Information to Reveal if Prompted

- The company has only **corporate clients** (only businesses)
- Market share: 30% of corporate customers
- Total population: 4M*
- Avg people per household: 5*
- Avg people available to work in a household: 1.3*
- Unemployment rate: 10%*
- % of corporate employees: 90% of workforce
- Corporate employees are people working in corporate firms
- %of Small companies: 70%
- % of Medium companies: 25%
- % of Large companies: 5%

* Have the candidate set up a market sizing equation first

Call Me Maybe (Continued)

Information to Reveal if Prompted

- Avg number of employees in small companies: 10
- Avg number of employees in med. companies: 50
- Avg number of employees in large companies: 1000

Intermediate Solution

The total number of corporate employees is ≃ 850K. The total number of corporate customers is ≃ 3600

Suggested Approach

- **Calculate total number of corporate employees**
  - **Total labour force =** (4M / 5)*1.3 = 1.04M
  - **Employed Population =** 0.90 * 1.04 = 936K
  - **Number of corporate employees =** 0.90 * 936K = 842K
- **Calculate total number of corporate customers**
  - **Total number of organizations =** 842 K / (70% * 10 + 25% * 50 + 5% * 1000) = 12115
  - **Total number of customers =** 30% * 12115 = 3634

Information to Reveal if Prompted:

- Monthly plan for Small companies: $100
- Monthly plan for Medium companies: $600
- Monthly plan for Large companies: $15000
- 30% companies share for small companies
- 60% companies share for medium companies
- 60% companies share for large companies

Call Me Maybe (Continued)

Suggested Approach

- **Calculate revenues:**
  - **Total revenue from small companies** = $100 * 12 * 30% * 70% * 12115 = $3,052,980
  - **Total revenue from medium companies** = $600 * 12 * 60% * 25% * 12115 = $13,084,200
  - **Total revenue from large companies** = $15000 * 12 * 60% * 5% * 12115 = $65,421,000
  - **Total revenue = $81,558,180**

Merits

- Correct structure of the problem
- Take into consideration unemployment
- Market sizing approach at the beginning

Demerits

- Not doing any market sizing
- Not dividing companies into S,M,L

Solution

The total revenue for the client is approximately $80 million.

R&D in the Pharma Industry

Case Type:
Qual | Profitability | Pharma

Description:
To judge the qualitative knowledge of the Pharma industry and the R&D process

Difficulty Rating:
Easy - Moderate - Challenging

Problem

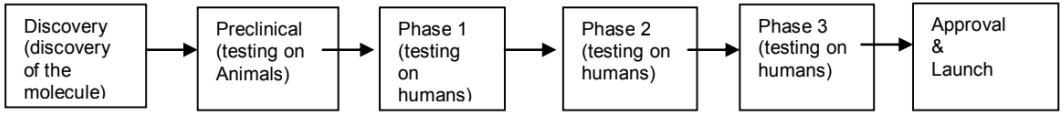
Your client is in charge of the R&D department of a pharmaceutical company and he wants us to advise him on how to improve productivity in his department.

First, focus on how to measure the productivity of the R&D department.

Suggested approach

1) Establish the process of drug discovery

There are several steps from the discovery of a drug and get it approved:



R&D in the Pharma Industry (Continued)

2) Find a formula to estimate productivity: NPV

Suggested formula:

$$\frac{\text{NPV of future cashflows of successful drugs} - \text{R \& D cost of all drugs}}{\text{R\&D cost of all drugs}}$$

3) Study the drivers of productivity

Drivers of the NPV:

- Quality of the compound
- Length of research
- Marketing & sales efforts

Cost reduction of R&D:

- Strict controls and parameters at each stage of development (no waste of time)
- Quality scientists
- Acquire almost done drugs

Solution

Find actionable items that do not require extra costs and will increase productivity: length of research and strict controls

R&D in the Pharma Industry (Continued)

4) Find other ways to increase productivity (focusing on HR)

- Keep scientists motivated
- Retention of scientists
- Avoid measuring scientists based on number of drugs
- Introduce a new incentive structure based on compliance

Information to Reveal if Prompted

- Scientists are often not motivated: research takes many years and they are compensated based on drugs discovered
- In this sector, scientists tend to not stay for long in each company
- Compliance is not taken into account when calculating salaries

Solution

If our pharma company lowers length of research, adds strict controls and parameters, and introduces new incentive structures based on compliance, it will be able to increase productivity.

R&D in the Pharma Industry (Continued)

Suggested Approach

- Ask about the process of drug discovery
- Find a formula to quantify productivity and study the key drivers
- Focusing on HR, find other ways to increase productivity
- Suggest three actionable drivers:
  - Shorten length of research
  - Establish strict guidelines
  - Change incentive structure of scientists

Merits

- Identify process of drug discovery
- Use correct NPV formula
- Identify key drivers
- Consider the HR factor

Demerits

- Not mentioning the process of drug discovery
- Select key drivers that add costs
- Forget the HR factor

Car Component Supplier

Case Type:
Qual | Cost Analysis | Automotive

Purpose:
Test the candidate‘s understanding of cost structures and potential supply chain management levers

Difficulty Rating:
Easy - Moderate - Challenging

Problem
Our client is a German car component supplier. The company buys individual parts from over 100 international suppliers and assembles them. It then delivers one integrated car dashboard to its clients, the car manufacturers. Despite growing revenues over the last couple of years, the company is still not profitable. It was determined that profitability shall be reached by reducing the purchasing costs of the individual parts. We were called in to help.

What are factors that would guide your decision as to where and how to achieve savings? Please detail an action plan to approach this issue.

Information to Reveal if Prompted

- Expected time horizon for materialization of savings: 1 year
- Expected overall cost savings in yearly parts purchases: 10 %
- Company size: among top 10 German car component suppliers; last year revenues of € 5.0 billion, consistent revenue growth over last years of around 5 %
- Current fiscal quarter: 2018, Q1

Car Component Supplier (Continued)

Suggested Approach

Three-step approach, starting from the status quo in terms of products and components (given limited time horizon and seemingly conservative expectations) and narrowing down to inputs with highest savings potential.

