Crack the Case Interview

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Overview

- Review Purpose of Case Interviews
- Present Information on How to Approach Case Questions
- Provide Examples of Case Questions
- Review a Few Samples
- Provide Information on Resources to Prepare for Case Problems
You Must Convey in an Interview

- **Confidence!**
  - Why this industry?
  - Why this employer?
  - Why you?
## Components of a Case Interview

<table>
<thead>
<tr>
<th>Time Duration</th>
<th>Activity Description</th>
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<tbody>
<tr>
<td>1 minute</td>
<td>Introduction</td>
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<tr>
<td></td>
<td>Set the agenda</td>
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<tr>
<td>10-15 minutes</td>
<td>Open “resume” discussion (education, employment history, motivations, style)</td>
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<tr>
<td>20-25 minutes</td>
<td>Introduce or “set up” the case</td>
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<td>Discuss relevant aspects of the case</td>
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<td>Wrap up the case</td>
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<tr>
<td>4-5 minutes</td>
<td>General questions and answers</td>
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<td>0-1 minutes</td>
<td>Discuss next steps</td>
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**Case Questions Help Employers Assess Your:**

<table>
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<tr>
<th>Creativity</th>
<th>Poise</th>
<th>Analytics</th>
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<tbody>
<tr>
<td>Apply a unique perspective to business situations</td>
<td>Appear excited by the kinds of issues consultants face</td>
<td>Provide structure to unstructured problems</td>
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<tr>
<td>See the big picture</td>
<td>Are not intimidated by ambiguity, process, or problems</td>
<td>Break problems into components</td>
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<td>Draw conclusions from partial information</td>
<td>Assimilate information quickly and effectively</td>
<td>Apply transparent, logical thinking to each component</td>
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<td>Make assumptions, see patterns, and generate hypotheses</td>
<td>Ask insightful questions</td>
<td>Synthesize discussion into solution</td>
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Types of Case Questions

• Brain Teasers
• Market-Sizing Problems
• Business-Operations Scenario
• Business-Strategy Questions
Statistics You Should Know

Population of the World
♣ 7.033 Billion

Population of the U.S.
♣ 311 Million

Number of Adults in the U.S.
♣ ≤18: 23.17%
♣ ≥65: 13.3%

Number of Households in the U.S.
♣ 114 Million
Average Household Size
♣ 2.6
Average Family Size
♣ 3.16

Number of Cars per Household
♦ 1.9

Minimum Wage
♣ $7.25

A Few Sample Brain Teasers
Goldman Sachs

You have eight balls, one of which is slightly heavier than the others. You have a two-armed scale, which you are allowed to use only twice.

Your challenge: find the ball that's heavier
Morgan Stanley Smith Barney

You have two containers; one holds five gallons, the other holds three. You can use as much water as you want.

Your task: measure exactly four gallons of water into the five-gallon container.
Let’s Work Through a Tougher Brain Teaser

How Many Golf Balls Can Fit into a Boeing 747?
Golf balls are solid spheres
→ Have to be stacked
→ Each ball takes a little less* volume than a cube with 1.5 in side length
→ Volume of each golf ball = (1.5 in)$^3$ = 3.375 in$^3$ ≈ 3 in$^3$
Calculate Volume of 747

Total Volume = 200ft x 30ft x 30ft = 180,000 ft³

- Seats, Cockpit Equipment, etc. = 30,000 ft³

Total Empty Volume = 150,000 ft³

1 ft³ = 12in*12in*12in ≈ 10in*10in*15in ≈ 1500in³ ≈ 225,000,000 in³
Calculate Answer to Case

Total Volume = 200ft x 30ft x 30ft = 180,000 ft³
- Seats, Cockpit Equipment, etc. = 30,000 ft³

Total Empty Volume = 150,000 ft³
1 ft³ = 12in*12in*12in ≈ 10in*10in*15in ≈ 1500in³
≈ 225,000,000 in³

Golf balls are solid spheres
→ Have to be stacked
→ Each ball takes a little less* volume than a cube with 1.5 in side length
→ Volume of each golf ball = (1.5 in)³ = 3.375 in³ ≈ 3 in³

# of golf balls = Total Empty Volume / Volume of each golf ball
= (225,000,000 in³) / (3 in³) = 75,000,000 golf balls
Five Stages of a Business Case Scenario

- Confirm Your Understanding of Scenario 5%
- Ask Questions to Obtain Additional Information 10%
- Develop Your Hypothesis and Framework 10%
- Work Through the Case 65%
- Summarize and Pull Up 10%
What Is a Framework?
Framework

- **What?**
  - Models, tools or maps that provide a systematic, logical way of analyzing a problem
  - Show cause and effect relationships to focus on
  - Distill a complex, ambiguous problem to the relevant issues

