CASEBOOK

2021

MANAGEMENT CONSULTING ASSOCIATION

Columbia Business School

Introduction

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Dear Future Consultant,

It is with great pride that we welcome you to the 2020-2021 CBS Management Consulting Association Casebook!

This book is the end result of more than a year of planning to restart the MCA's casebook publication process at CBS. It has been a labor of love from the start and we want to especially thank our case writers. This obviously wouldn't be possible without their efforts and we are so proud to have had such excellent partners throughout this process.

Additionally, for the first time in MCA history, we held an case competition to evaluate all the cases submitted. We owe Professor Alonso Martinez a particularly large debt of gratitude as the judge for the case competition.

We hope this casebook serves as a guide along your journey and that, one day soon, you can think of this book as instrumental in getting you prepared for your career!

Good luck!

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How to Use the Casebook

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General Preparation

- Go over the Case and Fit Interview Overview and Tips for Smart Casing in this case book; if possible – try to watch a live case demo presented by the MCA before diving into cases yourself
  - The MCA also has a repository of videos, guides, and presentations that provide information for both beginning and advanced casers

Choosing Cases

- Each case is divided into type, industry and difficulty. Try to choose cases that deal with issues / concepts that you need the most practice with
- Remember: the difficulty rating is subjective, one case can be considered hard by one caser and easy by another
- Cases that are rated easy are usually basic cases that test the basic concepts of casing, and are a good way to start and "warm up" in casing
- "Interviewers": come prepared by going over the case – not all of them have the same structure; print exhibits if needed and make sure to give candidates the information needed

Case and Fit Interview Overview

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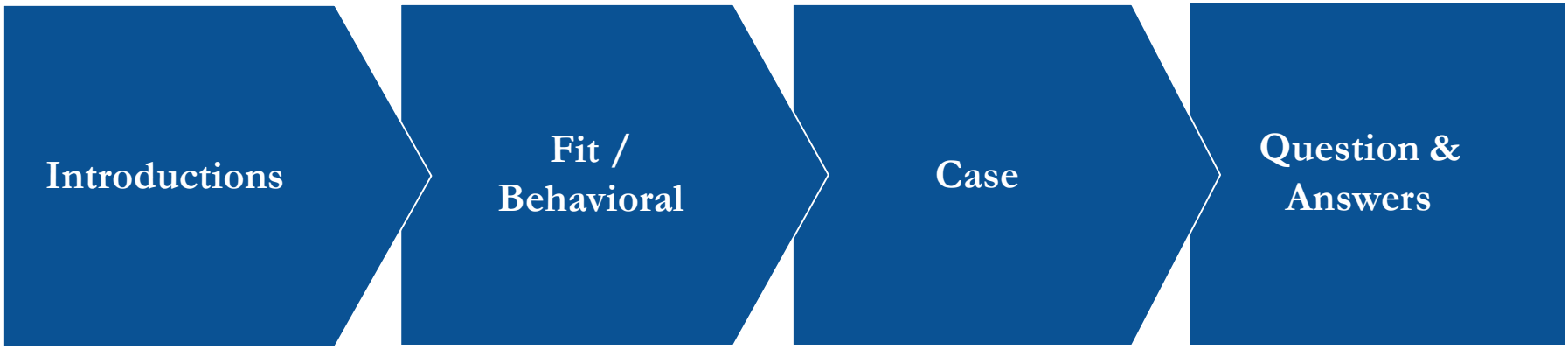
Typical case interview progression



~5 min | 10-15 min | 20-30 min | ~5 min

- The majority of consulting interviews follow the same structure (above)
- Interviews are broken down into two main parts: the Fit / Behavioral portion of the interview and the Case portion of the interview. **THEY ARE EQUALLY IMPORTANT!!!!**
- While this book focuses mainly on preparing for case interviews, it is highly recommended to put the same amount of effort into preparing for the fit portion as for the case portion

Fit / Behavioral Portion of the Interview

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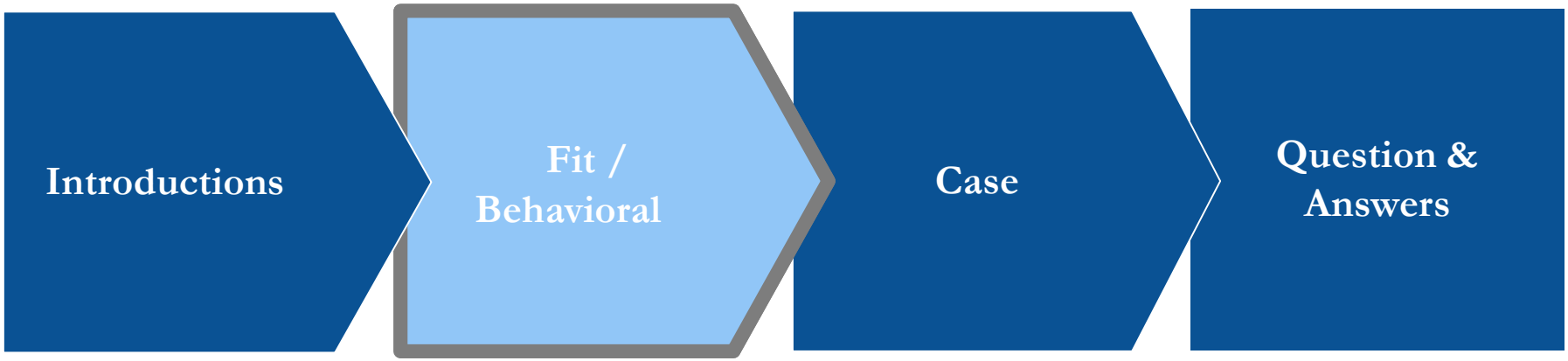
Fit questions are the first real part of most interviews, and performance on fit is a major differentiator



~5 min | 10-15 min | 20-30 min | ~5 min

Firms ask fit questions for 3 reasons:

1. Learn about your professional experiences
2. Assess your storytelling abilities / communication skills
3. Assess how you would act in front of clients

Fit / Behavioral Portion of the Interview

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Have airtight answers prepared for the most common fit questions

"Why you?"

- Your pitch, a.k.a. *"walk me through your resume" / "tell me about yourself"*. This should be roughly 2 minutes long
- Convey motivations for every major transition point (e.g., switching jobs, going to business school); strong answers build a tight narrative of how your life has led to that interview
- Highlight key consulting skills when speaking about experiences

"Why consulting?"

- Develop a genuine answer that's tailored to your background and goals
- It's okay to artfully position consulting as a career stepping stone
- This question may be redundant if you have a robust pitch

"Why firm X?"

- Demonstrate your in-depth understanding of the firm
- Use structure (i.e., "There are 3 reasons why I'm hopeful to join BCG")
- Highlight work nuances (i.e., industries, practice areas, generalist path), culture, and personal experiences, as appropriate
- Do not mix up firms!

Fit / Behavioral Portion of the Interview

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McKinsey approaches fit interviews slightly differently

Standard behavioral approach

- Drawn from standard questions
- 1st round fit lasts 10-15 minutes, with multiple questions
- Some 2nd rounds (e.g., Bain) devote a full interview to this

"Tell me about a time you led a team…"

"Tell me about an ethical dilemma you struggled with…"

"What's your greatest accomplishment?"

McKinsey Personal Experience Interview (PEI)

- One 'anecdotal deep-dive', the answer to which should fall into one or more of these areas:
  1. Leadership Abilities
  2. Personal Impact
  3. Entrepreneurial Drive
  4. Problem Solving
- Interviewer will then ask drill down questions for ~10 minutes

"Tell me about a time you struggled with an important decision…"

↓

"How did you think through the choice?"

↓

"What were the consequences of that?"

Preparation for McKinsey PEI will form answers for most fit questions at other firms

Fit / Behavioral Portion of the Interview

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Use the STAR or CAR framework to structure fit answers

25%

Situation | **Challenge**

- Briefly describe the context in which you were operating
- Do not be overly long: focus on what is most essential
- End with a clear description of the task at hand

75%

Thought | **Action** | **Result**

Action

- The MOST important part of your answer
- Clearly outline what YOU did (use "I", not "we")
- Describe your thought process
- Justify your actions, and convey alternatives you considered
- Highlight how actions went beyond normal duties

Result

- Communicate how your actions led to a positive outcome
- Find a way to quantify / qualify the result

Answer should be tight and clearly communicated—how you answer matters!

The Case Portion of the Interview

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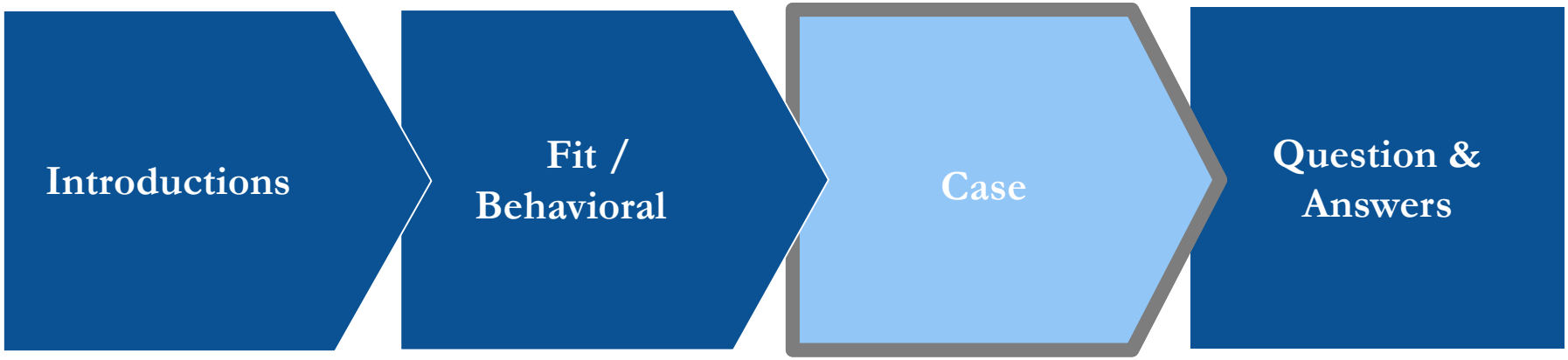
The case portion is the longest part of the interview, usually involving one case that is an ongoing discussion with the interviewer



~5 min | 10-15 min | 20-30 min | ~5 min

The 3 main objectives of the case interview:

1. Evaluate how structured your thinking is
2. Evaluate your business acumen and mental math skills
3. Assess how you would act under pressure

The Case Portion of the Interview

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The case interview can be dissected into component parts, allowing for more targeted preparation

Time	Component	Suggested actions
<2 min	Understand	• Listen as interviewer describes business problem and context (i.e., "Our client is X, who is experiencing situation Y") • Ask clarifying questions about the client situation or scope • Summarize the prompt and make sure you understand the big question
~2 min	Structure	• Construct a customized, structured approach to the problem (i.e., MECE framework) in ~90 seconds • Walk the interviewer through the framework, elaborating as necessary (i.e., "There are 3 main drivers I'd like to look into: X, Y, and Z. X is driven by two components, A and B") • Note areas of anticipated importance and suggest a starting point for analysis
~20 min	Analyze	• Using the structure as a guide, ask probing questions to test hypothesis • Follow directions and hints from interviewer, and audibly adjust hypotheses / structure as new information is presented • Conduct quantitative analysis aloud and connect insights to larger picture • Make analyses look clean, like client-ready slides; do arithmetic on scrap paper
<1 min	Synthesize	• State recommendation up-front in 1-2 sentences, followed by 2-4 supporting points • End with flagging risks and outlining potential next steps

The Case Portion of the Interview

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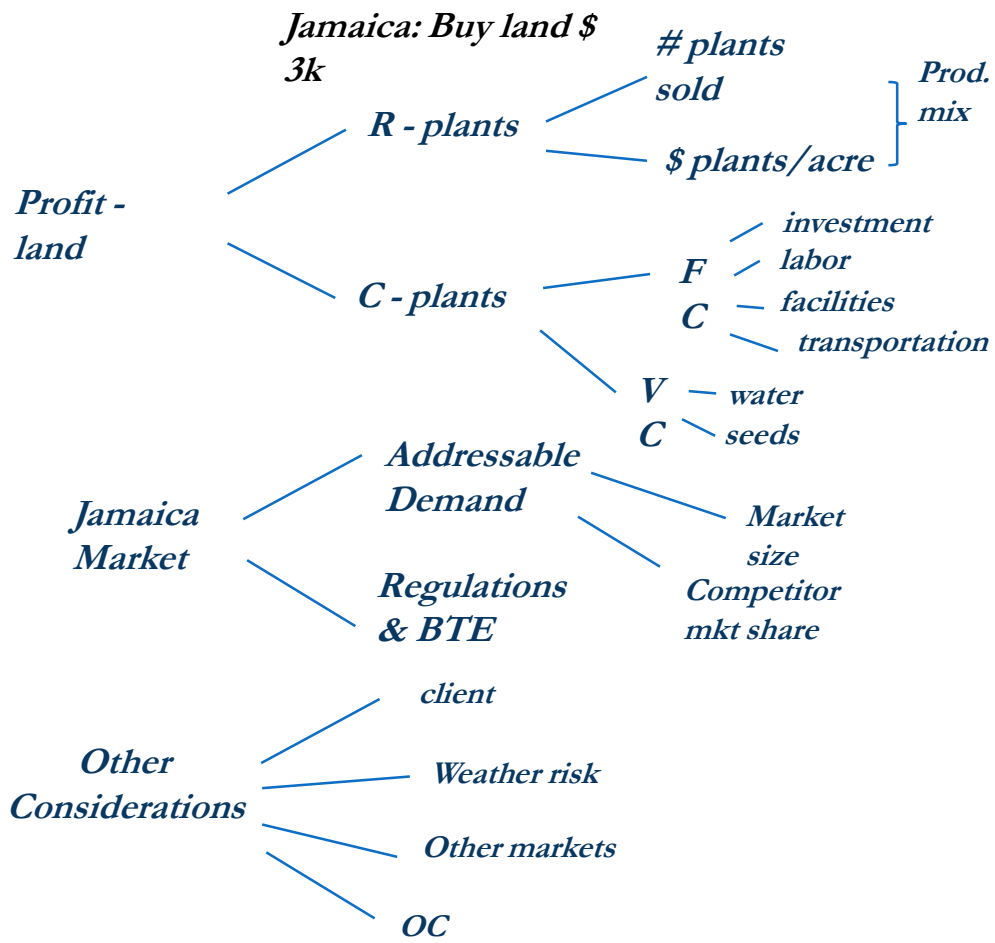
Example of a framework

Prompt

"Our client is thinking about buying a piece of land in Jamaica for $3,000, and has asked us to determine whether this is a good idea."

Possible Framework



Interview Overview

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Strategies for successful preparation

	Case	Fit
Individually	• Skim books such as *Case in Point* and *Case Interview Secrets* • Use RocketBlocks or FastMath to practice math and structuring • Practice creating frameworks from prompts in old casebooks • Consider using mental math phone apps to practice quick mental calculations whenever there is time	• Review MCA fit question database and draft mock answers • Build a story tracker and coverage map
With Others	• Case with sponsored cluster mates over the summer • Form and case with a peer group • Use MCA case coaches in the fall	• Career Fellows to practice fit stories • Fit mock interviews with peer group

Tips for Smart Casing

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1. **Case Smart, Not Hard:** Your "case prep" regimen should not be designed as a grueling marathon to do as many cases as humanely possible – it should be used to develop the necessary skills to a level where you can comfortably complete a range of case types. You may hear people brag about how many cases they did this week, but they are missing the point and likely misallocating their time. Instead, you should keep a measured pace, take time to reflect after each case, and keep a log of your performance; doing so will allow you to track your progress and smartly build upon any areas of weakness.

2. **Use Both 2Y's and 1Y's, and Just Dive in:** Your first case probably won't go well – acknowledge that fact and don't be afraid to just dive in. If you make a mistake, just brush it off and keep going (plenty of people get offers after making mistakes in real interviews, in fact). Know also that both first and second years are valuable resources for practice. Use second years for more pointed feedback (case with them whenever you can), but don't neglect fellow first years and sponsored consultants/students.

3. **It's 50% Case, 50% Fit:** Don't case for 100 hours and neglect fit prep entirely. Firms evaluate you equally on each component, and if you are a case rock star but can't relate your professional story in a meaningful way or can't talk intelligently and thoughtfully about leadership experience you've had, you're toast. Firms need to see both case proficiency and professional fit and poise.

4. **Seek variety:** Don't do 50 profitability cases, and don't just use a single casebook. Spread your practice among multiple types of cases and multiple case books from multiple schools; this is the best way to practice a range of skills necessary and increase your chances of being prepared on interview day.

Tips for Smart Casing

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5. **Do Your Research on Industries & Firms:** Each firm has slight differences in the way they interview, the types of cases they use, and the terminology they use to discuss themselves. Know the difference between a McKinsey structured interview and a Deloitte Group interview. Know these differences cold, and don't mix the firms up. Again, the differences are subtle, but they are there.

6. **Read the Business Press Every Day:** You need to be able to discuss business concepts with great and convincing fluency, which you can't do if you don't stay up to date on the news. Doing so will also help build your implicit reservoir of industry knowledge and increase your level of comfort with topics outside your immediate area of expertise.

7. **Brush up on the basics:** If you struggle with simple things like basic business terminology (profit/loss/industry vs verticals/market segments) or high school algebra & mental math (multiplication tables up to 15, quick % calculations) go brush up on these first BEFORE you dive into casing. You have to learn to crawl before you can learn to walk.

8. **Remember the Goal and Purpose of Casing:** The purpose of the case interview is NOT to find people who are case robots, able to breeze through any case with 0 mistakes – the purpose is to find people who are client-ready, who demonstrate significant structured problem solving & analytical capabilities, and who would fit at that particular firm from a cultural standpoint. That's it. Keep these goals in mind as you practice, and know that the goal is to maximize along those three dimensions, not along how quickly you can breeze through a case or how amazing your mental math skills are.

Case #1 : Ban the Box

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Difficulty: Medium
Industry: Government
Case Type: Impact Analysis

Written by Daniel Krimowski '21

Concepts Tested

- Creativity
- Structure
- Brainstorming

Problem Statement Narrative

After many years of "tough on crime" positions by politicians without regard to government budgetary implications, and the economic and social impact on low income and black and brown communities, popular sentiment has finally shifted and forced Congress to address criminal justice reform in a meaningful way. Our client is the chair of the Senate Judiciary Committee and wants our help getting their initiative passed. This will be an extremely politically sensitive project, and Congressional leadership on both sides have decided to consider rewriting the laws they previously co-sponsored in their decades in office. In order to both ensure their re-election and prevent making waves that would interfere with their campaign contributions, they have decided to "Ban the Box". "Ban the Box" means remove the check box in job applications that asks applicants upfront to declare whether they have a criminal record. This box is often used as a disqualifier which makes it exceedingly difficult for Formerly Incarcerated Persons (FIPs) and those with any justice-involvement to find jobs commensurate with their qualifications. A major part of this bill will be not only the elimination of the checkbox on applications, but also regulating the appropriate use of criminal background checks after a conditional offer is made. Members of Congress on both sides feel that this bill will: 1. Create a more equitable environment for FIPs to re-enter society as well as a fair chance for people with justice involvement; 2. Lower their likelihood of recidivism; and 3. Balance the need for employers to consider relevant factors in their hiring processes. What factors would you consider when advising the client on a nationwide "Ban the Box" bill?

Question #1 / Framework

What factors would you consider when advising the client on a nationwide "Ban the Box" bill?

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Guidance for Interviewer

The math in this case is extremely easy and conceptually this is meant to be an easy but thought-provoking case requiring creativity to complete. It is important for the candidate to solve the client's problem so this bill can pass, not focus on tropes or stereotypes. The interviewer should help course correct the candidate if going off-track

Clarification Answers if Asked

- Where geographically would the Ban the Box extend?

This bill would cover all American states and territories and all employers (business, government, nonprofit etc.) operating in the US that interacts with the federal government or across state lines (due to limits of federal legislative powers)

- What companies would a Ban the Box bill apply to?

Ban the Box would apply to all federal government jobs, companies and employers that contract with the federal government, and employers that operate either interstate or internationally. Our client expects that most states will follow suit with their own statutory laws soon after passage of this bill

Sample Framework

1. FIPs
   a. # Currently released
   b. # Projected Released
   c. Recidivism Rate
      i. Geographic breakdown
      ii. Racial breakdown
      iii. Socioeconomic breakdown
2. Ban the Box Program
   a. Nationwide implementation
      i. States with existing programs
      ii. States likely to follow suit after enacting
   b. Branch B
      i. Sub-branch A (if needed)
      ii. Sub-branch B (if needed)
3. Risks
   a. PR
      i. Media
      ii. Advocacy Groups
   b. Will it work
      i. Unintended consequences

Question #2

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Question

As mentioned, this is a politically sensitive issue that will require support from at least 60 senators. Our client will need to engender support from senators on both sides of the aisle. One of the ways we can help them do this is to identify how this can help their constituents. What economic and social factors could be used to engender support for this bill?

Solution

Candidate should start to brainstorm ideas utilizing a structured approach

Economic Factors	Social Factors
1. Increased employment rate 2. More taxes 3. Fewer people on government assistance 4. Lower recidivism means fewer people incarcerated and major budget savings for prison systems 5. Signal to employers to tap into a broader talent pool that is more loyal / potentially reduce turnover	1. Less fear of background checks 2. Higher application rates increasing hope and participation in the workforce 3. Easier for FIP to rejoin community 4. Stronger community ties 5. Redemption / giving people a fair chance after they've served their time 6. 70 M people in the US have a criminal record – politically many people and their families could be positively impacted

Question #3

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Question

Major factors cause recidivism, include technical violations of parole conditions (imposed curfew hours, failure to show up to parole appointments during working hours etc.), and committing new crimes after released. Many barriers exist for individuals to return to 'normal' life. They must reestablish ties with their family, return to high-risk places, secure govt-issued IDs for housing/job applications; deal with gaps in their work history and a criminal record. Arguably the most important of these is employment, as a good job helps give the individual purpose and move forward with their life after having paid their debt to society. What information do you need to calculate how many FIPs would stay out of prison in if their employment was 100%? For this calculation, we are only going to consider newly released FIPs for the next 3 years

Question #3 (continued)

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Solution

Provide yellow highlighted numbers when candidate asks for each. They should calculate the green ones. If struggling, help them along and they are allowed to round

The biggest thing to look for is the "So What". The candidate should be giving context and thought into the bigger picture not only societally, but also in how these numbers can be used to influence policy. Equally important is identifying the risks of these assumptions

Total Incarcerated Persons	2.4m
% Released Annually	25%
# Projected FIPs (3 years)	1.8m
% FIPs reincarcerated	70%
Returned to Incarceration	~1.25m
% Recidivism due to unemployment	20%
FIPs NOT reincarcerated (3 years)	~250k

Question #4

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Question

The ranking member of the minority on the Senate Judiciary Committee wants to expand "Ban the Box" to college applications in return for their support on the bill. They are willing to co-sponsor the bill, which would almost guarantee it's passage. What are some positives of expanding "Ban the Box" to cover college admissions?

Solution

- Creates educational opportunities for FIPs and education leads to even more opportunities
- Those with college degrees often make more money, improving the lives of them and their families
- These higher incomes also increase amount of taxes paid, contributing more to their communities
- Gives greater diversity to college classes
- Doesn't ruin someone's life for a single mistake
- Jail and Prison sentences serve as paying a debt to society, continuing punishment is unnecessary and unfair
- Will further lower recidivism (college/education behind bars reduced recidivism by 40% - RAND study, so would expect similar results for college outside of prison)
- Further removes social stigma associated with being a FIP
- Access to career-track and not just transitional jobs (janitorial, temp agency-type work)
- Diversity of FIPs can help fill the talent gap for employers in key sectors like tech and healthcare

Conclusion

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Recommendation

- Preferred Recommendation: I recommend that our client put forward a bipartisan Ban the Box bill eliminating the box and regulating or restricting the use of criminal background checks for employment and college admissions

Rationale

- We should do this because it will keep an additional 180k FIPs from recidivism and will reduce the stigmas placed upon FIPs, allowing them to better reintegrate into society

Risks

- The risks of this are: the politicians will face strong opposition from lobbyists and companies who profit from the prison industrial complex and might not stand by their promise to support this bill

Next Steps

- Considering these risks, our next steps are to advise the client to begin preparing the bill for passage and began lobbying his fellow senators to ensure approval

Keys to the Case and Feedback

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Takeaways

1. To learn more about this, investigate taking one of the ReEntry Acceleration Program (REAP) courses from Professor Damon Phillips in your time at CBS. REAP focuses on improving employment opportunities for FIPs and people with a criminal record and is genuinely one of the most impactful classes in their time at CBS for those who took it. I strongly recommend signing up to learn more about these incredibly important issues facing so many FIPs

2. Take your politics out of the case. Solve the problem and advise your client without commentary. You never know how someone leans and a consultant needs to operate independently. First and foremost, help the client solve their problem

3. BUT!! If passionate on an issue, use it to your advantage in your creativity and recommendations. Interviewers, especially partners, will often choose cases that they either worked on, or care deeply about. Find that commonality with them in order to elevate your performance to stand out

4. When the math is easy, it becomes even more important to give the why that math matters and how it affects the case

Case #2 : Cheers

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Difficulty: Medium
Industry: CPG
Case Type: Profitability

Written by Dylain Cohen '21

Concepts Tested

- Math
- Structure

Problem Statement Narrative

Your client is the American Liquor Sales House (ALSH), an international company known for selling unique and prized wines. ALSH is concerned about their declining profitability over the past few years and have requested our help to figure out why and what they should do

Case Notes

ALSH is suffering low profitability due to low sales because of a poor reputation. This is due to the company unknowingly selling fake wines. The candidate should first be steered towards calculating ALSH's profitability and then examine how much they should spend on screening their wines to avoid selling fakes

Question #1 / Framework

What is causing ALSH's profitability issue?

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Guidance for Interviewer

The case is centered around ALSH's poor reputation in the industry due to the fake wines that they inadvertently sells

Clarification Answers if Asked

- Does ALSH have a physical presence?: Yes, it has a few stores in major cities in the US, but the bulk of its sales occur online
- Is there a profitability target?: No – aim to increase as much as possible
- Timeframe?: As fast as possible
- Where does ALSH sell to?: Internationally – mainly to private collectors and enthusiasts

Sample Framework

1. ALSH
    a. Revenue
        i. Number of bottles sold
        ii. Price per bottle
    b. Costs
        i. Fixed costs
            1) Advertising
            2) Maintenance of online platform
            3) Rent of warehouses, stores
        ii. Variable costs
            1) Cost of wines sold
            2) Shipping
    c. Reputation / demand for products
2. Wine market
    a. Competitors
        i. Fragmented/ consolidated
        ii. Market share
    b. Customers
        i. Changes in preferences
        ii. Demographics
    c. Regulatory issues
        i. Licenses required for exporting alcohol internationally
3. Opportunities
    a. Exclusive partnerships with vineyards
    b. Expansion to non-alcoholic beverages

Question #2

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Question

How profitable is ALSH?

Solution

Ask the candidate what information they need in order to calculate ALSH's profitability. Provide them with the following information as requested:

- Annual expenses incurred by ALSH total $34,500,000
- Wine sizes, number sold, price, and cost (summarized below)

Wine Size	Number Sold	Price	Cost
Magnum	1,000,000	$45	$30
Liter	2,000,000	$35	$25
Standard	4,000,000	$30	$25

Candidates should calculate the following:

- Magnum wines generate $15,000,00 in profit
- Liter wines generate $20,000,000 in profit
- Standard wines generate $20,000,000 in profit

Total profit = 15m + 20m + 20m – 34.5m = $20.5m annually

Question #3

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Question

One of the major problems facing ALSH appears to be the quality of its wine. Specifically, ALSH heard from some of its customers that it has been unknowingly selling fake wines. How much do fake wines cost ALSH?

Solution

Provide the candidate with Exhibit #1

The candidate should begin to calculate how many fake wines there are for each of the different wine sizes.
Provide the candidate with the fact that only 50% of fake wines require a refund (some of the fakes are very well concealed)

Wine Sizes	Number Sold	Chance of Counterfeight	Number of Fakes	Refund Amound	Chance of Detecting a Fake	Total refunds
Magnum	1,000,000	0.30%	3,000	$200	50%	1,000,000 x 0.3% x $200 x 50% = $300,000
Liter	2,000,000	0.10%	2,000	$200	50%	$200,000
Standard	4,000,000	0.40%	16,000	$200	50%	$1,600,000

The total refunds issued are **$2,100,000**
This will hence mean that ALSH's total net profit is $20.5m – $2.1m = **$18.4m**

Question #4

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Question

ALSH has found that in order to improve demand for its wines it will need to have them screened to weed out the fakes. Thankfully, a third party company can do this screening for them. How much should ALSH be willing to pay as a flat rate per bottle of wine for it to be screened to ensure it is not a fake?

Solution

Candidates may have some trouble getting started with this question so lead them with the following:

- If the third party charged $1 per wine for it to be screened, how much will that cost ALSH?
  - This will cost $1 x (1m Magnums + 2m Liters + 4m Standards) = $7m
  - ALSH will therefore not need to issue any refunds, saving $2,100,000
  - ALSH's total profit = $55m (gross profit) – $7m (screening cost) – $34.5m (operating costs) = $17m

Cost of Screening	$0.10	**$0.30**	$0.50	$1.00	$2	$3	$4
Screening Cost	$0.7m	**$2.1m**	$3.5m	$7m	$14m	$21m	$28m
ALSH's overall profit	$19.8m	**$18.4m**	$17m	$13.5m	$6.5m	– $0.5m	– $7.5m

The most ALSH should be willing to pay to ***breakeven*** **is $2.93**

However, to generate the ***same profits*** as before, ALSH should **pay $0.30 per bottle**

i.e. $55m (gross profit) – $2.1m (screening cost) – $34.5m (operating costs) = $18.4m

The candidate should also identify the following:

- If wines are found to be fake, ALSH will need to ask their distributor for a refund which would then cause them to spend more on screening (perhaps the distributor can reimbursed them for this screening cost)
- A cost of $3 per wine cuts deep into the already slim margins of the standard wines
- Even though screening may be expensive, it has the potential to greatly improve the reputation of ALSH

Conclusion

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Recommendation

- ALSH should partner with a third party screener to filter out any fake wines before they are sold to their customers and should aim to pay around $0.30 per bottle screened

Rationale

- Fake wines greatly tarnish ALSH's reputation and weeding them out will increase demand
- Fake wines cost ALSH money for refunds

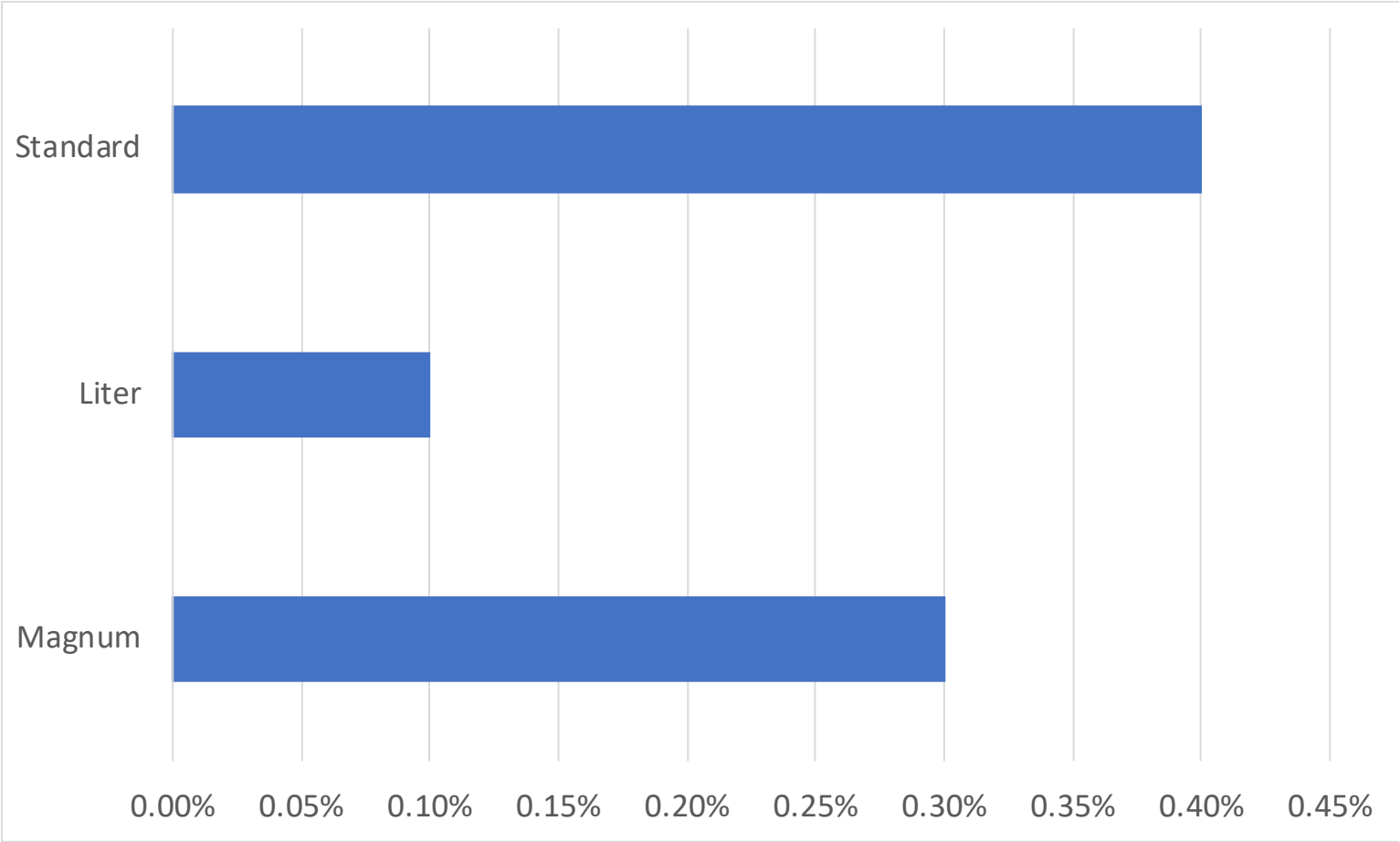
Risks

- Depending on the price paid, screening wines can be extremely expensive which would further cut into ALSH's profitability
- The demand for ALSH's services may take a while to rebound as customers may be apprehensive about purchasing from them again
- The third part screeners may not be 100% accurate in detecting fakes

Next Steps

- ALSH should launch an advertising campaign to announce its efforts to combat selling fake wines
- ALSH may consider selling more expensive wines due to the added screening which may be viewed as a premium service
- ALSH may consider reducing the refunds it provides, particularly with the standard sizes, since the price of the wine is less than the actual cost. This would change the economics of the screening

Exhibit #1 : Likelihood of a Wine Being Fake



Note: Cost of refund and credit is $200

Case #3 : Combating Climate Change

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Difficulty: Medium
Industry: Government
Case Type: Brainstorming

Written by David Huxley-Cohen '21 and Daniel Krimowski '21

Concepts Tested

- Creativity
- Structure
- Brainstorming

Problem Statement Narrative

The mayor of NYC was just elected based on her platform of creating a more environmentally sustainable city. During her campaign, she set a mandate to reduce the city's emissions by 80% by 2050. Critics are skeptical of these lofty goals. But the mayor is determined to make this her number one priority and has hired your firm to design the city's greenhouse gas reduction plan.

What factors would you consider when designing NYC's greenhouse gas reduction plan?

Case Notes

This case is meant to be interviewer-led. The prompt should challenge the candidate to develop a creative framework. The purpose of Q2 is to have the candidate think through the different stakeholders impacted by the policy. Q3 introduces an exhibit where the candidate should identify where to focus GHG reduction efforts. The case ends with a brainstorming section around implementation considerations. Q5 and Q6 are optional. There is no conclusion

Question #1 / Framework

What factors would you consider when designing NYC's greenhouse gas reduction plan?

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Guidance for Interviewer

Some candidates might be less familiar with GHG reduction policies; therefore, Q2 should be provided by the interviewer right after the framework walkthrough

Clarification Answers if Asked

- There is no specific budget, but the mayor doesn't want the plan to require an increase in taxes for her constituents
- The plan is just focused on NYC, not the state of NY
- The mayor is open to any and all ideas you might have, so get creative!

Sample Framework

1. Design Plan
   a. GHG reduction initiatives
      i. Clean generation (renewables, carbon offsets, nuclear, "clean" fossil fuels)
      ii. Reducing usage at the source (buildings, cars, industrial plants)
   b. Cost considerations
      i. Government administrative costs
      ii. Drive businesses away
      iii. Increase cost of living
2. Implementation
   a. Who's involved? (lobbyists, politicians, public)
   b. Who's paying for the additional costs? (property managers, government subsidies, public)
   c. How will it be enforced? (tracking emissions, penalties)
3. Benchmarking
   a. Programs implemented in other cities
   b. NYC's current GHG reduction progress
   c. Effectiveness of NYC's past initiatives

Question #2

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Question

The mayor likes your ideas but heard that emissions trading in the form of carbon cap-and-trade is gaining popularity in Europe and select US cities. She wants to know how an emissions trading policy would impact the city?

Solution

If the candidate asks you to clarify the mechanisms behind emissions trading, tell them that it's a market-based approach to controlling pollution where a central authority allocates a limited number of permits that allow a discharge of a specific quantity of pollution. Polluters that want to emit beyond their allocated permits must buy permits from other polluters or pay a penalty

Candidate should start to brainstorm ideas utilizing a structured approach

Pros	Cons
1. Utilizes a market-based approach that provides flexibility to polluters for meeting their targets 2. Ensures the city will meet their targets 3. The program can be funded through the fees collected from the penalties 4. It's already been tested in other markets and shown to be effective	1. Logistically challenging to ensure compliance (i.e. proper reporting of each polluter's emissions levels) and enforcement of penalties 2. Could involve politicking when it comes time to determine how to allocate permits 3. Could drive businesses out of the city by increasing their cost of doing business 4. Could increase the cost of living in the city, which would most negatively impact the poor

Question #3

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Question

The mayor wants to continue to explore this emissions trading program. Our analysts put together **Exhibit 1** and your manager wants to know, based on the exhibit where should the emissions trading program focus its efforts?

Solution

The candidate should talk through the exhibit in a structured top-down approach. No math is necessary

At a high-level, the candidate should identify residential buildings as having the largest potential for emission reductions, with heating as the primary source for emissions. The candidate should also mention some of the points below:

Average Candidate	Strong Candidate
1. Buildings are responsible for most of the city's emissions, primarily residential 2. Space heating is the largest source of emissions for buildings 3. Transportation has significant emissions, but it appears to be getting more sustainable and should not be the initial focus for the city	1. It will likely be harder to reduce the emissions from residential buildings because there's a larger number of them and ownership is fragmented 2. While the buildings provide the largest opportunity, there's not enough to achieve the city's 80% reduction target 3. Targeting residential buildings could result in higher rent, which would have the largest impact on the poor

Question #4

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Question

The mayor expects that NYC property owners will pass on the additional costs of updating their buildings to the tenants. What factors would you take into consideration when designing and implementing an emissions trading program?

Solution

No additional information is necessary

Candidate should start to brainstorm ideas utilizing a structured approach

Design Considerations	Implementation Considerations
1. How to determine the emission allotments 2. How many phases to ensure property owners have enough time to make the necessary upgrades 3. Including additional flexibility for buildings with affordable housing units	1. Community outreach to get buy-in from the property owners 2. Ensuring there's a robust platform to track emissions 3. Create an agency that enforces the penalties

Question #5

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Question

NYC has a long history of outside interests buying influence in City Hall. Our client insists on a transparent process. How do we ensure that the design phase is completely transparent to the public to avoid lobbying interests taking over?

Solution

No additional information is necessary

Candidate should start to brainstorm ideas utilizing a structured approach

Communication to Public	Process Control
1. Clear and timely press release schedule 2. Weekly press conferences open to questions from reporters 3. Town hall meetings	1. Restriction on any lobbying meetings 2. Transparent and immediate release of any potential conflicts of interest 3. Set guidelines for success online altered by scientific data and guidance 4. Remove politicians from process

Question #6

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Question

Our client has decided to continue with cap and trade for the long-term but realizes that this won't get them to their short-term emissions targets. The client is evaluating subsidies for builders of LEED certified buildings. What are the pros and cons of offering subsidies?