1 Importance

Determine importance of individual parts based on volume and price

Rank parts into three categories:
1: High volume – High price
2: High volume – low price or vice versa
3: Low volume – low price

*Look more closely at **segment 1**, only look at 2 and 3 afterwards*

2 Appropriateness

Determine appropriateness of savings on individual parts within these categories using a number of additional features:

Additional features to be considered
- Security impact
- Visibility and importance to final customer
- Level of integration with other parts
- (...)

Further narrow down number of potential cost-saving parts

3 Savings Potential

Determine savings potential of top-ranked parts (based on importance and appropri-ateness) through three approaches:

Three approaches
- Offers from alternative suppliers
- Cost estimations for parts used by competition
- Cost estimation for insourcing production

Estimate savings potential based on comparison of current cost and reference points

Car Component Supplier (Continued)

Problem

We have determined a number of parts whose savings potential shall be analyzed. In the car industry, suppliers and sub-suppliers have to submit exact breakdowns of costs when participating in tenders. This is the cost break-down of one of the parts we are looking at.

By looking at this table, what can you establish?

Part Nr. X-13FY *Cost breakdown in €, per piece*

1 Material

Price	Weight
2.5/kg	0.2 kg

2 Production

Machine 1	Time	Machine 2	Units
10/h	3 min	0.01/unit	5

3 Profit *(10% surcharge on material and production)*

4 Transportation **0.050**

Suggested Answer

Key findings the candidate should make:

Material Cost = 0.5€ / piece
Production Cost = 0.55€ / piece
➔ Total cost = 1,205 € / piece

Two major pools of cost

- Material (~ 40%)
- Production (~ 45%)

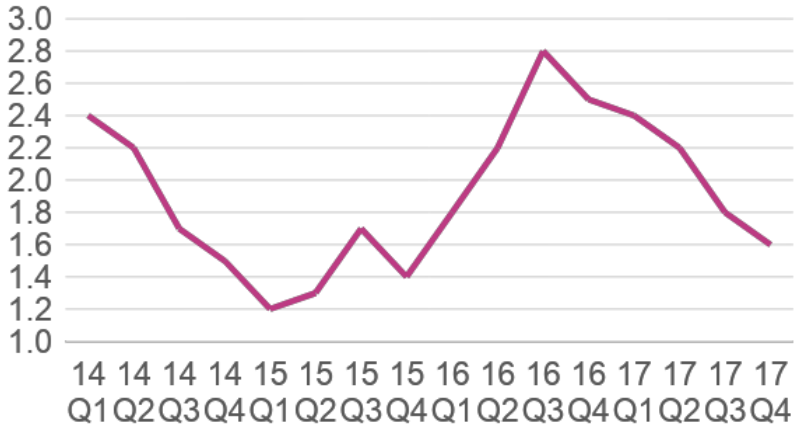
Profit that the supplier charges is calculated as percentage of material and production cost.

Car Component Supplier (Continued)

Problem

This chart shows the development of the world market prices for the plastics used in the production of the part just discussed.

What can you ascertain based on this chart?



Suggested Answer

Raw material costs dropped significantly between Q4-2016 and Q4-2017 (approximately from 2.5€ / kg to 1.6€ / kg.)

Based on this price development, one should try to **understand the underlying supplier contract** in further detail to assess how the supplier is passing on favorable and unfavorable price changes.

Car Component Supplier (Continued)

Problem

Based on this information on changes in material costs, we are asked to determine by how much the client overpaid its supplier in the last year.

What figure should the company name in its negotiations with the supplier?

Suggested Approach

- 100.000 units purchased in 2017; assume equal consumption throughout the year

→ 2017 Q1: 25.000 units x 0,2 kg x € 0,100
→ 2017 Q2: 25.000 units x 0,2 kg x € 0,300
→ 2017 Q3: 25.000 units x 0,2 kg x € 0,700
→ 2017 Q4: 25.000 units x 0,2 kg x € 0,900

€ 10.000

→ Indirect effect via 10% profit margin

€ 1.000

€ 11.000

Solution

This means that the client in total the client overpaid their supplier by € 11.000,00 which represents almost 10 % of the total (€ 120.500,00). This figure should be used in kicking off negotiations.

Cinema Case

Case Type:
Mixed | Growth | Entertainment

Description:
Test the candidates' ability to reason about service quality implications for sales

Difficulty Rating:
Easy - Moderate - Challenging

Problem

Your friend who runs a local cinema has seen stagnant revenues over the past few years. He approaches you and asks for possible ways to grow organically.

What are the possibilities?

Information to Reveal if Prompted

- The aim is to grow revenues by 10% of current ticket sales

Suggested Answer

Possible ways to increase revenues:
- Ticket sales (increase number of tickets / increase price per ticket)
- Food / Beverage sales
- Ad Revenue

Cinema Case (Continued)

Problem

Your friend has already discussed the idea to increase ad revenues internally. Specifically, he thought about broadcasting one advertisement before every movie.

Will this approach be sufficient to reach the targeted revenue increase?

Information to Reveal if Prompted

General operations

- Average ticket price: 8€
- Avg. Capacity per theatre: 250
- Avg. Utilization per theatre: 65%
- # of movies per theater / day: 4
- Opening days / year: 360

Implications of the idea to broadcast ads

- Ticket sales will go down 3%
- Ad revenue per visitor:
  - Low involvement (Food / Beverages): 30ct / visitor
  - High involvement (e.g. Car Brands): 70ct / visitor
  - 25% Share of high involvement commercials is possible
- When a low involvement ad is broadcasted, Food / Beverage sales increase by 0,5€ per visitor

Suggested Approach

1. Estimate ticket sales decrease
2. Estimate Ad revenue increase
3. Estimate additional Food / Beverage sales
4. Calculate overall effect on sales

Cinema Case (Continued)

Solution

Current Ticket revenues:

- 8€ * 250 * 0,65 * 4 * 3 * 360 = 5.616.000 €
  - ➔ Decrease: 5,616 MLN € * 0,03 = -168.480 €

Ad revenues:

- # of low involv. commercials / year = 4 * 3 * 360 * 0,75 = 3240
  - ➔ Increase: 3240 * 250 * 0,65 * 0,3€ = 157.950 €
- # of high involv. commercials / year = 4 * 3 * 360 * 0,25 = 1080
  - ➔ Increase: 1080 * 250 * 0,65 * 0,7€ = 122.850€

Food / Beverages revenues:

- ➔ Increase: 3240 * 250 * 0,65 * 0,5€ = 263.250 €

The overall increase of 375.570 € is not sufficient to reach the targeted revenue increase (~ 560.000 €).