- **Why?**
  - Guides intelligent questioning of the interviewer
  - Lays out your analysis in a logical, coherent manner—paints a picture of how you think
  - Allows you to apply your experience to an unfamiliar situation

- **How?**
  - SWOT analyses
  - Familiar frameworks—5 forces, 7 Cs, 7 Ss, 4 Ps
  - Matrices—2x2, more sophisticated multi-dimensional
  - Value chain analysis
  - Comparative economics
  - Product/technology life cycle
  - Decision trees
Framework Examples: The “Three Cs”

• **Cost**
  – Break down the company’s cost structure (fixed/variable)
  – Estimate the competitor’s cost structure
  – Understand trends in cost structures

• **Customers**
  – Segment the company’s customer base (new vs. existing, loyal vs. switchers)
  – Examine company profitability by segment (how much do customers purchase, at what price?)

• **Competitors**
  – Identify major competitors (traditional/unexpected substitutes)
  – Determine competitors’ strengths and weaknesses (profits/costs)
  – Investigate market share
Framework Examples: The “Four Ps”

• **Product**
  – What are the product’s differentiating attributes?
  – Why does the consumer purchase this product?

• **Place (Distribution)**
  – How is the product distributed to consumers?
  – What new methods of distribution are coming available?

• **Promotion**
  – What advertising medium is currently used?
  – What is the most effective method of getting the word out?

• **Price**
  – How is this product priced?
  – How are its competitors priced?
Framework Examples: Five Forces Market Analysis

- **Barriers to Entry**
  - Economies of scale, capital costs, cost advantage of existing competitors, barriers to exit, patents

- **Market Rivalry**
  - Number and size of competitors, industry growth rate, product differentiation factors, industry margins/pricing

- **Buyer Power**
  - Significance of purchase relative to cost structure, switching costs, purchase volume, threat of backward integration

- **Supplier Power**
  - Number and size of suppliers switching costs/product differentiation, availability of substitutes, possibility of forward integration

- **Substitutes**
  - Relative price/value of substitute compared to industry’s product, cost of switching to substitute, buyers’ propensity to switch
Case Example

Scenario
Assess whether or not a Red Sox t-shirt vending cart operated outside of Boston’s Fenway Park can be a profitable business

Background Facts

- Fenway Park is home to the Boston Red Sox, a major league baseball team
- Many vendors operate single-cart businesses (e.g., hotdog carts, ice cream carts, t-shirt carts, etc.) immediately outside ballpark grounds for pre- and post-game sales
- Average game attendance: 30,000
- Average game duration: 5 hours (includes pre- and post-game)
- 160 games per season: 50% home, 50% away
- Average ticket price: $40 per person
- Business intention is to operate a single vendor cart outside of Fenway Park on Yawkey Way, where people come to enjoy the festive pre-game atmosphere
Execution: Thoughts and Notes

- Fenway Park – is it profitable to operate a t-shirt cart?
- What do I know?
  - Attendance 30,000
  - 80 home games per year
  - T-shirts sell for $10 - $25

How do I break this down?
How do I proceed?
Execution: The Framework

**Profit**

- **Revenue**
  - Quantity
    - How many t-shirts can you sell per game?
    - What factors affect sales?
  - Price
    - How much can you charge for t-shirts?
- **Cost**
  - Fixed
  - Variable
    - What are my costs?
Execution: Cost Analysis

Profit

Revenue
- Quantity
  - How many t-shirts can you sell per game?
- Price
  - How much can you charge for t-shirts?

Cost
- Fixed
- Variable
  - What are my costs?
  - What costs are start-up, (e.g., one-time only)?
  - What costs are recurring? How often? (Annual, monthly, periodic?)
Case Execution: Cost Analysis

**Profit**

**Revenue**
- Quantity
  - How many t-shirts can you sell per game?
- Price
  - How much can you charge for t-shirts?

**Cost**

**Fixed**
- Cart Purchase ~$5,000 (one-time)
- Cart Lease ~$1,000 (semi-annual)
- Operator’s License $1,000 (annual)

**Variable**
- Labor
  - $10/hour
  - 5-hour (incl. pre- and post-game)
  - $50 labor per game, plus...
- T-shirt cost
  - $2 per t-shirt
  - how many t-shirts do I need?

Total $6,000

Total ????
**Case Execution: Revenue Analysis**

### Revenue
- **Quantity**
  - How many t-shirts can you sell per game?
- **Price**
  - How much can you charge for t-shirts?