Solution

If the candidate asks about LEED, tell them that LEED certified buildings - (Leadership in Energy and Environmental Design) is the most widely used green building rating system in the world. LEED provides a framework for healthy, highly efficient, and cost-saving green buildings

Pros	Cons
1. Will help get city to short-term emission targets 2. Developers are already familiar with the LEED certification process 3. Aligns incentives between city (who want to reduce GHG) and property owners (who want to saving on their energy bills) 4. Can benefit developers who can use LEED as a marketing tool when selling occupants on leasing/buying their building	1. Expensive for developers, who might start to look at other cities for their projects 2. Not the most effective way to reduce GHG, focuses on a single source of emissions and depends on the LEED's standards 3. Doesn't actually reduce GHG emissions, because it doesn't address current buildings 4. Zoning and construction restrictions in NYC limit the ability to implement quickly

Exhibit #1 : NYC Greenhouse Gas Emissions

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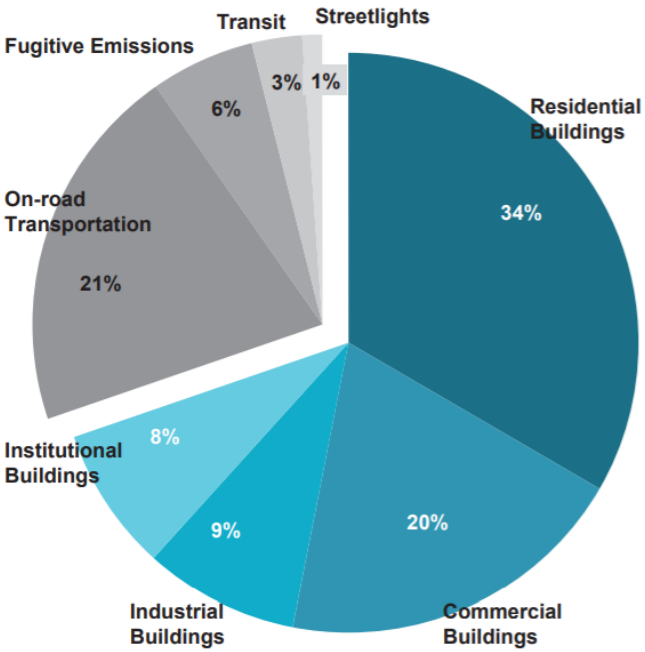
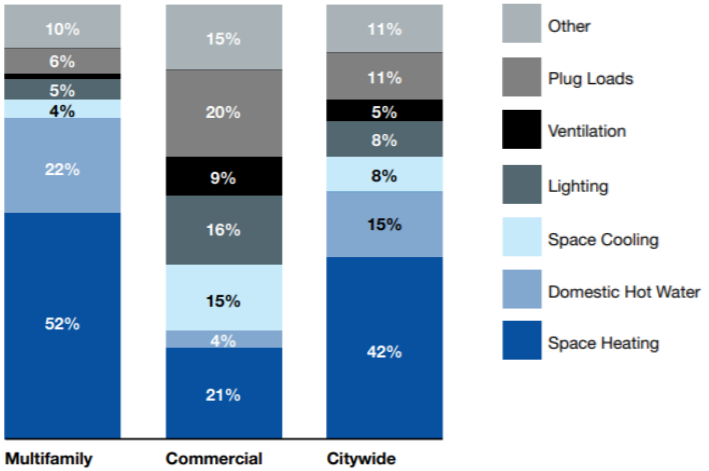
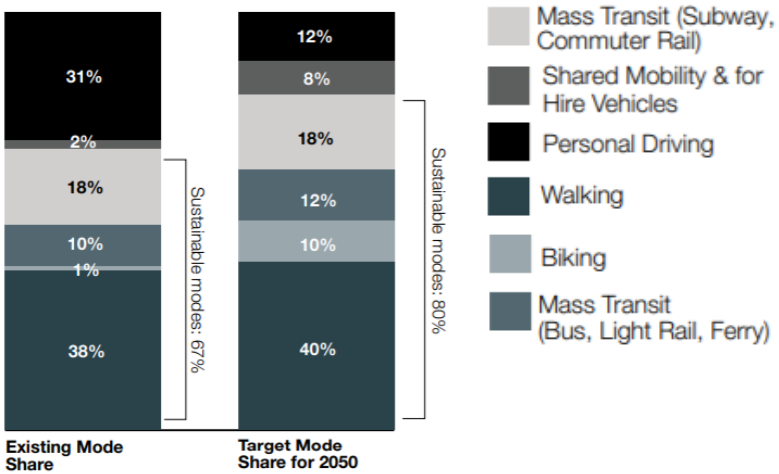
NYC GHG Emissions by Sector



NYC GHG Emissions from Large Buildings by End Use



Transportation Mode Shift for In-City Trips



Source: New York City Mayor's Office of Long-Term Planning and Sustainability

Case #4 : CO-V(id)accinated

Columbia Business School

Difficulty: Very Hard
Industry: Public Sector
Case Type: Optimization

Written by Daniel Krimowski '21 and Anthony Villamagna '21

Concepts Tested

- Balancing competing priorities
- Creativity and confidence
- Focusing through extra, unessential information

Problem Statement Narrative

Happy New Years Eve! Thank you for coming in to help with this emergency deliverable. 5 Pharma companies have developed 5 COVID vaccines and are now beginning to deliver them. Our client is the government of New York State and we will be providing ongoing support to the vaccine distribution until the end of the pandemic. The federal government is controlling distribution nationally and our client has been given extremely limited lots as New York's illustrious leader, Governor Drew Commo, disputed the efficacy of the vaccines. The vaccines lots begin arriving to NYC in specially-outfitted refrigerated trucks tonight. You're here to help New York State make their final decision on how to distribute the initial vaccine lots that arrive this week in the manner that is best for the state. We have a call in 40 minutes with Governor Commo and his team. If approved, the distribution and administering of the available vaccines will begin tomorrow morning. If your recommendations are denied, we will lose the project and the distribution of the vaccines will be delayed. Your recommendations will have life and death effects on New Yorkers. How do we approach distribution?

Case Notes

To effectively give this case, Coach must be intimately familiar with this case. Do NOT provide any information unless the candidate explicitly requests it. This a Candidate-led case and should be driven entirely by the candidate with a clarification questions asked throughout the sections. This case is designed to be extremely difficult to navigate with large amounts of excess information that the candidate must sort through and identify what is important. This case tests the candidate's mental math, structure, time management, and focus.

Clarifying Questions

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Clarification Answers if Asked

- **What do you mean by best for the state?**
  "We want to save as many lives as possible and get our economy back up and running as soon as possible with the vaccines arriving this week. New York is facing a $10 billion shortfall on next year's budget. They have cut every extraneous item out of their budget that is viable. Governor Commo will reject any plan that does not cover the costs of the vaccines. A vaccinated person will immediately return to work in person."
- **How does the vaccine work and how effective is it?**
  "The vaccines have varying degrees of effectiveness and are all administered by a series of or individual injections. An effectively vaccinated person cannot carry or spread the disease"
- **How many doses do we have? or How many lots of vaccines do we have?**
  "We will address this later in the case. However, if you prefer, we can jump right into it." If they say, yes, skip the framework and go directly to Exhibit 1.
- **How many people can we inoculate?**
  "We will address this later in the case. That is what you are here to help figure out."
- **How many people live in New York State?**
  "19.5 million"
- **What about Antibodies?**
  "Recent studies show antibodies do not prevent reinfection or the spread of COVID and are ignored."
- **How many people need to be inoculated?**
  "Current research indicates 90% of the US pop needs to be inoculated before we can return to normal"
- **What support can we expect from the Federal Government?**
  "Governor Commo believes asking for help is a sign of weakness and he will not directly admit his failure and ask the President for help as it would hurt his ego. We can expect no aid from the Federal Government."

Question #1 / Framework

How do we approach distribution of the vaccine?

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Sample Framework

1. Vaccine Details
   a. # Doses for each Vaccine
      i. # Doses for inoculation
   b. Vaccine efficacy
   c. Spoilage

2. Who is Getting the Vaccine
   a. Population Details
      i. Population size
         1) Age
         2) Wealth
         3) Race
         4) Geography
   b. Risk Level
      i. Frontline Workers
      ii. Healthcare Heroes

3. Paying for Vaccines
   a. Cost of Vaccines
      i. Per vaccine cost
         1) Negotiation opportunities
      ii. Transport Costs
         1) Refrigerated Trucks
         2) Drivers
         3) Security Escorts
      iii. Storage Costs
      iv. Delivery/Administering Costs
   b. Additional $ (Revenues)
      i. Taxes
      ii. Subsidies
      iii. Non-Profit support
      iv. Federal Government Aid

4. Risks
   a. PR
   b. Vaccine failure
   c. Bad reactions to Vaccine
   d. Inability to pay/Budget insolvency
   e. Anit-vaxxers
   f. Federal Gov't intervention

Question #2

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Question

Share Exhibit #1: We just received these details on the vaccines being delivered to our client

Further Information (if requested)

- **Lot Size**
  Vaccines are delivered in lots. These are the total doses being delivered
- **Doses Needed to Inoculate**
  Each vaccine requires a different number of doses, follow-on doses are known as "boosters", to complete inoculation. A person is considered immune once they receive their initial dose so long as they receive their boosters. By federal decree, the state must hold in reserve enough doses so that every person who receives an initial vaccine, can complete the series. (Case Coach Note: Candidate can't game the system and use shots on a larger group relying on additional vaccines coming later. If 5 shots are needed for 1 complete inoculation, then need to store 4 shots for that person and are not allowed to use them on anyone else)
- **Spoilage %**
  With inefficient and new production processes and transportation practices, we are expecting to lose a small percentage of vaccines between shipment and administration of the vaccine. These vaccines are never issued as they render the entire vaccine series ineffective. Assume we can identify spoiled vaccines before issue
- **Vaccine Effectiveness**
  The effectiveness of each vaccine is defined as the percentage of recipients who can no longer contract or spread COVID after receiving the vaccine. This is based upon a person's individual immune system and is spread evenly throughout the population. There is no way to tell how the vaccine will react within each person and if it will be effective or not beforehand. The only way to check this is with an antibody test 3 weeks after inoculation

Question #3

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Question

Share Exhibit #2: We compiled the vaccine cost breakdowns sent to our client by the pharmaceutical companies

Further Information (if requested)

- **Cost of spoiled vaccines**
  New York State is responsible for paying for all vaccines issued from the manufacturer, including those that end up spoiled. Any negotiations or legal proceedings on this will not be resolved until post-pandemic
- **Spoilage (If not asked earlier)**
  With inefficient and new production processes and transportation practices, we are expecting to lose a small percentage of vaccines between shipment and administration of the vaccine. These vaccines are never issued as they render the entire vaccine series ineffective. Assume we can identify spoiled vaccines before issue
- **Cost per series**
  This is the cost for each inoculation series of each vaccine
- **Cost of administering vaccines**
  This is the per-dose cost of giving the vaccine out including all overhead, labor, and safety costs
- **Cost of transport of vaccine**
  Total cost to transport each full lot of vaccines to New York City, the hub, and aggregated cost to send vaccines to all parts of New York State
- **Arrival date**
  This is when the vaccine lots arrive in New York City and into the custody of New York State Health officials

Question #4

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Question

Share Exhibit #3: Here we have the population data for New York State

Further Information (if requested)

- **Population size**
  This is total number of people in each population group. Recent studies show antibodies do not prevent reinfection or the spread of COVID and people who have previously contracted COVID are included as they MUST get the vaccine
- **High-Risk and Low-Risk**
  High-risk people will die or be hospitalized if they contract COVID. Low-risk people will not die or be hospitalized if they contract COVID. Our client cannot identify who is in what risk level
- **Medium-Risk**
  The remaining people who are not high- or low-risk are medium risk. Medium-risk people will die or or be hospitalized at a 5% rate if they are infected with COVID. Our client cannot identify who is in what risk level
- **Average taxable income**
  Total average annual taxable income of members of each group including those who are not actively working
- **Return to work Income Effect**
  The 12 month increase to average taxable income upon returning to work in-person after receiving the vaccine
- **Tax rate**
  The effective tax rate for New York is 10%

Question #5

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Question

Brainstorm. If prompt is needed: What are the implications of this approach?

Solution

Candidate should include Economic implications and one/both of Health and Moral.

Economic

- The more high-risk people inoculated, the worse off the economy as people aren't working/as productive
- Economic Trade-offs

Health

- Lockdown has been almost 9 months at this point, incalculable damage to mental health
- We will be issuing vaccines with less than 100% effectiveness to high-risk citizens

Moral

- Asking our most vulnerable to continue their isolation while others go back to their normal lives
- Politicians and bankers getting vaccines before people in nursing homes and those with disabilities would create significant concerns

Conclusion

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Recommendation

- Preferred Recommendation: I recommend that we give 43k Hamilkas vaccines to Segment C to earn taxes to pay for the vaccines and remaining 656k vaccines distributed to Segments D and E with a preference towards those in urban areas

Rationale

- We should do this because this will save allow 43k people to comfortably return to work with 100% efficacy which pays for these vaccines and protects the lives of 656k more elderly and higher risk NYS residents as we begin inoculation of the greater population

Risks

- We are giving vaccines to low-risk individuals for the money to pay for the vaccines which risks the lives and health of our high-risk, elderly residents
- We are issuing vaccines that are not 100% effective to high-risk citizens and risk increasing the death toll even more by giving false confidence
- We are giving vaccines to non-healthcare/frontline workers in pursuit of economic gain
- We can expect heavy PR resistance to the decision no matter how we choose to allocate the vaccines

Next Steps

- Considering these risks, our next steps are to immediately begin scheduling the administering of the vaccines arriving this week while sculpting the PR response so Governor Commi can continue to stay on the good side of the press. Our client must continue to stress the populace taking safety measures

Exhibit #1 : COVID Vaccines Details

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Vaccine Name	Company	Lot Size	Doses Needed	Vaccine Effectiveness	Spoilage %
Hermes	Panzer	0.6m	3	90%	5%
Apate	Voderna	0.5m	1	90%	10%
Mercurius	Lonson	1.5m	5	95%	0%
Hamilkas	Terck	0.25m	1	100%	10%
Dolos	Covartis	2m	1	100%	10%

Exhibit #2 : COVID Vaccines Costs

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Vaccine Name	Cost per Series	Cost to Administer	Cost to Transport Lot	Arrival Date
Hermes	$10	$4	$1.72m	Jan. 1st
Apate	$5	$4	$1.20m	Jan. 28th
Mercurius	$8	$4	$2.10m	Jan. 3rd
Hamilkas	$12	$4	$1.10m	Jan. 5th
Dolos	$2	$4	$2.80m	Apr. 1st

Exhibit #3 : Population Data

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Age Range	Size of Segment	High Risk	Low Risk	Average Income	Income Effect of In-person
<25	5.4m	1%	95%	$25k	15%
25-35	2.4m	4%	86%	$35k	12%
36-59	5.2m	12%	63%	$50k	10%
60-70	2.4m	35%	30%	$30k	0%
>70	4.1m	60%	5%	$8k	0%

Exhibit #1 Solutions

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Math Answers

Step 1: Take Spoiled vaccines out. Multiply total vaccines by remaining % after spoilage

Hermes:	600k	*	(1-.05)	=570k
Apate:	500k	*	(1-.10)	=450k
Mercurius:	1.5m	*	(1-.00)	=1.5m
Hamilkas:	250k	*	(1-.10)	=225k
Delos:	2m	*	(1-.10)	=1.8m

Total: 305k spoiled vaccines-Exact #
and
4.545m unspoiled vaccines-Exact #
~6% spoil rate-Can round

Step 2: Calculate Total # People who can receive vaccines by dividing remaining vaccines by # doses needed.

Hermes:	570k	/	3	=190k
Apate:	450k	/	1	=450k
Mercurius:	1.5m	/	5	=300k
Hamilkas:	225k	/	1	=225k
Delos:	1.8m	/	1	=1.8m

Step 3: Calculate Total # People vaccine is effective for

Hermes:	190k	*	90%	=171k
Apate:	450k	*	90%	=405k
Mercurius:	300k	*	95%	=285k
Hamilkas:	225k	*	100%	=225k
Delos:	1.8m	*	100%	=1.8m

Total: 2,965,000-Exact # people receiving vaccines
Total: 2,886,000-# people receiving effective vaccines

79k citizens will be back to work with ineffective vaccines
Note: Total vaccinated people from vaccines coming this week = 715k (Next Exhibit)

Exhibit #2 Solutions

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Math Answers

Step 1: Calculate number of series' and multiply by cost per series

Hermes:	600k	/	3	*	10	=$2m
Apate:	500k	/	1	*	5	=$2.5m
Mercurius:	1.5m	/	5	*	8	=$2.4m
Hamilkas:	250k	/	1	*	12	=$3m
Delos:	2m	/	1	*	2	=$4m

Step 2: Calculate Total Cost of administering vaccines by multiplying non-spoiled vaccines from Ex 1 by cost to give.

Hermes:	570k	*	4	=$2.28m
Apate:	450k	*	4	=$1.8m
Mercurius:	1.5m	*	4	=$6m
Hamilkas:	225k	*	4	=$900k
Delos:	1.8m	*	4	=$7.2m

Total Cost is $41m or approximately $14 /pp inoculated. However, Apate and Delos are **NOT** being delivered this week.

Step 3: Add Transportation costs to previous 2 totals to get Total Cost for each vaccine. (Optional: Solve for cost/vaccine)

Hermes:	2m	+	2.28m	+	1.72m	=$6m	/	600k =$10
Apate:	2.5m	+	1.8m	+	1.2m	=$5.5m	/	500k =$11
Mercurius:	2.4m	+	6m+	2.1m	=$10.5m	/	1.5m	=$7
Hamilkas:	3m	+	900k	+	1.1m	=$5m	/	250k =$20
Delos:	4m	+	7.2m	+	2.8m	=$14m	/	2m =$7

For vaccines arriving this week, $21.5m of vaccines for 715k people ~$30 /person, but only 681k are effective, <u>leaving 34k people going back to normal life with ineffective vaccines</u>

Exhibit #3 Solutions

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Math Answers

Candidate should immediately notice that there are nowhere near enough available vaccines to inoculate a meaningful percentage of the population (681k / 19.5m = ~3.5% NYS pop.) So long as candidate accounts for paying for the vaccines, any answer is acceptable. Candidate should not calculate all the information as it is unessential to solving the case question of what to do with the initial batch of vaccines.

Step 1: Calculate total revenue needed to pay for vaccine from Segment C. .

50k (Income) * 10% (Increase) * 10% (Taxes) =$500

Step 2: Calculate number vaccines need to give to Segment C to pay for vaccines

21.5m (Total Cost) / 500 =43k

To pay for $21.5m in vaccines delivered this week, 43k Hamilkas vaccines (100% efficacy) should be given to Segment C population currently working and the remaining should be distributed to Segments D & E. While the cost looks large at first, the vaccines are easy to pay for under this model and are getting cheaper with the follow-on lots.

Keys to the Case and Feedback

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Takeaways

1. **Effective Vaccines**- We will administer the vaccine to 715k people, however only 681k of them are effectively inoculated. The 34k who did not generate antibodies can still contract and spread COVID. This is the key to the case
2. **Empathy**- Be careful turning human lives into revenues and costs. This is a calculation that all the states are doing, but it is better to lean towards empathy and saving lives. Balancing the budget is important, but don't focus entirely on the financials. The primary focus should be the people
3. **Math**- Including the interviewer in the math is essential. The takeaways for the candidate should be to not get lost in the math and to solve the problem **with** the interviewer. Have a goal
4. **Case Progression**- "Limited supply of vaccines" indicates that in the supply and demand calculation, candidate should look at supply first as that will be the choke point/bottleneck
5. **Spoilage**- Note that we are losing 305k doses that would inoculate 285k people (279k effectively)!! How can we improve this? Mercurius has 0% spoilage rate, how can we match that?
6. **Paying for the Vaccine**- The government doesn't get all of their additional income when they return to work Karl Marx ☺, they get a % of it. Keep in mind the "So What" of the math
7. **Driving the Case**- Candidate-driven cases are hard. If your intuition is incorrect and you're not asking the right questions, you can easily go off track. This case is much harder than anything you will see in an interview, but if you were permitted to drive the case, you can identify where you went wrong
8. **Efficiency**- There is a lot of information in this case. It is important to know where you are going with the math to ensure you aren't bogged down in an exhibit. Try doing the case again from scratch. You'll find that when you have it mapped out, the case moves quite rapidly

Case #5 : Dam Dam Dam

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Difficulty: Hard
Industry: Energy
Case Type: Non-Profit

Written by Dylain Cohen '21

Concepts Tested

- Math
- Structure
- Creativity

Problem Statement Narrative

We have just been approached by the council of Dracula, an isolated city of 900,000 people. The council is considering whether to approve the request to allow a steel supplier to open a factory next to an important dam on the outskirts of the city. What advice do we have for the council?

Case Notes

The case focuses heavily on the use of the dam for hydroelectric power generation
While candidates should certainly flag externalities such as waste and pollution as hinderances to the construction of the factory, the main focus should be on the reduction of the water level of the dam causing lower power generation

Question #1 / Framework

What factors should we consider when deciding what advice to give the city of Dracula?

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Guidance for Interviewer

While environmental concerns will likely dominate the candidate's framework, steer them in the direction of what the water in the dam can be used for

Clarification Answers if Asked

- Why is the dam important?: It is used to generate hydroelectricity for the city
- Are there other energy sources for the city: No
- How long will the construction of the factory take: 1 year
- On what basis should this decision be made: Sustainability
- Unemployment rate: 15%
- City population growth rate: unknown
- Why does the plant need to be built next to the dam?: it needs to use the water for its manufacturing process
- Are there other locations the plant is considering?: No

Sample Framework

1. The steel factory
    a. Construction issues
        i. Pollution
        ii. Protests
        iii. Unions
    b. Bringing jobs to the residents
        i. During construction
        ii. During operation
    c. Generating tax revenue for the city
    d. Cost to build the factory
    e. Time to build the factory
2. The city of Dracula
    a. Current uses of the dam
        i. Recreational – swimming, sailing etc.
        ii. Hydroelectricity generation
        iii. Water resource for residents
    b. Demographics of the residents
    c. Primary industries in Dracula
    d. Population growth

Question #2

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Question

What are some of the major inflows and outflows into and out of the dam?

Solution

Inflows	Outflows
• Rain • Water from wastewater treatment plants • Runoff from nearby lakes/mountains	• Evaporation • Hydroelectricity generation • Water for residents' homes • Water for factories in the city

Question #3

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Question

We have been given some information by the city. Based on this exhibit, what are the inflows and outflows from the dam per quarter?

Solution

Provide the candidate with Exhibit #1.

The candidate should identify the following:

- At the start of each quarter, the water level is 85 meters
- During the quarter, due to rain, evaporation, and water usage by residents, the dam water level increases by 21 meters to 96 meters
- At the end of the quarter, as stated by the note, the water level falls by 21 meters due to hydroelectricity generation and the quarterly cycle restarts (increasing by 21m and then decreasing by 21m)

The candidate is not given information about which sources are an inflow or outflow so provide additional guidance as needed (rain is the only inflow)

Source	Water Level Change (meters per month)	Water Level Change (meters per year)	Inflow vs outflow	Water Level Change (meters per quarter)
Rain	7	-	Inflow	21
Evaporation	-	15	Outflow	3.75
Hydroelectricity generation	-	48	Outflow	12
Water for residents	-	21	Outflow	5.25

Question #4

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Question

How much power does the dam generate per quarter and is this sustainable for the city?

Solution

Provide the candidate with Exhibit #2.

- Given the fact that the water level in the dam is 96 meters at the end of each quarter, the candidate should realize that the dam will generate 2,400,000 MWh of electricity (per quarter)
- When asked, each resident in Dracula will require 2 MWh of electricity per quarter:

  900,000 residents x 2 MWh per quarter = 1,800,000 MWh per quarter
- The dam therefore generates more electricity than what the city requires (i.e. 2,400,000 MWh vs 1,800,000 MWh)
- Candidates should now realize that the steel factory may impact the water level of the dam – it will reduce the water level by 3 meters per quarter (provide this information to the candidate)
  - Initially this additional water outflow won't be a problem, but it does cause the outflows from the dam to exceed the inflows (24 meters of outflow vs 21 meters of inflow)
  - After 9 quarters (i.e. 2.25 years), the water level will drop below 70 meters causing the dam to not generate sufficient electricity for its residents. This assumes no population growth

Quarter	0	1	2	3	4	5	6	7	8	***9***	10	11
Water Level (m)	96	93	90	87	84	81	78	75	72	***69***	66	63

Conclusion

The mayor of Dracula would like to know the advice you have for them regarding the new factory

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Recommendation

- We would recommend against the construction of the steel factory

Rationale

- There are two primary concerns:
  - The steel factory will use water from the dam causing the amount of hydroelectricity we generate to fall below sustainable levels after 2.25 years
  - There are environmental concerns associated with the factory such as chemical runoff and spillage that may contaminate water in the dam

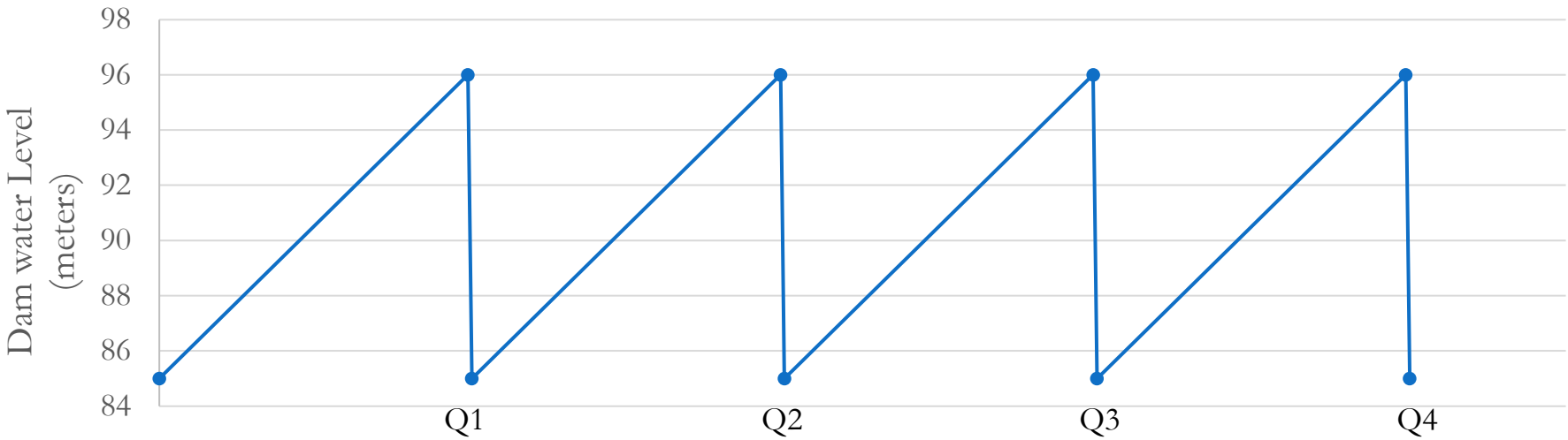
Risks

- There may be significant pushback from residents who view the factory as a source of employment
- The steel factory could generate significant taxes for Dracula
- The rejection of the factory could signal to other companies that doing business in Dracula is very difficult

Next Steps

- Look at alternative sources of energy generation so that the city is not solely reliant on the dam for electricity
- Discuss with the steel factory to see if it can find an alternative source of water for its production process
- Investigate whether water can be pumped into the dam from a neighboring city so that the steel factory can go ahead with its proposed plan

Exhibit #1 : Dam Water Level Changes Over a Year



Source	Water Level Change (meters per month)	Water Level Change (meters per year)
Rain	7	-
Evaporation	-	15
Hydroelectricity generation *	-	48
Water for residents	-	21

Note: Hydroelectricity generation occurs at the end of each quarter

Exhibit #2 : Energy Generation From Dam

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Water Level (meters)	Electricity Generation (MWh)
≥ 110	3,000,000
100 to < 110	2,700,000
90 to < 100	2,400,000
80 to < 90	2,100,000
70 to < 80	1,800,000
60 to < 70	1,500,000
50 to < 60	1,200,000
< 50	900,000

Case #6 : Dizzy Fruits

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Difficulty: Medium
Industry: Retail (Alcohol)
Case Type: Market Entry

Written by Henry Bolo '22

Concepts Tested

- Mental Math
- Structure
- Brainstorming

Problem Statement Narrative

Big Beer Co is a multinational drink and brewing company with $50b in annual sales. Big Beer Co is the industry leader in terms of market share and boasts a portfolio of hundreds of different beer brands. It has seen consistent growth over time, with recent growth stemming from acquisitions of craft beer breweries and mergers with other multinationals. Wary of ever-changing consumer tastes and the need to deliver value to shareholders, the board is concerned about the go forward viability of the current corporate strategy.

Recently, non-alcoholic alternatives, hard kombucha, and alcoholic seltzer have grown in popularity as Millennials and Gen Z come of age, with alcoholic seltzer being the most attractive option. The CEO has brought you in to determine the following: should Big Beer Co enter the alcoholic seltzer market? And how should it enter the market?

Case Notes

There are four main questions in the case. Question #5 is optional

Question #1 / Framework

Should Big Beer Co enter the alcoholic seltzer market?

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Guidance for Interviewer

After reviewing framework, candidate should drive toward market sizing

Clarification Answers if Asked

- Will only launch in US market
- Board is looking for initiatives that increase margins by $500M by year 5
- Big Beer Co expects investments to have a payback period of <= 5 years. There is no discount rate to factor in
- Big Beer Co manufactures in-house and distributes through third parties
- Manufacturing capacity is not currently a constraint

Sample Framework

1. Alcoholic Seltzer Market
   a. Size
      i. Growing/Declining?
      ii. Trends
   b. Competitors
      i. Positioning
      ii. Relative Market Share (RMS)
   c. Consumers
      i. Segments
      ii. Preferences
      iii. Purchase Drivers
2. Financial
   a. Revenue
      i. Volume
      ii. Average Selling Price (ASP)
   b. Costs
      i. Variable Costs (sales commissions, transportation, raw materials, labor)
      ii. Fixed Costs (PP&E, rent, marketing, R&D, SG&A)
3. Risks
   a. Brand, regulatory, opportunity costs, consumer education, changing consumer tastes, macroeconomic conditions, cannibalization

Question #2

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Question

How big will the alcoholic seltzer market be in five years?

Solution

Show candidate exhibit #1 after reading the question

Competitor	Market Share	2020 Sales
Competitor 1	60%	(500 x 4) x .1 x 6 = $1.2b
Competitor 2	25%	$500M
Competitor 3	10%	(500 x 4) x .1 = $200M
Competitor 4	5%	(500 x 4) x .1 x 1/2 = $100M

Market Size in 5 Years: $2 billion in 2020 sales x 2 = **$4 billion**

Question #3

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Question

What are some ways that Big Beer Co could enter the alcoholic seltzer market?

Solution

Candidate should mention acquisition, partnership, or internal launch. Once done, show exhibit #2

NPV should be calculated based on company's 5-year payback period. candidate should also mention that each of these three options satisfies the company's payback and profitability requirements, but that the Organic option is the best option

	Internal Launch	Joint Venture	Acquisition
Annual Contribution Margin	1.5b x 50% = $750M	1b x 50% = $500M	1.2b x 50% = $600M
NPV	($750M x 3 years) - $500M = $1.75b	($500M x 4 years) - $500M = $1.5b	($600M x 5 years) - $2b = $1b

Question #4

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Question

What are some considerations that should be included in Big Beer Co's go-to-market plan?

Solution

There are many ways to answer this question. The candidate should be structured, MECE, and creative. One way to structure an answer:

- **Who:** segments with younger generations (e.g., millennials or gen z)
- **What**: the form factor of the product (size, alcohol content, caloric content, flavors)
- **How**: social media promotion, brand positioning that will appeal to younger generations, celebrity endorsements, prominent placement in channels that younger demographics frequent

Question #5

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Question

In addition to moving into the alcoholic seltzer market, the CEO has asked you to enumerate other potential initiatives for Big Beer Co. What else could the company do to increase profitability?

Solution

The candidate should be structured, MECE, and creative. Some possible answers are:

- Consider other product categories (e.g., wine, spirits, non-alcoholic beverages, or food)
- Refresh advertising (e.g., influencer marketing, TikTok)
- Target new segments or geographies (e.g., developing economies)
- Sell lagging parts of the business (e.g., sell off poor-performing brands or stop distributing in poor-performing regions)
- Vertically disintegrate or integrate (e.g., spin off manufacturing or move into agricultural production or distribution)

Conclusion

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Recommendation

- Candidate should recommend that Big Beer Co pursue alcoholic seltzer market and to pursue internal launch route

Rationale

- Internal launch has highest NPV

Risks

- Changing consumer tastes
- New entrants flood the market
- Inability to launch product in other markets
- Cannibalization
- Opportunity costs

Next Steps

- Collaborate on R&D, manufacturing, and go-to-market plans for the launch of alcoholic seltzer
- (Only if question #4 covered) Do further analysis on other profitability initiatives

Exhibit #1

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Annual Alcoholic Seltzer Sales (in USD)*

Competitor	Market Share	2020 Sales
Competitor 1	60%	??
Competitor 2	25%	$500M
Competitor 3	10%	??
Competitor 4	5%	??

Note: Alcoholic Seltzer sales are set to double in 5 years

Exhibit #2

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Market Entry Options

	Internal Launch	Joint Venture	Acquisition
Annual Revenue	$1.5 billion	$1 billion	$1.2 billion
Operating Expenditures	50%	50%	50%
Up-front Costs	$500 million	$500 million	$2 billion
Time-to-Market	24 months	12 months	0 months

Case #7 : Dust Cloud

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Difficulty: Medium
Industry: Agriculture
Case Type: Profitability

Written by Daniel Krimowski '21

Concepts Tested

- Math Structure
- Revenue
- Creativity

Problem Statement Narrative

Our client is the North Australian Pastoral Company (NAPCO). NAPCO is a 143-year-old agriculture enterprise that is one of the leading companies in the space in Australia. They operate 13 cattle stations in Queensland and Northern Territory. Cattle stations are large cattle farms or ranches that raise cattle for slaughter. NAPCO's cattle stations cover over 60,000 square kilometers and they manage over 200,000 head of cattle. Their largest station is Alexandria Station in Northern Territory that is over 16,000 square kilometers and supports herds of over 55,000 head. 10,000 head are due to be delivered to Darwin next month, but due to heavy flooding in Northern Territory, the train tracks they normally use to deliver their mature cattle from Alexandria Station to market in Darwin are inaccessible and we will be unable to repair the damage until the end of the wet season next April. What factors would you consider in deciding how to advise NAPCO how to deliver the cattle?

Case Notes

What is the terrain between Alexandria Station and Darwin?

- There is a variety of terrain including wetlands and marshes, but mostly rolling flatlands

Question #1 / Framework

What factors would you consider in deciding how to advise NAPCO how to deliver the cattle?

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Sample Framework

1. Profitability
   a. Revenues
      i. 10k Cattle
      ii. Price per head/pound
   b. Costs
      i. Transport
      ii. Fuel
      iii. Feed
      iv. SG&A
2. Delivery
   a. Location
      i. How far away is Darwin?
      ii. Where else can we take them?
   b. Method
      i. How do we get them there?
         1) Train – Unflooded stations
         2) Plane – Landing strips
         3) Trucks – Transport of 10k cattle
         4) Cattle Drive – Best option if train is out
   c. Timing
      i. When do we need to deliver?
         1) Contract pricing
         2) Late fees
         3) Insurance
3. Risks
   a. Lost animals
   b. Opportunity cost for labor
   c. Damaged relationships
      i. Buyers
      ii. Shippers
      iii. Brokers

Question #2

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Question #2

As NAPCO must deliver on their order, they have decided to revive an old practice and drive the cattle to another station where they can be loaded onto trains and delivered to Darwin. The station manager for Alexandria Station has come forward with 2 separate stations to drive the cattle: Coorabulka Station or Boomarra Station. What factors should NAPCO consider when comparing these options?

Suggested Answer

1. **Profitability**
    a. Revenue factors
        i. Selling price per head or per pound
    b. Cost factors
        i. Feed
            1) What do they eat
            2) How much do they need per day
            3) How much does each bushel cost
        ii. Water
            1) Availability of water (flooding)
        iii. Cost of extra labor and opportunity cost
2. **Operations**
    a. Capability to drive cattle
    b. Security of the route
    c. Lost cattle
    d. Cattle ability to stay healthy on drive
    e. Horses vs trucks
    f. Supply points for cattle and drovers
        i. Water
        ii. Food
        iii. Bedding

Question #3

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Question #3

The station manager has given us details on the routes. Route A is to follow the Georgina River 600 kilometers southeast to Coorabulka Station. Route B is 300 kilometers due east to Boomarra Station. He also passed along this information on the effects of driving a herd on the cattle. Which route and pace should we advise NAPCO to take? Hand candidate Exhibit 1

Clarifying Questions

- Cattle require 3% of their mature weight in grass feed per day. Cattle will lose half the unreplaced weight every day
- All cattle are Alexandria Composite and are sold by the pound. At mature weight they sell for $800 USD per head
- Alexandria Composite weigh 500 kilograms at mature slaughter weight
- Km Traveled- This is the distance the cattle are driven every day. Cattle are creatures of habit and during a drive need to be driven approximately the same distance every day

Question #4

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Question #4

Driving cattle has been an obsolete method of transporting large, commercial herds for decades. Our client will need to hire aboriginal drovers who still practice this profession. The station manager has spoken with one of the Warlpiri, one of the aboriginal tribes in Northern Territory, who has said he and his 19 other drovers will work for $100 per day. He has also said that NAPCO will lose one half percent of the cattle going down the river and 1% of cattle on the route to Boomarra. Which route and pace should we advise the client to take?

Math Answer

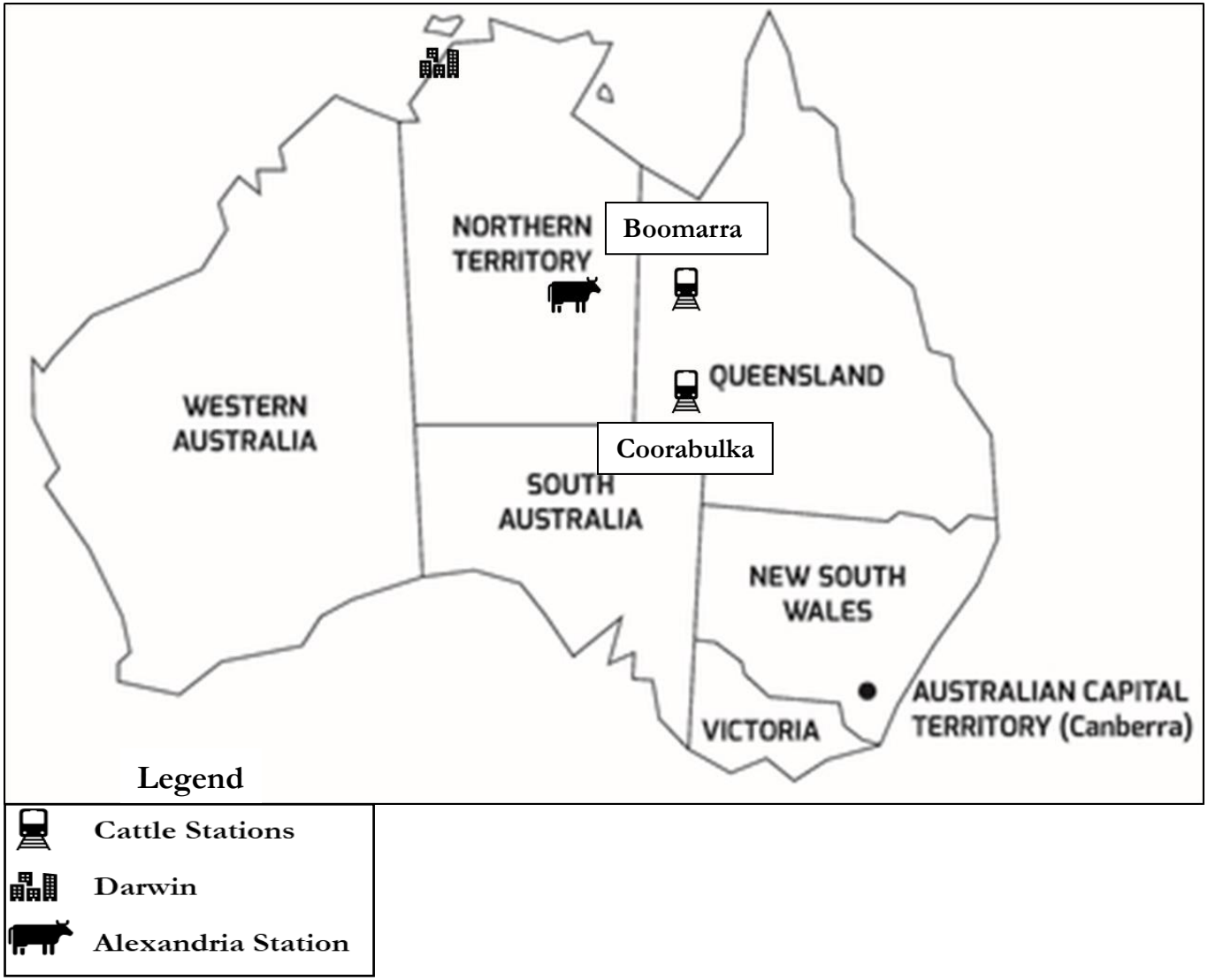
	Cost From Ex 1		Labor		Lost Cattle		Total
Coorabulka	640k	+	80k [40 * 20]	+	37k --> *[460 * 1.6 * 50]*	=	**757k**
Boomarra	672k	+	12k [6 * 20]	+	73k --> *[458 * 1.6 * 100]*	=	**757k**

***Rounding is allowed*

Both routes end up costing nearly the same. With time of delivery not being an immediate concern so long as the cattle are delivered, it is better to treat the animals well and not stress them out in their drive by choosing the easier pace.

The important part of this answer is the rationale given by the candidate for their answer. If they don't give a why, ask them why that is the choice they are making.

Exhibit #1 : Cattle Drive Routes



Coorabulka Route

Km Traveled	Grass Eaten
15	15kg
30	10kg
50	8kg

Boomarra Route

Km Traveled	Grass Eaten
15	10kg
30	6kg
50	3kg

Note: Cattle lose 1kg every day on a cattle drive, regardless of grass intake

Exhibit #1 Solution

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Math Answers

Minimize Loss

Price /Kilo 800lbs / $500 = $1.60

Coorabulka Route

Drive	Calorie Loss	Distance	Pace	Kgs/Day	Days	Price	Lost Rev	Cattle	Total
(1 + 15 - 15 / 2)	*	600 /	15 =	1	* 40	* 1.60 =	64k	* 10k =	640k
(1 + 15 - 10 / 2)	*	600 /	30 =	3.5	* 20	* 1.60 =	112k	* 10k =	1.12m
(1 + 15 - 8 / 2)	*	600 /	50 =	4.5	* 12	* 1.60 =	87k	* 10k =	870k

Boomarra Route

Drive	Calorie Loss	Distance	Pace	Kgs/Day	Days	Price	Lost Rev	Cattle	Total
(1 + 15 - 15 / 2)	*	600 /	15 =	3.5	* 20	* 1.60 =	112k	* 10k =	1.12m
(1 + 15 - 10 / 2)	*	600 /	30 =	5.5	* 10	* 1.60 =	88k	* 10k =	880k
(1 + 15 - 8 / 2)	*	600 /	50 =	7	* 6	* 1.60 =	67k	* 10k =	670k

The best option is to take Coorabulka Route at a pace of 15km per day. This will cost NAPCO $640k or 8% of the potential revenues.