Merits

- ➢ Clarifying the client's growth target
- ➢ Differentiating between high involvement and low involvement advertisements and connecting that information to movie content (e.g. car commercial during James Bond movie)

Demerits

- ➢ Forgetting that broadcasting ads will lower ticket sales and increase Food / Beverage revenues

O Christmas Tree

Case Type:
Quant | Market Sizing | Misc.

Aim:
To test the candidates' market sizing ability and understanding of profit trees

Difficulty Rating:
Easy - Moderate - Challenging

Problem

The city of Cologne has a very famous christmas market, which brings thousands of tourists to the city every year. For rivalry reasons, the city of Dusseldorf is thinking about opening a Christmas market, too.

What's the potential profit that all of booths on the Christmas market would make together in a year?

Information to Reveal if Prompted

A christmas market is a market in the city center, that opens daily during christmas time. It usually consists of booths that sell mulled wine, sweets or hot food and booths that sell christmas merchandise like little figures, gloves or beanies.

Entrepreneurs rent the space for their booths from the city.
No need to take taxes into account.

O Christmas Tree (Continued)

Information to Reveal if Prompted

General

Christmas market time: 30 days
Daily opening time: 6hrs

Available space for booths: 10000 m^2
Avg. space per booth: 20m^2

Two types of booths:

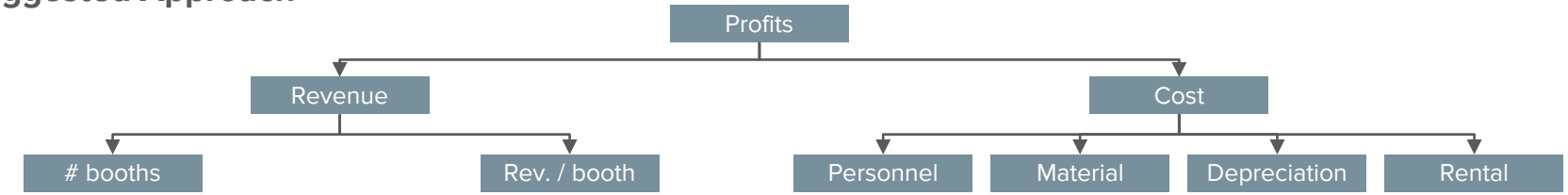
1. *Food booth:*
- 20% share of all booths
- 2 workers per booth
- Revenue per day = 3600€

2. *Merchandise booth:*
- 80% share of all booths
- 1 worker per booth
- Revenue per day = 360€

Cost Situation

	Food	Merchandise
Personnel	10€ / h / worker	
Material	20% of rev.	50% of rev.
Depreciation	10% of revenues	
Rental to City	5€ / m^2 / day	

Suggested Approach



O Christmas Tree (Continued)

Solution

Revenue

of booths: 10000 m^2 / 20 m^2 = 500
➔ 100 Food, 400 Merchandise booths

Revenue per booth type per day:

- Food: 3600€ * 100 = 360.000 €
- Merchandise: 360€ * 400 = 144.000 €
➔ Total = 504.000 €

Total Revenue over 30 day period: 504.000€ * 30 = 15.120.000€

~ 15 MLN €

Cost

Personnel:
- Food: 100 booths * 2 workers * 6hrs * 30 days * 10 € = 360.000 €
- Merch: 400 booths * 1 worker * 6hrs * 30 days * 10 € = 720.000 €

1.080.000 €

Material:
- Food: 360.000 € * 20% cost margin * 30days = 2.160.000 €
- Merch: 144.000 € * 50% cost margin * 30 days = 2.160.000 €

4.320.000 €

Depreciation
15.120.000 € * 10% = 1.512.000 €

Rental to City
10000 m2 * 5 € * 30 days = 1.500.000 €
~ 8.4 MLN €

The overall profit will be around 6.6 MLN €.

Surf'n'Turf

Case Type:
Quant | Profitability | Misc.

Description:
Test the candidates ability to dig deep and extract company information.

Difficulty Rating:
Easy - Moderate - Challenging

Problem (Part 1)

A medium sized butchery company from the US with a limited product portfolio has experienced declining profits in the last years.

Advise the CEO on how to improve his situation.

Information to Reveal If Prompted

Current Revenue: 75,5 m
Current product lines:
- Fine meats (Rind)
- Sausages (Pork)
- Sauces (Ketchup / Mustard)

Channels: Wholesalers

Historical figures:

in € MLN	2016	2017	2018
Revenue	65m	70	75,5
Cost	51m	57,5	65,5

Merits
- Candidate should assess that this is a cost problem leading to margin deterioration and try to understand the cost structure more in depth.

Surf'n'Turf

Problem (Part 2)

Following your initial assessment, the CEO hands you the following split of the profitability of the three business segments.

What information can you extract from this document?

in € MLN		2016	2017	2018
Fine Meats	*Revenue*	20	21	23
	Cost	16	20	24
Sausages	*Revenue*	27	29	31
	Cost	21	22,5	24
Sauces	*Revenue*	18	20	21,5
	Cost	14	15	17,5

Revenue has been growing across all three segments. Costs have also grown across all three segments. However, **cost growth in Fine Meats has been higher** than revenue growth leading to a negative margin for that specific business segment.

Problem (Part 3)

The CEO would like you to analyse in deep the cost structure of that business segment. How would you go about this analysis?