### Cost
- **Fixed**
  - Cart Purchase ~$5,000 (one-time)
  - or
  - Cart Lease ~$1,000 (semi-annual)
  - Operator’s License $1,000 (annual)

- **Variable**
  - Labor
    - $10/hour
    - 5-hour (incl. pre- and post-game)
    - $50 labor per game, plus...
  - T-shirt cost
    - $2 per t-shirt
    - how many t-shirts do I need?

**Total $6,000**
Case Execution: Quantity Estimation

What is the best metric to use?

What is per game attendance?

How many people buy things at baseball games (food, hats, t-shirts, banners, balls, etc.)?

How many people buy t-shirts?

How many people buy t-shirts from us?

How many people buy t-shirts per baseball game?

How many people buy t-shirts from us?

30,000 people per game

6,000 Buyers (20%)

24,000 Non-Buyers (80%)

1,500 T-shirt Buyers (25%)

4,500 Buy Other Things (75%)

50 Buy Our T-shirts (3%)

1,450 Buy T-shirts from Others

“SANITY CHECK”
Case Execution: Sanity Check

The Sanity Check:

– Does 50 t-shirts sold per-game sound right?
– There are 1,500 t-shirts sold and I am selling 50 shirts, so that implies that there are ~30 t-shirt vendors at the park. Is that a reasonable number?
– If we really only sell t-shirts for 2 pre-game hours and 1 post-game hour, we effectively have 180 “selling minutes” → OR... we sell 1 t-shirt every 3-4 minutes
  • Can one person handle a t-shirt sales transaction every 3 ½ minutes?

OUR ASSUMPTIONS SEEM REASONABLE
Case Execution: Revenue Analysis

Profit

Revenue
- Quantity: 50 t-shirts sold per game
- Price: $15 per t-shirt

Total Revenue per Game: $750

Cost
- Fixed:
  - Cart Purchase ~$5,000 (one-time)
    or
  - Cart Lease ~$1,000 (semi-annual)
  - Operator’s License $1,000 (annual)
- Variable:
  - Labor
    - $10/hour
    - 5-hour (incl. pre- and post-game)
    - $50 labor per game, plus...
  - T-shirt cost
    - $2 per t-shirt
    - ~50 t-shirts per game

Total: $6,000

Total: $150
Execution: Roll-It-Up

Revenue

- Quantity: $750 per game revenue
- Price: $15 per t-shirt

Cost

- Fixed:
  - $5,000 start-up costs (cart purchase)
  - $1,000 annual operator’s license

- Variable:
  - $50 labor wages per game
  - $2 cost per t-shirt x 50 shirts = $100

Profit

- $6,000 annual costs
- $150 per-game costs
Execution: Annualize and Summarize

Total Revenue per Game $750
Less: Total Costs per Game $(150)

Net Income per Game $600

Total Home Games per Year 80

Annual Income $48,000
Less: Annual Fixed Costs $(6,000)

Total Annual Profit $42,000

What do you think? Too high? Too low?
Sample Case Questions at Cornell
How many tennis balls would be floating in the air on a Saturday afternoon at 3 pm in the U.S.?
How many glasses of red wine are sold on a Saturday night in Ithaca to Cornell students?
Case Interview Guidelines

- Listen to the Problem
- Take Notes
- Restate the Problem
- Verify Objective
- Ask Clarifying Questions
- Identify the Type of Case
- Think Big Picture First; Think Top Down
- Structure the Problem

- Organize Your Answer and Manage Your Time
- Be Creative and Brainstorm Without Commitment
- Be Coachable (listen to the interviewer’s feedback)
- Think Out Loud (but do think first!)
- Bring Closure and Summarize
Tips for Success

• Scratch your analysis on paper—even stream of consciousness thoughts
• Use facts provided to develop support for your conclusions
• Ask for more data, clarifying information
• Keep your framework in mind
• Do math on paper
• Use round numbers
• Start over if needed
• Stay focused if you are challenged
• “Think out loud”—keep it interactive
• Show enthusiasm and a positive attitude
• Have fun
Case Interview Don’ts

- Forget to conclude the case—regardless of progress made or time constraints
- Waffle or be indecisive—have a point of view and confidently support it
- Ask for feedback
- Forget the original question
- Overly worry about basic math mistakes—yet, don’t make too many of them
- Worry about decimal-point precision
- Lose sight of the issue (get lost in the details)
- Lose contact with your interviewer
- Ignore when analytics disprove original hypotheses
- Keep your thought processes to yourself
Case Reference Materials
Case Reference Materials

• Refer to handout
• Practice, practice, practice!
  – caseinterview.com/
  – glassdoor.com
  – joinbain.com/apply-to-bain/interview-preparation/default.asp
  – oliverwyman.com/careers/61.htm
Questions?