Crack the Case Interview

Rebecca M. Sparrow
Craig A. Jones

Cornell Career Services
September 23, 2013
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?
Case Questions Help Employers Assess Your:

<table>
<thead>
<tr>
<th>Creativity</th>
<th>Poise</th>
<th>Analytics</th>
</tr>
</thead>
<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>
</tr>
<tr>
<td>See the big picture</td>
<td>Are not intimidated by ambiguity, process, or problems</td>
<td>Break problems into components</td>
</tr>
<tr>
<td>Draw conclusions from partial information</td>
<td>Assimilate information quickly and effectively</td>
<td>Apply transparent, logical thinking to each component</td>
</tr>
<tr>
<td>Make assumptions, see patterns, and generate hypotheses</td>
<td>Ask insightful questions</td>
<td>Synthesize discussion into solution</td>
</tr>
</tbody>
</table>
Components of a Case Interview

<table>
<thead>
<tr>
<th>Time</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 minute</td>
<td>Introduction</td>
</tr>
<tr>
<td></td>
<td>Set the agenda</td>
</tr>
<tr>
<td>10-15 minutes</td>
<td>Open “resume” discussion (education, employment history, motivations, style)</td>
</tr>
<tr>
<td>20-25 minutes</td>
<td>Introduce or “set up” the case</td>
</tr>
<tr>
<td></td>
<td>Discuss relevant aspects of the case</td>
</tr>
<tr>
<td></td>
<td>Wrap up the case</td>
</tr>
<tr>
<td>4-5 minutes</td>
<td>General questions and answers</td>
</tr>
<tr>
<td>0-1 minutes</td>
<td>Discuss next steps</td>
</tr>
</tbody>
</table>
# Statistics You Should Know

<table>
<thead>
<tr>
<th>Category</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population of the World</td>
<td>7.033 Billion</td>
</tr>
<tr>
<td>Number of Households in the U.S.</td>
<td>114 Million</td>
</tr>
<tr>
<td>Average Household Size</td>
<td>2.6</td>
</tr>
<tr>
<td>Average Family Size</td>
<td>3.16</td>
</tr>
<tr>
<td>Population of the U.S.</td>
<td>313 Million</td>
</tr>
<tr>
<td>Number of Adults in the U.S.</td>
<td>≤18: 23.5%</td>
</tr>
<tr>
<td></td>
<td>≥65: 13.7%</td>
</tr>
<tr>
<td>Number of Cars per Household</td>
<td>1.9</td>
</tr>
<tr>
<td>Minimum Wage</td>
<td>$7.25</td>
</tr>
</tbody>
</table>

**Sources:**♣ U.S. Census Bureau 2012; ♦ U.S. Federal Highway Administration 2009;♠ U.S. Bureau of Labor Statistics 2011
Types of Case Questions

• Brain Teasers
• Market-Sizing Problems
• Business-Operations Scenario
• Business-Strategy Questions
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.
Here’s a Tougher Brain Teaser

How Many Golf Balls Can Fit into a Boeing 747?

- Calculate volume of a golf ball
- Calculate volume of Boeing 747
- Calculate solution to brain teaser
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 = \( (1.5 \text{ in})^3 = 3.375 \text{ in}^3 \approx 3 \text{ in}^3 \)
Calculate Volume of Boeing 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 Brain Teaser

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 ≈ 1500 in³
≈ 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

* < 3 in
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%
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 You Should Know

- The “Three Cs”
- The “Four Ps”
- Five Forces Market Analysis
Framework Example: 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 Example: 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 Example: 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**

- **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?

**Profit**

Revenue - Cost = Profit
Execution: Cost Analysis

Profit

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

MINUS

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**

### 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?

$6,000 Total

Total ????
Case Execution: Revenue Analysis

**Profit**

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

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

$6,000 Total

Total ????
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

\[ \text{Total Revenue per Game} = \$750 \]

Cost

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

\[ \text{Total} = \$6,000 \]

- **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

\[ \text{Total} = \$150 \]
**Execution: Roll-It-Up**

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

**Total Revenue**: $750 per game

### 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

**Total Costs**: $6,000 annual costs + $150 per-game costs

**Profit**: $750 - $6,150 = -$5,400
**Execution: Annualize and Summarize**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Revenue per Game</td>
<td>$ 750</td>
</tr>
<tr>
<td>Less: Total Costs per Game</td>
<td>($ 150)</td>
</tr>
<tr>
<td>Net Income per Game</td>
<td>$ 600</td>
</tr>
<tr>
<td>Total Home Games per Year</td>
<td>80</td>
</tr>
<tr>
<td>Annual Income</td>
<td>$48,000</td>
</tr>
<tr>
<td>Less: Annual Fixed Costs</td>
<td>($6,000)</td>
</tr>
<tr>
<td><strong>Total Annual Profit</strong></td>
<td>$42,000</td>
</tr>
</tbody>
</table>

What do you think? Too high? Too low?
Sample Case Questions at Cornell
Gotham Consulting

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?

Gotham Consulting
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 or whiteboard—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
- 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 IN POINT
Complete Case Interview Preparation
MARC P. COSENTINO

CASE INTERVIEW SECRETS
A Former McKinsey Interviewer Reveals How to Get Multiple Job Offers in Consulting
VICTOR CHENG
FOUNDER, CASEINTERVIEW.COM
Case Reference Materials

• Refer to handout
• Practice, practice, practice!
  – http://cornell.cqinteractive.com/cqiaccess/member_dashboard.cfm
  – caseinterview.com
  – Cornell Case
  – Optimal Interview
Case Interview Mock Madness

- Friday, September 27
  9:00 am-4:30 pm
  103 Barnes Hall
- Sign up on CCNet
  - Employer search– CCS General Services
Questions?