Suggested Approach

Value Chain Analysis

Buy meet from farm

- Market prices have stayed the same for meat inputs

Produce fine meats

- Wages have stayed equal
- Production cost hasn't increased
- **New environmental law** let cost of disposal rise strongly to $ MLN 3

Sell

- Prices on selling markets have remained stable

Surf'n'Turf

Problem (Part 4)

The CEO becomes very interested in reducing that cost. He tells you that just yesterday, he's been approached by an old friend who owns a Fish Farm and is desperately looking for ways to decrease his fish food cost. The CEO thinks that using the waste from his fine meats operations could be used to produce fish food.

The CEO asks you to assess the financial feasibility of this project in terms of EBIT contribution.

Information to Reveal If Prompted

➔ Target measure: EBIT

Revenue	Cost
# of fishes fed: 50000	Machine purchasing price: $ 10 MLN
Quantity / feeding: 1,5 g	Lifetime: 10 yrs
Feedings / day: 3	Personnel needed: 3
Fish food price: $18 / kg	Personnel cost: $20/h
	Working hrs/day: 8
	Working days / month: 30
	Distribution Cost: $100000 per year

➔ Need to take into account savings from not having to dispose the meat anymore = $ MLN 3

Suggested Approach

Revenue

*50000 * 1,5g * 3 * $0,018 / g * 365 days =*

➔ *+ $ 1478250*

Cost

- Depreciation: *$ 10 M / 10 = - $ 1M*
- Personnel: *3 * $20/h * 8 * 30 * 12 = - $172800*
- Distribution: *- $100000*

➔ *- $ 1272800*

Savings

➔ *+ $ 3000000*

➔ Overall EBIT Contribution: **$ 3205450**

All Roads Lead to Rome

Case Type:
Quant | Profitability | Transportation

Description:
Test the candidates ability to handle complex interrelationships of big numbers.

Difficulty Rating:
Easy - Moderate - Challenging

Problem

The leading Italian train company is undertaking an assessment of the profitability of their 3 most popular connections. The CEO has already initiated an internal research and hands you the following table:

	Milan - Rome	Venice – Naples	Genoa - Bari
Railway kilometres	600	700	950
Google searches / day	10000	5000	3000
Direct flight availability	Yes	No	No

The client asks you which of the connections they should look deeper into.

Suggested Approach

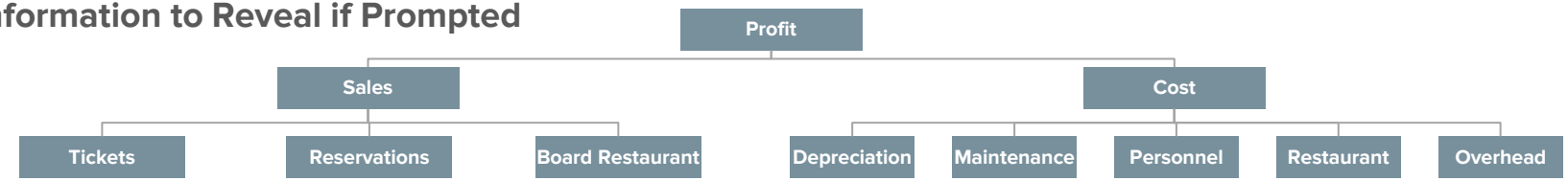
On the basis of this information, the candidate should **prioritize Milan–Rome** as the connection has the *biggest revenue potential* and the *strongest competition* from substitutes.

All Roads Lead to Rome

Problem (Part 2)

The client asks you to determine the profitability of the connection between Milan and Rome

Information to Reveal if Prompted



General
- Connections per day: 40
- Capacity per train: 400
- Utilization: 80%
- Operating Days: 360

Pricing
- Avg. Ticket Price = 40€

Reservations
- Price: 4,50 €
- Share of customers that buy it: 25%

Trains
- # needed: 6
- Purchasing price: 300 MLN €
- Value at liquidation: 25 MLN €
- Lifetime: 10 yrs
- Maintenance / year / train: 2,5 MLN €

Board restaurant
- Avg. Consumption per passenger: 2€
- Gross margin: 50%

Railway
- Length: 600 km
- Purchasing price / km: 100000 €
- Lifetime: 20 yrs
- Maintenance / year / km: 2000 €

Personnel
- Headcount per connection: 15
- Duration of one connection: 3 hrs
- Salary: 20€ / h

All Roads Lead to Rome

Solution

*Passengers / year = 40 * 400 * 80% * 360 = 4.608.000*

Revenues

Ticket Sales

- *4.608.000 * 40 € =* **184,320 MLN €**

Reservations

- *4.608.000 * 25% * 4,50 €*

→ **5,184 MLN €**

Restaurant

- Revenue per year = 4.608.000 * 2 €

→ **9,216 MLN €**

Overall Revenue = **198,720 MLN €**

Cost

Depreciation

Trains

- 275 MLN € / 10 * 6

→ 165 MLN €

Railways

- 100.000 € / 20 * 600

→ 3 MLN €

Maintenance

Trains

- 6 * 2,5 MLN €

→ 15 MLN €

Railways

- 600 * 2000 €

→ 1,2 MLN €

Personnel

- 40 * 360 * 15 * 3 * 20

→ 12,96 MLN €

Restaurant

- 9,216 MLN € * 50%

→ 4,608 MLN €

Overhead

→ 5 MLN €

Overall Cost = **206,768 MLN €**

The connection between Milan and Rome makes yearly losses of ~ 8 MLN €.

Time Flies

Case Type:
Quant | Profitability | Airline

Description:
Test the candidates' quant skills and understanding of business models

Difficulty Rating:
Easy - Moderate - Challenging

Problem

Your client, a large multinational airline in the premium segment, has experienced a steady drop of sales over the last years.

Identify the reason for this decline. In an initial brainstorming, name some reasons why the business could be losing sales.

Suggested Approach

Possible Reasons for the drop in sales

- New competitors (e.g. cheap airlines)
- New disruptive services (e.g. alternative forms of travel: BUS)
- Airline service level has deteriorated (e.g. many delays)
- Market for air travel is shrinking
- (...)