Keys to the Case and Feedback

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Takeaways

1. **No Conclusion-** McKinsey and Bain often will not ask for a full recommendation and instead you will need to give mini-recommendations throughout the case
2. **Math Rationale-**Make sure to give rationale behind your math. It is not just about getting to the right answer in a structured manner, but also the reason you came to this decision
3. **Advising-** A consultant is a trusted advisor who needs to look beyond the page. For Question #4, think about how it would look if word got out that NAPCO was driving cattle 50km per day, just to make $480 more. Use sense and logic when making recommendations

Case #3 : Echo Yankee Games

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Difficulty: Easy
Industry: Technology
Case Type: Profitability

Concepts Tested

- Pricing strategy
- Mental math
- Actual math

Problem Statement Narrative

The client, Echo Yankee Games, has approached the firm to help them boost profitability. EYG is a mobile gaming development agency that makes game applications for the iOS and Android platforms and has four genre of games: Trivia, Action, Puzzle, and Word games. In the last few years, they have done well financially, but still want to increase profitability. What should they consider?

Case Notes

This is a simple case that is meant to test comfortability with mental math

It is entirely interviewer-led

Question #1 / Framework

What should Echo Yankee Games consider to improve their profitability ?

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Guidance for Interviewer

The framework doesn't really matter for the case but should at least reflect some knowledge of profitability and specificity to the mobile game industry

Clarification Answers if Asked

- EYG is US based.
- Market is extremely fragmented with no clear leaders
- There is no specific revenue / cost target
- Revenue from two streams:
  - In-app Purchases
  - Downloads

Sample Framework

1. Revenue
   a. Number of users
      i. Core Demo - kids
      ii. Growth/trends
   b. Price per user
      i. In-app purchases
      ii. App downloads
   c. Product mix / high performers
      i. Action
      ii. Trivia
      iii. Puzzle
      iv. Word
2. Costs
   a. Fixed
      i. Development
      ii. Marketing
   b. Variable
      i. Server costs
3. Overall market
   a. Competitive landscape / response
   b. Benchmarks

Question #2

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Question

EYG's current profit margins by game genre are Trivia 10%, Action 20%, Puzzle 30%, and Word 20%. The CMO says that by optimizing marketing efforts they can double the profit margins on any genre. By how much will EYG increase overall profit margins if they double the profit margin of Trivia games?

Solution

If asked, tell the candidate the following:

- The user base will not decrease with the increase in profit margin
- Category by percentage of current profit: Trivia 20%, Action 50%, Puzzle 20%, Word 10%

Current Profit Margin: 20% = (10%*20%+20%*50%+30%*20%+20%*10)
New Profit Margin: 22% = (20%*20%+20%*50%+30%*20%+20%*10)

A great candidate will note that they would do better by increasing the profit margins on Action games, their most popular genre

Doubling Action games would see an increase in the company-wide profit margin from 20% to 30% overall

Question #3

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Question

EYG has done some analysis and knows that to break even on developing an action game in one year they have to sell 40 thousand downloads. They know that their core demographic, children, primarily play in the summer break. On these high volume days, a game is downloaded 300 times per day. During the school year, the app is downloaded 50 times per day. The app store is down for maintenance 65 days per year. How many high volume days in one year does Echo Yankee need to break even on this action game?

Solution

Use algebra to solve a system of equations:

Two Equations:
$40{,}000 = 300H + 50L$
$300 = H + L$

Subtract H from both sides of 2nd equation to get: $300 - H = L$
Plug L into 1st equation to get: $40{,}000 = 300H + 50(300 - H)$

Answer: H = 100 days

Note: A strong caser will note the feasibility of this result. Are there 100 days in a summer for students? Many students have a summer that is less than 90 days, so a new action game isn't likely to break even in the first year

Question #4

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Question

Echo Yankee's marketing team has found that by placing ads for their games on other free-to-play games, they can acquire each new user for $4.00. These users, on average, will spend $2.00 per year on in-game purchases. Should they use this marketing campaign?

Solution

Variable costs can be assumed to be zero; all $2 of revenue is profit
If asked, CLV formula:
$CLV = m * (r / (1 + i - r)) - AC$

Candidate must recognize that the retention, the discount rate for the CLV formula
If asked, $i = 10\%$ and $r = 55\%$

Answer: No, the acquisition costs of campaign outweigh the absolute CLV by $2.00 per user.
The retention rate is too low

Brainstorming session can be held for ways to improve retention rate

Extra bonus: the retention rate must be greater than ~75% to break even on the campaign; probably don't ask this unless the candidate wants to try it

Conclusion

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Recommendation

- Focus on increasing profitability in Action genre and develop the proposed new game; do not go ahead with the marketing plan unless CLV can be raised

Rationale

- Action games are 50% of all profits
- Game will break even in 1 year and will be all profits after that
- Retention rate or per-user revenue is too low; or acquisition costs are too high

Risks

- Many assumptions were made around expected users and expected spend/user
- Platforms change and development must pivot
- Players can quickly lose interest in a game
- Other market players

Next Steps

- Ensure dev team is on the path to success
- Re-analyze assumption numbers and competition
- Re-work marketing plan
- Expand into other genres

Case #9 : EduCo

Columbia Business School

Difficulty: Medium
Industry: EdTech
Case Type: Growth Strategy

Written by Rachit Agarwal '21 and Wineeta Paul '21

Concepts Tested

- Mental math
- Acquisition analysis
- Extracting insights from exhibits

Problem Statement Narrative

Your client is EduCo, one of the oldest and the largest corporate training and learning service provider in the US. Over the last two years, EduCo has been facing increasing competition from new and upcoming digital learning providers and MOOC start-ups.

The CEO believes that EduCo is operating in a very dynamic industry and needs to diversify and adapt to the changes for continued survival. The CEO has asked your firm to come up with a diversification strategy to ensure the firm maintains its market share in this evolving industry. How would you approach this?

Case Notes

Problem statement should lead candidate to create a turnaround strategy/growth framework

Case will require candidate to analyze exhibits and perform mathematical calculations

The exhibits are connected to one another – interviewer should let the candidate lead

Question #1 / Framework

What diversification strategy will maintain EduCo's position?

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Guidance for Interviewer

Candidate should dive right into creating a framework

After the candidate creates the framework, the interviewer should nudge the candidate to think of new areas/themes for company to diversify into in terms of content offering, before providing Exhibit 1

Clarification Answers if Asked

- Products: Currently provides in-person learning services to working professionals (post K-12) in two areas: 1) software programming and applications 2) soft skills such as communication, teamwork and negotiation
- Customers: Pure play B2B firm with presence across the US; US market continues to remain the focus
- Changing industry trends: 1) demand for certification in certain niche areas 2) requirement for online and hybrid learning and training formats
- What are MOOCs? Massive open online courses

Sample Framework

1. Understanding the Market
    a. Customers – Demographics, Demand, WTP
    b. Business Model – B2B, B2C, B2B2C
    c. Content delivered – Topics, Mode (offline, interactive, hybrid)
    d. Size and players (Segment size and growth, # of players)

2. EduCo Options
    a. Organic (Geographies/Offering, investment requirement, capabilities)
    b. Inorganic (available options and their assessment on qualitative and financial metrics, post merger integration efforts, new branding)

3. Risks (market, regulatory, integration, etc.)

Question #2

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Question

Which segments/area(s) do you think the company should diversify into in order to expand its offerings?

Provide Exhibit 1 after the candidate has brainstormed 4-5 ideas

Solution

The candidate should be able to identify the three variables shown in the exhibit and interpret their significance. Each of these indicators impact the learning budget of the corporations –

- Estimated market size: Industry size determines the revenues of the firms, hence, impacting their employment costs
    - Excellent candidate should be able to highlight the impact of estimated size is unclear without having further information on industry averages on employment costs
- Annual historical % increase in job postings: Job postings impact budget for new hire trainings for the industry
    - Excellent candidate should be able to identify this metric only has a one-time impact on employment costs, and is missing the component of on-the-job training, including corporations' efforts to upskill and reskill their workforce
- Projected % market growth: Future growth determines how quickly the learning needs will increase

Candidate should be able to highlight that EduCo should focus on only one of the five segments, given the complexity in launching new training catalog and customer acquisition. Rationale for segment selection:

- Candidate should be able to identify fintech as an obvious options to focus on
- Candidate should be able to rule out genetics due to its smallest industry size & robotics due to lowest job postings
- Candidate should indicate cyber security and blockchain as two potential areas to consider for the second viable option for EduCo; and ask for more information on learning budget to further narrow path forward to one segment

Question #3

Columbia Business School

Question

Does the information given in the table further help you finalize the segment to be targeted?

Provide Exhibit 2 to the candidate

Solution

The candidate should realize that the potential market size in this case is the learning budget of companies in particular industries. The candidate should multiply the three columns to calculate the market size and conclude that the segment to go ahead is Fintech

Segment	Market Size (Learning budget)
Fintech	$30.0 B
Genetics	$4.4 B
Robotics	$13.0 B
Big Data and Analytics	$18.9 B
Cyber Security	$16.0 B

Question #4

Columbia Business School

Question

What are the potential ways for the client to tap into the target segment of fintech?

Solution

The candidate should provide pros and cons of entering this space, through both organic and inorganic options and enquire about any time or budgetary constraints and about any data related to existing players

Excellent candidates should be able to provide additional reasoning using their personal experiences as well

Question #5

Columbia Business School

Question

The client decides to acquire an existing start-up in this space. Which start-up do you think the client should acquire and why?
Provide Exhibit 3 once the candidate has provided satisfactory answer to the previous question

Solution

The candidate should calculate the total yearly profit by multiplying the first three rows in the table and also calculate the pay-back period by dividing total yearly profit by acquisition cost. The candidate should eliminate Option B from the consideration post these calculations. The candidate should give reasons for choosing either of Option A or C. Some possible answers are:

Option A: both online and off-line presence, high average profit – increasing number of courses and customers can boost the profit further

Option C: shortest pay-back period, highest yearly profit, dominant player in the market

EdTech Start-ups in FinTech Space	Option A	Option B	Option C
Total yearly profit	$ 78M	$ 40M	$ 81M
Pay-back period (years)	2.6	3.0	2.5

Conclusion

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Recommendation

- EduCo should diversify its corporate training and learning services offering in Fintech space
- It should acquire a smaller startup – Option A or C – to execute this expansion/diversification

Rationale

- Fintech space (based on Exhibit 1 & 2) provides the largest market for learning services ($30 billion)
- Within Fintech space, EduCo should go ahead with inorganic growth options (acquisition) instead of building out course offerings because of speed of diversification. Option A/C is a good option due to its short pay-back period and great future potential

Risks

- Regulatory risks – Fintech is heavily regulated sector, and employee trainings may need to be compliant with SEC and Fed rules
- Post merger integration risks – Acquisition of Option A/C presents inherent integration risks (e.g.: business operations, SG&A, and firm culture)
- Brand Dilution – EduCo is an established offline learning provider, and this acquisition might cause brand dilution

Next Steps

- Initiate acquisition process for Option A/C – due diligence, identify synergies, make an offer, and plan for post merger integration
- Expanding current course catalog to other platforms – creating online/ hybrid course offerings
- Create a customer acquisition plan for new course offerings with a focus on maintaining brand capital

Exhibit #1 : Potential New Segments

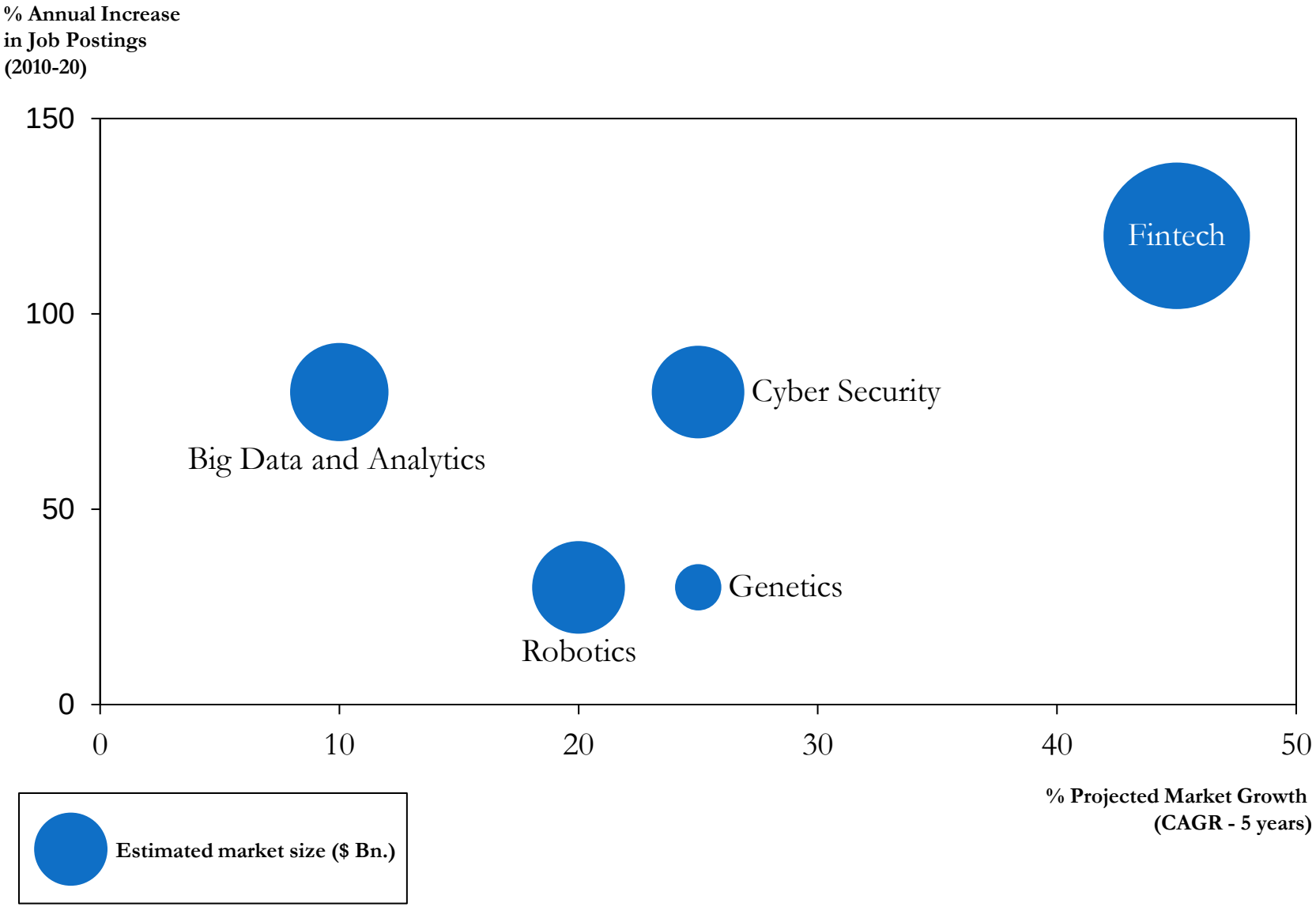

Exhibit #2 : Potential New Segment Details

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Segment	Industry Size ($ B)	Employee costs (as a % of revenue)	Learning spend (as a % of employee costs)
Fintech	1000	30%	10%
Genetics	100	20%	22%
Robotics	400	25%	13%
Big Data and Analytics	450	30%	14%
Cyber Security	400	20%	20%

Exhibit #3 : Potential Acquisition Targets

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EdTech Start-ups in FinTech Space	Option A	Option B	Option C
# of courses offered	40	40	45
# of customers	13,000	10,000	20,000
Average yearly profit / course / customer	$ 150	$ 100	$ 90
Mode of delivery	Online + Hybrid	Offline	Online
Acquisition Cost	$ 200M	$ 120M	$ 200M

Case #10 : Explorer Bank

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Difficulty: Medium
Industry: Financial Services / Credit Cards
Case Type: Profitability

Concepts Tested

- Brainstorming / Creativity
- New product launch
- Breakeven / profitability

Problem Statement Narrative

Your client is the Explorer Bank, a major issuer of credit cards. The company issues credit cards either under its only brand (e.g., The Explorer Platinum) or with partners (e.g., Southeast Airlines Advantage). A new airline, Alpha Airlines, recently approached Explorer Bank with a partnership credit card proposal. How should Explorer Bank evaluate this proposal?

Case Notes

In addition to standard consulting cases, because this case provides an overview of credit card economics, it is very relevant to interviews for other financial services companies (e.g., Visa/Mastercard/Amex/Chase)

Question #1 / Framework

How should Explorer Bank evaluate the partnership proposal at a high-level?

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Guidance for Interviewer

Provide guidance on framework to ensure candidate arrives at all major revenues and fees related to credit cards

Do not show exhibit 1 until question 3 has been discussed

Clarification Answers if Asked

- For this type of arrangement, Explorer Bank as the issuer will issue the credit card and provide all support; Alpha Airlines as the partner generally provides only branding and promotions
- Explorer bank has previous experience issuing credit cards with airline partners and currently partners with 1 other regional airline
- All other minor revenue sources / costs not listed in the sample framework can be ignored for this case

Sample Framework

1. Determine market size
    a. Existing Alpha Airlines customers
        i. Annual unique customers
        ii. Credit Card conversion rate
    b. Card-driven customer acquisitions
        i. Demographics
        ii. Incentive structure
2. Estimate profitability
    a. Revenue
        i. Merchant fees (e.g., interchange)
        ii. Customer fees (e.g., annual, late)
        iii. Interest
    b. Cost
        i. Processing costs (e.g., Visa)
        ii. Partner revenue share
        iii. Bonus for new customers
        iv. Benefits (e.g., miles redemption)
        v. Operational / service costs
        vi. Credit losses
3. Assess risks
    a. Impact on existing partners
    b. Unexpected credit losses

Question #2

Columbia Business School

Question

At a high-level, do you think this type of partnership can be mutually beneficial? What are the benefits to Explorer Bank? What are the benefits to Alpha Airlines?

Solution

Benefits for Explorer Bank

- Access to new customers
- Branding and promotion from Alpha Airlines
- Revenues from both purchases related to Alpha Airlines and beyond

Benefits for Alpha Airlines

- Stronger loyalty (customers with branded credit card with benefits more likely to select airline)
- Revenue share of credit card generated revenues from Explorer Bank

Question #3

Columbia Business School

Question

What do you think are the major sources of revenue for Explorer Bank? What would the major costs in this arrangement to Explorer bank?

Solution

Revenue

- Merchant fees (e.g., interchange)
- Customer fees (e.g., late)
- Interest

Cost

- Processing costs (e.g., Visa)
- Partner revenue share
- Bonus for new customers
- Benefits (e.g., miles redemption)
- Operational / service costs
- Credit losses

Question #4

Columbia Business School

Question

Based on the estimated revenues and costs (Exhibit 1), how much does a customer have to spend per month on the credit card in order for Explorer Bank to break-even on a customer?

Solution

Total revenue per $100 spend = $1.75 + $0.50 + $0.25 = $2.50
Total costs per $100 spend = $0.50 + $0.35 + $0.10 + $0.05 = $1.00
Profit before operating / servicing costs to Explorer Bank per $100 spend = $1.50
Operating / servicing costs (i.e., fixed cost) = $15 per customer
Break even = $15 / $1.50 = 10 units of $100 spend = $1000
Answer: A customer must spend $1000 on his / card credit card per month for Explorer Bank to break even

- **Note:** Top candidates with further interpret this number - $1000 spend on an airlines credit card is largely feasible as long as a customer uses this credit card for other travel purchases as well

Question #5

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Question

What ideas do you have to help ensure that customers of Explorer Bank consistently spend above the monthly breakeven amount for Explorer Bank?

Solution

Explorer bank initiatives

- Introduce additional rewards
  - Better reward redemption (e.g., more ways to use points / miles earned)
  - Incremental rewards (e.g., additional points for spend beyond a threshold)
- Provide non-travel related benefits
  - Incentivize customers to use card for everyday purchases (e.g., offer protections/insurance)
  - Create convenience features (e.g., mobile / tap payments)

Alpha Airlines initiatives

- Enhance card holder benefits on Alpha Airlines
  - Bonus for using credit card (e.g., free checked bags, upgrades)
  - Discounts for other related purchases (e.g., drinks / meals on flights)
- Engage in direct promotion at airports / in-flight (e.g., fliers to remind customers of benefits)

Conclusion

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Recommendation

- Explorer Bank should enter into a partnership with Alpha Airlines to launch a new credit card

Rationale

- Significant benefits to both Explorer Bank and Alpha Airlines from additional customer access to increment profit
- Explorer Bank can be profitable as long as customers spend on average more than $1000 per month, a figure likely feasible

Risks

- Financial losses if average spend per customer is too low
- Credit losses if non-payment is higher than projected
- Cannibalization if a majority of customers who acquire new Alpha Airlines partner card had previously used other Explorer Bank credit cards

Next Steps

- Understand demographics and segmentation for Alpha Airlines customers and those likely to apply for the new credit card
- Finalize contract with Alpha Airlines and set individual responsibilities for partnership (e.g., card promotion by airline)

Exhibit #1 : Revenue and Costs

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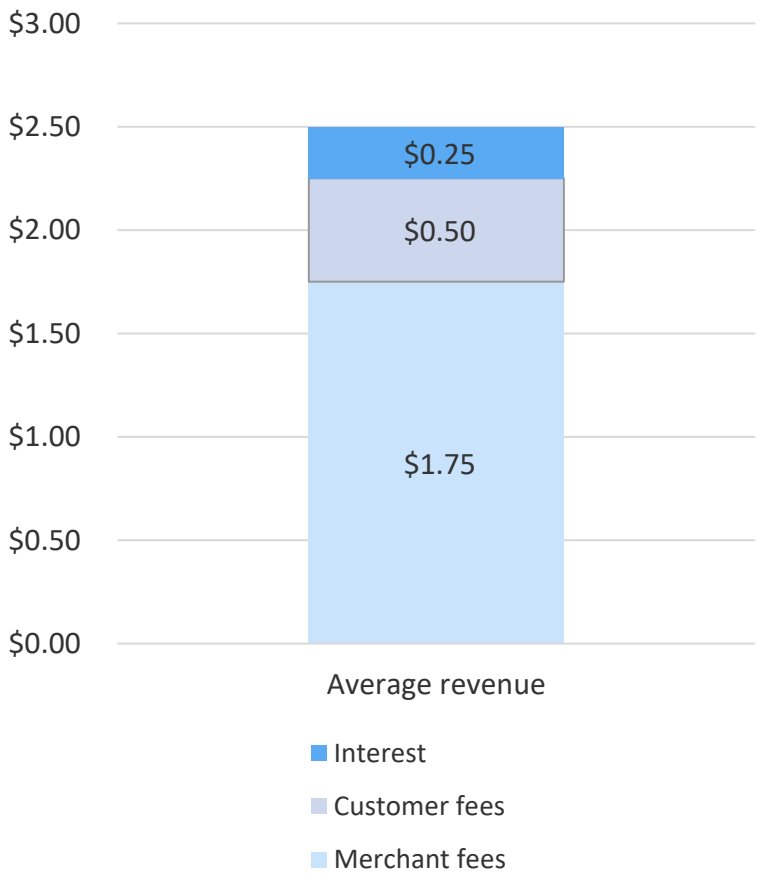
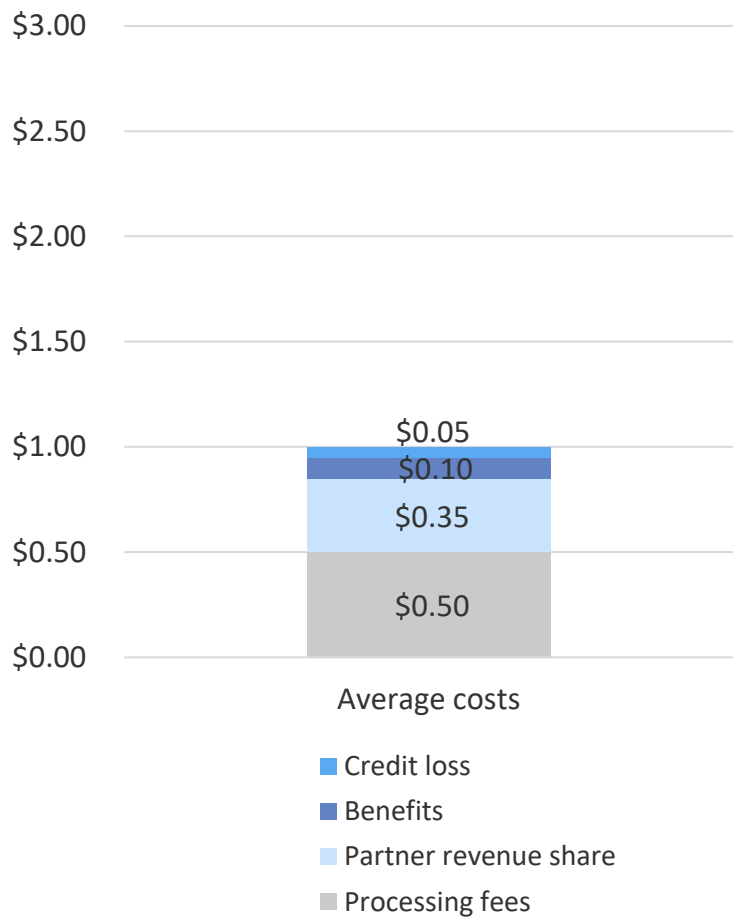
Average revenue to Explorer Bank per $100 credit card spend



Average cost to Explorer Bank per $100 credit card spend[1]



[1] - Costs to Explorer Bank also include $15 per month per customer for operations / servicing

Case #11 : Fintech Startup

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Difficulty: Hard
Industry: Financial Services, Tech
Case Type: Opportunity Assessment

Concepts Tested

- Graphical Analysis
- Mental Math
- Creativity

Problem Statement Narrative

Your client is an up-and-coming fintech startup that has reached a critical juncture in developing its main product, a machine-learning based platform that will be used by banks to improve their decision-making about whether to accept or reject loan applications. The CEO is wondering if a certain capability should be added to the platform or not. How would you help her think about this issue?

Case Notes

This case is candidate-led. The best candidates will understand the right questions to ask after being read the prompt, presenting their framework, and throughout the rest of the case as is necessary, and be able to drive the case with minimal guidance

Please see next slide for answers to critical questions candidates should be asking (best if they ask upfront, but also potentially fine if they ask later on in the case)

Question #1 / Framework

Should a certain capability should be added to the platform or not?

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Guidance for Interviewer

Strong candidates will describe their plan for answering the client's question and justify each step

Potential process for solving this case: first determine if the client's potential customers want the bias detection feature included, then figure out how much the project will cost, whether the startup has enough funding and if not brainstorm ways to raise $

Clarification Answers if Asked

- **CRITICAL: What new feature is the CEO thinking of adding?** Bias detection capability
- **What is the goal of the client here?** Maximize potential revenue/sales opportunities within reason
- **What is the business plan of the startup? How do they plan to make money?** Sell the platform to banks for $
- If the candidate asks any other questions, say we'll get to it later if it happens to become relevant. (including financial situation of startup—which is actually a great question to ask here)

Sample Framework

1. Banks (customer)
    a. Do they want / need bias detection feature?
    b. Segmentation? Best potential revenue source?
    c. WTP / price sensitivity
2. Fintech startup (client)
    a. Financials
        i. Costs
            1) Number of software engineers
            2) Salary per software engineer
            3) Time for project
        ii. Cash on hand
            1) Necessary funds?
            2) Burn rate?
        iii. Sources of funding
            1) VC, bank loan, personal funding
    b. Non-financial capabilities
        i. Necessary coding expertise
        ii. Timeline, business needs
3. Bias detection capability (product)
    a. Compatible with ML product
    b. Ease of integration with product
4. Risks
    a. Run out of funding
    b. Development puts behind schedule
        i. Anger VCs, other investors
    c. Regulatory

Question #2

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Question

Do our potential customers want the bias detection capability included in the end product?

Note: Excellent candidates will come up with this question on their own; insights from Exhibits #1 and #2 provide a sufficient answer to this question

Solution

- Candidates should exhibit a desire to understand who the potential customers for the startup are, and try to figure out how critical the bias detection feature would be for them
- If the candidate asks for a customer preferences survey, and/or asks for information about what potential customers want, then provide the candidate with *Exhibit #1*
    - From Exhibit #1, the candidate should realize the only relevant information for solving the case lies in the ratings for bias detection capability, the feature in question. For banks with total assets <$100m and $100m-1b, it's probably not necessary to add the feature; for those at $1b-250b and >$250b, it definitely is. KEY QUESTION: which segment is most important for future sales of startup's product? Is there data on it?
- If the candidate asks about who the potential customers are (and it would be great if they went beyond saying banks, but brought up customer segmentation—i.e. are our potential clients small, mid-sized or large banks), and data related to that, provide the candidate with *Exhibit #2*. SEE *Exhibit #2 – Analysis* for calculations
    - From Exhibit #2, the candidate should conclude that 1b-250b size banks are the biggest source of potential revenue by a factor of ~2, comprising ~60% of future sales, and their preferences are extremely important
- From both Exhibits #1 and #2, the candidate should conclude that unless the cost is staggeringly high, we should proceed with developing the bias detection capability since it is very important to 1b-250b size banks and they make up such a substantial portion of future sales

Question #3

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Question

How are we going to make this project happen? How much will the project cost and what resources will be required? Do we have the financial and non-financial capabilities to complete it and if not what should we do?

Insights from Exhibits #3(a) and #3(b) provide a sufficient answer to this question

Solution

- Once the candidate asks most of the above questions, provide them with Exhibits *#3(a) and #3(b)* (they are meant to be analyzed simultaneously)
- See *Exhibit #3(a,b) – Analysis* for full set of calculations
- Key conclusions:
    - Currently have $240k available funds to spend on project
    - The project is projected to cost $330k, leaving the startup short by $90k in cash to fund project
    - The project is critical to future success of the startup, so the team needs to get creative and secure the $90k in funding
    - Transition to Question #3

Question #4

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Question

Brainstorm some ways the startup can get the necessary funding to add bias detection capability to the platform

Note: The best candidates will not need to be prompted to do this. Indeed, it shows strong business acumen to be able to realize this feature is NEEDED, you're advising a startup that's secured funding before and needs more capital now…

Solution

- Internal
  - CEO, other founders/employees personally fund venture, reimburse selves once make back money
  - Offer engineers % of future profits (or equity) instead of paying in cash upfront
  - Reallocate some of current budget towards this project
  - Cut costs elsewhere to free up funding
- External
  - VC fundraising—re-connect with prior sources of funding and explain situation to them
  - Strategic partnership
  - Crowdfunding
  - Bank loans

Note: the strongest answers will be structured, and demonstrate 1-2 "out of the box" type ideas, and/or personal experience.

Conclusion

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Recommendation

- The client SHOULD develop the bias detection capability
- Because this feature is critical to future sales and the startup is short $90k to be able to fund its development, the startup needs to find a way to get the $90k in cash to make the project happen

Rationale

- 1b-250b size banks are the biggest source of potential revenue by a factor of ~2, comprising ~60% of future sales
- Per exhibit 1, bias detection capability is a must have for customer segment of 1b-250b

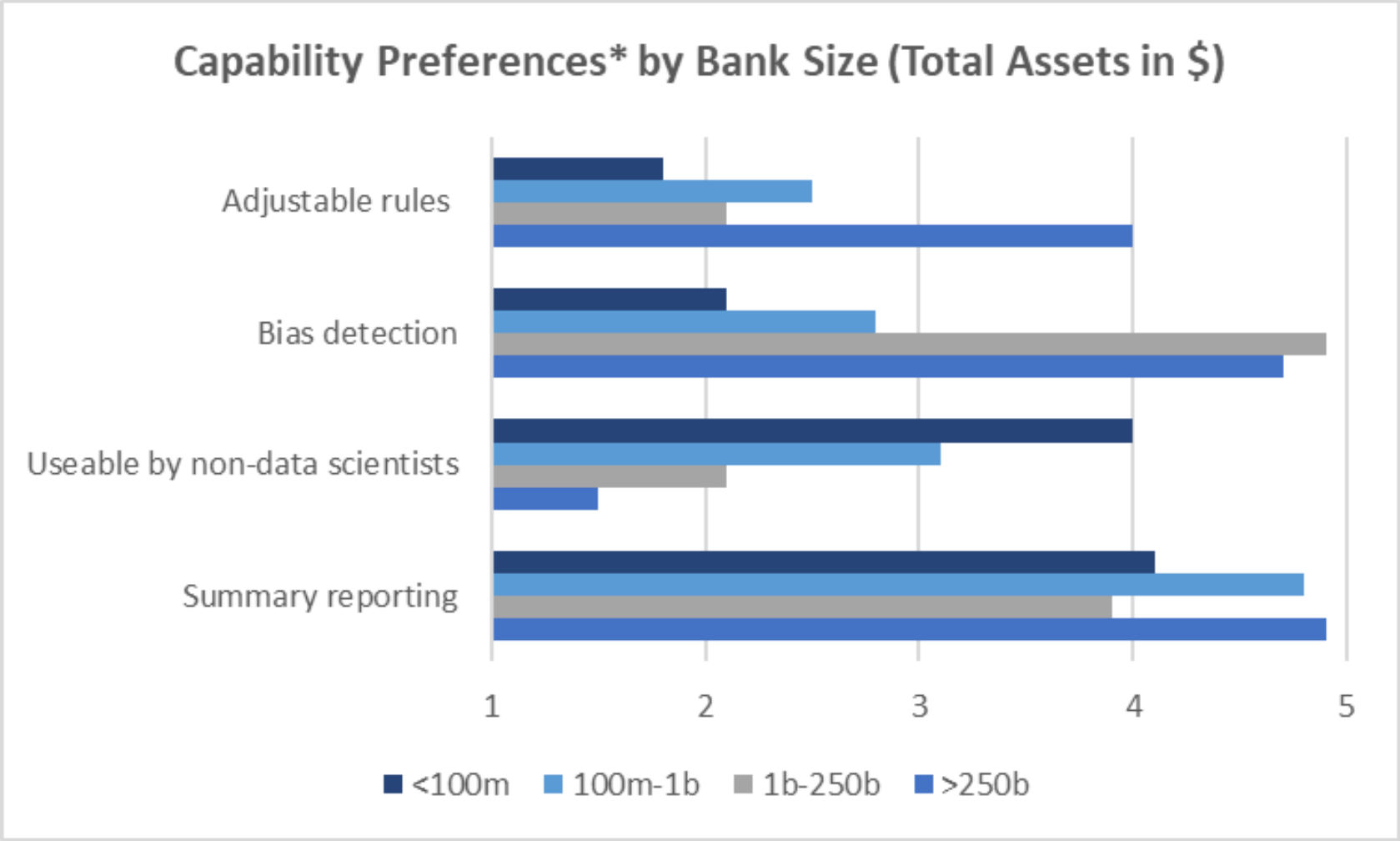
Risks

- Costs, and time to complete the project could exceed projections, potentially angering investors and delaying product launch time
- Sales leads are just that—leads, and the WTP is also subject to change depending on competitors entering the market; these numbers could be substantially different in reality, and it could be the 1b-250b segment ends up being a more minor part of the startup's business—making the feature less relevant

Next Steps

- Assemble team of engineers to complete project in given time frame
- Find either an internal source of cash (e.g. reallocate funds, cut costs, etc.), and or an external source of cash (e.g. VC, bank loans, etc.) to be able to fund entire project

Exhibit #1



Note: Rated on a scale of 1 (not at all necessary) to 5 (essential)

Exhibit #2

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Bank Size by Total Assets ($)	Number of Sales Leads	Projected WTP/sale ($)
<100M	51	50,000
100M-1B	5	75,000
1B-250B	34	150,000
>250B	1	300,000

Exhibit #3(a)*

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Key assumptions for Exhibit #3(b):
At month 2, we added 2 software engineers to the data science team.
No other changes occured last year regarding spend rate.
All engineers are paid the same per unit of time worked.
There has been no change in the pay rate for engineers.
All engineers work at the same rate.

Current financial status:
92% of $3m in total funding has been allocated.

Projected labor and time required to add bias detection capability:
3 software engineers needed to work on project for 11 months.

Note: To be handed out with Exhibit #3(b)

Exhibit #3(b)

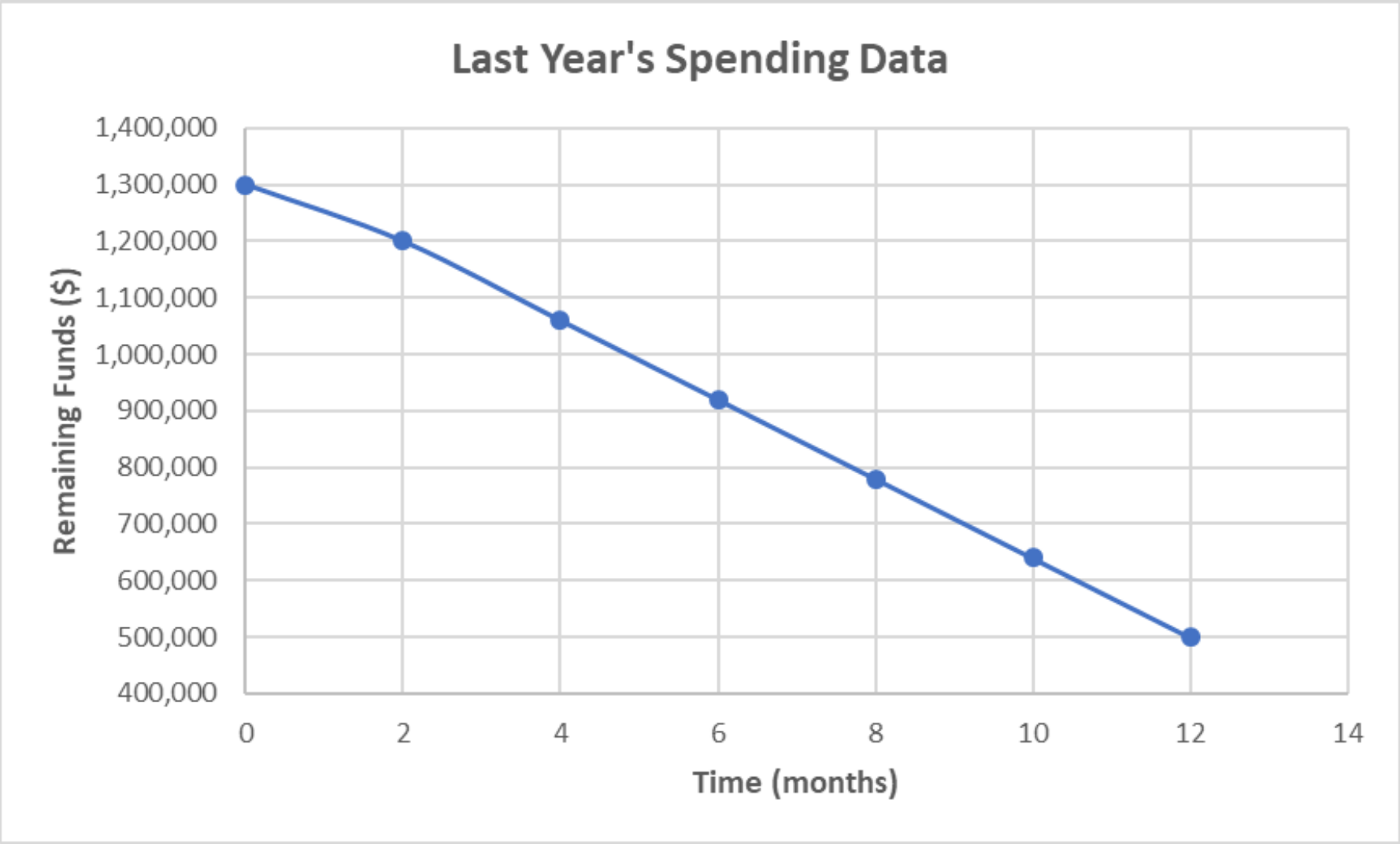
Last Year's Spending Data
Remaining Funds ($)
1,400,000
1,300,000
1,200,000
1,100,000
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
0
2
4
6
8
10
12
14
Time (months)

Exhibit #2 Solution

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Relevant calculations—*it is fine if candidate asks to round, and gets approximate values (especially for the percentages).*

bank size	(# leads)*($/lead) =	projected revenue		% of total proj. rev.
<100m	51*50k =	2550000	2.55m/8.325m =	31%
100m-1b	5*75k =	375000	375k/8.325m =	5%
1b-250b	34*150k =	5100000	5.1m/8.325m =	61%
>250b	1*300k =	300000	300k/8.325m =	4%
		8325000		100%

Takeaways:

- Assuming these leads are reflective of future sales, and there are no trends we are unaware of, then…
  - 1b-250b size banks are the biggest source of potential revenue by a factor of ~2, comprising ~60% of future sales
  - <100m size banks are the second biggest source of potential revenue, comprising ~30% of future sales
  - 100m-1b and >250b size banks comprise only ~10% future sales
  - For the purposes of this case, 1b-250b size bank's preferences for the startup's product are critical for future sales potential, and should be taken very seriously
  - <100m size banks preferences are quite important and should be paid attention to
  - 100m-1b and >250b preferences are less important
  - From a product development standpoint, 1b-250b preferences should be given top priority, followed by those of <100m banks

Exhibit #3(a,b) Solution

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- Financial status calculation—exact values please

if 92% of total funding has been allocated, assuming all unallocated funds can be put towards the project, then we only have 8% of total funding. Total funding = $3m, so we have (8%)*($3m) = **$240k remaining**

- How much will the project cost—exact values please

here's where the quantitative analysis gets interesting!

first we need to determine the pay rate for each software engineer: the key is to analyze how the spending changes from month 2 and on.

we need to determine the SLOPE of each

slope from month 0-2: spend rate = $\frac{\Delta\$}{\Delta t} = \frac{1.3\text{m} - 1.2\text{m}}{2 - 0 \text{ months}} = {}^{\$50\text{k}}/_{\text{month}}$

slope from month 2-12: spend rate = $\frac{\Delta\$}{\Delta t} = \frac{1.2\text{m} - 0.5\text{m}}{12 - 2 \text{ months}} = {}^{\$70\text{k}}/_{\text{month}}$

from Exhibit 3(a), we know the only CHANGE happening is that 2 engineers were added to the team, and the cost per month increased by $20k, **that's $10k/month/engineer**

now for the cost: using the fact that the project will take 3 engineers 11 months to do project

total cost of project: 1 engineer working for 11 months costs 11*($10k) = $110k, thus

TC = 3*($110k) = **$330k**

- Therefore, we are $330k - 240k =$ **$\$90k$ short** of being able to fully fund project
- We need to find a way to get $90k more in cash so we can include this critical feature in product

Case #12 : Funeral Homes

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Difficulty: Medium to Difficult
Industry: Funeral Homes
Case Type: Profitability, Interviewer-led

Written by Vidisha Agarwal '21

Concepts Tested

- Profitability
- Logical thinking in obscure industry
- Mental Math

Problem Statement Narrative

Our client is a private equity firm looking to acquire Funeral Co, a company operating 100 funeral homes in the US. The client targets to grow Funeral Co's EBITDA by 15% annually over five years. Should the client acquire Funeral Co?