Time Flies (Continued)

Problem (Part 2)

The CEO tells you he remembers a recent customer satisfaction report where many customers complained about **delays** they experienced with the airline during domestic flights within Germany.

The CEO asks you to estimate how many minutes of delay the airline is experiencing for domestic flights in Germany each year and to give a recommendation on how to reduce that amount.

Candidate should come up with a list of possible reasons and argue qualitatively about probabilities + average delays

Information to Reveal if Prompted

Operations:

- The client flies out from only two hubs in Germany (FRA and MUC)
- 17 airports that they connect within Germany
  - 4 main airports (10 flights arriving + leaving each day)
  - 13 side airports (5 flights arriving + leaving each day)

Delays:

Reasons for delay	Probability	Average delay in hrs.
Strike	1%	4
Technical Issues	5%	1
Climate	5%	0.5
Pilot Illness	2%	0.5

Time Flies

Merits

- Understand directly that Airlines fly only from certain hubs
- Reason qualitatively about reasons for delays
- Structure by reasons for delay when coming up with ways to reduce delay

Demerits

- Calculating number of flights via people that fly every year

Suggested Approach and Solution

Total yearly delay

# of flights x Avg. delay per flight

# of flights

- Main airports: 2 Out-Airports * 3 In-Airports * 20 flights / airport / day = 120 flights
- Side airports: 2 Out-Airports * 13 In-Airports * 10 flights / airport / day = 260 flights

→ **380 flights / day**

Avg. delay per flight

- (1% * 4h + 5% * 1h + 5% * 0.5h + 2% * 0.5h) * 60 min / h = **7,5 minutes per flight**

Total yearly delay

- 380 flights / day * 360 working days * 7.5 minutes / flight = **1.026.000 minutes / year**

Possible ways to increase punctuality

Strike

- Improve employee satisfaction (e.g. pay, benefits)
- Improve trade union relationship

Technical Issues

- Employ newer planes
- Re-negotiate maintenance contracts with suppliers
- Predictive maintenance by smart sensor technology

Climate

- Out of the airlines control

Human Illness

- Health increasing employee programs (e.g. gym memberships, quit smoking initiative)
- Introduce “on-hold” time model for pilots to be able to quickly jump in

Dressed for Success

Case Type:
Quant | Market Entry | Retail

Purpose:
To challenge the candidate's math skills, and judge their understanding of a retail supply-chain

Difficulty Rating:
Easy - Moderate - Challenging

Problem (Part 1)

Your client, X Fashion, is a European fast fashion chain which has three business lines: adult, child, and sports. They have been operating very successfully in Southeast Asia and have begun assessing the feasibility of entering the Chinese eCommerce market by renting a warehouse in Shenzhen.

What is the estimated revenue the company could achieve in China?

Information to Reveal if Prompted

- Chinese age structure: 0-14 years: 17%, 15-24 years: 13%, 25-54 years: 49%, >55 years: 21%
- # of Chinese Internet users: 800 million
- Estimated market share:
  - Child (0-14 years: 3%)
  - Adult (15-24 years: 1.5%, 25-54 years: 3%)
  - Sports (0-54 years: 1%)
- Average unit price: $20
- Average retention per year: 1.77

Dressed for Success (Continued)

Suggested Approach

(# of Internet User) x (% of Age) x (Market Share)

(800M)	x	(17%)	x	(3%+1%)	~	**$5.5M**
(800M)	x	(13%)	x	(1.5%+1%)	~	**$2.6M**
(800M)	x	(49%)	x	(3%+1%)	~	**$16M**
				Total	~	**$24M**

(Quantity) x (Avg Unit Price) x (Avg Annual Retention)

(24M) x (20) x (1.77) ~ **$850M**

The projected revenue of X Fashion is around $850M every year.

Problem (Part 2)

The ecommerce market is extremely seasonal and competitive. The company has forecasted different scenarios of sales performance. Different parts of the value chain need to be considered.

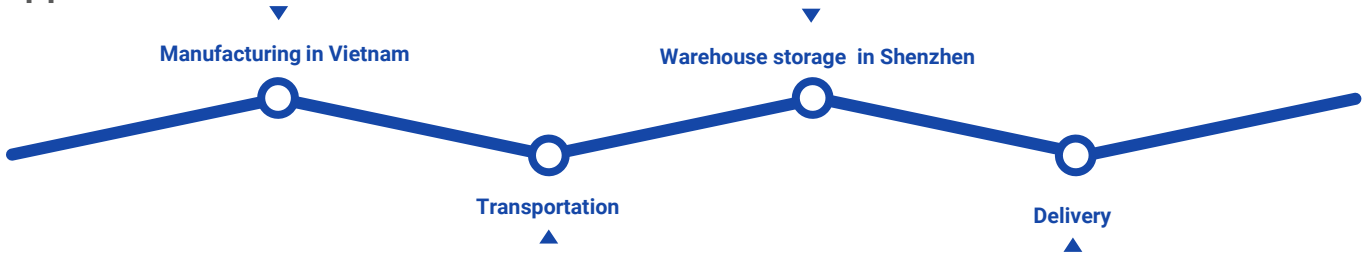
Can you help X Fashion evaluate the feasibility to expand to China?

Information to Reveal if Prompted

- Due to seasonality, there is a 40% chance that half of the goods cannot be sold. They will be stored for the maximum amount of time in the inventory and get disposed with a cost of $1 per unit.
- There are multiple manufacturing centers in Vietnam. The products will be imported from Vietnam.
- The transportation cost per unit is $1.
- The manufacturing cost per unit is $12.
- The cost of renting a warehouse in Shenzhen and running the delivery system is $4.8M a month.
- Inventory holding cost is negligent in the short-term, and is $2 per unit in the long-term.