Case Notes

This case should be delivered in the McKinsey style if a candidate doesn't have prior knowledge about funeral homes. Spend more time on Question 2 if you're looking to test more math skills or on Question 3 if you're looking to test more brainstorming skills

Question #1 / Framework

Should the client acquire Funeral Co?

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Guidance for Interviewer

Additional information will be given during the framework / clarification phase and during the questions

Clarification Answers if Asked

- There are 2 types of funeral ceremonies performed by a funeral home: (1) burial and (2) cremation. Industry trend is shifting towards more cremation.
- Funeral homes have a high fixed cost structure.
- Funeral homes industry is highly fragmented with over 20,000 funeral homes scattered across US. 75-80% of the homes are owned and operated by individuals or families though ~20-25% of the homes are operated by private corporations
- Only funeral home in the areas they operate in
- The target is currently offering only burial services; serving only Christians in small towns
- Our client (PE firm) wants us to concentrate on increasing EBITDA only, i.e. to double EBITDA in 5 years (15% IRR over 5 years = 2x)

Sample Framework

1. Financial (EBITDA)
    a. Revenue
        i. Price per burial
        ii. Burials per year
        iii. # of locations
    b. Costs
        i. Fixed costs
            1) SG&A
            2) Rent
        ii. Variable costs
            1) Fuel
            2) Chemicals (formaldehyde)
2. Funeral Home Market
    a. Competitors (in close proximity)
        i. Fragmented/ consolidated
        ii. Service differentiation
    b. Customers
        i. Changes in preferences
        ii. Segmentation by WTP
    c. Growth
        i. Are they located in an aging community?
3. Opportunities to expand product offerings
    a. Burials vs cremation
    b. Value added services

Question #2

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Question

The target is currently offering only burial services with $6000 revenue earned per burial at 20% EBITDA margin. How much EBITDA can burial services segment generate in the 5th year and how much extra EBITDA does Funeral Co need to generate outside burial services by the end of PE firm's holding period of 5 years?

Solution

The candidate should:

- First, calculate current revenue, costs and EBITDA for the target
- Then, think of what these numbers will look like in the 5th year given growth in business
- Finally, calculate the difference between target EBITDA and projected organic EBITDA in the 5th year

Following information is to be shared when the candidate asks:

- Current scenario: Total 100 locations and each location conducts 150 burial services per year
- In 5 years: Number of locations will remain same. Volume will grow by 3% and Price by 2% per year. EBITDA margin will remain at 20% for the target

Solution: $90M in revenue and $18M in EBITDA generated currently. This implies that, if the PE firm wants to double EBITDA, the target needs to generate $36M in EBITDA by 5th year (15% YoY growth over 5 years roughly equals doubling of EBITDA in 5 years). Burial services segment can generate up to $23M in EBITDA organically by 5th year, thus, FuneralCo needs to generate incremental EBITDA of $13M by 5th year

Question #2 (continued)

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Solution

	Current state			5 years fwd
	Company level	**Per burial**		**Company level**
Revenue	$ 90,000,000	$ 6,000		$ 115,000,000
Gross Profit	$ 63,000,000	$ 4,200		
EBITDA	$ 18,000,000	$ 1,200		$ 23,000,000
Margin	*20%*		*Target EBITDA*	$ 36,000,000
			Extra EBITDA	$ 13,000,000

Question #3

Columbia Business School

Question

The target is wondering if they should introduce cremation services in the existing funeral homes, but revenue per cremation is 33% lower than burial services. Should they pursue it?

Solution

Does the customer trend support or oppose the move? – Give Exhibit 1.
Supports it. More customers want cremation services. Currently, customers are going to neighboring towns to get cremation with services or they were doing basic cremations services at home if they didn't want to go outside their town

Does the target have the capabilities to introduce cremations? Yes, they can. Need to add only one employee per location. No change to existing funeral home interior or design

Is cremation profitable? Yes. Provide following data when asked:
$4000 price per cremation. 70% Gross profit margin => $2800 Gross Profit per cremation
Can do 50 cremations per year on average per location => $20M total revenue added
No extra SG&A as you can utilize same resources

Can cremation alone bridge the entire $13M gap? Yes

Question #3 (continued)

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Question

	Company level	Per cremation
Revenue	$ 20,000,000	$ 4,000
Gross Profit	$ 14,000,000	$ 2,800
SG&A	$ -	$ -
EBITDA	$ 14,000,000	$ 2,800

Question #4

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Question

What else can Funeral Co do to bridge the EBITDA gap?

Solution

Possible solutions:

- Offer Direct cremation: Lower revenue; Can leverage existing employees; Very little cost or investment (can be derived from exhibit 1); can reach steady state from year 3 onwards; Can add $3-4M in EBITDA in steady state
- Hire labor on contractual basis: Currently, 130 days of idle time. Even with cremation, they will have 80 days idle. Can save $4-5M per year in costs, but quality of service may go down
- Increase value added services such as transportation of the bodies, pre-need sales (contract funeral arrangements before death) working with lawyers or life insurance firms, offer services to non-Christians

What options are not possible (but good if the candidate can come up with these)

Acquire more funeral homes: strict zoning laws prohibiting sale in most areas; other players unwilling to sell
Increase funeral home locations: takes many years to build and ramp up. Outside the horizon of PE fund
Increase pricing for just burial/ cremations: Pricing laws prohibit abnormal increases in prices

Conclusion

Reiterate the prompt's question - Should NewCo invest in Widget A?

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Recommendation

- The target needs to add $13M in EBITDA to meet the PE fund's goal
- The target can bridge that by introducing cremation services. Can add to EBITDA by introducing direct cremation/ lowering staff costs / increasing value added services

Rationale

- The target can add cremation services in existing funeral homes with relatively low investment within the 5 years horizon of the PE fund

Risks

- Target may not be able to reskill all employees to provide cremation services, and may need to hire more employees
- Customers (Christians) may not prefer cremations and burials being co-located
- Management bandwidth will be divided if they offer different services

Next Steps

- Survey of families who would usually conduct burials if they are okay with cremations taking place in same funeral home
- Due diligence for target
- Discuss valuation

Exhibit #1 : Consumer Survey

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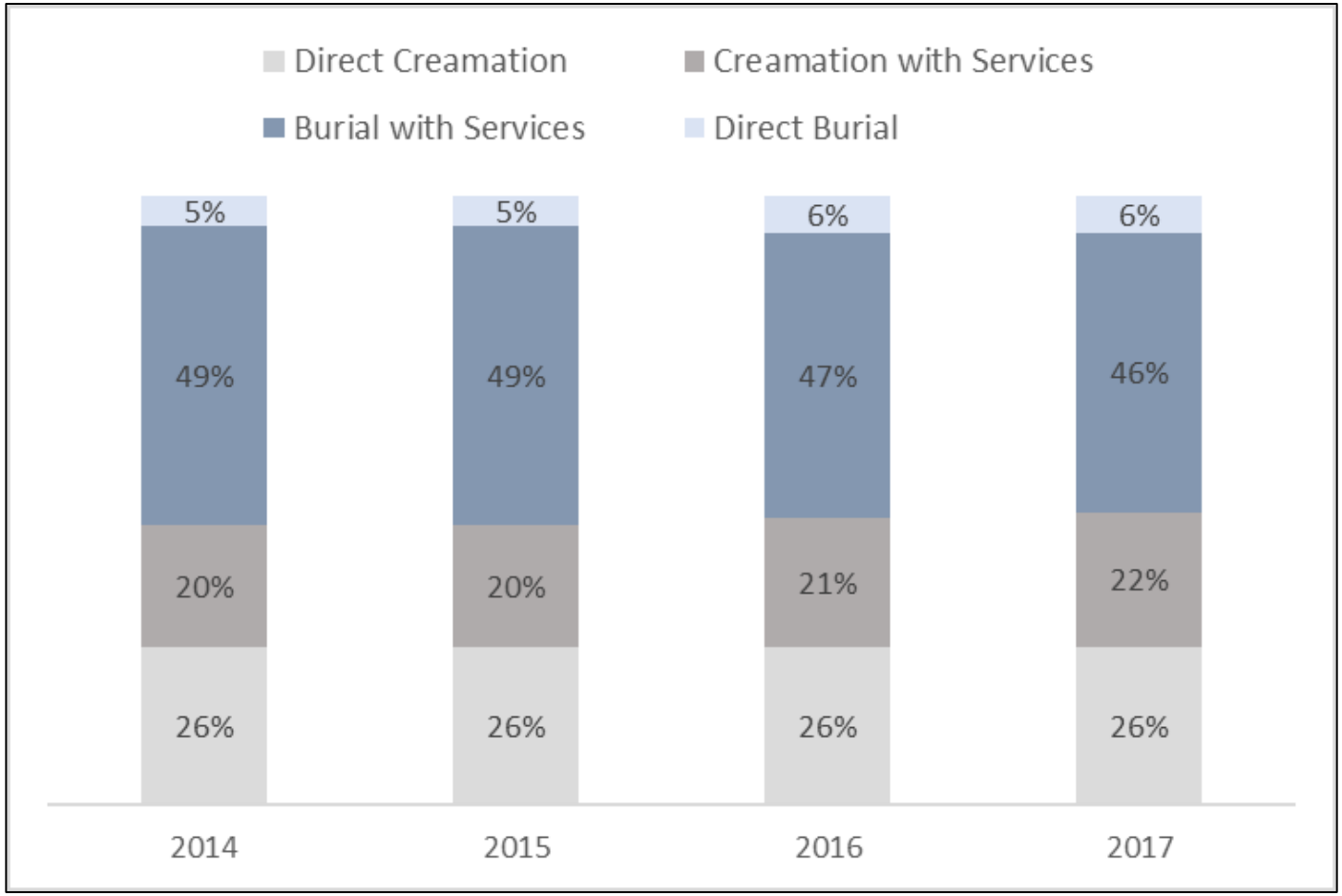
Target can offer cremation with services in existing funeral homes

Target offering only burial with services currently



Case #13 : Grocer Prepared Foods

Columbia Business School

Difficulty: Easy
Industry: Grocery
Case Type: Profitability

Written by Anthony Villamagna '21

Concepts Tested

- Isolating a problem area
- Math
- Open ended recommendation

Problem Statement Narrative

Our client, Best Market, an independent grocer in Manhattan with only 1 location, has been facing increased competition from low-cost competitors. Therefore, they have become increasingly dependent on prepared foods to drive growth

However, the client has reported that they have experienced zero growth in gross profits over the last 3 years. We have been asked to help the client understand what is causing this lack of growth and what they need to do to turn things around

Case Notes

This is a straightforward case where the client is expected to give a typical profitability framework while working through some interesting paths to profitability with an open-ended conclusion

Question #1 / Framework

What is causing this lack of growth and what they need to do to turn things around?

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Guidance for Interviewer

Let them explore options on what the problem is. For example, if they want to understand what market changes have occurred, ask them to describe what market changes could cause this

Pay close attention to the rationale for the solutions. Common "solutions" that people think of don't make sense when probed

Clarification Answers if Asked

- **Where is the client located in New York?**
  - Harlem (Manhattan)
- **Does the client have a specific financial target?**
  - No, they just want to identify the problem and figure out ideas to solve the problem
- **Additional detail on the client?**
  - More than 30 years in community, family owned/operated, mid-tier (i.e. like Safeway or Stop and Shop, not Whole Foods)
- **What are the clients' revenues/costs/profits?**
  - We'll get into that later in the case

Sample Framework

1. Best Market
   a. Financial Considerations
      i. Profit
      ii. Product Mix
      iii. Recent Investments
   b. Operational Considerations
      i. Supplier Changes

2. Grocery Market
   a. Size
      i. Growth in each segment?
   b. Consumer Segments
      i. Change in tastes?
   c. Competitors
      i. Number
      ii. Size
      iii. Threat

3. Other Considerations
   a. Demographic changes in neighborhood
   b. NYC health restrictions

Question #2

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Question

What is the root problem as to why gross profits aren't growing? (Hand them Exhibit 1)

Why is the profit margin declining in prepared foods? (Brainstorm)

Solution

The candidate should quickly realize that while gross margin hasn't been increasing for the company overall revenues are increasing, meaning that the profit margin is declining over time. Encourage them to specifically talk about what is happening with the profit margins for each category

Most candidates will zero in on the prepared foods because that is where the "story" is on this exhibit. However, the grocery department is stagnant, which isn't growing either. A strong candidate will note that, if there is time, they would like to explore the grocery department but first they would like to look at the prepared foods

Ask them to brainstorm why the profit margin is declining for prepared foods

- Suppliers have changed
- Prices are not optimized
- New products

Ideally, they get new products, because that segues into the next portion of the case

Question #3

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Question

Best Market introduced two new products in 2018, buffalo chicken tenders and made-to-order sandwiches. We have some financial data on the performance of these two products. What do you think? (Hand out Exhibit 2)

Solution

Buffalo Chicken Tenders: $6 revenue per 10 pieces minus $2.50 of material cost ($0.25 * 10) and $0.5 of fixed costs (.25 hours * $20/hr makes 100, divide by 10). **Total profit of $3 per order**

Made-to-Order Sandwiches: $240 revenue per day (40 * $6) minus $160 of material cost (40 * $4) and $160 of fixed costs (8 hrs * $20). **Total profit of $-2 per sandwich**

Most candidates will identify Buffalo Chicken Tenders as being profit makers and sandwiches as profit losers

However, a strong candidate will note that the buffalo chicken tenders are made in advance in batches and any unsold tenders are thrown away at the end of the day, meaning the material cost can be considered a fixed cost as well. This means they must sell 50 tenders out of every batch of 100 to break even

Made-to-Order sandwiches have a similar problem. The fixed costs are high. If candidates ask, it isn't possible to simply cut those hours

Question #4

Columbia Business School

Question

What are some ideas to make these two items more profitable?

Solution

If candidate asks to raise prices, ask "How price sensitive do you think these customers are?" People getting lunch/dinner at the grocery store are likely to be price sensitive, making a price increase unlikely

An example of ideas:

Tenders Only	Both	Sandwiches Only
Analyze data to better predict demand at any given time	Advertising throughout the store	Cut the number of hours to work the station only during lunch
Establish cut-off time where no new tenders are made	Bundle with higher margin items like chips, cookies and drinks	Consider getting rid of station entirely and moving to pre-made sandwiches
	Source cheaper supplies	

Conclusion

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Recommendation

- The profitability problem lies with the prepared foods department. Two newly introduced items have been dragging down margins. We recommend…
- Anything the candidate produces from the brainstorm that is rational works here

Rationale

- Any rational justification is acceptable here if the case giver thinks it is rational

Risks

- The main risk of this is that the elephants will be unable to adapt to life in the wild and could be a threat to the ecosystem there without proper management

Next Steps

- Considering these risks, our next step is to begin the process of returning them to India

Exhibit #1

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Category		2018	2019	2020
Grocery	Revenue	480	470	480
	COGS	300	290	300
Prepared Foods	Revenue	200	230	280
	COGS	160	190	240
Overall	Revenue	680	700	760
	COGS	460	480	540
	Gross Margin	220	220	220

Note: All values are in thousands

Exhibit #2

Columbia Business School

Buffalo Chicken Tenders	
Price	$6 for 10 pieces
Total Material Cost	$0.25 per piece
Prep Time	15 minutes per batch of 100
Employee Cost	$20 per hour

Made-to-Order Sandwiches	
Price	$6 per sandwich
Avg. Sales/Day	40 sandwiches
Total Material Cost	$4 per sandwich
Employee Cost	$20 per hour
Dedicated Hours	8 hours per day

Case #14 : Housing Authority Goes Green

Columbia Business School

Difficulty: Medium
Industry: Government/Public Service
Case Type: Investment

Written by Jessie Goldman '22

Concepts Tested

- Mental math
- Cost and breakeven analysis
- Creativity

Problem Statement Narrative

You're working with the local city government in a major urban area. Your client manages housing developments spread across 3 neighborhoods that are collectively home to 400,000 residents. All residents receive health care services at the local hospital, also funded and managed by your client. The client received a grant from a major foundation and is considering using that money to remodel some of the city's housing developments to feature more green space. Your job is to help the client think through whether this is a good idea and, if so, which sites to focus on first.

Case Notes

This is designed to be an interviewer-led case. Because the client is a city government, it will be important for the candidate to recognize that economic benefits are just one piece of the equation. Still, the interviewer should recognize that the case overall should be treated like an investment decision. This is a long case (5 total questions, including the framework); if running short on time, interviewer can skip the final question and still arrive at a reasonable conclusion.

Question #1 / Framework

How would you evaluate whether the city should invest in green spaces?

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Guidance for Interviewer

The candidate should start by outlining a framework that analyzes potential costs, benefits, and risks of the investment. Once he/she walks through the framework, let them know that they will start by exploring one perceived benefit – the impact of green space on hospital expenses

Clarification Answers if Asked

- The client has 4M to invest. If they don't use the money on green spaces, they can use it for other city maintenance/improvement projects.
- Other than remaining within the $4M constraint, the city wants to see a positive ROI in 6 years or less
- It's safe to assume that if the government decides to move forward, they'll be able to break ground immediately

Sample Framework

1. Costs
    a. Upfront investment
        i. Permitting
        ii. Construction
            i. Labor
            ii. Materials
        iii. Landscaping
    b. Ongoing costs
        i. Maintenance/upkeep – supplies
        ii. Maintenance/upkeep – labor
    c. Opportunity costs
2. Benefits
    a. Social
        i. Enhance vibrancy of public housing
        ii. Reduce crime
    b. Economic
        i. Improve residents' physical health
        ii. Improve residents' mental health
3. Risks
    a. Limited resources –could see greater benefit elsewhere
    b. Create disparities across sites and make some sites much more desirable than others
    c. Negative externalities: noise/disturbance, pollution from construction

Question #2

Columbia Business School

Question

One reason that the housing authority is interested in adding green space is that greenery can reduce asthma rates. Right now, 10% of people with asthma are hospitalized one time per year at an average cost of $200 per hospitalization. Based on Exhibit 1, what is the annual cost of treating asthma patients that live in housing developments right now?

Solution

	Residents	Current Asthma Incidence	Current Residents with Asthma (Residents * Incidence)	Hospitalized Residents (10% of Residents with Asthma)	Annual Cost of Hospitalization (Hospitalized Residents * Cost per hospitalization)
Neighborhood A	150	30%	75,000	7,500	$1.5M
Neighborhood B	200	15%	30,000	3,000	$600K
Neighborhood C	50	25%	12,500	1,250	$250K

Total Cost = Cost A + Cost B + Cost C = $1.5M + 600K + 250K = $2.4M

Question #3

Columbia Business School

Question

The city estimates that it costs $600K to build 1000 square feet of green space. What do you think are the largest cost drivers and how the city might consider reducing the cost of building green space?

Solution

This is a brainstorming question that does not require any calculation. However, the interviewer should write down the $600k/1000 sq feet because it will be required in the next question

Note: Fixed and variable costs are just one sample way to brainstorm

Fixed Costs	Variable Costs
1. Labor (an outstanding candidate would bring in the fact that city employees may be union-affiliated) 2. Construction and gardening machinery *Reduction Opportunities* • Share cap-ex across city departments • Consider equipment purchase/rental opportunities • Open negotiations with the union	1. Soil, trees, seeds, and other plants 2. Lighting, benches and other accessories that will enhance the green space *Reduction Opportunities* • Re-negotiate with greenery suppliers; look for opportunities to buy in bulk, potentially leverage economies of scale in other city departments

Question #4

Columbia Business School

Question

Given the client's limited budget, they need to pick one neighborhood to begin with as a proof of concept. The city will start to see savings one year after breaking ground (i.e., in year 2). From Exhibit 2, which neighborhood would you start with and why? Assume that the cost reduction efforts from the last question have not been implemented

Solution

Note: Cost to build was given in question 3. If candidate asks for the number, first remind him/her that it was already provided. If necessary, reiterate that it's $600k/1000 square feet

Answer: Site C has the shortest payback period of 5.5 years and the city would therefore see a positive ROI in the shortest time frame. The candidate could make a case for starting with Site A because the payback period is just 6 months longer and it generates the most savings per year. Both fall within the initial constraint of positive ROI in no more than 6 yrs

Neighborhood	Annual savings generated (after year 2)	Planned Green Space (in square footage)	Time to Build (years)	Cost to build Green space * price per sq foot	Payback period (from point of breaking ground)
A	$600K	5000	5	600K * 5 = $3M	(3M/600k)+1 6 years
B	$400K	4000	4	600K * 4 = $2.4M	(2.4M/400k)+1 7 years
C	$200K	1500	2	600K * 1.5 = $900K	(900k/200k)+1 5.5 years

Question #5

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Question

Before announcing the new investment, the city surveyed residents across each neighborhood. Responses are shown in Exhibit 3. How would you interpret the information? How, if at all, does it change your site recommendation?

Solution

Average Candidate	Strong Candidate
1. Explains key insights: a. Residents in neighborhoods A are most excited about green space, believe it's a worthwhile investment but are also most likely to be bothered by construction b. Residents in neighborhood B are least excited about green space, least likely to believe it's a worthwhile investment, but also least concerned about the disruption c. Residents in neighborhood C are overall excited about green space, believe it to be a worthwhile investment but, like A, are concerned about disruption 2. Recognizes that Sites A and C are still most desirable 3. Notes n-size	*In addition to commends from "average candidate"* 1. Comments on small n-size relative to the number of residents living in the city housing developments (120 people surveyed of 400,000 total residents); questions whether it's a reliable sample 2. Begins to offer a recommendation that mitigates risks that are underscored by the exhibit. For example, if they go forward with neighborhood A or C, find ways to minimize disruption 3. Uses information to defend or change earlier recommendation – many answers could be acceptable, including desire to mitigate disruption, desire to focus on those that are most bought in, etc

Candidate could make a compelling case for either Site A or C (which may involve changing prior recommendation)

Conclusion

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Recommendation

- Yes, the city should invest in green space and should pilot with either neighborhood A or C

Rationale

- Satisfies criteria of positive ROI within 6 years, and that's only considering one dimension of benefit
- Neighborhood A can be justified as generating the highest annual savings (after the payback period)
- Neighborhood C can be justified as the shortest payback period (which will also mean less disruption time)

Risks

- Other investments may generate even higher savings/benefits to the community; the money is not earmarked to green spaces
- Current budget will only allow for one site to be renovated; city runs the risk of improving one site and making others look worse as a result
- Construction could be a considerable disruption and cause ill will among residents

Next Steps

- Shortlist other priority investments that can be made with the 4M and assess savings/benefits as a result
- Assess impact of enhancing one neighborhood on other neighborhoods behaviors
- Run more detailed analysis of residents' opinions about construction disturbances and opportunities to mitigate those disturbances

Exhibit #1

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Neighborhood	Total Residents (in thousands)	Current Asthma Incidence	Planned Green Space (in square footage)
A	150	30%	300
B	200	15%	400
C	50	25%	150

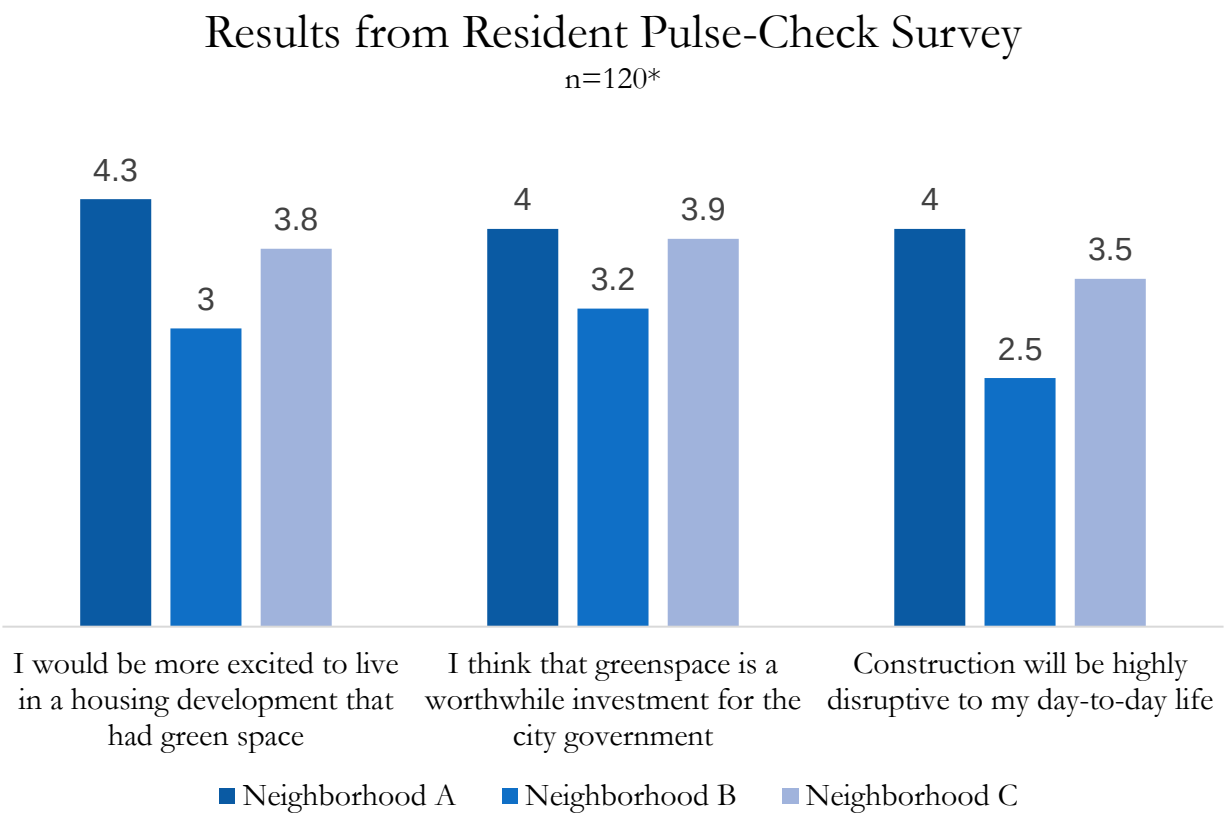
Exhibit #2

Columbia Business School

Savings, Planned Green Space, and Time to Build

Neighborhood	Annual savings generated (beginning in year 2)	Planned Green Space (square feet)	Time to Build (years)
A	$600,000	5000	5
B	$400,000	4000	4
C	$200,000	1500	2

Exhibit #3



*Assume that survey included 40 residents from each site
**Scale where 1 = strongly disagree, 3 = neutral, 5 = strongly agree

Case #6: Insta-Famous

Columbia Business School

Difficulty: Medium
Industry: Social Media
Case Type: New Product

Concepts Tested

- Optimization
- Cannibalization
- Mental Math

Problem Statement Narrative

Katherine Isaacs is a fitness-focused influencer on several major social media platforms. She posts videos about her workouts, and these videos garner hundreds of thousands of views. While she is excited about her current reach and the steady income she receives from the social media sites, she is considering launching her own app. You have been brought in by her team to help think through whether she should launch an app or just stay with the social media sites

Case Notes

- After the framework, ask the candidate the first question
- Once they answer the first question they should drive the discussion towards the financials of what they brainstormed. At that point, hand them the first exhibit
- From there, they should ask for the second exhibit
- Once they have decided what should go on the app, you can discuss risks with their plan or ask them to sum up

Question #1 / Framework

Should Katherine Isaacs launch her own app?

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Guidance for Interviewer

Candidate should think whether the app will make Katherine money and whether she can do it

Candidate should also think about how the app will affect her current business

Clarification Answers if Asked

- **What are her goals?** She would like to generate $30M in additional, annual profits without spending more than 20 hours of her time per week on the app
- **What would be on the app?** She is open to many ideas and is looking to you for guidance
- **How does she make money now?** She gets paid by the social media sites for driving traffic and she gets paid from companies for products for which she directly advertises for in her videos and posts
- **How much money does she make now?** She makes $5M in Social Media profits now

Sample Framework

1. Financial
   a. Revenue (should discuss multiple possible revenue streams)
      i. Sample stream 1: Katherine directly advertising products
      ii. (Additional streams encouraged)
      iii. Affect on existing social media rev.
   b. Cost
      i. Fixed cost
         - Initial development
         - Ongoing site maintenance
      ii. Variable cost (depends on rev stream)
2. Operational – can her team pull it off?
3. Brand impact
4. Market
   a. Size: # of followers with app-enabled phones to Competition: are there existing apps for health/workout customers?
   b. Trend: are people preferring to engage with fitness/health through apps instead of SM?

Interviewer Notes

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Exhibit #1

- After the candidate brainstorms product/services idea, they should want to explore the feasibility of what they came up with. Explain that this exhibit is a preliminary estimate for some products/services Katherine is considering
- Candidate should calculate the total revenue per product/service and then adjust for the impact on SM revenue
- To do this, candidate will need to ask how much Katherine currently makes on the social media sites. Tell candidate she makes $5 million in revenue and profit (she has no costs for the social media sites)

Exhibit #2

- Candidate will need to combine this cost data with the revenue data to calculate total profit per product/service
- Candidate should understand that Katherine doesn't have the time to do all the product/services
- Candidate should calculate **profit per hour** to determine the product/services that Katherine should include:
    - "Advertising other companies products" and "Katherine's workout program" have the highest profits per hour. These should definitely be included in the recommendation
    - "Multi-influencer" and "live-events" have similar profit per hour but Katherine can only do one of them. Candidate should make an argument for one over the other. One is a greater profit and the other is more efficient. Candidate should justify everything
    - Emphasize that having the structure to analyze what is the best ($/hr) is what is important

- Once the candidate has determined the products/services to include in the app, you can engage in a high-level discussion of risks / next steps or simply ask the candidate to sum up

Question #2

Columbia Business School

Question

What sorts of products and services could Katherine include on the app?

Solution

Possible ideas (no need to have these specifically):

- Workout regimen (lessons) that you can work through each day
- Live-streamed workouts that multiple people can join in on
- Products to buy (weights, mats, athletic gear, food/drink)
- Announcements about and tickets for in-person events
- More personal information such as where she likes to travel, pets, etc.
- All of the above for multiple influencers (create a platform for other influencers)
- Gamified rewards for connecting on the app
- Premium service with access to exclusive videos

Possible ways to structure:

- Content similar to what's on SM vs. new content entirely
- Products vs. services

Exhibit #1 : Revenue and SM Impact

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Potential app products and services	Katherine's workout program	Advertising other companies product	Live events and in-app ticket portal	Multi-influencer workout program	Creating and advertising private label products
Customers (thousands)	400	250	250	700	250
Annual revenue per customer	$30	$25	$90	$30	$60
% current SM profit impact	10%	0%	10%	0%	-30%

Note: The Social Media revenue impact is additive. For example, doing two ideas that each cannibalize 5% of revenue would simply cannibalize 10% of existing SM revenue.

Exhibit #2 : Cost and Hour Requirement

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Potential app products and services	Katherine's workout program	Advertising other companies product	Live events and in-app ticket portal	Multi-influencer workout program	Creating and advertising private label products
Annual cost	$1M	$0.25M	$7M	$3M	$5.50M
Hours/week requirement for Katherine	5	0.5	10	12	8

Exhibit #1 and #2 Solution

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Calculations	Katherine's workout program	Advertising other companies product	Live events and in-app ticket portal	Multi-influencer workout program	Creating and advertising private label products
App revenue	$12M	$6.25M	$22.5M	$21M	$15M
SM revenue impact	+$0.5M	$0M	+$0.5M	$0M	-$1.5M
Profit (adjusting for SM impact and cost)	$11.5M	$6M	$16M	$18M	$8M
Profit per hour	$2.3M 2nd best	$12M best	$1.6M 3rd best	$1.5M 4th best	$1M worst

Conclusion

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Recommendation

- Katherine should launch the app, including her own workout regimen, advertising other companies products, and (candidate chooses either "live-events" or "multi-influencer"). Doing so would bring in an additional $30M in profit without asking more than 20 hours of her time

Rationale

- These features are the most profitable per hour of Katherine's time

Risks

- Difficulty launching and maintaining an app
- Live-events is heavily operationally intensive
- Live-events may not be as polished as her pre-crafted Instagram videos
- Having multiple influencers on the app could
- Optimal product/service selection is highly dependent on revenue, cost, and time estimates

Next Steps

- Partner with an app development and maintenance team
- Identify companies and products to advertise and cultivate her workouts into an app-based regimen
- (Depending on selection) Map out a live-event program or identify other influencers to bring on

Case #16 : MTA Subway

Columbia Business School

Difficulty: Medium
Industry: Transportation
Case Type: Profitability

Concepts Tested

- Brainstorming / Creativity
- Market sizing
- Pricing

Problem Statement Narrative

Your client is the New York City Transit system, also known as the MTA. Specifically, you are working for the subway division. This division is part of a government authority that operates all the subways in New York City. Recently, the division approached you because they have been operating at a net loss. How can you help this client?

Case Notes

Case will focus on both traditional profitability and public policy considerations

Question #1 / Framework

How can you help the MTA understand its current ridership and profitability drivers?

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Guidance for Interviewer

Case will be focused on revenues, as expenses for MTA are largely fixed by contract (e.g., unions)

Candidate can approach market sizing either based on the size of the train (capacity-based) or based on the population of NYC (demand-based)

Clarification Answers if Asked

- Price for a single ride ticket is $2.75
- Ticket options include single rides, weekly pass, monthly pass, and reduced (for students / elderly)
- There are 22 train lines on the MTA (e.g., 1 – 7, A – G, J, L, M, N, Q, R, W, Z)
- The MTA gets current funding from ticket sales as well as some government funding – government funding can be ignored for this case

Sample Framework

1. Estimate market size (i.e., ridership)
    a. Capacity-based
        i. Volume available (e.g., number of lines, number of cars, volume of each car)
    b. Or Demand-based
        i. Demand for subway service (e.g., Population of NYC, % who take subways)
2. Identify profitability drivers
    a. Revenue
        i. Ticket price
            - Single ride
            - Weekly / monthly passes
        ii. Volume
    b. Cost
        i. Variable
            - Electricity
            - New construction
        ii. Fixed
            - Labor (e.g., Unions)
            - Infrastructure / depreciation

Question #2

Columbia Business School

Question

How would you estimate the total number of subway rides that are taken on an average week day in New York City?

Solution

22 subway lines

Each train has on average 10 cars
Each car on average fits 100 people -> 1000 people per train

Trains arrive on average every 3 minutes during rush hour -> 20 trains per hour
6 hours of rush hour (7-9 AM and 5-8 PM)
Trains arrive on average every 6 minutes all other times -> 10 trains per hour
18 hours of non-rush hour

Total rush hour ridership -> 20 trains per hour x 6 hours x 1000 people per train x 22 lines = 2,640,000
Total non-rush hour ridership -> 10 trains per hour x 18 hours x 1000 people per train x 22 lines = 3,960,000

Total daily ridership -> 2,640,000 + 3,960,000 = 6,600,000 (~6 million officially reported by MTA)

Question #3

Columbia Business School

Question

Because of the nature of their expenses (e.g., pensions, union contracts, required maintenance), they have asked you to help them turn around their profitability by focusing on opportunities to grow revenues – what are some ways for the MTA to grow their revenues?

Solution

Short term

- Ticket price
  - Increase overall price
  - Create more granular pricing
    - Distance based pricing
    - Demand based pricing (e.g., rush hour)
- Ticket volume
  - Reduce unlimited passes
  - Conduct advertising campaign

Long term

- Expand coverage / services
  - Add more service to in-demand lines
  - Build new lines into up-and-coming neighborhoods
- Lobby for policy changes
  - Greater taxes on alternative transportation (e.g., driving / taxi)
  - Additional government funding for subways

Question #4

Columbia Business School

Question

Given that the MTA is a public agency with a public mission, what are some concerns if the MTA adopts a distanced based pricing scheme?

Solution

Impact to riders

- Lower income riders generally live / commute farther
- Currently under a fixed price scheme high income riders (who generally only ride the subway a few stops) effectively subsidize low income riders (who generally live farther away)
- Impact of price change to distance-based would disproportionately impact low income riders

Impact to city

- Real estate prices may increase for areas closer to business centers (e.g., Midtown / downtown Manhattan)
- Short distance ridership may increase (e.g., those who live 1 stop away will now ride the subway because it will be cheaper for shorter rides)
- Traffic congestion may increase (e.g., those who live farther away can turn to driving or car pooling)

Conclusion

Columbia Business School

Recommendation

- Introduce new pricing schemes, including distance or demand based pricing

Rationale

- Differentiated pricing would likely provide additional revenue for the MTA
- The new pricing scheme would better match demand (either by distance or by time) to available supply (i.e., train capacity)

Risks

- Introduction of a demand based pricing could potentially deviate from the public mission aspect of the MTA as it would disproportionately impact lower income riders
- Implementation of price differentiation schemes would require significant infrastructure upgrades (e.g., to track system entry / exit)

Next Steps

- Conduct analysis to understand impact of any pricing change on different areas and populations of the city
- Determine appropriate pricing for the new scheme
- Work with local officials and community representatives to solicit input and feedback

Case #17 : NeuroNow

Columbia Business School

Difficulty: Hard
Industry: Pharmaceuticals
Case Type: Market Entry

Written by Vishesh Jain '21

Concepts Tested

- Market entry
- Market sizing
- Breakeven analysis

Problem Statement Narrative

Our client, NeuroNow, is a mid-market biopharma company having 2 products in the US market. They have developed a new oral medicine to treat multiple sclerosis (MS) which has successfully passed phase 2 of clinical trials. Before deciding on further investments in phase 3 and commercialization, our client is looking to project revenues for the drug in 2021 and would like to know how soon can they breakeven on their investment from phase 3 trials onwards

Case Notes

This case consists of 3 main components:
1) Setting up market sizing calculations and identifying relevant haircuts to be considered in the patient population
2) Recommending ways to estimate market share
3) Identifying risks and benefits of going ahead with further investment on phase 3 trials

Question #1/ Framework

What factors would you consider when deciding whether to proceed with launching the drug?

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Guidance for Interviewer

Guide the candidate towards sizing up the market for potential number of patients for the new drug. A good candidate will identify the necessary 'haircuts' required to arrive at the target market

Clarification Answers if Asked

- It is estimated that 0.1% of Americans will suffer from MS in 2021 (out of a total population of 300mn in 2020)
- However, according to estimates, only 80% of the cases will be diagnosed and only 90% of the diagnosed population will receive treatment
- Patients undergo gradual degradation of spinal cord and brain cells and symptoms include impaired movement, speaking and other senses
- No full cure exists but injectable medicines are used for management of symptoms
- 1st oral medication to manage symptoms was introduced in 2016 and has gained popularity quickly over incumbent injectables due to obvious reasons. 2 more oral drugs have entered the market since
- Price of NeuroNow therapy would be $1000/month for 12 months/patient

Sample Framework

1. Market Size = No. of patients * Price
   a. Incidence
   b. Diagnosis and treatment rate
   c. Treatment share and competition Price/dose
   d. Number of annual doses/patient
   e. Growth rate
2. Profitability:
   a. Revenue:
      i. Price
      ii. Duration
      iii. Market share
   b. Cost:
      i. Clinical trial & launch costs
      ii. Salesforce and admin costs
      iii. Marketing costs
      iv. Manufacturing, distribution, etc.
3. Other risks:
   a. Trial success
   b. Insurance coverage
   c. Other competitors
   d. Regulatory changes affecting price, etc.

Question #2

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Question

What is the potential number of MS patients that will be treated with oral drugs in the next 5 years?

Solution

- Guide the candidate towards estimating number of patients treated for MS in a year: US Population * Incidence rate * Diagnosis rate * Treatment rate; For 2020: 300mn * 1/1000 incidence * 80% diagnosis rate * 90% treatment rate = 216,000 treated patients in 2020
- Hand out exhibit 1. A good candidate will note that the oral medicine market is expected to grow at an attractive pace and adoption was driven through launch of competitors and was accelerated by COVID-19 pandemic in 2020
- Assuming no change in total population, incidence, diagnosis and treatment rates, we can expect ~900k MS patients to be treated with oral medication
- A good candidate will recognize that a market research study to estimate NeuroNow's expected market share within the oral medicine market is the ideal next step

Year	Incidence	Diagnosed	Treated	Oral medication share %	Target patients
2021	300000	240000	216000	75%	162000
2022	300000	240000	216000	80%	172800
2023	300000	240000	216000	85%	183600
2024	300000	240000	216000	85%	183600
2025	300000	240000	216000	90%	194400
Total:	**1500000**	**1200000**	**1080000**		**896400**

Question #3

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Question

What is the expected patient share of NeuroNow within oral MS market? Subsequently, can the client breakeven in 5 years?

Solution

- Hand exhibit 2. Candidate should note that based on both qualitative and quantitative assessment we can expect NeuroNow to capture significant market share right after launch in 2021. Candidate should be able to back his/her assumptions up with clear rationale. For example, it is valid to assume that peak market share could be expected a couple of years after launch as returns on marketing investments materialize. Current assumptions are taken for ease of calculation
- Hand exhibit 3 for costs analysis. Push the candidate to try and come up with cost heads and schedules on their own.
- Breakeven expected in just over 1 year of launch. Total profit of $1.9Bn (44%)

Year	Patients on oral drugs	NeuroNow share	NeuroNow patients	Price/year ($)	Total revenue (bn $)	Total cost ($ bn)	Profit (bn)	Cumulative profit (bn)
2020	151200	0%	0	12000	0	0.3	-0.3	-0.3
2021	162000	40%	64800	12000	0.8	0.5	0.3	0
2022	172800	40%	69120	12000	0.8	0.4	0.4	0.4
2023	183600	40%	73440	12000	0.9	0.4	0.5	0.9
2024	183600	40%	73440	12000	0.9	0.4	0.5	1.4
2025	194400	40%	77760	12000	0.9	0.4	0.5	1.9
Total	**896400**		**358560**		**4.3**	**2.4**	**1.9**	

Question #4

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Question

What are some other risks that our client could face?

Solution

- Clinical trial failure: Profitability calculations need to be adjusted by the probability of success in the trial
- Competitor response: A fast-growing oral MS drug market would attract existing injectable competitor to develop new oral products and new players to entire this market; Our position can be swayed if new competition arises which provides one or many of better clinical utility, economic value or ease to various relevant stakeholders
- Regulatory risks: Industry is very exposed to such changes
- Supply: Manufacturing and/or distribution related issues either internally or with partners

Conclusion

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Recommendation

- Client should proceed with phase 3 trials and further investments on NeuroNow

Rationale

- Client can expect to breakeven in 1 year (vs 5) and can expect a profit of $1.9Bn (44%) across 5 years from launch. They will be entering a growing market with unmet needs

Risks

- Failure of clinical trial; Emergence of new innovative competitors/products

Next Steps

- Set up clinical trial design with representative population
- Maintain market awareness for oral MS drugs and NeuroNow
- Work on salesforce recruitment and organization structure plans
- Curate marketing campaigns and messaging

Exhibit #1 : MS Treatment Paradigm

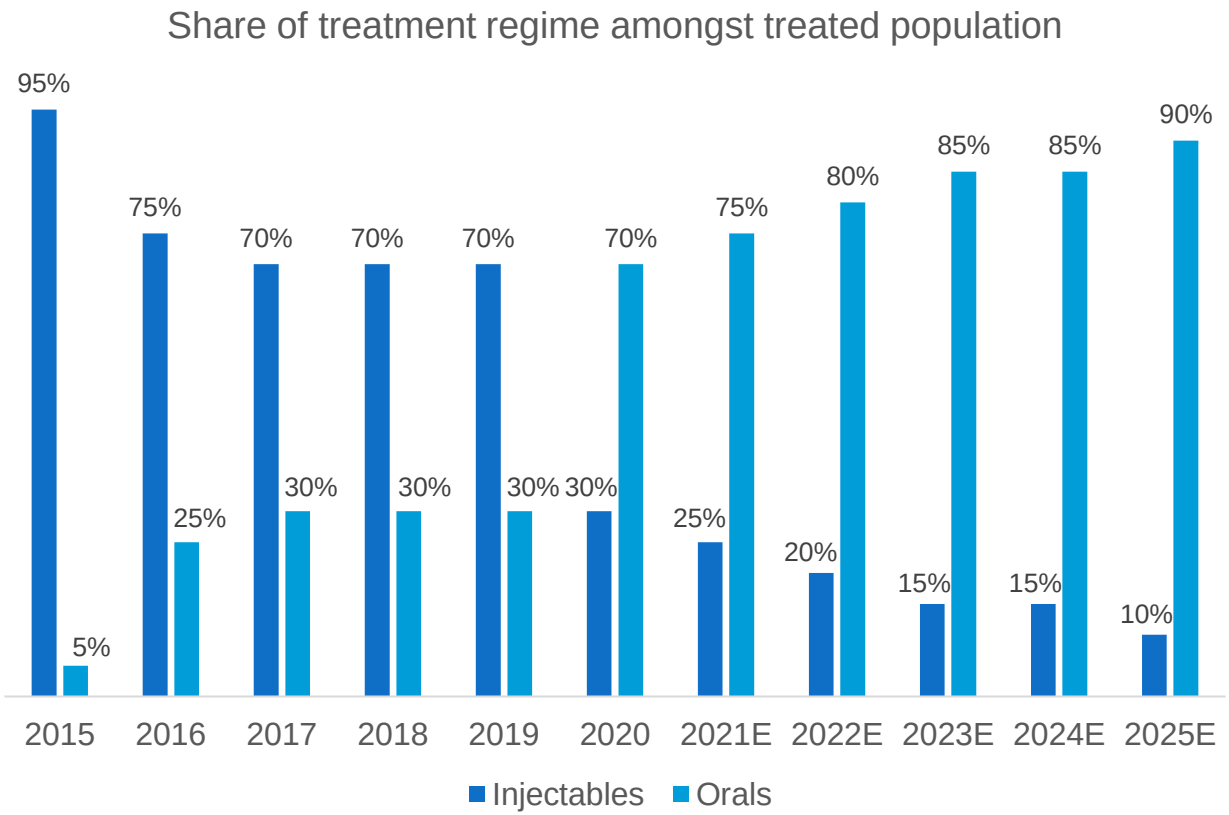
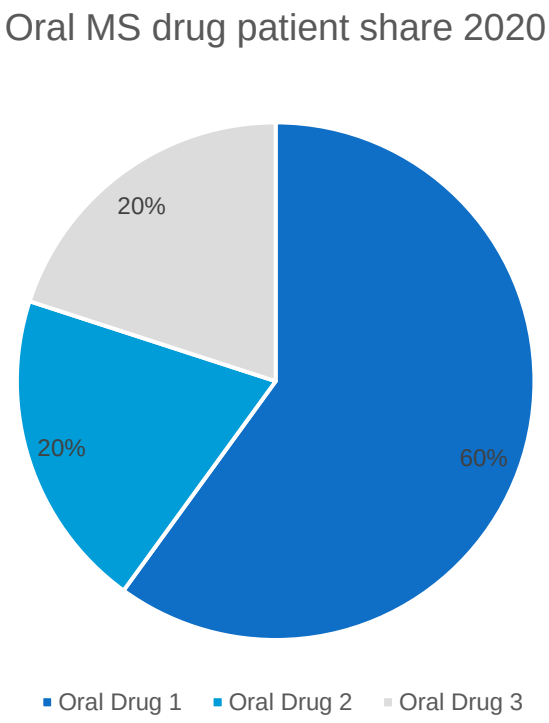


Exhibit #2 : Market Research Study



Key stakeholders:

- "Oral drugs have really transformed how I manage my patients. They are more compliant towards their schedules and hence sometimes show better results than injectables. I can't wait for NeuroNow to be launched as its' early clinical trials show that it has fewer cases of serious side effects than the leading incumbents"
  – Leading Neurologist, Columbia Medical
- "Oral MS drugs have proven to be an economic boom to the healthcare costs for a MS patient as 100s of thousands of monthly hospital visits for injections are being replaced by those patients stayinjg at home and taking their own pills. With NeuroNow, we expect a greater benefit as fewer patients will be buying additional drugs to manage common side-effects that come from the currently available oral MS drugs in the market"
  – USA's top private insurer
- "I am on Oral Drug 1 and it is really helping me with my symptoms however the resultant side-effects are getting tougher to manage by the day. "
  – 70-year-old MS patient

Exhibit #3 : Estimated Costs

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Cost head	Schedule	Amount
Phase 3 Clinical trial	2020	$100mn
Launch costs	2021	$100mn
Salesforce costs	Every year from 2020	$70mn/year
Marketing costs	Every year from 2020	$130mn/year
Manufacturing, distribution etc.	Every year from 2021	$200mn/year

Case #18 : Optic Eye

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Difficulty: Medium
Industry: Technology
Case Type: Product Entry

Concepts Tested

- Brainstorming
- Option Evaluation
- Customer Acquisition

Problem Statement Narrative

Our client is Hudson Electronics, a manufacturer of high-tech electronic devices based in the US. They have just developed a new product called the Optic-Eye. This is an augmented reality tool that users wear around their eyes. This product is new to the market and needs WiFi to work, but also could potentially be bundled with a cellular service provider. The way that it could be sold is similar to how cell phones are currently sold, in an annual contract.

Our client is debating between partnering with Verizon/ATT vs partnering with other providers, but is unsure of which of these two options will work best.

Case Notes

This is a BCG style case, where the candidate will guide the discussion and come to a conclusion on which option would work best for the company.

Question #1 / Framework

What factors would you consider in making the decision on a telecom provider?

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Guidance for Interviewer

This is an unusual case that should not use a cookie-cutter framework. The candidate should recognize that the drivers for growth will be customer adoption and cost of the contract

The candidate should take the time to structure their framework and then walk through it

Clarification Answers if Asked

- The candidate should ask more questions on the types of providers that could be a part of the "Other" Category. If they ask, the providers would be 6 national level carriers: Sprint, T-Mobile, U.S. Cellular, Cricket, Boost Mobile, and MetroPCS
- If the candidate asks, the objective for this case is to achieve $1B in revenue in 2 years

Sample Framework

1. Market Structure:
   a. Size of market through each set of providers
   b. National and regional reach
   c. Competitors in the space
2. Customer Preferences:
   a. Customer profile (e.g. demographic, income differences),
   b. WTP for this type of product
   c. Preference for new technology
3. Channels:
   a. Online vs. in-store format
   b. National footprint
   c. Distribution channels
4. Risks:
   a. Market power of the providers
   b. Regulatory risks with consumer electronics
   c. Customer perception

Question #2

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Question

What is the market size of each telecom provider, and how many customers do they serve? How many do we need to fulfill our requirements?

Solution

If the candidate asks for the market size, show them **Exhibit 1.**

- The contract price for Verizon/ATT is $400, and for Others is $500

The candidate should identify that the current market for ATT and Verizon is smaller than the Other market by 33%

The Candidate should calculate how many customers they feasibly need to achieve the $1B target (2.5M for ATT/V and 2M for Others)

However, the candidate should also intuit what the difference is between ATT/Verizon and Other customers, and think through how likely they might be to use a new technology. This will lead to the next question

Question #3

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Question

What is the difference between each type of customer? I.e. how will their preferences drive adoption of this new technology?

Solution

If the candidate correctly identifies that we still need to identify how many of those customers are willing to try a new product, show **Exhibit 2**

Exhibit 2 should show that ATT/Verizon customers are more focused on features and speed, and in general are less price sensitive.

They should identify that ATT/V is more promising, suggesting that it might be much easier to sell to those customers

Question #4

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Question

How will we reach, and sell to those customers?

Solution

Now they have a good sense of which customers are more likely, the candidate should start to think about the channels, and how do you demonstrate the value of this product and how you sell it

If they ask for it, show them Exhibit 3. They should only focus on US, and correctly identify that ATT has a wider network of channels

Conclusion

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Recommendation

- In the final recommendation, the candidate should mention that (1) the market is more promising and (2) it is easier to reach and sell to customers directly through ATT and Verizon than Other Providers

Rationale

- Though the Other Providers have more total customers, and also have potential revenue per customer, it is far harder to convince those customers of the value of this product because they are so price sensitive. ATT/Verizon customers are more likely to sign up

Risks

- Regulatory risks around a new product
- The quality of the product itself, and if it will work as advertised

Next Steps

- Do a deeper analysis into customer preferences to analyze the % of customers for ATT/Verizon who will buy Optic-Eye
- understand the contracting process end to end

Exhibit #1 : Customer Base

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There are currently ~50M consumer wireless data service customers in the US.

Wireless Data Service Providers	Current Customer Base
ATT	11M
Verizon	9M
Other carriers	30M

Exhibit #2 : Customer Feedback

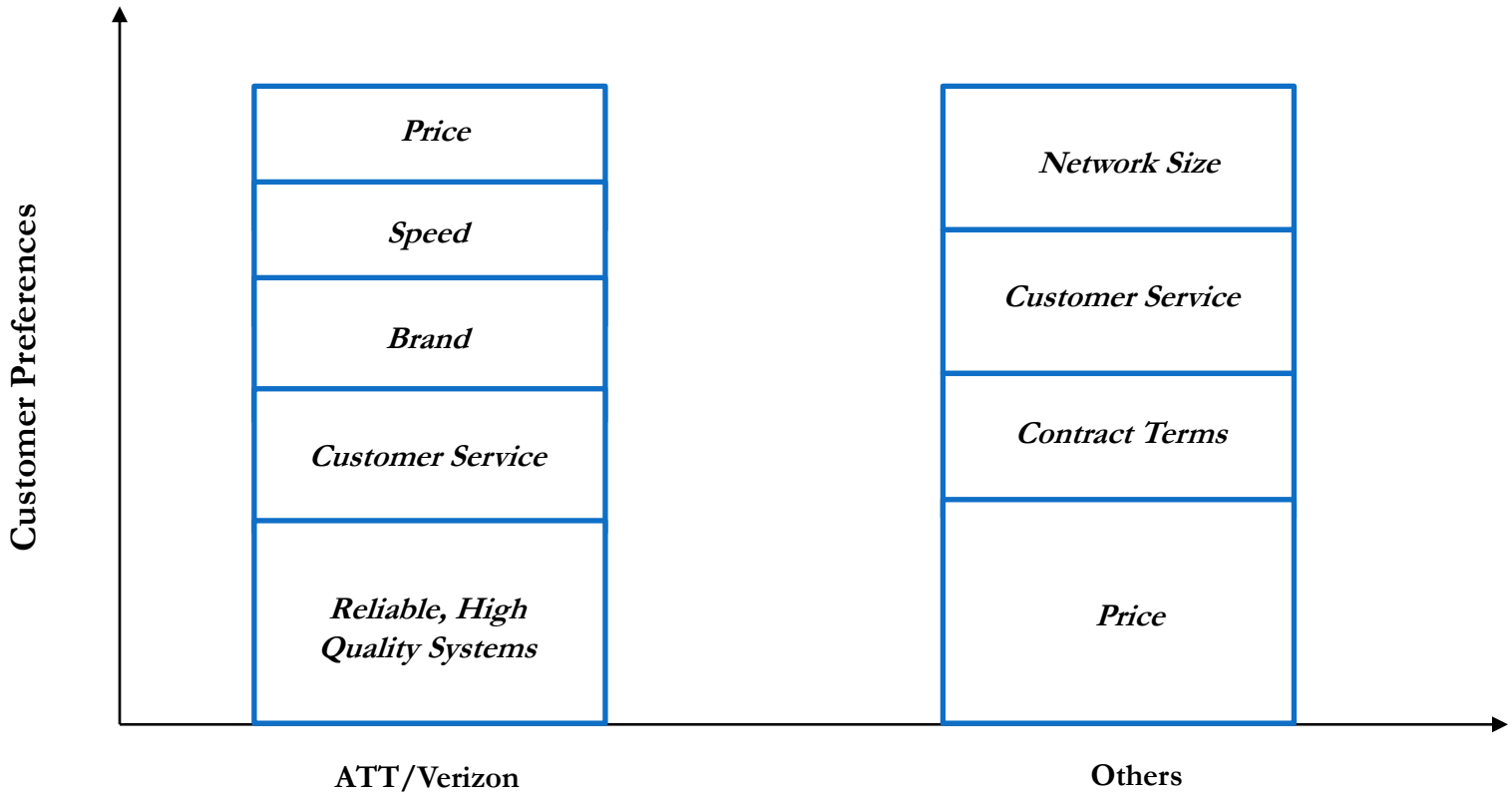

Exhibit #3 : Stores Per Company

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Wireless Data Service Provider	Number of US Retail Stores	Number of non-US Retail Stores
ATT	2,200	1,600
Verizon	1,800	1,000
Other Carriers	3,000	6,500

Case #2 : Packaging Cost Reduction

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Difficulty: Easy
Industry: Manufacturing
Case Type: Cost Reduction

Concepts Tested

- Supply chain
- Brainstorming
- Mental math

Problem Statement Narrative

The client is a tier 1 supplier to the auto industry, manufacturing and distributing both electrical and seating components. The client is concerned about the high costs related to its packaging operations. Your client, the VP of Supply Chain, is targeting a 30% cost reduction of their total packaging cost in 12 months

Case Notes

This case should be candidate led. The candidate needs to keep in mind the specific goal of a 30% cost reduction while being aware of how the means to achieve that reduction could have potentially negative consequences for the firm. Push them on the brainstorms and, wherever possible, try to have the candidate ask for the data they need

Question #1 / Framework

How should your client reduce their packaging costs?

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Guidance for Interviewer

Three key areas that we will explore:

- Hypothesis for why costs have increased
- Brainstorming around one of these hypothesis
- Data and analysis

Clarification Answers if Asked

- Describe the steps in the supply chain
  1. Create components
  2. Ship to warehouse where each component is packaged into either corrugated cardboard boxes, or plastic reusable containers
  3. Additional steps like labeling, shrink wrap etc.
  4. Logistics company hired to ship to clients
- 1000x suppliers for packaging alone, of which 50x represent 80% of packaging spend
- Company operates in three independent regions (NA, Asia, Europe)
- Tier 1: highest priority supplier for auto industry
- Currently spend $60 on packaging

Sample Framework

1. Internal processes
   a. Financials of 'corrugated' vs. 'reusable' – i.e. cheap disposable vs. up front expensive reusable
   b. Supplier fragmentation – potential for consolidation
   c. Internal coordination – centralized procurement process and communication between regional heads
2. Client driven demands
   a. Customization of packaging depending on fragile nature of some components?
   b. Geographical dispersion and number of client locations

Question #2

Columbia Business School

Question

Brainstorm pros and cons of corrugated cardboard boxes vs. reusable plastic

Possible Solution

	Pros	Cons
Corrugated Cardboard Boxes	1. Commoditized product with multiple suppliers 2. Lower unit costs 3. Customizable 4. Lighter 5. Easily replaceable 6. Easy to label	1. Less durable 2. More variable quality 3. Some environmental concerns 4. Continuous procurement required
Reusable	1. Reusability (value over time) 2. Quality 3. Environmentally friendly 4. Potential for other uses 5. Less frequent procurement	1. Heavy 2. Upfront investments 3. Fewer suppliers 4. Less customizable 5. Logistic return 6. Storage issues

Question #3

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Question

Verbally tell the candidate the following:

- $60M is the current total spend on packaging, 1/3 on corrugated boxes, 1/4 on reusables containers, remainder on other items like palettes
- New 'diversity' supplier of corrugated cardboard has a pricing proposal: (i) 4M boxes at $4.50/box; (ii) 5.5M boxes at $3.00/box; (iii) 7M boxes at $2.50/box
- 2% federal rebate on purchases from 'diversity' suppliers

If asked, client currently pays $4 per box and $200 per container. Each container is equivalent to 10 boxes. Client is only exploring a deal with this potential supplier

Solution

- (I) Switching just the corrugated => $60M total spend, 1/3 = corrugated at $4 => 5m boxes… new price = $4.50 => factor in rebate => $22.05m vs. $20m originally
- (II) Switch everything to new supplier => $60M total spend, 1/4 at $200 => 75k reusable containers => 1 container equals 10 boxes => 750k boxes
- (III) Combined, 5.75M boxes. New price = $3.00 => total cost of boxes is $17.25M => factor in rebate => $16.9m
- (IV) Previous spend of $35M on boxes and reusable containers means an $18.1M reduction, or a 30.1% reduction on their $60M current spend
- However, issues with switching to a single new supplier

Question #4

Columbia Business School

Question

What other considerations should the client consider when exploring this supplier switch?

Solution

New Supplier Considerations	Elimination of Existing Suppliers Consideration	Other Considerations
1. Quality risk with unproven supplier 2. Lack of experience with our / client requirements 3. Single-supplier risk 4. Implementation risk 5. Geographic capabilities	1. Loss of long term relationships and associated benefits (e.g. customization, price flex, R&D) 2. Client reaction 3. Legal	1. Environmental Impact 2. Consumer shock/recognition of packaging

Conclusion

Columbia Business School

Recommendation

- In order to meet the client's goal of a $30% reduction in costs, we recommend that the client stop purchasing reusable packaging and switch to buying all boxes from the new supplier

Rationale

- The client can achieve a 30.1% reduction in costs, which exceeds the goal of a 30% reduction

Risks

- See previous brainstorm

Next Steps

- Understand legalities of terminating contracts with current suppliers
- Ensure that client needs are thoroughly communicated to new supplier
- Understand how removing reusable packaging will impact current operations
- Engage stakeholders within company

Case #20 : PanDan Diplomacy

Columbia Business School

Difficulty: Medium
Industry: Lobbyist
Case Type: Strategy Formulation

Written by Daniel Krimowski '21

Concepts Tested

- Creativity
- Brainstorming

Problem Statement Narrative

Now that President-elect Dan has won the United States general election, our client, the Chinese government, is constructing their approach to influence President-elect Dan to look favorably upon them in negotiations once he takes the oath of office. President-elect Dan is the first independent who has won a presidential election in the modern era. He is a Pennsylvania native, from a small town a few hours north of Philadelphia who campaigned on strong international trade deals, education reform, and immigration reform. One of the most effective diplomatic approaches for China has been Panda Diplomacy. Panda Diplomacy is the process by which the Chinese government sends giant pandas to countries in which to leverage better trade deals and improve their outcomes. We have been tasked to help our client sculpt their initial Panda Diplomacy approach to President-elect Dan. What factors would you consider when planning this Panda Diplomacy approach?

Case Notes

This case is supposed to be a break from the monotony of case after case. Have fun with it! Encourage candidate to be creative. Even so, it is important for the candidate to work the case seriously

Question #1 / Framework

What factors would you consider when planning this Panda Diplomacy approach?

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Guidance for Interviewer

This is a very abstract initial concept. Guide the candidate to think about how to best use the pandas as an asset. There will be more concrete pieces of information and math as the case goes on. As always, nudge the candidate in the correct direction if they absolutely need it

Clarification Answers if Asked

- There are no important pieces of information to be gleaned from the candidate's questions. Feel free to add details as you feel necessary

Question #1 / Framework (continued)

What factors would you consider when planning this Panda Diplomacy approach?

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Sample Framework

1. President-elect
   a. Feelings on pandas?
      i. Is he a fan?
   b. Views on China
   c. Campaign promises and ability to influence policy
      i. Trade deals!!
      ii. Education reform
         1) College admissions for Chinese students
      iii. Immigration reform
      iv. Others
2. Expected Negotiations
   a. Tariffs
   b. Additional taxes
   c. Most favored nation status
3. Panda Diplomacy
   a. Effect of pandas
   b. # pandas available to send
   c. Where to send
      i. Targeted cities/locations
         1) Philadelphia
      ii. Famous Zoos/Sanctuaries
         1) Currently have pandas
            a) National Zoo
            b) San Diego
            c) Memphis
            d) Atlanta
         2) Large zoos w/o pandas
            a) Chicago
            b) Bronx
4. Risks
   a. Opportunity Costs
      i. To which other countries could we send pandas?

Question #2

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Question

Luckily for our client, President-elect Dan is a massive fan of giant pandas! Our client has decided to send 4 breeding pairs of pandas to the United States, the largest display of Panda Diplomacy in their history. Each of these panda pairs will be sent to different zoos across the United States. While dozens of zoos can host the pandas, our client can only choose 4. What factors should we consider when deciding which zoos will get the pandas?

Solution

Influence	Financials
• How much will pandas affect his views • Will the pandas help him think positively of our client • Is he willing to make concessions for pandas • More pandas closer to him will help more? • Connection to Philadelphia and how that will influence president-elect • Showing up on TV and in newspapers • Population touched • Influence generation of children	• How much will zoos pay for pandas • Auctions • Possible panda cubs • Annual "Panda fee" • Contribution to research • Increased tourism to Chengdu • Increased interest in visiting and purchasing Chinese products

Question #3

Columbia Business School

Question

Pandas are an expensive investment for zoos. China charges a $1 million fee for each panda. A panda eats 15 kilograms of fresh bamboo every day. It also will cost each of these zoos $2 million to build the required enclosures, with $42,000 in annual maintenance. Ignoring other revenue sources, how many additional tickets will each zoo need to make from the pandas to breakeven Year 1?

Solution

(Give below data once candidate asks for information on each, prompt them if they forget)

- Ticket cost: $20
- Bamboo Cost: $20 per kilogram
- Discount rate: 10%
- All other variable costs: $139,000 annually (you can ask candidate to quickly brainstorm variable costs)
- Number of Pandas: Selected Zoos will receive 2 pandas to for companionship and mating possibilities

Initial Costs

2m + 2m = 4m

Yearly Recurring Costs

15 * 20 * 2 * 365 = 219k + 42k + 139k = 400k

Calculations

(X-400k) / 10% - 4m = 0X = 800k 800k / 20 40k additional tickets

Question #4

Columbia Business School

Question

Which zoos should our client target for Panda Diplomacy? (Hand out Exhibit #1)

Solution

Our client will only consider zoos who do not currently have pandas as they use Panda Diplomacy to influence new people to associate positive feelings towards their government

If they contextualize the why and link it to the case, candidate can choose any 4 zoos that don't currently have pandas, including brainstorming ideas for other zoos not on the list. The best choice to always include is the Philadelphia Zoo as the prompt mentions he is from near the city

Question #5

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Question

President-elect Dan has promised to make environmental protections a key focus for the early days of his administration. Part of his proposed plan would make it illegal for our client to charge panda fees in the US. This is disconcerting to our client as they use these fees to extract more value from the West in the name of conservation and research. Above everything else, our client uses Panda Diplomacy to influence favorable trade deals and to improve perceptions of their regime. As initial outreach shows that his administration will likely take a harder line towards our client, what are the pros and cons of his love of pandas in our client achieving their goals?

Solution

Pros	Cons
• He loves pandas and pandas are endemic to China • Likely associates great feelings to China • Sending pandas to US will help reinforce those good feelings • Most people love pandas, and he wants to please his constituents. The more pandas, the better	• He is aware of their affect and is separating himself from his love of pandas to be unbiased • His advisors are also aware and will be on notice of Panda Diplomacy having too great an influence • Possible negative reaction from push back against obvious influence attempt

Conclusion

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Recommendation

- I recommend that our client sends the pandas to the Philadelphia Zoo and the zoos in Bronx, St Louis, and Houston

Rationale

- We should do this because Philadelphia has a special place in the president-elect's heart and the other 3 are the zoos that get the most annual visitors. This will create more sympathy for our client with the most people

Risks

- The main risk of this is our client is now setting a precedent that they are willing to send pandas without a panda fee and could weaken their negotiating position with other countries going forward

Next Steps

- Considering these risks, our next step is to begin contacting these zoos to start the process of panda acquisition

Exhibit #1

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Zoo	State	Visitors	Current Pandas?
San Diego	California	3.2m	Yes
Phoenix	Arizona	1.5m	No
Saint Louis	Missouri	2.9m	No
Atlanta	Georgia	0.9m	Yes
Philadelphia	Pennsylvania	1.3m	No
Smithsonian Park	DC	2.2m	Yes
Memphis	Tennessee	1.3m	Yes
Bronx	New York	2.0m	No
Pittsburgh	Pennsylvania	1.1m	No
Houston	Texas	1.8m	No

Case #21 : Pay Me My Money, In Cash

Columbia Business School

Difficulty: Very Hard
Industry: Education
Case Type: Strategy Formulation

Written by Daniel Krimowski '21 and Anthony Villamagna '21

Concepts Tested

- Endurance
- Creativity
- Demeanor

Problem Statement Narrative

COVID has fundamentally changed the MBA experience for students. Classes are mostly remote, travel has been eliminated, and the students are not happy. However, Columbia Business School (CBS) is still charging the same tuition as before COVID. Our client is a group of CBS students who feel that they are not getting the full value of their MBA.

In the view of our clients, the MBA is as much about the relationships built with classmates and the experiences gained as it is about the education. Some of our client's were even placed on probation by the school for traveling. They are extremely unhappy. How do we approach pressuring the school into giving our clients a tuition reduction?

Case Notes

This is a candidate-led case that is an exercise in futility. There isn't any viable path forward and every path they pursue is a red herring with no chance of success at the end. Offer the answers to the clarifying questions when asked throughout the case. Give the prompts when candidate asks about a particular subject and let them brainstorm and work the problem before informing them that the option is impossible. The test is if they continue to attack each new problem with energy and do not visibly show their frustration. Do NOT help them at any point in the case

Question #1 / Framework

How do we approach pressuring the school into giving our clients a tuition reduction?

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Clarifying Questions

- **What do we want to accomplish?**
  "Our clients want at least 20% of tuition refunded or reduced, removal of the character probation they received, and an apology from the school for putting them on probation. These demands are absolute and non-negotiable."
- **Who is the decision-maker on reducing tuition?**
  "Decisions on tuition reduction, removal of probation, and issuing an official apology are all made by the Office of the President of Columbia University."
- **Is there any particular time this needs to be accomplished by?**
  "Since most of the students are in their 2nd year, they would like their refund before tuition is due at the end of January in the Spring Semester"
- **What do the students intend to with the refund?**
  "We don't have any information around that"
- **Does the school have a history of giving tuition refunds?**
  "No"
- **How does this year's tuition compare with last year's?**
  "The school announced a tuition freeze last Spring Semester. It is the same as the year before"
- **How much is tuition?**
  "75k per year"
- **Can you tell me more about the coalition of students?**
  "Due to confidentiality, we can provide no details beyond that the client is a coalition of like-minded students."
- **Has the school responded to their initial demands?**
  "Yes, Columbia University announced there will be no refunds"

Question #1 / Framework (continued)

How do we approach pressuring the school into giving our clients a tuition reduction?

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Sample Framework

1. Client Demands to School
   a. 20% Tuition Refund ($15k)
      i. Reduction in Tuition
         1) % of students paying Full Tuition
      ii. Increased Financial Aid
   b. Removal of Probation
      i. Influence Provost
   c. Apology From School
      i. Content
      ii. Who Apologizing

2. CBS Compared to Peer School Actions
   a. Ivy League/M7 B-Schools
      i. Travel Restrictions
      ii. Punishments
      iii. Violations Reported
      iv. COVID Rate
   b. Near-Peer Schools

3. Potential Client Actions
   a. Tuition Strike
      i. Refuse to Pay
   b. Donation Withholding
      i. 5-year Promise
      ii. Permanent Pledge
   c. Legal Actions
      i. Threaten to Sue
      ii. Take to Court
   d. Direct Communication w/ School
      i. Email Blasts
      ii. Phone Calls
   e. Petition
      i. % of Class
      ii. Alumni
   f. Media Pressure
      i. Journalism Fellows
      ii. TV Contacts

4. Risks
   a. CU Withhold Degree
   b. More Negative Attention

Question #2

Columbia Business School

DISCLAIMER

As Candidate explores each of these topics let them brainstorm and work the problem before informing them that the option is impossible. Let them struggle. Ask for recommendation once the total case time is 30 minutes

Possible Discussion Points

- **Legal Recourse**
  - **Prompt-** "What ways can we use threats of lawsuits to pressure Columbia University into giving in?"
  - **Result-** "Litigation against a billion-dollar institution would take too long and would be prohibitively expensive. Additionally, there is no legal standing for an effective lawsuit and the school is unmoved by our client's threats"
- **Direct Communication with Columbia University**
  - **Prompt-** "How can we pressure the administration to apologize, overturn the punishment and reduce tuition?"
  - **Result-** "The Provost of Columbia University issued the punishment and is unmoved by any appeals."
- **Donation Withholding**
  - **Prompt-** "How can we leverage not donating to pressure the school?"
  - **Result-** "The University already considers the current students a lost cause for donations."
- **Tuition Strike**
  - **Prompt-** "How can we leverage going on tuition strike to pressure the school?"
  - **Result-** "The University has stated that if students refuse to pay their tuition, they will neither confer their degrees nor will they even allow the students to earn credits for the semester."
- **Petition**
  - **Prompt-** "Interesting idea. How would we go about getting a petition signed, by who, and how would we use that?"
  - **Result-** "Our clients already attempted a petition, and the school is unmoved."

Question #2 (continued)

Columbia Business School

Possible Discussion Points

- **Media Pressure**

  Prompt- "How could we use the media to pressure the school into giving in to our client's demands?"

  Result- "We don't believe it's a good idea to bring media attention to our clients traveling overseas and partying during a global pandemic that has killed millions of people. Not only is it in poor taste, but this will also likely result in more negative attention on our clients. For those who did not travel, they are students at an Ivy League institution and can expect no sympathy from a ravaged country."

- **Peer Schools**

  Prompt- "How can we use the actions of peer schools to pressure Columbia?"

  Result- "No peer or near-peer school has given a tuition reduction. They also have similar travel punishment policies and thus will not be of help to our clients."

- **Student Walkout**

  Prompt- "How could we plan and execute a walkout in a way that would pressure the school?"

  Result- "If the students don't attend class, they will receive Incompletes as grades and will be unable to graduate. This also would be unpopular to the student body as is disrespectful to the professors who are not involved in the punishment to our clients."

- **Targeting Alumni Support**

  Prompt- "How can we connect with the many CBS Alumni and motivate them to pressure the school?"

  Result- "The Alumni overwhelmingly support the school in this matter and are not sympathetic to our clients. Many of them have lost family members and friends to the pandemic and are upset with our client's behavior."

- **Miscellaneous/Other- Whatever rabbit hole they want to go down, encourage them to do so.**

  Prompt- "Tell me more about that. How would we approach that?"

  Result- "I see. Unfortunately, that will not be an effective approach. How else can we pressure the school?"

Conclusion

Columbia Business School

Recommendation

- It is important to see whether the candidate has the courage to advise the client of news they don't want to hear
- "I recommend that we advise the client to drop their appeals to the school"

Rationale

- We should do this because the punishment was meted out by the provost of Columbia University and our clients don't have any reasonable recourse to pressure or overturn the decision
- All reasonable avenues have been explored to no avail, meaning this is a fruitless endeavor

Risks

- The main risk of this is that the clients will likely be extremely upset that there is nothing that can be done

Next Steps

- Considering this risk, our next step is to communicate to the clients that they should finish out their degrees and move on

Keys to the Case and Feedback

Columbia Business School

Possible Discussion Points

1. Enthusiasm and Energy- When things aren't going well, how is the candidate reacting to it? They should be focused on solving the problem with the interviewer and get to a solution

2. Structure- Keep their structure throughout the case. The candidate should always bucket their brainstorms and always write down their ideas as they are talking unless the interviewer tells them not to

3. Paper Hygiene- Each brainstorm should have a new piece of paper. Candidates should be prepared to give their paper to the interviewer at the end of the case. What insights would a firm gain from having their papers?

4. Recommendation- Candidates should have the courage to advise the client that they need to do something that they don't want to do

5. Creativity- Brainstorms can be difficult. Candidates should continue to work the problem and come up with multiple ideas for each idea

6. Reassess- When candidates get stuck and are "taking a step back", make sure they reference their framework and previous slides for ideas. Start from the big picture and work their way down

Case #22 : Race to 270

Columbia Business School

Difficulty: Hard
Industry: Political Election
Case Type: Asset Optimization

Written by Daniel Krimowski '21 and Anthony Villamagna '21

Concepts Tested

- Creativity
- Math Structure
- Professionalism

Problem Statement Narrative

The United States Presidential election is 2 weeks from today. Our client is the campaign manager for President Rump who is seeking re-election and is locked in a tight race with Former Vice President Widen. The US presidential election is decided by a general election which earns each candidate electoral votes. States are given electoral votes based upon their population ranging from 55 for California to 3 for 8 states. With a total of 538 electoral votes at stake, a candidate needs to earn 270 to win the election outright. A candidate wins the electoral votes by 50 popular-vote elections in each state. This allows every state to matter as for the most part, candidates and their parties are unable to predict which will be the key swing states. What factors would you consider in advising our client on how to pursue winning the election?

Case Notes

This case has difficult math, but the overall lesson of the case is to support a client no matter your opinion of the work. The candidate should work to a solution with the best interest of the client in mind

Question #1 / Framework

What factors would you consider in advising our client on how to win the election?

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Guidance for Interviewer

Politics are an inherently uncomfortable topic, especially given the vitriol of the 2020 presidential election. However, candidates should not let this affect them

The math in this case is unwieldy and the candidate MUST have good paper hygiene to be successful

Clarification Answers if Asked

- **What is the goal of the client?**
  To win the election
- **What political party is Rump?**
  Republican
- **What time does it need to be completed by?**
  The election is 2 weeks away
- **How much of the population is of voting age?**
  75%
- **Of the eligible voters, how many will vote?**
  2/3
- **Current Projected Electoral Votes that are guaranteed to go to each candidate:**
  Rump- 162 Widen- 176

Sample Framework

1. Winning Election
   a. Current Standings
      i. Won States
      ii. Lost States
      iii. Battleground States
         1) Available Electoral Votes
         2) Population
            a) Voting Population
            b) Non-Voters

1. Campaign Events
   a. Event Options
      i. Presidential Rally
      ii. VP Rally
      iii. Ad Campaign
         1) TV
         2) Radio
         3) Mail
   b. Effect of Events
      i. New Voters
      ii. Excitement

Question #2

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Question

During our leadership meeting this morning, the client's campaign manager called twice to check on our progress. What ideas do you have that our client's campaign could do to increase their chances of winning re-election?

Solution

Candidate should start to brainstorm ideas utilizing a structured approach. An example brainstorm is below:

Awareness	Positioning
1. Buying more advertising (digital, print media, etc.) 2. Send candidate to state 3. Send VP on campaign trail 4. Public interactions	1. Identify top initiatives and policies once re-elected 2. Segment what undecided voters want and will convince them to vote for candidate 3. Create a new platform 4. Highlight contrast vs opponent

Question #3

Columbia Business School

Question

We have compiled information on 10 battleground states (states where either candidate can win) with information on their electoral votes, the current standings, and undecided voters. Due to budget restrictions from an early spending blitz and lower donations due to the pandemic, we can only use one of each of the four campaign events and can only use one event per state to get the desired effect. Which states should we target to help our client win the election and which campaign event should we use for each? (Give Exhibit #1 now, Exhibit #2 when they ask for information about Battleground states, and Exhibit #3 when they ask about the events)

Notes

The candidate should talk through the exhibit in a structured top-down approach.
Candidate can round. If they do not, encourage them to do so

Clarifying Questions:

Rump is a Republican

Event Efficacy:

If we use multiple events on one state, we will only get the result of the highest efficacy event.

How much of the population is of voting age?

75%

Of the eligible voting population, how many will vote?

2/3

Current Projected Electoral Votes that are guaranteed to go to each candidate:

Rump- 162
Widen- 176

Question #4

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Question

We just received intel that former Vice President Widen and his campaign will host a rally in Washington. Additionally, his potential VP and running mate Senator Ferris is doing rally in Michigan. Studies have shown that they are half as influential as President Rump's and Vice President Fence's rallies and will have half the impact compared to our client. How will this affect our client's strategy? Don't write it down, just walk me through your immediate thoughts

Solution

Candidate should start to brainstorm ideas utilizing a more conversational approach.