Dressed for Success (Continued)

Suggested Approach



Scenario 1

Products are fully sold (60% possibility)

Cost includes: Manufacturing cost, transportation cost, warehouse renting cost, delivery cost

Annual Profit = Revenue - Cost
= 850M - (1+12) x 24M - 12 x 4.8M
= **480.4M**

Scenario 2

Half of the products are not sold (40% possibility)

Cost includes: Manufacturing cost, transportation cost, warehouse renting cost, delivery cost, **inventory holding cost, disposing cost**

Annual Profit = Revenue - Cost
= 850M x 50% - (1+12) x 24M - 12 x 4.8M - (1+2) x 24M x 50%
= **19.4M**

Solution

X Fashion should expand to China. (Net Expected Profit = 480.4M x 60% + 19.4 x 40% = ~ 300M)

Dressed for Success (Continued)

Merits

- Identifying the correct value chain
- Understanding inventory holding and disposing as the potential cost drivers
- Taking in account seasonal demand

Demerits

- Not considering the different scenarios presented by the case
- Not laying out a clear value chain to identify the cost elements

Bonus question:

Why does seasonality have a high impact on inventory sold?

Potential Solutions:

- Agile demand
- Weather
- Commercial planning inefficiency (not promoting the right products at the right time)
- Inventory planning inefficiency (not allocating the right products to the online stores at the right time)

What's Poverty?

Case Type:
Quant/Qual | Estimation | Public Sector

Purpose:
Test the candidate's math skills and understanding of basic economic circumstances

Difficulty Rating:
Easy – Moderate to Challenging

Problem

How do you define poverty?

Suggested Approach

- **Poverty**
  - **Economic Poverty**
    = Lack of economic means
    - **Relative**
      *occurs when a person can't afford a certain minimum level of "living standards" as **compared to the rest of the population of that country***
    - **Absolute**
      *the **complete lack of the means necessary** to meet basic personal needs such as food, clothing and shelter .*
  - **Social Poverty**
    = Lack of personal connections; Mental health problems

➢ **Extreme Poverty** = living of less than 1.90 $ / day – *World Bank, 2005*

What's Poverty? (Continued)

Problem (Part 2)

Imagine a country, which has 150 million inhabitants and makes $ 1 trillion GDP. Within the five quintiles of the population, the second one earns double the income of the first one, the third one earns double the income of the second one and so on.

Please determine the average wage per month that someone in the first and in the fifth quintile makes.

Suggested Approach

X + 2x + 4x + 8x + 16x = $ 1 trillion
31 x = $ 1 trillion
X = $ 0.032258 trillion = $ 32 billion

How many people in one quintile?
→ 150 million / 5 = 30 million

Avg. of one worker in Q1 a year = 32 bn / 30 mln = $ 1066.67
Avg. of one worker in **Q1** a month = 1066.67 / 12 = **$ 88.89**

Avg. of one worker in Q5 a year = $ 1066.67 * 16 = $ 17066
Avg. of one worker in **Q5** a month = 17066.67 / 12 = **$ 1422**

What's Poverty? (Continued)

Problem (Part 3)

Would you say this is a particularly poor or rich country?

Suggested Approach

Calculate monthly average income

$ 1 trillion / 150 million / 12 months = **$ 555.55**

Compare to other countries

Rank		*Avg. monthly income*
1	Monaco	15,507 $
2	Liechtenstein	9,692 $
(...)		
28	Italy	2,585 $
(...)		
51	Equatorial Guinea	588 $
Imaginary Country		***556 $***
52	Cuba	548 $

Problem (Part 4)

The government wants to lift up the living standards of Q1 and Q2 to the standards of Q3, what's the cost of this?

Suggested Approach

Q1 Income: $ 32 billion
Q2 Income: $ 64 billion
Q3 Income: $ 128 billion

(Q3-Q2) + (Q3-Q1) = 128 – 64 + 128 – 32

$160 billion

Toll Roads

Case Type:
Quant/Qual | Estimation | Public Sector

Purpose:
Test the candidate's ability to scan graphs quickly and assess evaluate political implications

Difficulty Rating:
Easy – Moderate – Challenging

Problem

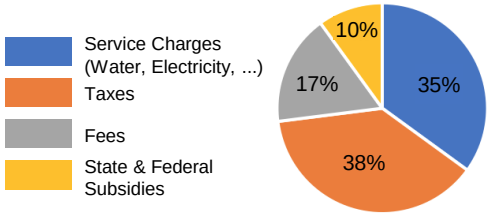
The City of Monterey has recently gotten into financial trouble. The mayor, a friend of yours, is thinking about exploiting new revenue sources, but simply doesn't know where to start.

How should he go about assessing this question?

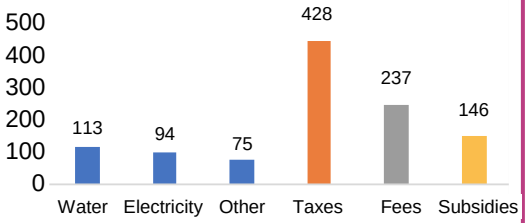
Information to Reveal If Prompted

Candidate should come up with the idea of benchmarking with other cities

Average Californian City Revenue Split



Monterey Revenue Sources (in $ MLN)



Toll Roads (Continued)

Suggested Approach

- Overall City Revenue = approx. $ 1 BLN
- Only **Service Charges (ca. 26%)** is lagging behind the benchmark
  - Within service charges, the segment **Other (ca. 7%)** seems to be particularly low

The client should focus on Other revenue sources in the following.

Problem (Part 2)

The mayor likes this initial assessment. Indeed, he had already thought about opening up that channel by establishing a **toll road**.

How much revenue could the city of Monterey make by pursuing this initiative?

Information to Reveal if Prompted

There are 3 potential roads:

- Airport Road
- Hospital Road
- Commuter Road

Number of cars that use these routes currently per day

	Morning	Afternoon	Evening	Night
Airport Road	1200	700	1100	150
Hospital Road	800	750	850	650
Commuter Road	2500	2000	500	100

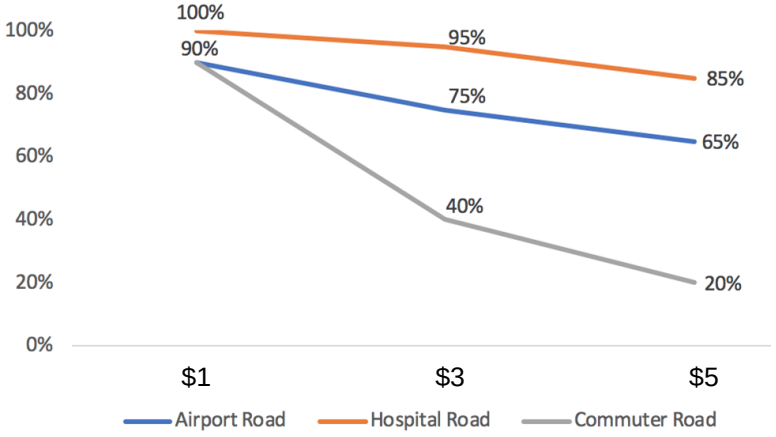
Toll Roads (Continued)

Information to Reveal If Prompted

Price elasticity of routes

Candidate should first reason which road probably has the highest / lowest price elasticity and why

Price-demand curve



Suggested Approach

- To avoid too many calculations, the candidate should spot that **demand decreases sub-proportionally to price growth**, except for the Commuter Road
- Candidate should only calculate the following combinations:
  - Airport Road + $5
  - Hospital Road + $5
  - Commuter Road + $3

Calculation scheme

Revenue = Price * Elasticity * # of cars per day * 365 days / year

Airport Road + $5: $5 * 90 % * 3150 * 365 =	$ 3.736.687,50
Hospital Road + $5: $5 * 95% * 3050 * 365 =	$4.731.312,50
Commuter Road + $3: $3 * 40% * 5100 * 365 =	$2.233.800,00

Politically, it's dangerous to install toll roads on the hospital road. Hence, the mayor should choose the Airport Road.

FMCG M&A

Case Type:
Quant/Qual | M&A | FMCG

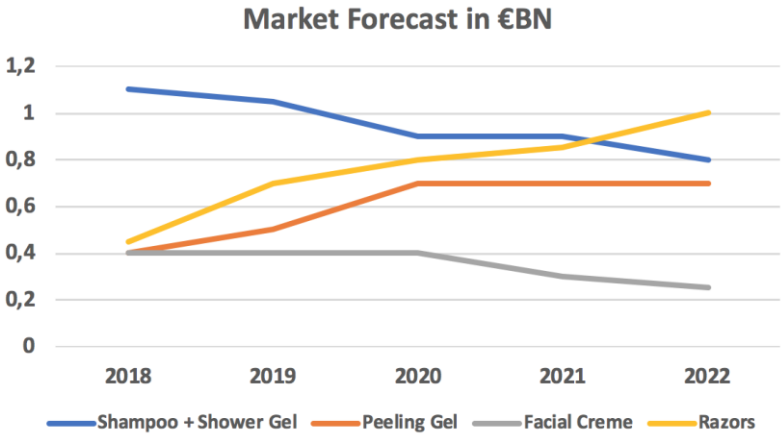
Purpose:
Test the candidate on data skimming, M&A topics and synergetic thinking

Difficulty Rating:
Easy – Moderate – Challenging

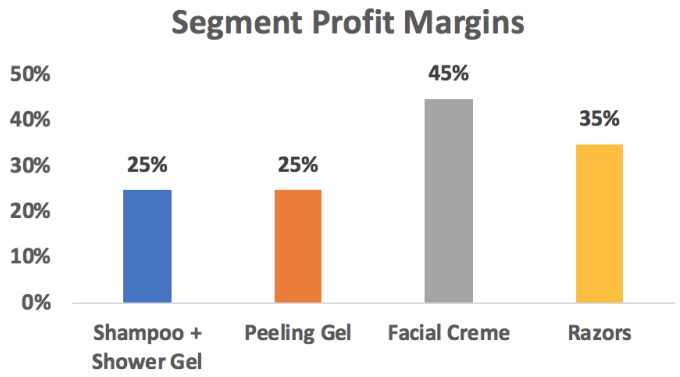
Problem

On a thursday afternoon, the CEO of a medium-sized FMCG company calls to tell you that he wants to grow his company. Currently, the company is focused on teeth products but wants to expand the product line to other facial hygiene products.

What segment should they enter?



FMCG M&A (Continued)



Competitive Intensity

Shampoo + Shower Gel	High
Peeling Gel	Low
Facial Creme	High
Razors	Medium

Suggested Approach

Candidate should see that **Razors are the most attractive segment** to enter as

- market growth is highest
- razors in the longer run have the largest market size
- profit margins are above average and
- competitive intensity is medium.

FMCG M&A (Continued)

Problem (Part 2)
The CEO tells you he has been approached by a former study buddy who runs a VC fund. The VC is looking to sell a company that employs an innovative business model selling razors and blade subscriptions to end customers.

What are the factors that need to be considered before doing the deal?

Suggested Approach

Since the market has already been analyzed:

Company	Price	Integration

● Revenue
● Profitability
● Market Share
● Customer Growth
● Customer Loyalty
● Positioning
	● Fair Valuation
	● Are sufficient funds available
		● Synergies
		  ● Cost
		  ● Revenue
		● Culture
		● Fit with existing brand
		● Integration capacity from client side

FMCG M&A (Continued)

Problem (Part 3)
The CEO likes your approach. He has reinitiated the talks with his friend at the VC to come to an agreement soon.

Can you evaluate the consolidation synergies between the two businesses?