- Figure out what they're doing
- Analyze impact their moves have on our client
- Mitigate their successes while protecting our client's gains

Conclusion

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Recommendation

- The candidate should realize that after the moves by Widen President Rump has no chance of winning the election
- Ideally the candidate says that they approach the client with a best of strategy but acknowledge that the numbers don't look good now, but that elections can be unpredictable

Rationale

- The election of Rump becomes mathematically impossible as those moves by Widen put Washington state out of reach and would force Rump to campaign in Michigan to win the state, meaning that he is guaranteed to lose either Michigan or Colorado, ultimately losing the election

Risks

- Planning not to win
- Razor thin margins, too much up to chance
- Don't fully know the extent of other moves by the Widen team (such as additional TV ads, etc)

Next Steps

- Get funding to have more events
- Understand the Widen team's future moves to better respond
- Figure out other events, ads, etc that can have an impact on the campaign with such little time

Exhibit #1 : Electoral Map of US

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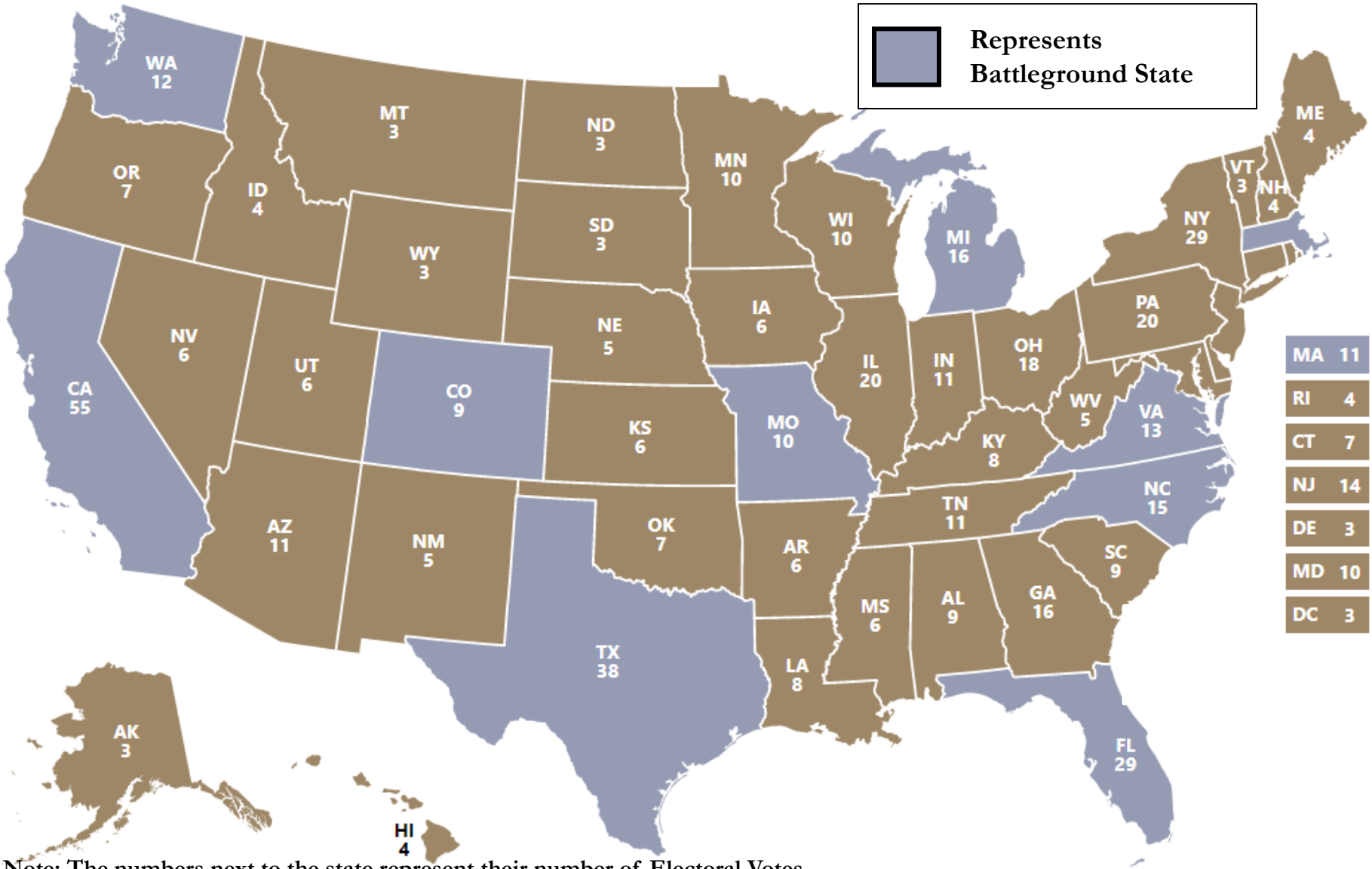

Note: The numbers next to the state represent their number of Electoral Votes

Exhibit #2 : Battleground States

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State	Population	% Democrat	% Republican
California	39,512,223	47%	40%
Colorado	5,758,736	46%	42%
Florida	21,477,737	32%	48%
Massachusetts	6,949,503	50%	40%
Michigan	9,986,857	43%	40%
Missouri	6,137,428	39%	48%
North Carolina	9,380,884	35%	47%
Texas	28,995,981	40%	51%
Virginia	8,535,519	47%	35%
Washington	7,614,893	45%	41%

Note: Anyone that is not labelled 'Democrat' or 'Republican' is undecided, meaning they are equally likely to vote for Rump or Widen

Exhibit #3 : Campaign Strategies

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Strategy	Impact*
President Rump Rally	50%
Vice President Hence Rally	30%
TV Ads	20%
Door-to-door campaign	15%

Note: Impact means that % of voters are confirmed for your political party. For example, a 10% impact with 10 undecided voters means your party now has 1 confirmed voter with 9 undecided voters left

Exhibit #1 Math Solutions

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Solutions

State	Electoral Votes	Population	Rounded	Voters (75%)	Will Vote (2/3)	Dem	# (candidate)	Rep	# (candidate)
California	**55**	**39,512,223**	40,000,000	30,000,000	20,000,000	**47%**	9,400,000	**40%**	8,000,000
Colorado	**9**	**5,758,736**	6,000,000	4,500,000	3,000,000	**46%**	1,380,000	**42%**	1,260,000
Florida	**29**	**21,477,737**	21,000,000	15,750,000	10,500,000	**32%**	3,360,000	**48%**	5,040,000
Massachusetts	**11**	**6,949,503**	7,000,000	5,250,000	3,500,000	**50%**	1,750,000	**40%**	1,400,000
Michigan	**10**	**9,986,857**	10,000,000	7,500,000	5,000,000	**43%**	2,150,000	**40%**	2,000,000
Missouri	**10**	**6,137,428**	6,000,000	4,500,000	3,000,000	**39%**	1,170,000	**48%**	1,440,000
North Carolina	**13**	**9,380,884**	9,000,000	6,750,000	4,500,000	**35%**	1,575,000	**47%**	2,115,000
Texas	**38**	**28,995,981**	29,000,000	21,750,000	14,500,000	**40%**	5,800,000	**51%**	7,395,000
Virginia	**13**	**8,535,519**	9,000,000	6,750,000	4,500,000	**47%**	2,115,000	**35%**	1,575,000
Washington	**12**	**7,614,893**	8,000,000	6,000,000	4,000,000	**45%**	1,800,000	**41%**	1,640,000

Note: A strong candidate will realize that they don't need to do most of the calculations. They can leave everything in percentages as the goal is simply to get more than 50% of the total votes in a state

Exhibit #1 Math Solutions Continued

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Solutions

State	Undecided Voters	# (candidate)	To Win:	Votes Needed	If we do nothing	Pres Rally (50%)	VP Rally (30%)	TV (20%)	D2D (15%)
California	13%	2,600,000	10,000,001	2,000,001	1,300,000	1,950,000	1,690,000	1,560,000	1,495,000
Colorado	12%	360,000	1,500,001	240,001	180,000	270,000	234,000	216,000	207,000
Florida	20%	2,100,000	5,250,001	210,001	1,050,000	1,575,000	1,365,000	1,260,000	1,207,500
Massachusetts	10%	350,000	1,750,001	350,001	175,000	262,500	227,500	210,000	201,250
Michigan	17%	850,000	2,500,001	500,001	425,000	637,500	552,500	510,000	488,750
Missouri	13%	390,000	1,500,001	60,001	195,000	292,500	253,500	234,000	224,250
North Carolina	18%	810,000	2,250,001	135,001	405,000	607,500	526,500	486,000	465,750
Texas	9%	1,305,000	7,250,001	(144,999)	652,500	978,750	848,250	783,000	750,375
Virginia	18%	810,000	2,250,001	675,001	405,000	607,500	526,500	486,000	465,750
Washington	14%	560,000	2,000,001	360,001	280,000	420,000	364,000	336,000	322,000

Note: A strong candidate will realize that they don't need to do most of the calculations. They can leave everything in percentages as the goal is simply to get more than 50% of the total votes in a state

Case #23 : SeaBag Marina

Columbia Business School

Difficulty: Medium
Industry: Nautical
Case Type: Profitability

Concepts Tested

- Profitability
- Math Organization
- Framework for a lesser known subject

Problem Statement Narrative

A recent Columbia MBA graduate, Finn Russo, is exploring entrepreneurial opportunities and has decided he would like to open up a private boating marina near Sullivan's Island, South Carolina. With limited knowledge of the region apart from celebrating a bachelor party in the Charleston area and some online research, Finn has chosen a potential location and has come to you for guidance on how to proceed. He has one financial partner (his father) who is contributing $2,000,000 to the project interest free to be paid back in the 3rd year of operation. Should Finn open up a marina?

Case Notes

This seems like a straightforward profitability issue, but there are many open variables to think about

Feel free to guide the candidate to think of a marina like they would a hotel business

Question #1 / Framework

What points would you consider when evaluating this investment decision?

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Guidance for Interviewer

The candidate might not be familiar with the marina business so feel free to support as much as needed

Clarification Answers if Asked

- Primary source of revenue comes from providing docking and mooring. Docking prices are often charged based on length of the boat.
- Docking- wet slips or docking space near shore usually complete with electrical power supplied will be charged based on $/Feet of length of the boat.
- Mooring- permanent anchor spot in the water some distance from short (mostly used for much larger boats and sailboats)
- Alternative Sources of Revenue:
  - Sell boating supplies and equipment
  - Repairs on boats
  - Sell fuel for boats
- The marina will be offering both monthly and daily moorings and slips
- Finn has no experience in boating or running a marina.

Sample Framework

1. Profitability
   a. Revenue
      i. # of slips
      ii. # of Moorings
      iii. Demand for each / # of boats
      iv. Price
      v. Occupancy Rate
   b. Costs
      i. Development costs
      ii. Wages
      iii. Maintenance
      iv. Storefront Real Estate (buying space)
2. Market
   a. Size
   b. Type of Customer / Boats
   c. Seasonality (Warm Months vs. Cold Months)
3. Other
   a. Regulatory
   b. Insurance
   c. Security
   d. Weather Risks
   e. Purchase existing marina?

Question #2

Columbia Business School

Question

Finn has found a potential location and put together the following pricing chart (hand out exhibit 1). The potential Marina can hold 40 slips and 50 moorings based on market analysis and wants help understanding potential revenue in Year 1. (elaborate what slips and moorings are at this point if not previously discussed)

Solution

After seeing **exhibit 1**, candidate should ask about demand next. Hand **exhibit 2**.
Bonus points if the candidate notices a larger discount for monthly users

Tell candidate to assume that a year has 300 days if computing daily and 10 months if computing monthly

	Daily	Monthly
Slip revenue	40 Slips* 50% daily use* 40ft boat *$2 per foot *300 days = $480,000	40 slips* 40ft *$40*50%*10months = $320,000
Mooring revenue	50 moorings*25% daily use*$60*300days=$225,000	50 moorings*75% monthly use* $1000*10 months= $375,000

Total Revenue: $480,000+ $320,000+$225,000+$375,000 = **$1,400,000**

Question #3

Columbia Business School

Question

What will SeaBag Marina's profitability be in 3 years?

Hand out **Exhibit 3**

Solution

Notes to Interviewer:

- Candidate should ask for costs and ask if we can assume that revenue is staying constant
- Tell candidate to assume revenue grows 10% annually but costs remain flat
- Candidate should remember that he received a $2,000,000 loan and should not count as a charge in addition to the $3,000,000 set up cost

Revenue:
Year 1 $1,400,000 + Year 2 $1,540,000 ($1,400,000*110%) + Year 3 $1,694,000 ($154,000,000*110%) = $4,634,000

Costs:
$2,000,000 onetime loan
$1,000,000 initial setup ($3,000,000-$2,000,000 loan)
Annual $500,000 x 3 years = $1,500,000
Total costs = $4,500,000

3 Year Total profit = $134,000

Conclusion

Columbia Business School

Recommendation

- Yes, Finn should open up the marina as he will be profitable within 3 years

Rationale

- Although the timeline for when Finn would like to be profitable was not explicitly stated, the candidate can defend the position that the Marina is generating far more revenue than ongoing costs. The longer the Marina stays open the higher the profit

Risks

- Weather in the area and if it's a safe spot given hurricanes or other possible events
- Can the marina bring in fuel as that is usually a common offering
- Since Finn has no marina experience is he suited to run this establishment himself

Next Steps

- Dig further into the exact location Finn has chosen since he has done minimal research
- Do a competitive analysis around the area to ensure demand is as expected
- Look into insurance and regulations to get started

Exhibit #1 : Marina Pricing Chart

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	Amount	Daily	Monthly
Slips	40	$2*	$40*
Moorings	50	$60	$1000

*** Price per Foot**

Exhibit #2 : Occupancy and Use

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Average boat size is 40ft

Annual Occupancy for Slips & Moorings is 100%

	Daily	Monthly
Slips Used	50%	50%
Moorings Used	25%	75%

Exhibit #3 : Marina Costs

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Initial Setup cost (real estate + development): $3,000,000

Ongoing annual maintenance cost: $300,000

Annual Wages: $200,000

Case #24 : Sparkle Co.

Columbia Business School

Difficulty: Medium
Industry: Retail
Case Type: Profitability

Concepts Tested

- Profitability
- Market entry (new product)
- Brainstorming

Problem Statement Narrative

Sparkle Co. is a mid-sized private beverage company ($900MM annual sales) that manufactures sparkling water in a range of flavors. After several years of profitable growth, Sparkle Co. has seen profitability deteriorate in the past year. The CEO dreams about taking the company public, and has hired our firm to diagnose the problem and help turn things around

Case Notes

- This case should be candidate-led (BCG/Bain "style")
- The first part of the case is a classic profitability diagnosis and the second part is a market entry (new product launch)
- This case tests a lot of general business judgment. Candidate should be able to rationally explain decisions and backup with numbers

Question #1 / Framework

What is wrong with profitability and how can the client turn things around?

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Guidance for Interviewer

The goal of the framework is to diagnose and brainstorm ways to improve profitability

The next portion will be to analyze the opportunities/risks of entering a new product category

Clarification Answers if Asked

- We don't have any figures yet about revenues or costs – we just know net profit is down slightly vs. last year
- Sparkle Co. is based in New York City, and sells across the country through retailers such as grocery stores and drugstores and major ecommerce sites like amazon.com
- They do not want to expand outside the US

Sample Framework

1. Profitability:
   a. Revenue
      i. Price – wholesale & retail price, promotions/discounts
      ii. Units sold
   b. Costs
      i. Variable – unit cost, transportation, manufacturing
      ii. Fixed – manufacturing & production, marketing /sales
2. Market:
   a. Competition – multinationals, new entrants
   b. Customers
      i. Consumers – health trends, interest/demand, purchase behaviors, potential segments
      ii. Retailers – shelf space, bargaining power
3. Company:
   a. Products – is a particular product line doing poorly?
   b. Sales Channels – is a particular channel doing poorly?
   c. Marketing – change in tactics, channels, etc.
   d. People – turnover, cultural issues

Question #2

Columbia Business School

Question

A Sparkle Co. commercial analyst has put together some reports for you (hand over Exhibit 1 & Exhibit 2). What can you conclude about the company's profitability issues? What has happened to the company's market share?

Solution

YoY market share calculations:

2018	2017	2016	2015	2014
15%	17%	17%	16%	15%

The Candidate should identify the following:

- Year-over-year the market is growing (~9% between 2017 and 2018), but Sparkle Co. sales are down this year (~3.75%), which means they are not growing as fast as the market (losing share).
- Gross margin has been consistent, so COGs has not changed
- R&D and SG&A are both down this year (i.e. fixed costs are down)
    - R&D costs going down may indicate that Sparkle Co. is not investing in as much product innovation

Candidate should conclude that declining profitability is actually a revenue issue, caused by losing market share in a market that is still growing. Prompt the candidate to brainstorm some potential reasons:

- Competition – new entrants, new products, increased marketing spend, competitive promotions, private label
- Distribution – reduced shelf space, did we lose any accounts, are we missing any key distribution points
- Customer – changed perception of product, prefer other products
- Product – quality/taste issue, not enough marketing

Question #3

Columbia Business School

Question

Our team has conducted some consumer surveys to better understand the customer perception of Sparkle Co. beverages (hand over Exhibit 3). What can you conclude from this research? What would you recommend?

Solution

From the exhibits, candidates should conclude:

- Sparkle Co. is not meeting customer expectations on healthiness & visual appearance - therefore an opportunity to redesign the packaging and improve health perception of the beverage
- Exceed expectations on price, so there may be an opportunity to increase price or introduce a premium beverage

The rest should be a creative brainstorming exercise about what they recommend. Some potential answers:

- Packaging redesign
- Marketing campaign about health benefits/low calorie/no sugar
- Launch new "healthy" line of beverages at a higher price point
- Partnerships with "health" influencers, doctors, nutritionists
- Re-vamp social media and website

This should lead in nicely to the final part of the case.

Question #4

Columbia Business School

Question

The Sparkle Co. R&D team has been developing a line of premium sparkling waters with "health" ingredients such as CBD, turmeric, collagen, spirulina, etc. This new product would fall into the "functional beverages" category. Based on the customer survey results, the marketing team wants to accelerate the launch of this new product line. According to R&D, it could be ready to launch by 2020. They want you to evaluate the opportunity. (hand over Exhibit 4)

Solution

Functional beverages are intended to convey a health benefit. Examples include: vitamin waters, kombucha, etc.
After looking at exhibit, candidate should ask about costs. Provide the following:

- Upfront fixed costs
  - Finish developing product - $10MM (candidate should realize that past R&D is sunk)
  - Invest in additional production capacity - $30MM
- Annual fixed costs: $8MM/year
- Gross Margin: 30%

	Year 1	Year 2	Year 3	Total
Revenue	$ 20,000,000	$ 90,000,000	$ 200,000,000	
Share	*1.0%*	*3.0%*	*5.0%*	
Gross Profit	$ 6,000,000	$ 27,000,000	$ 60,000,000	
Gross Margin	*30%*	*30%*	*30%*	
Fixed Costs	$ 8,000,000	$ 8,000,000	$ 8,000,000	
Gross Profit	-$ 2,000,000	$ 19,000,000	$ 52,000,000	**$69,000,000**

Up Front Fixed Costs	
Capacity	$ 30,000,000
Development	$ 10,000,000
Total Fixed Costs	$ 40,000,000

- Candidate should note that this will breakeven between year 2 and year 3 (that's pretty fast)
- Should note the higher margin (30% vs. 25% on other product)
- Conversely, candidates may mention that this is a small business ($69MM in sales is < % of $900MM core business)

Conclusion

Columbia Business School

Recommendation

- Reasonable candidate could go either way on whether to launch the new product line

Rationale

- **Yes, launch:** addresses customer wants, high-growth market, higher margin, breakeven only 2+ years away, highly profitable, will drive growth
- **No, do not launch:** breakeven is still 2+ years away, does not meet short term need of the business, does not address declines in main product line, relatively small compared to main business

Risks

- **Yes, launch:** if projections are wrong could be unsuccessful, risky to enter new category, could funnel money away from core business line, when you add new products you add new competitors, health ingredients might have regulatory concerns
- **No, do not launch:** missing opportunity to enter high-growth market, competitor could beat you, ultimately not addressing customer wants

Next Steps

- Re-evaluate projections to understand if realistic & feasible
- Evaluate if there is an opportunity to take any actions to improve the main business line in parallel with launching a new line

Exhibit #1

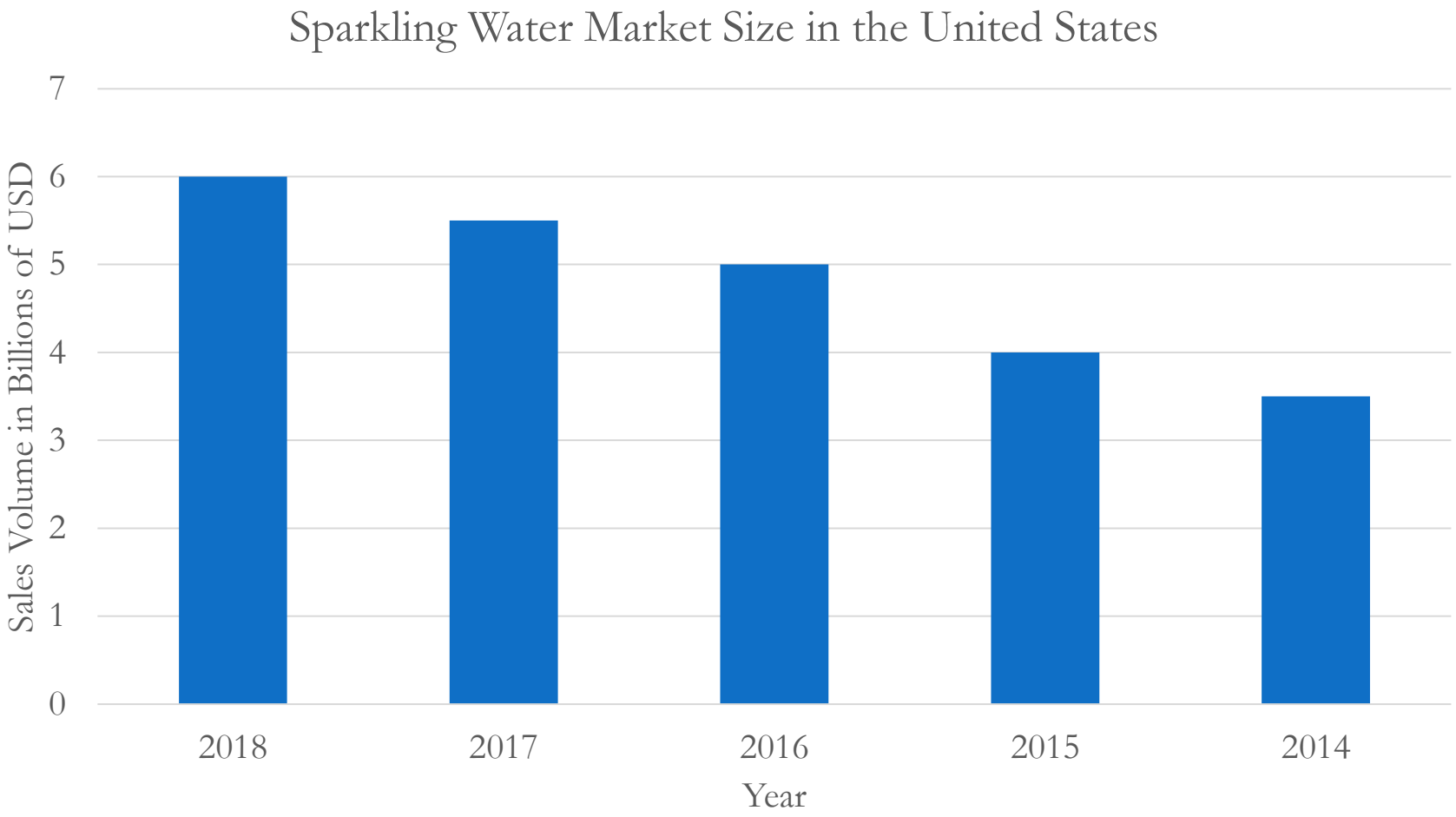
Sparkling Water Market Size in the United States
Sales Volume in Billions of USD
7
6
5
4
3
2
1
0
2018
2017
2016
2015
2014
Year

Exhibit #2

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Sparkle Co. P&L (in USD Millions)

	2018	2017	2016	2015	2014
Total Revenue	$900	$935	$850	$640	$525
Gross Margin	25%	25%	25%	25%	25%
Expenses					
R&D	$18	$19	$26	$26	$21
SG&A	$135	$140	$128	$96	$79
Net Profit	**$72**	**$75**	**$60**	**$38**	**$32**

Exhibit #3

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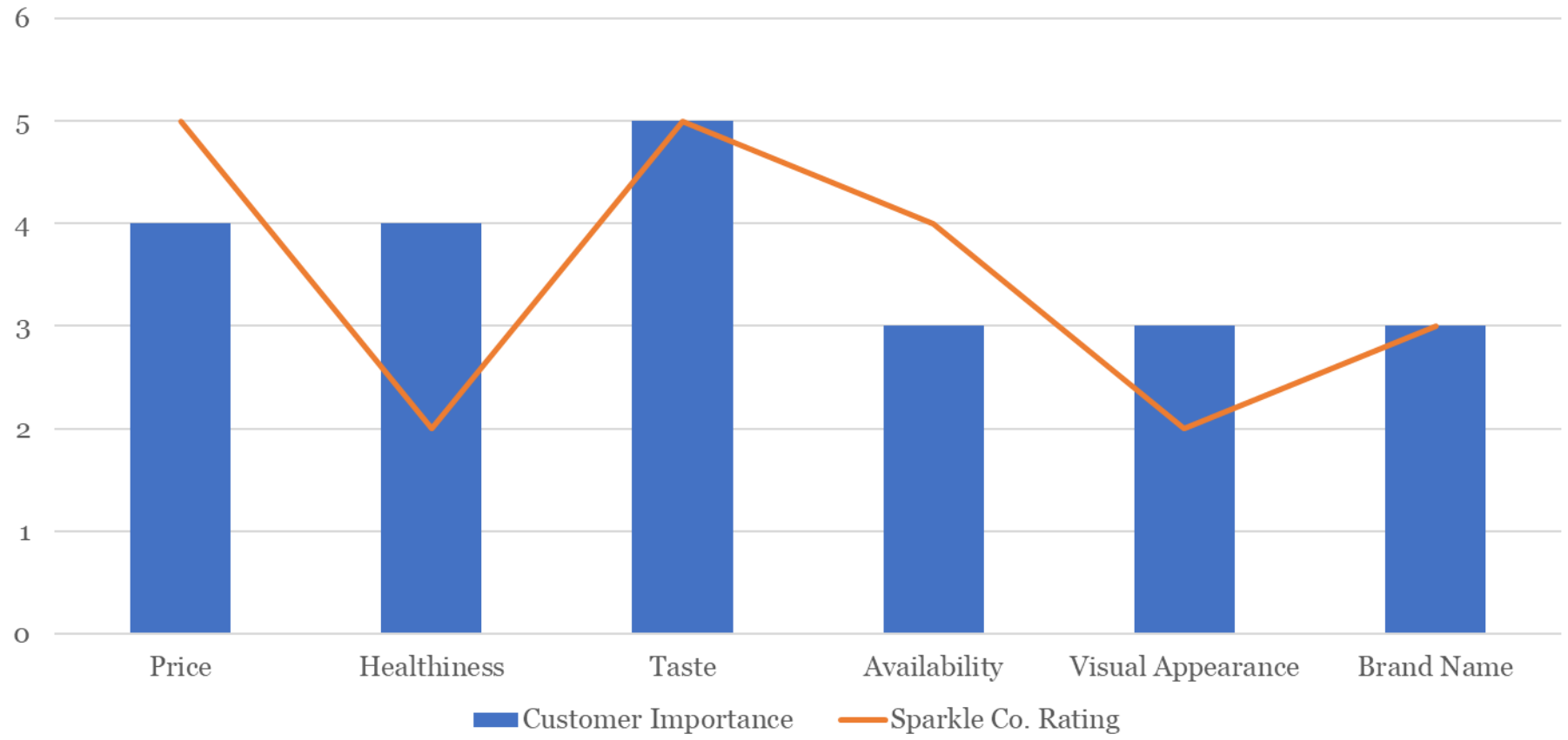
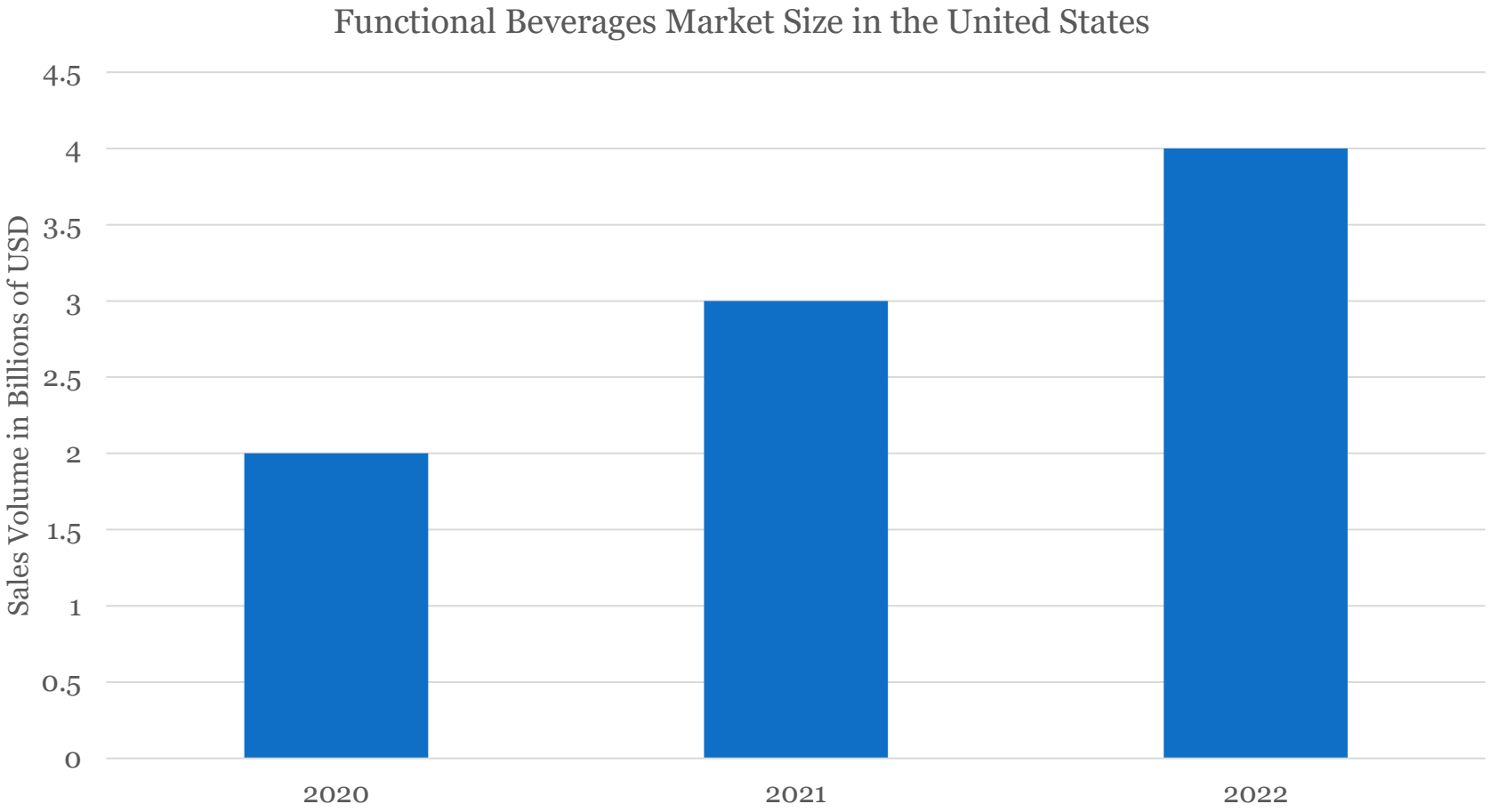
Sparkle Co. Customer Survey Results



1. On a scale of 1-5 with 5 being most important, which factors are most important to you when purchasing sparkling water?
2. On a scale of 1-5 with 5 being perfect performance, how well does Sparkle Co. do on each measure?

Exhibit #4



Projected Share:	1%	3%	5%

Case #25: ST Boat Sale

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Difficulty: Easy
Industry: Transportation
Case Type: Opportunity Assessment

Concepts Tested

- Creativity
- Math
- Clarifying Questions

Problem Statement Narrative

Our client owns a boat, and he wants to know if they should sell it or not

Case Notes

The prompt is short on purpose. Candidate should ask several clarifying questions in order to understand the business situation and come up with a tailored framework

Question #1 / Framework

Should your client sell their boat?

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Guidance for Interviewer

Answer clarifying questions as asked. If none are asked, you might hint at what is important

Clarification Answers if Asked

- **What type of boat is this?** Client owns a supertanker
- **What does the boat do/what is it used for?** Oil transportation. Sails empty to Russia, picks up crude oil, and ships it back to the Netherlands. The clients pay him for the transport
- **Who is interested in buying this boat?** Container ship company is interested in the boat
- **What is the capacity?** 50,000 tonnage, can transport anything
- **What is the boat's useful life?** 13 years old, 25 useful life
- **What are the specs?** Tech specs same as stuff in the market

Sample Framework

1. Financial analysis
   a. NPV or similar analysis around the valuation of the Supertanker
   b. Discount rate (not part of the case but should be included)
   c. Revenues
   d. Costs
   e. Book value of boat
   f. How much invested
2. Shipping Market
   a. Size
   b. Growth
   c. Competitors
   d. Clients
3. Opportunity cost / alternatives to selling
   a. What would client do with money?
   b. Alternatives to current operations?
4. Other considerations
   a. Retirement for client?
   b. Personal connection to boat?

Question #2

Columbia Business School

Question

What is the boat's annual revenue?

Solution

Provide the candidate with the following data, with which he/she should calculate Annual Revenue:

- $0.80 / ton / day of sailing
- 100% utilization
- 10 days sailing time with the cargo
- 2 days to load
- 1 day to unload
- 20 days of annual maintenance

First, candidate should calculate how many trips the boat does in 1 year. Should do: 365 – 20 = 345 available days. It takes 23 days for a complete trip (10 to go, 2 to load, 10 to come back, 1 to unload). So 345 / 23 = 15 full trips

Annual revenue = $0.80 x 10* x 15 x 50,000 = **$6 M**
*you only charge for those days in which the boat is sailing with cargo

Additional (bonus) brainstorming question: What could influence the number of sailing days? Lack of supply / demand, Bad weather / natural disaster, War, Pirates, Bottlenecks at port

Question #3

Columbia Business School

Question

What is the annual cost? And hence the total annual profit?

Solution

Provide this additional data and have the candidate calculate the annual cost. For an additional twist, you can ask the candidate to brainstorm on what he/she thinks the costs associated with running a boat are, and then provide these:

- $8,000/round trip on Fuel
- $20,000/round trip on Docks, tariffs, etc.
- $6,000 per crew member per round trip
- 12 crew members
- $25,000/day for ship maintenance

Annual cost = (8k + 20k + 6k x 12) x 15 + (25k x 20) = $2M

Hence, annual profit = $6M - $2M = **$4M**

Question #4

Columbia Business School

Question

How much is a potential buyer willing to pay?

Solution

Now that we have annual profit, how would you value the boat?

Remaining life: 12 years. So value could be 12 x 4M = $48M
NOTE: This is assuming a 0% discount rate

How do we know that this value is accurate? Brainstorm with the candidate. Response should be around benchmarking against similar boats in the market. Then provide this data for candidate to calculate what a boat of the same characteristics is worth.

- Brand new ship is $150M
- Same tech specs
- 25 year useful life

Value: A brand new ship depreciates $6M/year (150M/25). So a 13-year-old ship would be worth $72M.

What do you think of this? Why would someone pay $72M for a boat that can generate only $48M?
Candidate should brainstorm and come up with ideas as to why. The key is that the boat is traveling empty from the Netherlands to Russia – loading it would almost double the profit. There's other ideas that candidate can give as well.

Conclusion

Columbia Business School

Recommendation

- Client shouldn't sell the boat because they can earn $96M over the remaining lifetime of the boat but they are being offered only $72M
- This assumes a 0% discount rate, which the candidate can disagree with

Rationale

Possible reasons to sell:

- A buyer can extract more value
- Client doesn't wan to operate boat any longer
- Opportunity cost

Risks

- No buyers on the market in the future if want to sell
- Future income not guaranteed
- Operational overhaul needed

Next Steps

- Understand operational changes that are needed to make keeping the boat worthwhile
- Develop relationships with new clients
- Could renegotiate with buyer if they are willing to increase offer

Case #26 : The Greatest Show on Earth

Columbia Business School

Difficulty: Medium
Industry: Non-Profit
Case Type: Other

Written by Rebecca Aronson '21 and Daniel Krimowski '21

Concepts Tested

- Creativity
- Brainstorming

Problem Statement Narrative

Barnum & Bailey Circus is a traveling company of clowns, animals, and acrobats that performs year-round across the United States. While each act is thrilling, the clear stars are the elephants who have been trained to do tricks to delight and entertain the masses. However, due to increasing pressure from animal rights groups and severely declining profits, Barnum & Bailey Circus is now closing after 146 years of continuous operations. As a result, all of the animals need to be relocated. This is a relatively simple task for the smaller animals such as dogs and lions, but the elephants pose a unique problem due to their size. We are advising our client, the World-Wide Fund for Nature (WWF), on a pro-bono basis how to find a suitable home for the elephants. What factors would you consider when securing new caretakers for these majestic creatures?

Case Notes

As with most pro-bono cases, it is critical that the candidate doesn't get lost in profit-maximizing. For this case, the well being of the elephants must be considered as well

Question #1 / Framework

What factors would you consider when securing new caretakers?

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Guidance for Interviewer

The most common sticking point for candidates in this case is getting lost in the numbers with the exhibit. Subtly encourage them to think of the animals well being before explicitly stating it and leading them into Question #4

Clarification Answers if Asked

- What is the goal?
  - "We've asked you to consider what is most important"
- When are they hoping to finish the transfer?
  - "This process can take a while to set up, but ideally it would be accomplished withing the next two months"
- How old are the elephants?
  - "Assume there is an even distribution between the young and elderly"
- How many elephants are there?
  - "There are 10 elephants"
- Where are the elephants located?
  - "They are located in Baraboo, Wisconsin"

Sample Framework

1. Elephants
   a. How many are there?
   b. How big are they?
2. Options
   a. Where can we send them?
      i. Zoos
      ii. Sanctuaries
      iii. Nature Preserves
      iv. National Parks
   b. How do we get them there?
      i. Train
      ii. Truck
      iii. Ship
3. Costs
   a. Transport
   b. Food
   c. Medicine/Vet
4. Fundraising
   a. New program
   b. Existing Program
5. Risks
   a. Opportunity Costs

Question #2

Columbia Business School

Question

Based on its initial analysis, the team has identified two potential homes for the Barnum & Bailey elephants: (1) a nature preserve in Florida and (2) an elephant sanctuary in India. What considerations would you want to examine when comparing these two options?

Solution

Animal Considerations

- What is best for the elephants?
- Safety in both short and long term
  - Poachers
  - Risk of habitat loss
  - Pollution
- Veterinary care for elephants in India vs Florida
- Damage to environment by elephants

Financial Considerations

- Cost of transportation. Multiple methods for Florida, only boat reasonable for India
- Long term financial viability of the sanctuary and preserve
- Possible ROI for WWF
- PR opportunities
- Additional donations

Question #3

Columbia Business School

Question

Since our client is a non-profit organization, their operations are restricted by donated funds. For this project, WWF has raised $1 million to cover the transportation and care of the elephants, as well as and an unrestricted donation to either the elephant sanctuary or nature preserve in order to ensure the organization's viability in the long-term. Based on the information in Exhibit 1, please determine which option is more cost effective

Solution

Calculations:

	Nature Preserve (Florida)	Elephant Sanctuary (India)
Travel costs	10 elephants * 3 days * $6K / elephant / day = $180,000	10 elephants * 10 days * $8K / elephant / day = $800,000
Care costs	10 elephants * (600 + 200) / .2 = $40,000	10 elephants * (20 + 10) / .2 = $1,500
Donation	$100,000	$80,000
Total Cost	$320,000	$881,500

The Elephant Sanctuary in Florida is more cost effective by $561,500

Question #4

Columbia Business School

Question

Although the nature preserve in Florida is more attractive from a financial perspective, the team is concerned that the elephants will live better lives in a facility with more expertise in elephant care. What are some ways WWF could raise additional funds to be able to afford sending the Elephants to India?

Solution

Candidate should provide a clear structure for his/her ideas. One example here:

$ per donor	# of donors
1. Create elephant-specific incentives for giving benchmarks 2. Partner with other non-profit organizations to provide broader publicity/perks for high giving donors 3. Seek additional opportunities for public sector funding	1. Launch new giving campaign to tap into new segments (e.g. young professionals) 2. Create donor "referral" program 3. Appeal to new philanthropic organizations and investors

Question #5

Columbia Business School

Question

Now that the elephants have a new forever home, the team turns its attention to the newly unemployed clowns. As seen in 2016, if clowns are left unattended, they will begin to invade. List out some things we can do with these clowns to protect the world

Solution

- Rodeo clowns
- Job training opportunities
- Birthday clowns
- Circuses in other countries
- Cirque du soleil
- Scaring people during Halloween

Conclusion

Columbia Business School

Recommendation

- I recommend that WWF transport the elephants to the sanctuary in India

Rationale

- We should do this because that is their native home and still falls below within WWF's budget

Risks

- The main risk of this is that the elephants will be unable to adapt to life in the wild and could be a threat to the ecosystem there without proper management

Next Steps

- Considering these risks, our next step is to begin the process of returning them to India

Exhibit #1

Columbia Business School

	Nature Preserve (Florida)	Elephant Sanctuary (India)
Number of elephants	10	10
Length of trip	3 days	10 days
Transportation	$6000 / day / elephant	$8000 / day / elephant
Food	$600 / elephant per year*	$ 20 / elephant per year*
Veterinarian	$200 / elephant per year*	$10 / elephant per year*
Unrestricted Donation	$100,000	$80,000

Note: Assume costs are sustained in perpetuity even though elephants will not live forever, discount rate = 20%

Case #27 : The Home of Gnome

Columbia Business School

Difficulty: Medium
Industry: Media & Entertainment
Case Type: Competitor Analysis

Written by Rebecca Aronson '21

Concepts Tested

- Market sizing
- Customer lifetime value
- Brainstorming

Problem Statement Narrative

Our client is The Dalt Wisney Company, a diversified entertainment company known for its iconic franchises and unparalleled storytelling for the whole family. Colloquially known as the "Home of Gnome" for its first beloved character, Nellie Gnome, Wisney recently launched its own direct-to-consumer SVOD (streaming video on demand) service, Wisney+, filled with the rich content library of Wisney's film and TV studios. However, this week, Wisney's competitor WanderMedia announced that it will be releasing its entire slate of movies simultaneously in theaters and on its own streaming platform, WanderMax, rather than the typical windowing in which films play exclusively in theaters for 90 days. The CEO of Wisney wants to know why WanderMedia made the switch and, more importantly, should Wisney follow?