Information to Reveal if Prompted

Assumption: Machines at the client can take over the production for the target

	Client	Target
Employees	500	200
Number of production machines	100	35
Current utilization	65%	100%
Machine hour cost	13$	20$
Capacity / machine	4000 h / year	
Average annual Salary	50000	
FTE reduction (post merger)	15%	
Severance package	35000	
Value of one machine	100.000	

Suggested Approach

Production Cost:
100*(1-0,65)*4000 = 140.000 Machine hours free
Shift from target to the client: $ 980.000

FTE reduction (incl. severance packages)
0,15 * (50000-35000) * (700) = $ 1.575.000

Machine sale *(Shift production completely)*
100.000 * 35 = $ 3.500.000

Solution

Overall Savings of $ 6.055.000

Productivity of a Factory

Case Type:
Qual | Productivity | Manufacturing

Description:
To judge, to ideate, to brainstorm and to construct frameworks in an unfamiliar industry.

Difficulty Rating:
Easy - Moderate - Challenging

Problem

Your client comes from the textile industry in the Middle East. The client discovered that productivity was lower than at some of its major competitors. They want you to find out what drivers lie behind the lag in productivity.

First, brainstorm what are the parameters that can be used to assess productivity.

Suggested Approach

Establish framework

- People: productivity (output per worker) ratio
- Process: throughput rate
- Technology: automation rating, capital-output ratio

Productivity of a Factory (Continued)

Problem (Part 2)

Based on the parameters, discover the reason for lagging productivity

Information to Reveal If Prompted

- The client implements a similar process as competitors.
- 40 workers employed
- 10 hours a day, 25 working days a month
- Product per month: 15,000kg
- Total productivity: 2kg/hour
- Wage: 25 SAR/hour
- Price: 80 SAR/kg
- Machine productivity = 0.5kg/hour (unrelated)
- Machine maintenance cost = 300,000 SAR (unrelated)

Suggested Approach

Study the drivers of productivity

- Find out labor productivity = 15,000kg/25/10/40 = 1.5
- Monthly labor cost = 40 x 25 x 10 x 25 = 250,000
- Monthly revenue = 15,000 x 80 = 1,200,000
- Labor productivity / Total productivity = 0.75
- Monthly labor cost / Monthly revenue = 250,000/1,200,000 = 0.2083

Solution

Labor productivity / Total productivity is way higher than labor cost / revenue. Therefore, workers might get underpaid based on their performance.

Productivity of a Factory (Continued)

Problem (Part 3)

Imagine you are doing a consulting project for the Administry of Labor, how would you propose to solve the problem? Brainstorm a structured way to enforce the solution you propose.

Suggested Approach

- Policy
  - Standard: set a minimum wage for workers based on performance.
  - Incentive: establish reward for reporting the issue.
  - Punishment: enforce fine to disobeying factories.
- Implementation
  - Regular inspection
  - Top-down enforcement

Car sharing in Milan

Case Type:
Quant/Qual | Market Sizing + Pricing | Sharing Economy

Purpose:
To test the candidate's ability to reason on a known industry and individuate key factors

Difficulty Rating:
Easy - Moderate - Challenging

Problem

Your client wants to launch a car sharing service in Milan. The first task for us is to estimate the market size.

Suggested Approach

1. Total Population
2. Population in Driving age
3. Pupulation that has a driving licence
4. Possible users (people w/ driving licence & w/o car)
5. Actual users based on key factors that affect usage

Car sharing in Milan (Continued)

Information to Reveal If Prompted

- Total population in Milan = 1.5m
- 20% not in driving age (division in 5 uniform age classes, 0-18 not in driving age)
- Of those in driving age 90% have a driving licence
- Of those with a driving licence 50% already owns a car
- We assume those who already own a car do not use at all the service

Suggested Approach

1. Start from population in Milan = 1.5m people
2. Not all the people are in driving age. Consider division in age classes and only consider those over 18.
$$Driving\ age\ population = 1.5m * 80\% = 1.2m$$
3. Not all the people who are in driving age have a driving licence. You should consider only a % effectively has a driving licence. How to guess? Cultural factors + need: a lot of people usually have a driving licence in Italy (almost 100%). In Milan it might be slightly lower since it is a big city and has well functioning public transportation. Assume 90%.
$$\#\ effective\ DL\ owners = 1.2m * 90\% = 1.08m$$
4. Assume people who own a car would not use the service but would only use their car. Hence you need to subtract the % of DL owner who already owns a car. Assume 50% already owns a car
$$\#\ people\ without\ a\ car = 1.08 * 50\% = 540{,}000$$

Car sharing in Milan (Continued)

Suggested Approach (continued)

5. Now we need to get from the number of people who could potentially be interested (those who live in Milan, own a DL but do not own a car) to the number of actual users. In order to get to this number we need to consider which factors effectively influence consumption:
   A. NEED: this is a bucket which collects many practical instances (think about lives far from work, often moves around for different reasons)
   B. PRICING: if the service is too expensive people will not use it
   C. USER EXPERIENCE: if the service is too complicated to use/if cars are often broken/if issues occurs during usage then people might decide to take public transportation.

Interviewer please go to the next page and prompt the next part of the problem

Car Sharing in Milan (Continued)

Problem (Part 2)

The client thinks PRICING in particular is a key element. Therefore the client would like us to help him finding the pricing that would maximize the number of clients.

Suggested Approach

Different possible pricing strategies:

- COST PLUS: start form the cost and add a margin
- DEMAND PULL: how much is the client willing to pay?
- MARKET BASED: what are our competitors' prices?

Here the suggest reasoning is the following: if we want people to switch from public transportation to our service we should apply a similar price. Assume avg ride on public transportation lasts 10 minutes and costs 2€ → we get around €20cent/min.

This is slightly lower than the real number €30/35cent per min, due to the fact that we apply a little premium in reality as we think customers will be willing to pay a little extra as well

Case Author List

Type to Learn
Sonia Romero

Gas Stations in Italy
Richard Huang

Berlin Main Station
Jonas Japing

Chewing Gum in the US
Lucrezia Villani

Coffee in Singapore
Author

You are one tough cookie
Sonia Romero

Call me maybe
Lucrezia Villani

R&D in the Pharma Industry
Lucrezia Villani

Car Component Supplier
Jonas Japing

Cinema Case
Jonas Japing

O Christmas Tree
Jonas Japing

Surf'n'Turf
Jonas Japing

All ways lead to Rome
Jonas Japing

Time flies
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