Case Notes

This is an opportunity assessment case that tests quantitative analysis, brainstorming, and competitive dynamics. While the case is interviewer-led, be sure to leave room for the candidate to drive to answer each question fully. Most candidates will be familiar with the movie and streaming industries from a consumer perspective, so feel free to push for more creative ideas during brainstorming

Question #1 / Framework

Why did WanderMedia made the switch and, more importantly, should Wisney follow?

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Guidance for Interviewer

Guide candidate to fully understand how media companies generate revenues from their owned video content

Framework should focus on the financial and operational repercussions of WanderMedia's decision as well as the applicability to Wisney's business

Clarification Answers if Asked

- **Business Segments:** Operations include content production (traditional movie/TV studios), media distribution (owned SVOD platform [Wisney+] and content licensing), consumer products (toys, apparel, books), and theme parks
- **Value Chain:**
  - *Theatrical:* Consumers buy tickets from movie theaters who split box office revenues with movie studios
  - *Streaming:* Consumers purchase subscriptions to SVOD platforms to watch a library of movies on-demand. Wisney+ and WanderMax do not have content available for pay-per-view. Rather, their entire libraries are available to stream on demand for a single monthly subscription fee
  - *Other:* Media companies also generate licensing fees, which are fees paid by networks (e.g. CBS) or streaming platforms (e.g. Netflix) for the right to show content
- **Goal:** Wisney wants to maximize profits while maintaining its long-term position as the leading family entertainment company in the United States

Question #1 / Framework (continued):

Why did WanderMedia made the switch and, more importantly, should Wisney follow?

Columbia Business School

Sample Framework

Why did WanderMedia switch?

1. Factors internal to WanderMedia
   a. Financial
      i. Film revenues—box office sales [# tickets. $ ticket price, % theater split], subscription fees [# subscribers, $ subscription, churn rate], licensing fees
      ii. Film costs—production, talent, marketing, customer acquistion
   b. Operational
      i. Content—current library, in development, new projects
      ii. Relationships with creative talent
      iii. Distribution via streaming platforms and movie theaters
2. Factors external to WanderMedia
   a. Audience
      i. Size of market (theatrical vs. streaming)
      ii. Preferences—venue, content
      iii. WTP
   b. Competing movie studios and SVOD platforms
   c. Major movie theater chains

Should Wisney follow?

1. Similar financial implications?
2. Similar operational implications?
3. Similar external implications?

Question #2

Columbia Business School

Question

Given the recent upheaval of the movie theater industry in the wake of COVID-19, the team is first interested in the comparative outlook of the theatrical movie and streaming markets. Which segment will be larger in 2025?

Solution

Candidate should ask for data needed to size each market. **Give Exhibit 1** when the candidate has requested specific data points (e.g. number of tickets sold, average ticket price, etc.). candidate should discuss trends then calculate the market size for each in 2025

Assumptions: In 2025, total movie ticket sales = 1.2 billion, avg ticket price = $10, revenue split with theaters = 50%, avg subscription cost = $10/month

Calculations:

1) **Movie Theaters:** Market size = 1.2 billion * $10 * 50% = $6 billion
2) **Subscription:** Market size = 350 million * $10/month * 12 months = $42 billion.

This analysis shows that the **subscription market** will be $36 billion larger than the theatrical market in 2025. However, it **should not lead** to the conclusion that Wisney will be able to capture the entire market or that the markets are equally profitable. A strong candidate will note that households are often willing to pay for more than one SVOD subscription, which would indicate that our estimate is conservative

Question #3

Columbia Business School

Question

The team next wants to consider the comparative value of a moviegoing customer and a subscription streaming customer. To do this, you have been asked to calculate the average **customer lifetime value** of each type of customer. For this exercise, assume individuals are exclusively theatrical or streaming, the discount rate is 0%, and both customers have a retention rate of 90% as children naturally age out of Wisney's family friendly content

Solution

CLV = average revenue per user * (1 + r)/(1 + r – retention rate) = ARPU / churn [when discount rate = 0%]

Additional assumptions:
Avg movie ticket costs $10, customers see on avg 4 movies/year, Wisney splits revenues with theaters 50/50
Avg subscription costs $10/month, on avg 4 people share one subscription account

	Theatrical	Streaming
CLV	$10/ticket * 4 tickets per year * 50% split with theaters * (1/.1) = $20 * 10 = $200	$10 per month / 4 people per household * 12 months per year * (1/.1) = $30 * 10 = $300

The lifetime value of streaming customers is $100 greater than that of theatrical customers. Therefore, Wisney would **prefer to convert moviegoers to SVOD subscribers** by pursuing a simultaneous release strategy. A strong candidate will note that the two types of customers may have different acquisition costs, which would affect the CLV, and, in reality, movie tickets and SVOD subscriptions can be complimentary goods and customers could purchase both

Question #4

Columbia Business School

Question

Having determined that the average streaming customer is more valuable than the average moviegoing customer, the team is now interested in opportunities to further drive profitability from its subscription business. What are additional ways Wisney could increase profits from its SVOD platform, Wisney+?

Solution

Candidate should provide a clear structure for his/her ideas. One example here:

	Existing Customers	New Customers
Increase Revenues	1. Introduce pay-per-view for new releases 2. Tiered subscription levels (ads/no ads) 3. Limit sharing of subscription accounts 4. Increased personalization to reduce churn	1. Create exclusive platform content to target new markets (e.g. foreign language, niche fan bases) 2. Bundle with other SVOD/telecom services to attract new customers
Decrease Costs	1. In-platform promotions of new content to reduce marketing spend 2. Benchmark efficiency of in-house content production to identify savings	1. Evaluate customer acquisition costs across channels and benchmark against competition 2. Achieve greater economies of scale

Question #5

Columbia Business School

Question

The team continues its analysis and finds that if Wisney were to release new films in theaters and on its streaming platform simultaneously, 50% of its moviegoing customers would become exclusive SVOD subscribers. However, Cinedot, the major movie theater chain, just announced that it will no longer show WanderMedia films as result of WanderMedia's decision to pursue this strategy. Your team is now concerned that Cinedot and other movie theater chains might do the same to Wisney if it were to switch to simultaneous release. Calculate the expected change in lifetime value given that the likelihood of movie theater retaliation is 75% and Wisney is expected to sell 320 million movie tickets in the coming year

Solution

Expected change = LV of current moviegoing segment – expected LV of moviegoing segment after the switch
Current: 320M tickets sold / 4 films per person per year = 80M moviegoers * $200 LV per customer = $16B

After Switch:

- No retaliation (25%)
  - Theater: 80 million moviegoers * $200 LV per customer * 50% = $8 billion
  - SVOD: 80 million moviegoers * $300 LV per customer * 50% = $12 billion
  - Total = $12 billion + $6 billion = $20 billion
- Retaliation (75%)
  - Theater = $0
  - SVOD: 80 million moviegoers * $300 LV per customer * 50% = $12 billion
  - Total = $12 billion

Expected LV = .25(20) + .75(12) = $14 billion → $14 billion - $16 billion = loss of $2 billion → **Not worth the risk!**

Conclusion

Should Wisney follow WanderMedia's release strategy?

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Recommendation

- No, Wisney should not follow WanderMedia's decision to release its slate of films in theaters and on streaming simultaneously

Rationale

- While the lifetime value of a subscriber is higher than that of a moviegoer ($200 vs $300, respectively), the likelihood that movie theaters will lock Wisney out of theatrical distribution implies an expected loss of $2 billion in lifetime value

Risks

- By sticking to the traditional release schedule, Wisney potentially risks losing market share in the streaming space

Next Steps

- To ensure the future success of its SVOD platform, Wisney should instead find other ways to differentiate its platform and grow its subscription base such as through exclusive content or bundling with other products or services

Exhibit #1

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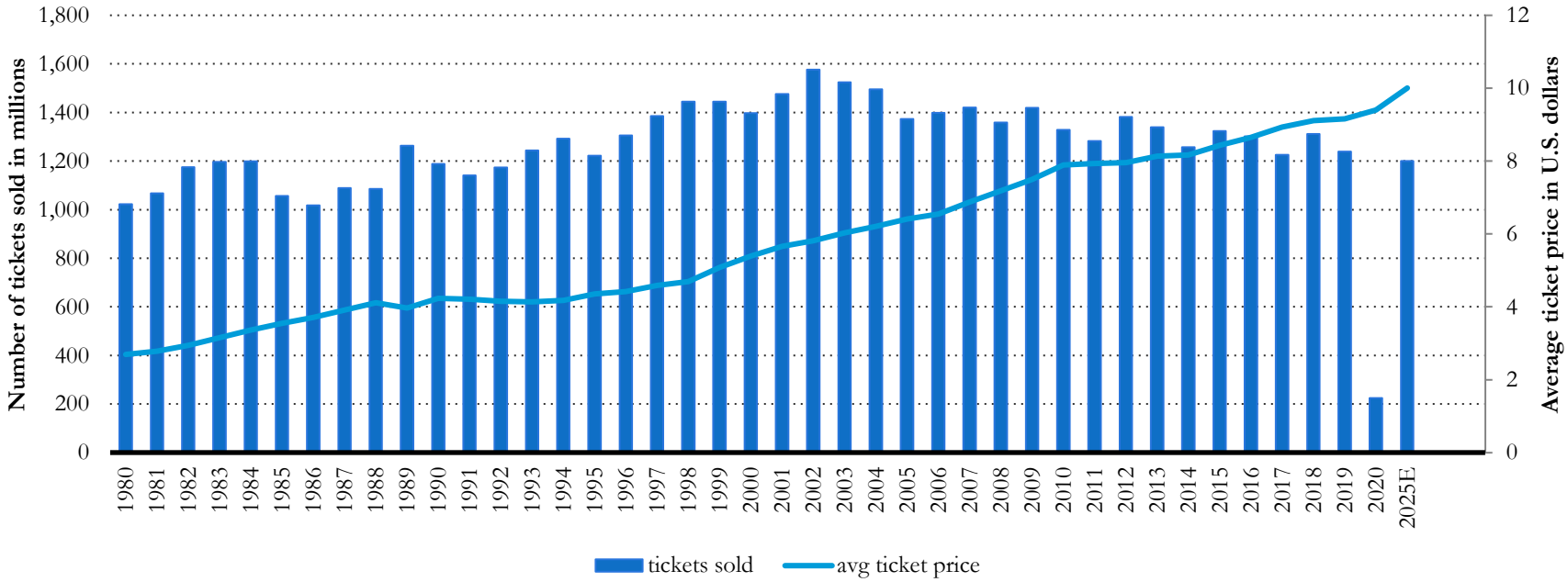
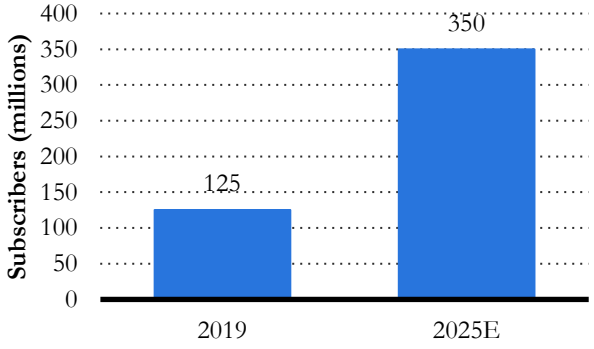
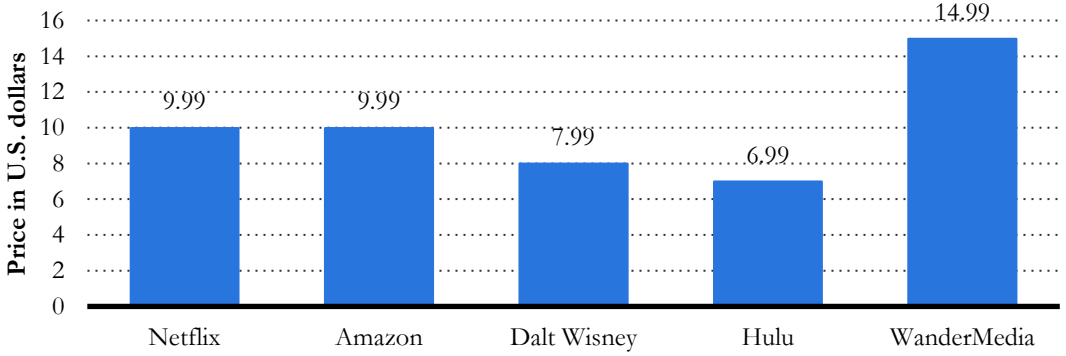
Number of movie tickets sold and average ticket price in the U.S. and Canada



SVOD subscription households



Monthly costs of SVOD platforms in the U.S. in 2019



Case #28 : Timeless Watches

Columbia Business School

Difficulty: Hard
Industry: Fashion Retail / Tech
Case Type: Market Entry

Concepts Tested

- Market sizing
- Creativity
- Mental math

Problem Statement Narrative

Your client is Timeless, one of the world's largest and most successful watchmakers. Based in the U.S., they are renowned for offering fashionable designs and quality craftsmanship at an accessible price. Timeless sells watches under several different proprietary brand names and also has licenses to design watches on behalf of other popular fashion brands. Timeless watches are sold in Timeless stores, in major department stores, online, and through other specialty retailers

Timeless has noticed in the past few years that consumers have grown increasingly interested in "smart watches." Timeless currently makes only "traditional" watches, but they have been considering adding a smart watch line to their product offerings. Timeless has hired your firm to help them analyze this opportunity

Case Notes

This case should be interviewer-led. There is no specific goal for the market entry (gain x% of share, etc.). Encourage the candidate to be creative throughout, but especially in question 3 and 4. The best interviews will pull together considerations from the retail brand portfolio aspect and the tech aspect to build a well-rounded perspective on the opportunities and risks of entering into the smart watch market

Question #1 / Framework

Should Timeless should enter the smart watch market?

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Guidance for Interviewer

This case presents a lot for the candidate to consider – not only do we need to think about the market opportunity, but we also need to think about whether Timeless is capable of making such a pivot, and if so, how it would effect their current business. Push the candidate to be creative throughout the discussion

Clarification Answers if Asked

- This case focuses on the US market
- For the purposes of this case, a "smart watch" is a watch that can communicate with a user's phone to receive text, call, or email alerts and can also support additional apps, like GPS or advanced fitness tracking (think Apple Watch, not a FitBit basic tracker bands)
- Timeless's current sales have been holding steady over the past few years
- Timeless's brands cover many different market segments and price points

Sample Framework

1. Market Size & Share
   a. What is the size of the US smart watch market?
   b. Is the market fragmented or consolidated, and do we expect this to change over time?
   c. Who are the main competitors?
2. Customers
   a. Who is Timeless's current customer? Would they also buy a smart watch? Potential cannibalization?
   b. Segmentation by use case (ex. fitness, work)
3. Timeless's Capabilities
   a. Does Timeless mgmt have the technical capabilities to make this jump? What needs to be added?
   b. How would design & production change?
   c. How can/should the Timeless brand be leveraged?
   d. Does Timeless have sufficient capital to invest?
4. How to Enter?
   a. Joint venture with an existing brand
   b. Licensing
   c. Acquisition
   d. Build in-house

These are some basic ideas. Creative additions might include discussion of operating systems, the consumer "watch closet," expansion into watch accessories sales, and opportunity costs.

Question #2

Columbia Business School

Question

Estimate the size of the US smart watch market

One Possible Solution

1. US Population: ~300M people
2. Create approximate age groups and assume even distribution of 75M people per group: 0-20, 21-40, 41-60, 61-80+
3. Apply a percentage estimate of the people in each group who would buy a smart watch:
   - 0-20: 10% → 7.5M people
   - 21-40: 25% → 18.75M people
   - 41-60: 20% → 15M people
   - 61-80+: 5% → 3.75M people
4. Add each group's estimate to get a total of 45M people
5. Estimated Average Smart Watch price: $250
6. Estimate the number of smart watches owned per person: 1.1 (most people will only buy one, but some people may periodically "trade up")
7. Estimate that people purchase a smart watch every 4 years
8. **Total Market Size: 45M people x $250 x 1.1 watches per person / 4 (years between purchases) = ~$3B**

Candidate will likely ask about the share of the market Timeless could capture. Hand them **Exhibit 1.**

Question #3

Columbia Business School

Question

Looking at Exhibit 1, what inferences can you draw about the smart watch market in the US and Timeless's options for entering the market?

Solution

This question tests the candidate's ability to draw "second level insights" from the information provided in Exhibit 1. They should note that the market is rather consolidated, which means Timeless might have a tough time breaking through. However, being a major player in the traditional watch market does come with some advantages, and we are starting to see some market segments emerge (fitness users, productivity needs, etc.). The candidate should consider the different benefits and risks associated with entering the market through joint ventures, acquisition, or building in-house. A potential framework might include the following:

Acquisition	Joint Venture	Build In-House
• Faster revenues • Leverage Timeless sales & marketing assets • Is there an affordable acquisition target available? • Integration risks • Can their tech keep up?	• Collaborate with tech company, get best of both tech & watch • Leverage both brands for customer acquisition • Choice of JV partner is key • Limited control over project	• Full control of process, costs • Expand an existing brand's line • Takes longest to build out; Timeless doesn't have tech capability currently • Demands of new project could cannibalize internal resources

Question #4

Columbia Business School

Question

Timeless has identified a potential acquisition target called CanCan, a 3-year old start up that makes a smart watch focused on providing top-notch productivity apps and features. Their product has developed a small but enthusiastic customer base. Looking at Exhibit 2, should Timeless proceed with the acquisition?

Solution

CanCan's annual gross margin = ($200 avg. sale price - $150 variable cost) x 200,000 watches = $5M
Annual Fixed Costs = $300k per month x 12 months = $3.6M
Annual Cost of Giveaways = 200 watches/month x 12 months x $150 variable cost per watch = $360k
CanCan annual profit = $5M revenue - $3.6M fixed costs - $360k giveaways cost = **$1.04M**

If the candidate asks for an **acquisition price**, tell them that current estimates are between **$15M-$20M**

Possible Answers: Can argue "yes" or "no" with thoughtful rationale. Some possible discussion points include:

Acquire: Lots of potential synergies: Timeless can leverage its marketing, distribution, and production expertise to increase sales and reduce fixed costs. Timeless can access capital to invest in expanding CanCan's production capacity. Timeless can cut back on the giveaway, which are currently costing CanCan a lot of money

Don't Acquire: Synergies are uncertain given Timeless doesn't currently produce smart watches (doesn't know how to manufacture them, market them, integrate new department of techies/programmers, etc.). Productivity-focused smart watch is a small market and may not be trendy in 1-2 years. There may be other acquisition targets that are more attractive

Conclusion

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Recommendation

- Timeless should pursue the acquisition of CanCan, pending confirmation of an agreeable price.
- (Candidate can also argue they should not proceed; Rationale, Risks, and Next Steps should support that argument)

Rationale

- Purchasing an up-and-coming smart watch brand will help Timeless enter the market faster than building in house, and there are several opportunities for synergies that will help CanCan grow its sales much faster than it could on its own

Risks

- Work culture integration risks
- Competitive responses (ex. Apple starts increasing emphasis on productivity features)
- Continual investments in tech development
- Cannibalization of internal resources towards smart watches
- Opportunity Costs – other potential acquisitions, etc
- Market-wide risk of low-cost manufactures creating a super cheap "good enough" watch

Next Steps

- Timeless should confirm acquisition price and ensure they have adequate capital to invest
- Timeless should research other potential acquisition targets to make sure that CanCan is the best option
- If CanCan is the best, they should create a plan & timeline for the integration (ex. Will CanCan employees move to Timeless HQ, or stay separate?)

Exhibit #1 : US Smart Watch Market

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Company Name	Market Share, 2019	Avg. Sale Price of Watch	Other Products
Apple	35%	$400	Consumer electronics, Apple Music
FitBit	20%	$200	Fitness tracker bands, pedometers
Fossil	10%	$200	Traditional watches, leather accessories
Garmin	5%	$350	GPS electronics, fitness monitoring equipment
Samsung	5%	$300	Consumer electronics & components
Other Companies, Aggregated	25%	$200	Varies

Exhibit #2 : CanCan Acquisition

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CanCan Information	
Avg. Watch Selling Price	$200
Annual Unit Sales	100,000
Monthly Watch Giveaways*	200
Variable Cost per Unit	$150
Monthly Fixed Costs	$300,000

Note: Giveaways are in addition to 100k annual unit sales. These are watches given to influencers, bloggers, tech reviewers, etc. for promotional purposes.

Case #29 : TriBeCa Branding

Columbia Business School

Difficulty: Medium
Industry: Professional Services
Case Type: Market Entry

Written by Scott Cesta '22 and Kat Boorstein '22

Concepts Tested

- Profitability, math, creativity
- New business models (SaaS)

Problem Statement Narrative

Tribeca Branding is a NYC-based brand strategy firm. They operate using a traditional consulting model – partners bring in new work, and teams of employees complete the projects, delivering recommendations to the client about their branding, marketing, and advertising strategy. In recent years, Tribeca Branding has developed an internal software tool that helped project teams optimize advertising strategy for clients. It has been so effective that clients are asking to purchase the tool to use themselves

Should Tribeca Branding launch this software tool as a standalone SaaS product to its clients?

Case Notes

This is an candidate led case that rests on the candidate breaking down the differences between consulting/ professional services and SaaS business models, and evaluate whether the Tribeca in question should change its business for this new opportunity

Question #1 / Framework

Should Tribeca Branding launch the software tool as a standalone SaaS product?

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Guidance for Interviewer

This case is all about managing a large amount of information and keeping one's "eyes on the prize" of profitability comparison. If stuck, remind the candidate to drive towards this goal

Clarification Answers if Asked

- The software is already developed and fully functional – some investment would be needed to get it "client ready" (UX design, IT improvements)
- The software helps clients optimize web advertising content and placement
- The primary objective is to maximize profitability over the next <u>two years</u>

Sample Framework

1. Profit
   a. Profitability of Existing Business Model
      i. Revenue per project
      ii. Costs
   b. Profitability of Tech Opportunity
      i. Monthly Recurring Revenue
      ii. Operating Costs
      iii. Switching Costs
2. Market
   a. Market
      i. Size of Market for Consulting Services
      ii. Size of Market for SaaS service
      iii. Market Trends (automation?)
   b. Competition
      i. Primary competitors for consulting
      ii. Primary competitors for SaaS
3. Operations
   a. Method of Entry
      i. Divert Resources from Existing Business
      ii. Invest to expand the business
   b. Transformation Costs
      i. Retrain staff vs. hire new salesforce
      ii. Customer service/maintenance costs
   c. Brand & Marketing
      i. Reach and marketing costs
      ii. Brand dilution/customer loss

Question #2

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Question

Your team has gathered some information on potential customer businesses for the SaaS product **(Exhibit #1)**.

(A) Where do you think Tribeca's current client base falls on this perceptual map?
(B) Which additional segment should they target?
(C) How many clients can they expect to reach in the new segment?

Solution

(A) The candidate should identify that **Segment #2** most likely contains Tribeca's current client base, as those large organizations are the most likely to be willing to pay for bespoke consultancy services to support their advertising

(B) The candidate should identify that **Segment #1** is the most attractive new target; though it less voluminous than Segment #4, the higher percentage of customers "on the web" makes it the best fit for this digital-focused product. In addition, it is more appealing than Segment #3 because smaller companies tend to be better targets for SaaS products, lacking the capital to develop in-house capabilities or hire consultants to perform the same jobs

(C) The candidate should work to identify how many clients they can expect to reach by targeting Segment #1. First, they should count the number of companies in the segment (8 dots * 500 companies/dot = 4000 companies)

Then, they should realize that they do not have the other piece of information they need to solve this problem – expected segment penetration. When they ask, you should tell them that Tribeca expects to see a **5% penetration rate** in Y1, **and a 10% penetration rate in Y2 and beyond**

Question #3

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Question

(A) Let's compare the operating profitability of the two possible business models: 1) traditional consulting and 2) SaaS subscription. What do you think the primary revenue drivers and cost drivers would be for each of these business models? *(Allow candidate to complete brainstorm before reading part B.)*

(B) Our team has gathered some data and estimates the following. What would be the associated profit per year?

Consulting: Tribeca has 100 consulting clients, and clients purchase a project about once every 2 years

- Tribeca charges an average of $300k/project
- It costs about $10k to sell a project (time spent by the partner who sells the project)
- The average project requires a team of 6 consultants, who bill 200 hours each, at $200/hr

SaaS: Tribeca would charge $10k/yr for an annual subscription

- It costs about $1k to sell a subscription
- The average annual subscription requires 10 hours of support staff time, at a cost rate of $100/hr
- Tribeca expects to see a 5% penetration rate in Y1, and a 10% penetration rate in Y2 and beyond of the segment identified in Exhibit 1
- For simplicity, assume that SaaS business cannibalizes 100% of existing consulting clients (100 additional SaaS clients)

Question #3 (continued)

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Solution

(A) A sample brainstorm might look like:

Consulting Revenue Drivers: contractual project payments
Cost Drivers: consultant billed hours, cost of project sales, overhead, consultant expenses

SaaS Revenue Drivers: subscription fees
Cost Drivers: cost of project sales, customer support, product development costs (upfront and ongoing)

(B) Candidate should first calculate the profit per project (contribution), and then annualize. If necessary, remind candidate of calculated total addressable market in previous exercise.

	Consulting	SaaS
Cost per project *(or annual subscription)*	6 consultants * 200hrs * $250 = $240k + $10k sales = **$250k / project**	10 support hours/year * $100 = $1000 + $1k sales = **$2000/ subscription**
Contribution/ project	$300k - $250k = $50k / project	$10k - $2k = $8k / subscription
Profit in Y1	100 existing clients * .5 projects/yr = 50 projects/yr * $50k/project = **$2.5M operating profit**	4000 possible clients * 5% + 100 existing clients = 300 subs/yr * $8k/sub = **$2.4M operating profit**
Profit in Y2	**$2.5M operating profit**	4000 possible clients * 10% + 100 existing clients= 500 subs/yr * $8k/sub = **$4M**
Total Profit	**$5M operating profit**	**$6.4M operating profit**

Question #4

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Question

Outside of financial profitability, what are some of the risks and challenges that could be associated with the decision to pivot to the SaaS product?

Solution

A sample brainstorm for could look like:

Operations	• Probability of success: is this the Tribeca's core competency? Will customers tolerate a shift like this? How reasonable are our sales projections? • Additional software development costs could be higher than expected • Changing operating model: shortened sales cycle, higher volume business
Competitive	• A lack of network effects leaves room for competitor firms to launch similar products • Cannibalization of existing consulting business
Human Capital	• Dramatic shift in personnel: fewer consultants needed, more sales staff and customer support • Change in culture of Tribeca would present a challenge to current employees

Conclusion

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Recommendation

- Yes – over the 2Y time horizon specified, launching the SaaS product is more profitable
- Yes, with reservations – although the SaaS product is more profitable over the specified time horizon, the operational challenges of executing a shift like this present significant challenges

(Either of these recommendations is appropriate)

Rationale

- There is a sizeable target segment of small companies with web-focused consumers; we expect eventual 10% penetration
- The annual margin for consulting in this market is $2.5M,; the annual margin of the SaaS product would be $4M once scale is achieved.
- Ramp-up to selling the new SaaS product would dampen profitability in Y1

Risks

- Challenges of switching business models may be overwhelming
- Sales projections may not hold
- Upfront and ongoing software development & marketing costs may be meaningfully large
- Competitors may launch similar products
- Firm may take reputational damage in other areas ("its services are replaceable by software")

Next Steps

- Investigate equity/debt funding sources that could push out investment timeline
- Research ongoing development and marketing costs in-depth

Exhibit #1

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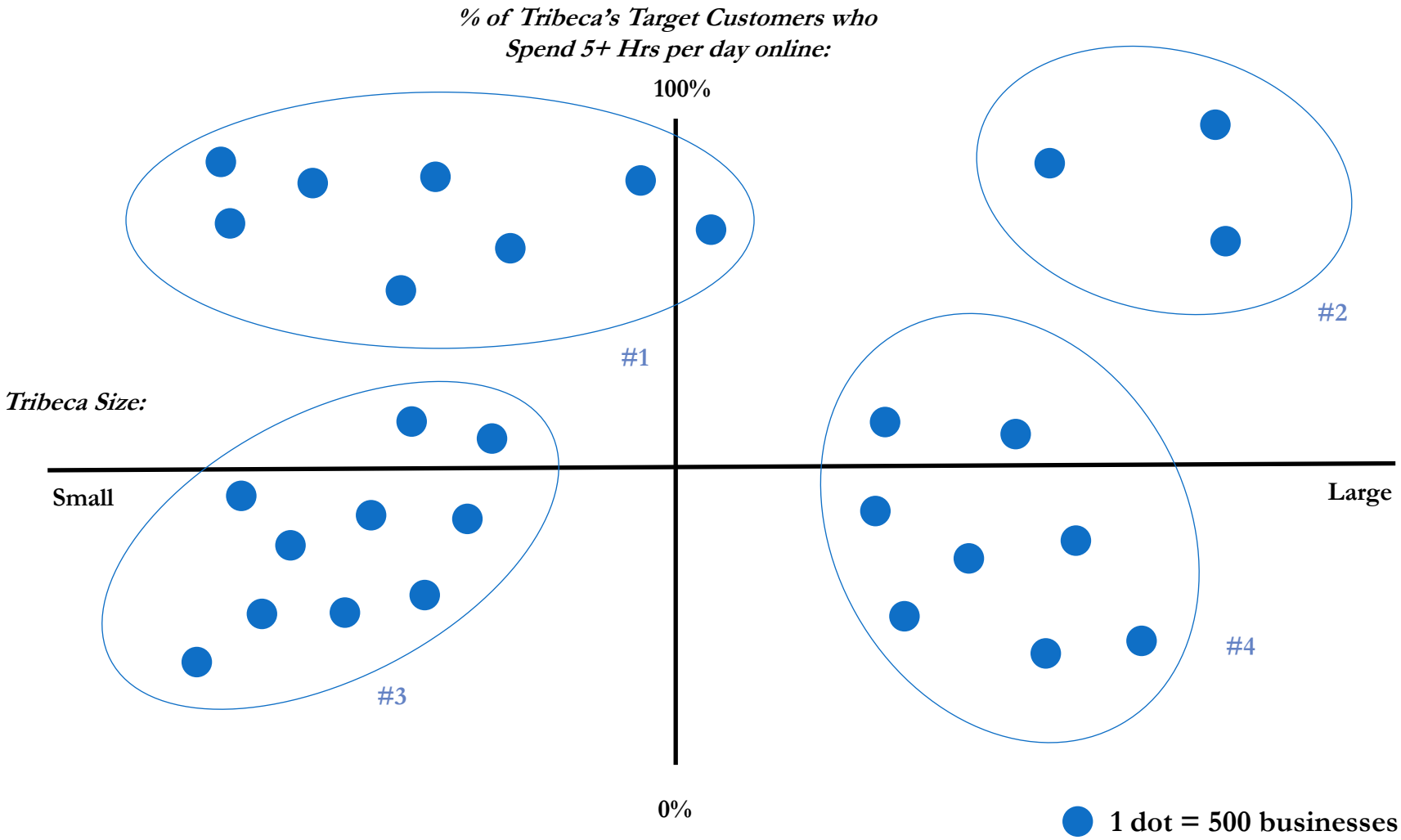
Perceptual Map – Potential Market for SaaS Product



Note: Average spend per Tribeca across all ad media in specified segment

Case #30 : Alkaline Ash

Columbia Business School

Difficulty: Medium
Industry: Chemicals
Case Type: Growth

Concepts Tested

- Market analysis
- Mental math
- Extracting insights from exhibits

Problem Statement Narrative

ChemCo, a U.S.-based manufacturer of chemical products, has come to your firm asking for advice on whether to make an investment. It would like to increase its production capacity for alkaline ash from one million to two million metric tons by 2020, with a total investment cost of $20M

Case Notes

This is an candidate led case, based on analysis of exhibits. Instead of asking upfront questions, interviewer gives candidates exhibits based on candidate's questions. candidate should lead discussion of exhibits to reach conclusion

Question #1 / Framework

Should ChemCo increase its production capacity?

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Guidance for Interviewer

This is an candidate-led case. Please hand each exhibit to the candidate as that information is requested, and then wait for the person to share insight or ask questions

This case is based on current and future projections of the supply and demand of alkaline ash

Clarification Answers if Asked

Alkaline ash is a chemical product that is commonly used in construction and electronics manufacturing

Sample Framework

1. Market Demand
   a. Current and expected demand for alkaline ash in:
      i. The construction industry?
      ii. The electronics industry?
      iii. Other industries?
2. Market Supply
   a. Current and expected supply for alkaline ash in:
      i. The construction industry?
      ii. The electronics industry?
      iii. Other industries?
   b. Is there expected to be a competitive response if ChemCo expands its capacity?
3. Incremental Revenues
   a. What is ChemCo's current market share, and how has this trended over time?
   b. How much additional market share is ChemCo expected to capture if it expands capacity?
   c. What is the price now, and how will that change as capacity increases?
4. Incremental Costs
   a. CapEx of adding capacity; only the $20M investment?
   b. Additional fixed costs, such as managers
   c. Ongoing variable costs, and how much this varies at different production levels
   d. Opportunity costs; are there more attractive investments available?

Conclusion

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Recommendation

- ChemCo should make the investment

Rationale

- The investment will be profitable in the first year that capacity is expanded, and the firm can expect additional profits down the line

Risks

- If Chinese producers can gain access to cheaper raw materials, through new discoveries or alternate production methods, they will be more competitive
- An economic downturn that affects demand for electronics or construction services would be detrimental

Next Steps

- Conduct further research on where demand in the Rest of Asia market will be, and establish relationships with potential future buyers
- Start construction process for expanding ChemCo's production facility

Exhibit #1

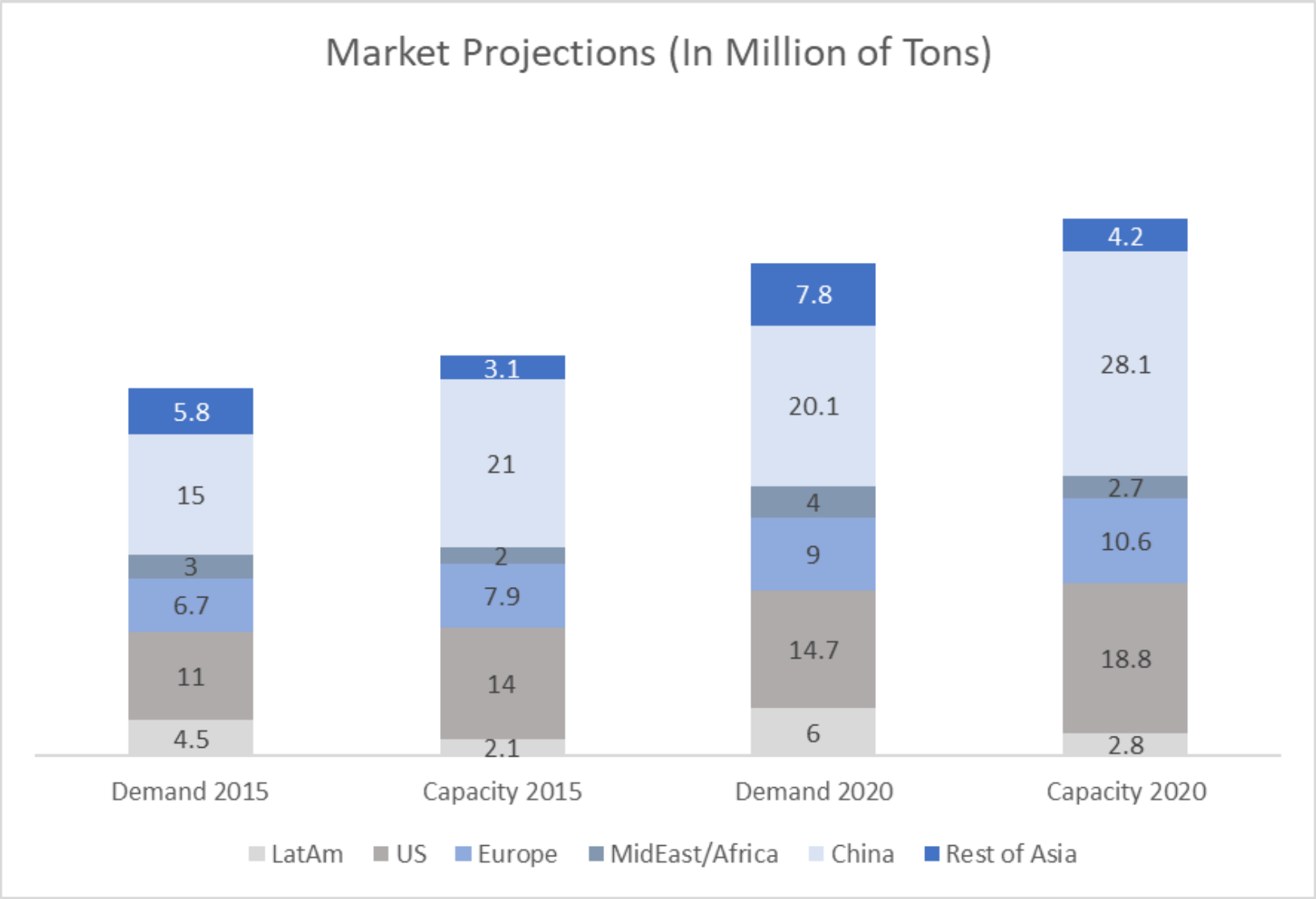
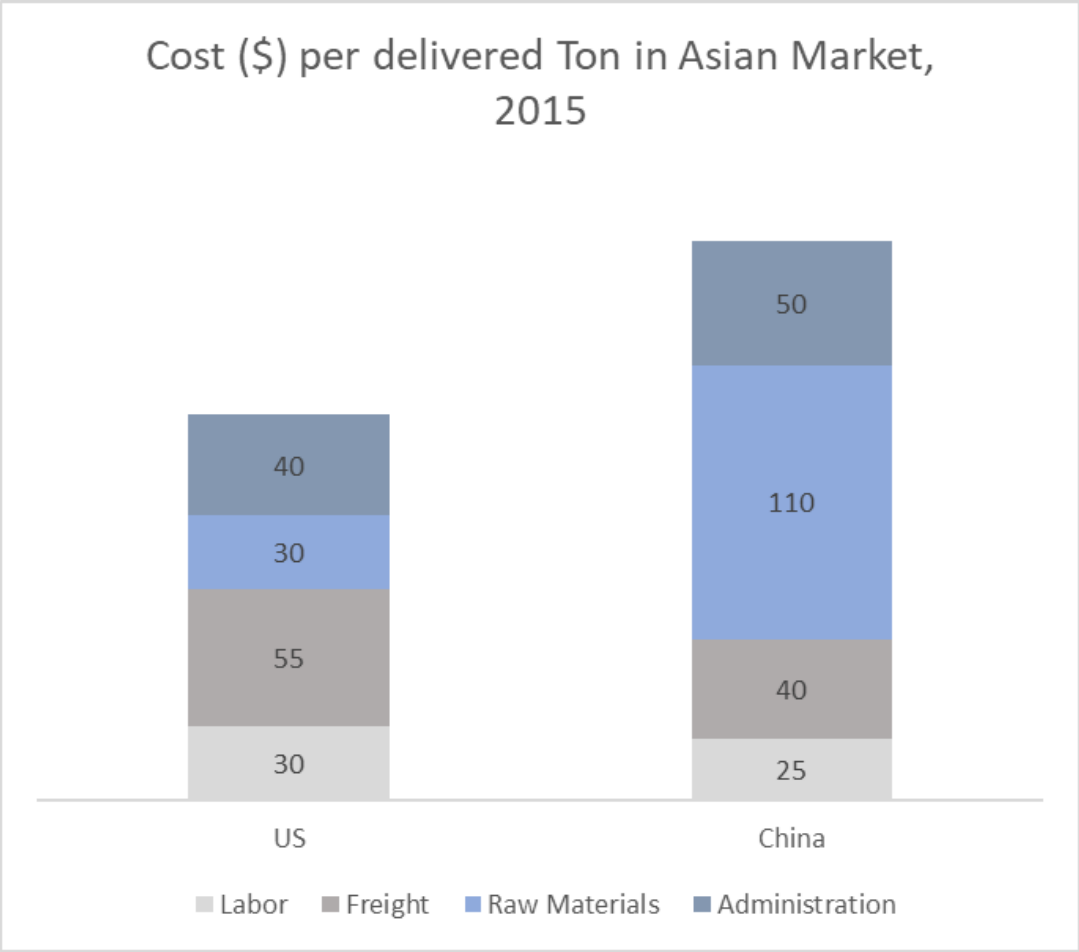

Market Projections (In Million of Tons)
5.8
15
3
6.7
11
4.5
3.1
21
2
7.9
14
2.1
7.8
20.1
4
9
14.7
6
4.2
28.1
2.7
10.6
18.8
2.8
Demand 2015
Capacity 2015
Demand 2020
Capacity 2020
LatAm
US
Europe
MidEast/Africa
China
Rest of Asia

Exhibit #2



Expected Cost Change 2015-20

	US	China
Administration	+15%	+10%
Raw materials/Energy	-5%	+15%
Freight	+20%	+5%
Labour	+20%	+10%

Exhibit #1 Solution

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The candidate should examine the relationship between demand and capacity in the different markets
Interviewer can lead candidate towards discussion of demand and capacity if she/he does not do so her/him self. If the candidate asks, the units for this exhibit are in metric tons

Conclusions from Exhibit 1:

1. In reviewing this exhibit, candidate should note that in the U.S., Europe, and China, **capacity outstrips demand**, and will continue to do so in 2020

2. By contrast, **LatAm, Mideast/Africa, and Rest of Asia** all **have higher demand than capacity**

3. The candidate should realize the **rest of Asia is particularly attractive**, since its demand is expected to grow by 2 metric tons, and its capacity is far from meeting that demand. (If the candidate focuses on LatAm, redirect her by stating that ChemCo has had bad experiences in the region before and would prefer not to engage there)

4. Therefore, **Chinese firms**, with their large capacity and close location in Asia, will be the key competitor in reaching the lucrative Asian market

5. A good candidate may propose a hypothesis about the cost for Chinese producers, e.g., expecting it to be lower (although that is not the case)

Exhibit #2 Solution

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1. The candidate should note that **costs for U.S. firms are significantly lower than for Chinese firms**, with raw materials/energy being the driving factors. The candidate should propose an explanation, e.g., that the raw materials are from the U.S. and thus are cheaper for U.S. producers than for Chinese producers
2. The candidate should then **calculate the production cost for 2020** by applying the percentage changes. The correct numbers are shown below:

	US	China
Administration	46	55
Raw materials/Energy	28.5	126.5
Freight	66	42
Labor	36	27.5
Total	176.5	251

3. The candidate should then determine how **much additional profit the firm will generate** from this move
4. What is the selling price? The Chinese firms will sell as low as they can go, which means ignoring the fixed costs (administration) and selling at **$251 - $55 = $196/metric ton**
5. Accordingly, the client can sell at a profit of **$19.5/metric ton at this price ($196 - $176.5)**. The candidate knows the cost of expansion, and if asked you can clarify that it is phased as $5M per year for four years (totaling $20M). These costs will be incurred starting in 2020, the earliest that ChemCo would be able to increase its capacity
6. The candidate should then calculate that **the profit in the first year that capacity is expanded will be $14.5M**, with greater profits down the line. Accordingly, this is a good investment

Case #31 : Car Wash Chain

Columbia Business School

Difficulty: Medium
Industry: Private Equity
Case Type: Opportunity Assessment

Concepts Tested

- Growth strategy
- Market sizing
- Creativity

Problem Statement Narrative

The client is a private equity firm looking to acquire a chain of car washes in the United States. The car wash chain provides basic coin-operated, self-wash services for $5, has 200 locations in 14 markets and had revenues of $40M last year. The firm is targeting 30% revenue growth in 1 year to justify the acquisition

How would you think about whether or not this is attainable?

Case Notes

Classic PE case focusing on analyzing target's growth to justify acquisition. Most of the analysis will be based on assumptions (market sizing), with some additional information given in an exhibit

Question #1 / Framework

Is 30% revenue growth in 1 year attainable?

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Guidance for Interviewer

Let candidate begin with wide analysis of potential growth areas, then guide towards new products and new markets

Clarification Answers if Asked

- Increasing sales of existing products and services in existing markets has already been explored and isn't a viable option

Sample Framework

1. Existing locations
    a. New products/services
        i. Customer demand
    b. Increase price
        i. Price sensitivity
    c. Change carwash hours
    d. Marketing
        i. Advertising
        ii. Partnerships
        iii. Social media
2. New locations
    a. Existing markets
    b. New markets
        i. Competition and response
3. Risks
    a. Cannibalization/Saturation
    b. Over-extended management
    c. Cost implications (*recognize we are primarily concerned w/ revenue here)

Question #2

Columbia Business School

Question

What do you think is the size of the carwash market as a whole in the United States?

Solution

Estimates:

Number of cars owned
100M households w/ average 1.5 cars = 150 million vehicles
Plus another 10% business or industrial vehicles = 165 million vehicles

Estimate # of Washes per year
Any number between 10 and 20 times per year is reasonable (We'll use 20)

Estimate average cost per wash ~ $5

Total US market: $16.5B

So long as the candidate uses reasonable assumptions, any market size is fine

Question #3

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Question

Give Exhibit 1: Look at the following slide on their existing 14 markets and competitors in those markets. What do you gather from it?

Solution

Insights from slide:

They have highest market share in about 10 of the 14 markets (all major cities) that they competed in and within those markets, many have no significant competition from other national chains These could be targets for continued expansion either via driving competitors out of the market or acquiring smaller local chains

Potential follow up: What are the pros and cons of acquisition vs. building fresh?

Another insight from the slide is that the chain is entirely concentrated in the Southeast and Pacific Northwest, ignoring major markets in the Midwest, Mid-Atlantic, Northeast, and Southwest

Potential follow-up: What factors would you consider in selecting potential areas for expansion?

Question #4

Columbia Business School

Question

What new products or services could the car wash company offer to grow their revenues?

Solution

Example solution

Most feasible/precedent:

- If they were not a full-service car wash, add additional services (wax, polish, undercarriage wash, detailing, vacuuming) to the existing car wash line. Eg., install coin-operated vacuums in a self- serve area after the car wash
- If they don't have it already, add a retail sales area to the car wash where customers can purchase air fresheners, seat covers, convenience items, etc

Medium feasibility/precedent:

- Explore adding a gas station or basic vehicle maintenance service (Oil changes, Tire replacements, etc.) to some of their larger carwash locations
- Pick-up and drop-off services

Least feasible/precedent:

- Install coin-operated hoses for a gated pet-washing area (compete with a service that Petco offers)
- Explore adding a franchise fast food restaurant like Dunkin Donuts or Subway

Question #5

Columbia Business School

Question

After considering some of your ideas, the team has come up with the following information: first, people vacuum their cars half as often as they wash them when the price to vacuum is $0.50. Second, low frequency customers are willing to pay $3 for wax services, while high frequency customers are willing to pay only $1 for wax services

Solution

Information to give if asked:

- Low frequency: 10x/year; represent 25% of revenues
- High frequency: 30x/year; represent 75% of revenues

Solutions:

- Adding vacuums will result in additional revenue = $2M (or 5%=10% price*50% frequency)
  - (8M washes * 50% frequency * $0.50)
- Adding wax services for $3 will result in additional revenue = $6M
  - 40M annual revenue * 25% = $10M from low freq. customers. At $5/wash, that's 2M washes. 2M washes * $3 wax = $6M
- Adding wax services for $1 will result in additional revenue = $8M (or 20%, b/c everyone will use it)

ANSWER: Adding vacuums for $0.50 and waxing for $1 will only achieve 25% revenue growth in 1 year

Conclusion

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Recommendation

- Based on our analysis thus far, we've identified opportunities to achieve 25% revenue growth. This will be achieved by adding vacuum and waxing services to existing locations. We feel confident that, with further analysis, we can identify at least one more opportunity to close the final 5% gap that would justify the purchase of this carwash chain

Rationale

- Target is market leader in several significant markets, yet is completely missing in several major markets which could be significant growth opportunities
- Target could also continue growing in markets it currently operates in, by buying out local competitors or driving them out of the market

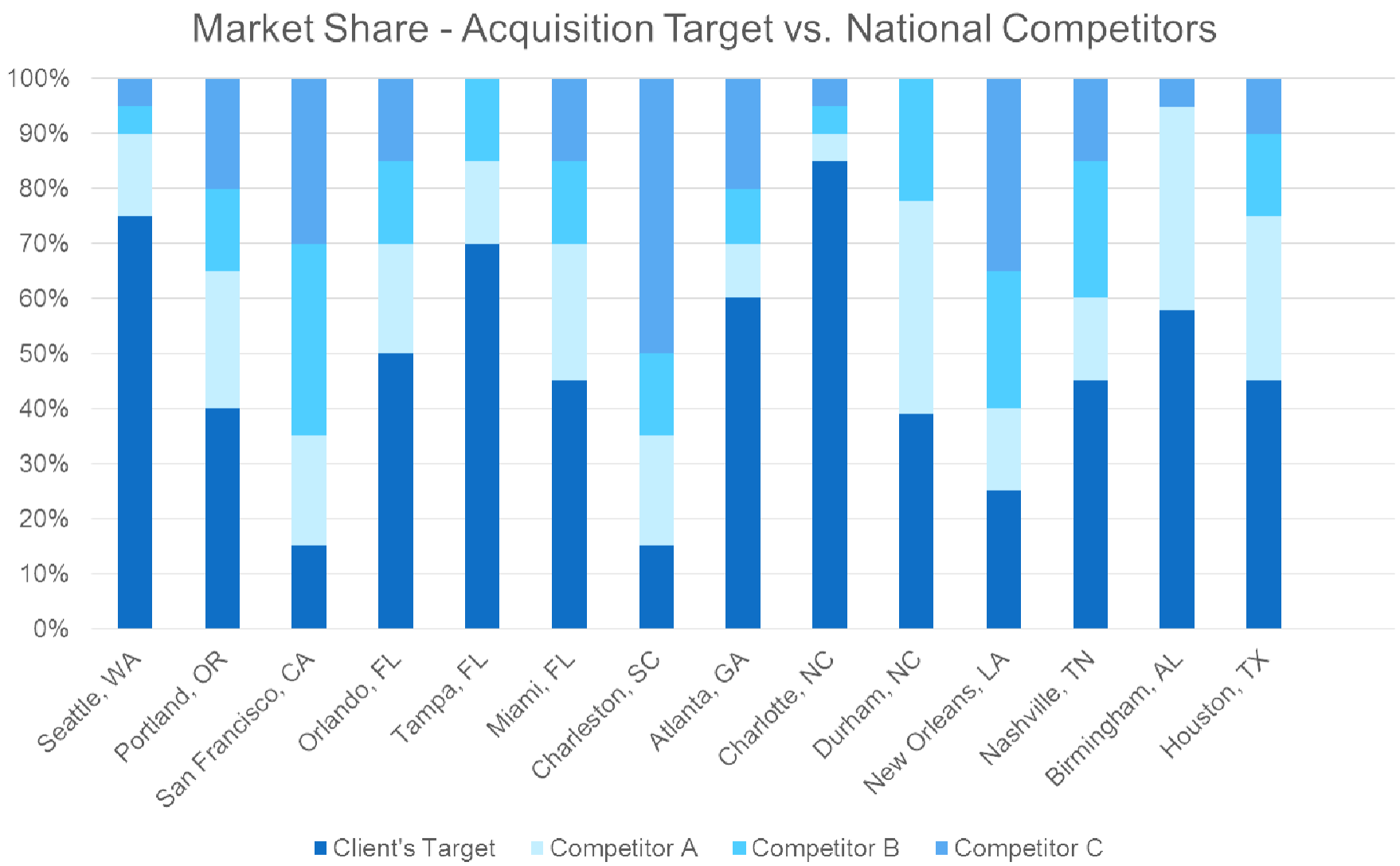
Risks

- Entering markets in which strong competitors exist could be tough
- Driving competitors out of existing markets could cause a price war
- Cost analysis of added services

Next Steps

- Research potential new markets to enter
- Dive deeper into existing markets to understand growth potential
- Discuss acquisition price

Exhibit #1


Market Share - Acquisition Target vs. National Competitors
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Seattle, WA
Portland, OR
San Francisco, CA
Orlando, FL
Tampa, FL
Miami, FL
Charleston, SC
Atlanta, GA
Charlotte, NC
Durham, NC
New Orleans, LA
Nashville, TN
Birmingham, AL
Houston, TX
Client's Target
Competitor A
Competitor B
Competitor C

Case # 32 : Lion King Bank

Columbia Business School

Difficulty: Easy
Industry: Banking
Case Type: Market Sizing

Written by Revti Gupta '15

Concepts Tested

- Market Sizing
- Customer Acquisition
- Customer Segmentation

Problem Statement Narrative

Lion King Bank is a consumer bank in South Africa providing checking, savings, credit cards, loans, etc. They have branches in all 9 South African provinces. They have completed an aggressive cost-cutting program, but revenues are still low and profitability is also low. They are looking to fix this and improve profitability quickly, and they've come to us to help them find a solution

Case Notes

Although the case tests a student's market sizing ability, it's a good time to review basic industry knowledge for consumer banking in terms of product offerings, customers, competition, trends, etc

Understand the goal of the client (to quickly increase revenue) and recommend immediate actions accordingly

Be creative when asked to brainstorm ideas on how to implement the strategy you just came up with. Think freely, this will demonstrate your business sense

Question #1 / Framework

How does the client improve profitability quickly?

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Guidance for Interviewer

A good answer would identify that the key is in the revenue since we know costs have been cut, and would focus on the drivers of revenue- increasing number of customer accounts or increasing the money earned per account. (also talk about customer life time value, or LTV)

Eventually this case focuses on customers and their life time value.

Clarification Answers if Asked

- Nothing has changed about the competitive landscape recently. Direct that candidate away from this area if they keep asking questions about it.
- The sample framework to the right is JUST a sample. A candidate can come up with something radically different if it is structured, logical, and relevant.

Sample Framework

1. Product Mix
    a. Existing mix
    b. Expansion opportunities
2. Customers
    a. Segments
    b. Demographics
    c. Growth opportunities
    d. Revenue potential
    e. Customer acquisition and retention
    f. Premium customer acquisition
3. Revenues
    a. Number of accounts
    b. Money earned per account
4. Competition
    a. Benchmarking fees
    b. Product offerings

Question #2

Columbia Business School

Question

The company is looking to dramatically increase revenues in 2 years, and has asked us to come up with ideas on how to do this

Solution

Increase number of customer accounts within existing market

- Capture unbanked customers
  - Identify and penetrate underserved geographies/ segments, but high implementation risk and duration

Acquire customers from competition

- Evaluating product mix against competition and improving offerings
- Lowering fees/ interest rates

Increase the money made from existing customers (customer life time value)

- Sell more products to existing customer base
- Increase rates

Expand into alternative markets

- Evaluate potential, competitive landscape and geographies

Question #3

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Question

There are two customer segments they are evaluating: students & affluent middle class customers. They already have many mid-income customers, and are looking at expanding student customers. Focusing on students for now, how would you evaluate the market and how might you target the students?

Solution

Allow the candidate to come up with a strategy for sizing the market, then give them Exhibit 1.
Solution to exhibit 1:

	Current- year 1	Year 3 potential	CAGR
Youth population	5,000,000	6,050,000	10%
% students	10%	6.05*.2= 1,210,000	100%
% using banking	50%	75%	
LKB share	10%	20%	
Number of accounts	25,000 accounts	181,500 accounts	

There is a 7x increase in number of student accounts which looks like an attractive growth opportunity if we are able to maintain/increase market share of a fast-growing market as projected
Ways to reach student population:

- Campus branding & tie-ups, locating in and around campus
- Offer facilities like student loans, low/no fee accounts, low balance requirements
- Target parents with existing accounts

Question #4

Columbia Business School

Question

The company does some research on the marketing methods and identifies that students can only be acquired through heavy price discounts. Should the company focus on student accounts or affluent mid-income accounts?

Solution

Key is in the candidate realizing that student accounts have:

- Very high growth potential in number of accounts
- High lifetime value, since these students might use other bank facilities over time
- However, will not translate into revenue growth, since they are unlikely to earn significant fees from student accounts
- Not viable since the firm is looking to improve revenues immediately

Therefore they should focus on improving attractiveness to affluent mid-income customers for now by:

- Improving product range (maybe adding mutual fund/ fixed income accounts)
- Improving product attractiveness (low fees, etc.)
- Pushing more products on existing customers
- Offering better ease of access (evaluating brand network and geographies)

Conclusion

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Recommendation

- Because the goal is to aggressively increase revenue, the company should focus on the mid- income segment of consumers rather than students to push revenues up in the short-term. They can target these customers by improving product range and attractiveness with aggressive sales and direct marketing

Rationale

- Student accounts, while can grow 8x in number over the next 2 years, will not translate into significant revenue growth since LKB cannot earn fees from students

Risks

- They cannot afford to ignore the student segment entirely, because students can turn into profitable customers over their lifetimes, and the switching cost for customers to change banks later in their lives is very high
- By aggressively acquiring mid-income customers from competitors they may trigger price wars in fees/ rates

Next Steps

- In-depth analysis of product mix to identify ways to optimize it
- Evaluate how to turn students into profitable customers
- Identify new sources of revenue (through geographic expansion perhaps)

Exhibit #1

	Current- year 1	Year 3 projected	CAGR
Youth population	5,000,000		10%
% students	10%		100%
% using banking	50%	75%	
LKB share	10%	20%	

Case #33 : Madecasse

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Difficulty: Hard
Industry: Non-Profit
Case Type: Market Entry

Concepts Tested

- Math
- Marketing creativity
- Remembering the goal

Problem Statement Narrative

Two entrepreneurs are launching a non-profit chocolate bar manufacturing company called Madecasse. The goal of Madecasse is to improve conditions for people in Madagascar by selling chocolate bars to consumers in the United States. Our firm is working with Madecasse on a pro-bono basis to determine two things: (1) where to source materials (Venezuela, Madagascar, Columbia) and (2) how to market the bars in the United States

Case Notes

This case examines a relatively straight-forward business question from a non-profit prospective. A strong candidate will recognize that maximizing profit for Madecasse is not the best result and will instead focus on maximizing impact for people in Madagascar

Clarifying question answers on the next page.

Answers to Clarifying Questions

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Additional Information

General

1. If asked to clarify the goal of Madecasse, the interviewer should emphasize that the mission of Madecasse is to improve the economic welfare of people in Madagascar
2. Assume that Madeccase will be able to sell as many chocolate bars as it makes
3. Manufacturing will take place in the same location as the cocoa

Madagascar

1. Population of 22M; Literacy: 70%
2. GDP/capita: $900; GDP is 30% agriculture; Population below poverty line: 50%
3. Fairly stable government now, recent history of instability

Sourcing options

1. Labor costs are highest in Venezuela and lowest in Madagascar
2. Venezuela employs more technology and thus can harvest more rapidly
3. Fields yield more crops per hectare in Venezuela and least in Madagascar
4. Colombia has the most available land, Madagascar the least

US consumers

1. Growing taste for dark chocolate
2. Typically buy chocolate bars as impulse buys at grocery store of convenience stores
3. Generally willing to pay $2/bar
4. Top 25% of income earners willing to pay more for high-end bars
5. Growing tendency to pay more for items associated with a cause

Other bars/Distribution

1. 3 primary brands with multiple products
2. Typically have ingredients outside of chocolate (e.g. nuts, caramel)
3. Sold through grocery stores, convenience stores, and gas stations

Sample Framework

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Sample Framework

1. Madagascar
    a. Social
        i. Demographics
            1) Income distribution
        ii. Culture
            1) Family structure
    b. Political
        i. Stability
        ii. Rule of Law
    c. Economic
        i. Industries
2. Sourcing Options
    a. Venezuela
        i. Climate for coco?
        ii. Agriculture
            1) Crops per hectare
            2) Available land
            3) Technology use
        iii. Infrastructure
        iv. Cost
            1) Fixed
            2) Variable
    b. Madagascar
    c. Colombia
3. US consumers
    a. Preferences for chocolate
        i. Dark/milk
        ii. With(out) nuts/fruit
    b. WTP
        i. Normal bar
        ii. Bar with cause
    c. Average spend
        i. By demographic group
4. Distribution options
    a. Retail/grocery
    b. Online
5. Other chocolate bars
    a. # other options
        a. Current share
        b. Marketing approach
    b. Types
6. Other
    a. Regulations

Question #1

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Question

Where should Madecasse source its cocoa beans? They are considering three options:
(1) Madagascar, (2) Colombia, (3) Venezuela.

Questions:

1. What subjects would you consider in comparing these 3 sources?
2. [Give Exhibit 1] Which market should they source from?

Solution

- The candidate should quickly brainstorm a way to compare the markets or can build on work from the initial framework. Potential subjects include: Costs (labor, transportation, equipment, etc.), quality, harvest size, export issues, tariffs, local government issues, environmental concerns.
- See "Exhibit 1 Solution" for math explanations
- The candidate should find that greater profit is available by producing in Colombia or Venezuela.
- However, the overall impact on Madagascar that Madacasse can make is greater by producing in Madagascar because all of the labor costs are actually contributing to local well-being. Therefore, the company can have the greatest impact by sourcing cocoa beans from Madagascar

Question #2

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Question

What considerations should Madacasse take into account when selling bars to American consumers?

[The goal of this section is to have a discussion with the candidate. The candidate should brainstorm ideas and can use initial framework. Guide the conversation to cover (1) the target demographic (2) probable distribution channels (3) how to position the bar vs. competitors]

Solution

- Target demographic: should include wealthier individuals who tend towards purchasing higher-end foods
- Distribution channels: higher-end grocery stores and convenience stores in wealthy neighborhoods. Could include partnerships with wine stores, coffee shops, etc
- Positioning: Various solutions are possible, but should include (1) proceeds to charity and (2) emphasize quality

Conclusion

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Recommendation

- Madacasse should source its coco from Madagascar
- The chocolate bars should target wealthy American consumers and be sold through high-end stores and partnerships with coffee shops

Rationale

- Sourcing from Madagascar will result in an impact of $375M, which is the highest impact to Madagascar
- Wealthy Americans tend to purchase high-end foods

Risks

- Even wealthy consumers may not be willing to pay $5/bar, especially in a recession
- A resurgence in instability in Madagascar would disrupt operations

Next Steps

- Interview consumers about WTP for bars
- Find reliable suppliers in Madagascar

Exhibit #1

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	Madagascar	Colombia	Venezuela
Pounds/hectare	3,000	5,000	6,000
Available hectares	12,500	20,000	17,000
Manhours to harvest a hectare	6	5	3
$/man hour	$1.50	$1.75	$2.25
Bars/pound of beans	2	2	2
Price/bar	$5.00	$5.00	$5.00

Exhibit #1 Solution

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	Madagascar	Colombia	Venezuela
Pounds/hectare	3,000	5,000	6,000
Available hectares	12,500	20,000	17,000
Total Harvest	37.5M	100M	102M
Manhours to harvest a hectare	6	5	3
Total Time to Harvest	225M	500M	306M
$/man hour	$1.50	$1.75	$2.25
Total Labor Costs	$337.5M	$875M	$688.5M
Cost/Pound	$9.00	$8.75	$6.75
Cost/bar	$4.50	$4.38	$3.38
Bars/pound	2	2	2
Bars	75M	200M	204M
Price per bar	$5.00	$5.00	$5.00
Revenue	$375M	$1,000M	$1,020M
COGS	$337.5M	$875M	$688.5M
Profit	$37.5M	$125M	$331.5M
Spending in Madagascar	$337.5M		
Impact to Madagascar	$375M	$125M	$331.5M

Case #34 : Pre-K Education

Columbia Business School

Difficulty: Hard
Industry: Education
Case Type: Asset Optimization

Concepts Tested

- Supply and Demand
- Creativity
- Multiple Prompts

Problem Statement Narrative

Your client is the State Department of Education and it is looking to improve the education outcomes of the general population. The department believes that investment in Pre-Kindergarten education (ages 3-4) is key and wants to increase the capacity of its state accredited Pre-K programs. The client is thinking about running a campaign to raise taxes to fund this initiative and have come to us with three questions:

1. How many additional spots for children need to be funded for the Pre-K programs?
2. How much will the campaign cost?
3. How should they approach the tax increase campaign?

Case Notes

Case requires both creativity in dealing with an unorthodox business model and a high level of quantitative analysis. Notice "sample dialogue" to fully simulate case and give all questions and information

Question #1 / Framework

How many additional spots? How much will it cost? How should we achieve tax increase?

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Guidance for Interviewer

Candidate should recognize or clarify that there's no revenue associated with Pre- K program.
It's a tradeoff between improving education outcomes and cost to the state.
Ask candidate to brainstorm: What are some benefits to improving education ?

Short-term goals: social and emotional development, colors, letters, etc.

Long-term goals: high school graduation rates, standardized test scores, reading/writing at grade level, etc.

Clarification Answers if Asked

- Education outcome means college admittance and completion rates.
- Private Pre-K programs are highly fragmented and range widely in quality. Therefore, the State Department of Education only wants to rely on state-funded programs in which they can guarantee the quality of the program (education level of the teacher, full-day program with adequate teaching materials/supplies etc).

Sample Framework

1. Financial Considerations
   a. Total addressable market vs. current capacity
   b. Cost breakdown of adding new schools
   c. Taxpayer base and how to increase taxes
2. Strategic Considerations
   a. Other states who have launched Pre-K education programs (what was their approach)
   b. Private Pre-K programs and how they might help serve to help State's goal
   c. Other pressing issues facing the city and/or the school district – who else is competing for the same resources?
3. Operational Considerations
   a. Long-term impact of funding initiative (to help get taxpayers on board)
   b. What's being taxed (real estate, sales, soda) and who is most directly affected by it

Additional Info / Areas for Analysis

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Market

- Population experiencing steady growth. Assume equal distribution of children in each age amongst all kids 3-18 years old
- Not in competition with private programs as the public market is only for children from low- income families (who could not afford private programs)

State

- The State Department of Education has already launched a similar initiative and provided some funding. Now they want to expand the program
- The graduates of last year's program did not show great results when they were tested on their social and aptitude for learning skills. (How long they can sit still, how they interact with other kids.) The State Department of Education hope that perhaps the poor result is due to flaws in the test

Revenues

- No revenues since the program will be free. Want to limit capacity to only children from low- income families

Costs

- Cost per 1 spot is $10,000 a year to the state

Question #2

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Question

Give Exhibit 1. How many additional spots need to be funded to reach the State Department of Education's goal of providing Pre-K education to all children of low income families?

Solution

Region	Population (K-12th grade)	Population (Pre-K)	% Low Income	Total Spots for Children Needed	Current Spots Available	Current Spots Needed
1	13,000	1,000	50%	500	462	38
2	26,000	2,000	60%	1,200	3,439	(2,239)
3	13,000	1,000	75%	750	397	353
4	39,000	3,000	40%	1,200	3,279	(2,079)
5	26,000	2,000	60%	1,200	2,025	(825)
						(4,752)

Turns out in total the State Department of Education would need to fund less than 400 additional spots or reallocate spots between regions.

Candidate should recognize that some regions (2, 4, and 5) are overfunded

Follow up question: Why do you think some of the regions are over funded?

Conclusion

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Recommendation

- I would not recommend launching a campaign to raise taxes or to expand the program

Rationale

- Some regions are currently overfunded. I would want to reallocate those resources first before opening new schools
- The current results are not conclusive for the effectiveness of the program, we want to focus on replicable results before justifying a tax increase

Risks

- Our state continues to fall behind in education standards, making it hard to attract/retain residents

Next Steps

- Start with improving the effectiveness of the Pre-K program by either changing curriculum or trying out different ways to measure the performance

Exhibit #1

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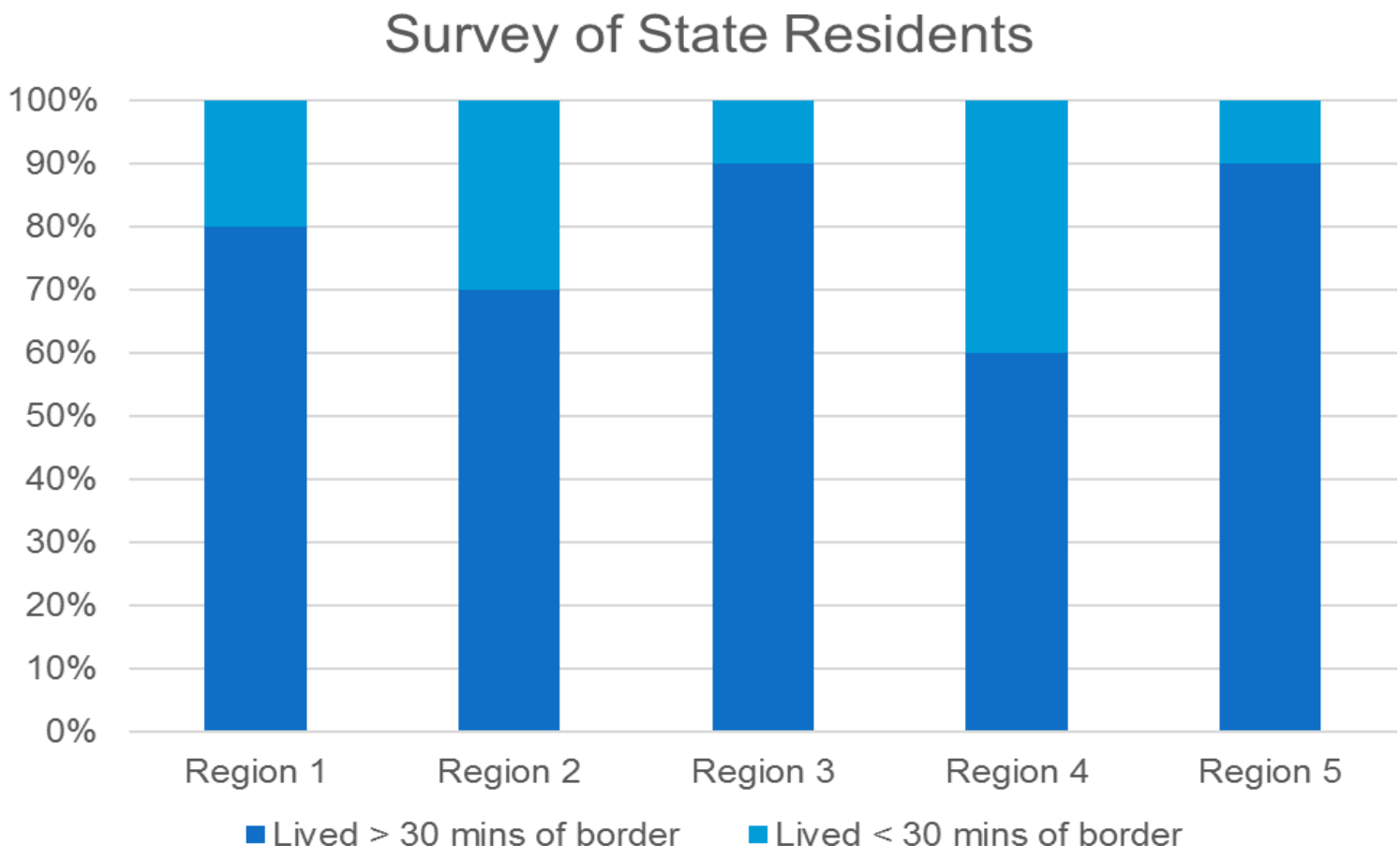
Region	Population (K-12th grade)	% Low Income	Current spots Available
1	13,193	50%	462
2	25,870	60%	3,429
3	13,049	75%	397
4	39,203	40%	3,279
5	26,103	60%	2,025

Exhibit #2


Survey of State Residents
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Region 1
Region 2
Region 3
Region 4
Region 5
Lived > 30 mins of border
Lived < 30 mins of border

Case #35 : Swedish Death Metal

Columbia Business School

Difficulty: Hard
Industry: Entertainment
Case Type: Market Entry

Written by Ross Freilich '14

Concepts Tested

- Market Sizing
- Market Segmentation
- Algebra

Problem Statement Narrative

Your client is a record producer looking to bring a new music act to the United States. While traveling through Scandinavia he came across a Swedish Death Metal band he thinks would be a perfect fit for his label. There are currently no Swedish Death Metal bands on US labels and all of their music must be imported from Europe. Your job is to advise the client whether this is a good idea and give him some launch process suggestions

Case Notes

If candidate asks what the difference between an import versus domestic is, inform him that imports eat into the margin of the album for the record company and there is no way to price higher

This case will deal extensively with albums sold - if candidate requires clarification indicate that this metric includes digital sales

Question #1 / Framework

How does the client improve profitability quickly?

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Guidance for Interviewer

Guide candidate away from alternative revenue opportunities as this case is primarily about album sales

Clarification Answers if Asked

- If interviewer asks for size of Swedish Death Metal market advise that there are no reliable metrics in the US as this is a relatively new market. The larger Death Metal market will serve as a proxy

Sample Framework

1. How to introduce SDM band to US market
    a. Album sales
    b. Touring as either opening act or headlining act
    c. Late night television appearances
    d. Music Blogs
2. Market size
    a. Total Albums Sold in US
    b. Size of Death metal market
    c. Share of the market the SDM band can capture
3. Customer
    a. Willing to make transition from Death Metal to SDM?
4. Financials
    a. Will record label be able to charge standard
    b. pricing for a new album?
5. Risks
    a. Band breaks up
    b. Drugs/alcohol abuse

Question #2

Columbia Business School

Question

Last year 150 million albums were sold in the United States. 13% of them were Death Metal. How many Death Metal Albums were sold?

Solution

150m * 13% = 19.5m

Candidates can round this to 20m

Question #3

Columbia Business School

Question

The Death Metal market is segmented into three groups: hardcore, average and casual fans. They comprise 20%, 30% and 50% of the population, respectively. Each group buys 4, 2 and 1.2 albums per person per year. Solve for the size of each group and the amount of albums purchased by each group

Solution

Candidates often confuse the size of the population with the 20 million albums sold per year. If the candidate multiplies the 20 million albums by the 20%, 30%, and 50% guide them towards the proper path

To solve the case:

Let x be the size of the population

$$4 * (20\% + x) + 2 * (30\% + x) + 1.2 * (50\% * x) = 20\text{m}$$

X = 10 million people, therefore there are 2 million hardcore fans, 3 million average fans, and 5 million casual fans who buy 8 million, 6 million, and 6 million albums respectively per year

Question #4

Columbia Business School

Question

We'd like to know the breakeven volume of albums for three marketing programs. Each album is priced at $12. The three marketing options are: Internet - $300k, Internet & Radio - $1m and Internet Radio & TV - $2m

Solution

The candidate should ask if there are any additional variable or fixed costs. Variable costs are:

- CD Manufacturing - $2/CD
- CD Distribution - $3/CD
- Royalties - $3/CD

There are no other fixed costs

$$\text{Contribution Margin} = \$12 - (\$2 + \$3 + \$3) = \$4$$

Breakeven volume for Internet only:

$$(\$300k/\$4) = 75k \text{ units}$$

Breakeven volume for Internet & Radio

$$(\$1m/\$4) = 250k \text{ units}$$

Breakeven volume for Internet & Radio & Television

$$(\$2m/\$4) = 500k \text{ units}$$

Question #5

Columbia Business School

Question

Which marketing option would you choose?

Solution

Candidate should ask if any of the marketing plans target any of the specific segments as there are 3 fan bases and 3 marketing plans. Provide info when asked:
Hardcore = Internet, Average = Radio, Casual = TV

Referring back to Question 2, we see that there are 10mm potential customers in the market. To break even with the internet plan you require 3.75% market share, 5% with internet and radio and 5% for internet, radio and television, based on the populations of each fan segment. (Note: Candidate should not be expected to calculate market share, but should be given credit if he takes initiative)

Candidate should recognize that capturing significant for a sub-genre entirely new to the US is very unlikely, especially considering that either of the more expensive fans will be targeting average and casual fans

Therefore, Internet is the correcting marketing option

Conclusion

Columbia Business School

Recommendation

- Client should bring the SDM Act to the US using the internet only plan

Rationale

- This is the first Swedish Death Metal Act to be based in the US. Death Metal is a relatively niche market and attracting hardcore fans are the best path towards gaining market share and expanding into other groups of fans

Risks

- Band could be a complete flop, break up or have issues like drug addiction
- Musical taste is very subjective

Next Steps

- Explore options for pilot launches i.e. singles before signing longer-term contract
- Explore other offerings like touring as opener for established act
- Appearances on late night television

Case #36 : Timber Crisis

Columbia Business School

Difficulty: Hard
Industry: Manufacturing
Case Type: Turnaround

Concepts Tested

- Creativity
- Endurance
- Market Fundamentals

Problem Statement Narrative

Our client is a Canadian-based Timber Company in 2009. It primarily makes 2x4s, and the U.S. Residential construction market is, by far, the largest consumer of these products. It also sells sawdust, which is a derivative of 2x4 production. The housing crash has just happened, and demand has dropped precipitously. The client is in dire financial straights and bleeding cash. Current internal projections state that we can run the company for only 6 months longer at the current rate of cash loss. What can we do to turn it around?

Case Notes

This case is a general brainstorming exercise and gives the appearance that there is some operational change that can happen. The reality is that nothing can be done– the company is the lowest cost player in a commodity industry and is already operating as efficiently as possible. There are no other revenue streams

Question #1 / Framework

What can we do to turn around the company?

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Guidance for Interviewer

For the interviewer, most of this case will be giving periodic bits of information and then shooting down ideas – a classic pressure test interview with little data and a very intractable, unstructured problem. Have the candidate come up with a framework, and pressure test them on it. There is no math involved

The candidate will likely want to go down a path of increasing revenues or decreasing costs. Encourage them to explore this space. For example, if they want to explore selling in Mexico, encourage them to market size it. However, you will ultimately tell them that plan won't work ("It would take too long to establish ourselves in a new market")

The ultimate goal is to get the candidate to realize there is no way to stop the cash bleed without injecting cash into the business

Clarification Answers if Asked

- Privately owned business, family has cash to spend if it makes sense
- 2 step production process– trees cut down, sent to saw mill, sent on trucks to transportation warehouse
- All our equipment is brand new, our employees are optimized, running at full capacity, trucks are new and fuel efficient (we bought them during boom times). Candidate should take away that we are the leanest, most-efficient operation in the business
- We have 1/3 Market share, rest of industry is small, fragmented and much higher on the cost curve
- We lease land for trees from Canadian government, cost of that lease is negligible– we pay government for each tree cut down
- Our 2x4s are sent by truck to the closest warehouse in Chicago, and then whoever needs them buys from
- there. Commodity market all products the same
- Candidate should try to look at various other potential revenue streams– we can't utilize them because our firm isn't set up to and doing so would be prohibitively expensive (shoot these down individually)

Question #1 / Framework (continued):

What can we do to turn around the company?

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Sample Framework

1. Revenue
    a. # Sales
        a. Existing customers
        b. New customers
    b. Price
        a. Commodity good
2. Costs
    a. Raw materials
    b. Manufacturing
    c. Transportation
    d. Storage
    e. Labor
3. Product Mix
    a. Existing mix
    b. Expansion opportunities
4. Cash Injection
    a. Outside funding
    b. Selling goods
5. Market
    a. Competitors
    b. Demand changes

Viable Solutions

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Notice

Throughout the process, the candidate might get frustrated at the lack of information, the lack of data, and the high level of pushback you give them – this is the whole point. The purpose of this case is to test the candidate's ability to stay calm and work in highly ambiguous situations. If a candidate gets one of the solutions below, encourage them to think of additional solutions

End the case interview once the candidate has discussed these issues for 20-30 minutes

Viable Solutions

- Liquidation – (not the best option given how we are lowest cost/huge market share), but not an unreasonable idea

- Wait it out – As the largest, lowest-cost, and best positioned firm in the space, smaller, higher cost competitors will fail and eventually go out of business more quickly than our client will. This drop in supply withing the market will push up prices and help us in the long run. The idea is that we would quite literally be the last firm to go out of business in this space
    - Housing tracks GDP growth and that is bound to pickup at some point (can cite 2009 stimulus package, etc).

- Family Cash – The candidate can either try to get the owning family to inject cash into the business directly to keep it afloat or to buy up smaller competitors at a discount. However, tell the candidate this would be an uphill battle to get the family to do this given the current market conditions

- Bailout – They could ask the Canadian government for money to bail them out, although this option is unlikely to be successful

Conclusion

Columbia Business School

Recommendation

- See previous page

Rationale

- See previous page

Risks

- Liquidation would risk future operations and should be a last resort
- Waiting it out makes sense on paper but you never know when/by how much the prices will recover over the coming months
- The family might not agree to inject cash given the current conditions
- Canadian government might not be amenable to a bailout

Next Steps

- Go over revenue and cost drivers to confirm there are no opportunities to increase efficiency
- Begin crafting appeals to owners and government
- Do a market analysis on what expected prices will be over the coming months as competitors go offline

Case #37 : Traditional Toy Maker

Columbia Business School

Difficulty: Medium
Industry: Private Equity
Case Type: Opportunity Assessment

Concepts Tested

- Market Sizing
- Charts and Graphs

Problem Statement Narrative

Our client, a private equity firm, is considering acquiring a company that manufactures traditional toys. Toy Co., the potential acquisition, was founded in 1923 and is one of the world's largest traditional toy makers. The traditional toy industry is dominated by several large players and ToyCo is one of the top three players by sales volume in the space. We have been hired to evaluate ToyCo's current strategy and to determine whether the private equity firm should place a bid to acquire the company. What considerations should the PE firm make in determining whether or not to acquire Toy Co.?

Case Notes

This is a typical McKinsey case, which is interviewer guided. If you would like to practice a more candidate-let style, the interviewer can only provide information when asked for it.

The PE firm client is fairly irrelevant to the case questions; however, an excellent candidate will remember that we're not making recommendations for Toy Co. directly, we're advising a PE firm.

McK doesn't always ask for a conclusion. An excellent candidate will recognize when it's time to wrap up.

Question #1 / Framework

Should our client acquire Toy Co.?

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Guidance for Interviewer

The candidate needs to remember the private equity context of the case prompt in order to conclude the case. A PE firm will be interested in acquiring Toy Co. if it can turn around its business and sell at a profit.

McKinsey cases often begin with a market sizing question, although after frame-working it's likely that an candidate will be tempted to begin with the company's economics

Clarification Answers if Asked

- The selling price of Toy Co. is irrelevant to the case discussion
- We have no information about other firms interested in acquiring and should assume

Sample Framework

1. Economics of Toy Co.
    a. Revenue Streams
        i. Price/toy
        ii. # Customers
    b. Costs
        i. Materials
        ii. Labor
        iii. Distribution
2. Market
    a. Competition
        i. New entrants
        ii. Long-time rivals
    b. Customer preferences
        i. Rise of electronics
3. Exit opportunities
    a. Buyers
    b. Exit multiples

Question #2

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Question

Let's begin our analysis by sizing the market for toys in the U.S. How would you estimate the annual sales volume of toys in the U.S.? (Note: you can read out the population groups and sizes provided below after the candidate does some estimations. Give the candidate the purchase rates and cart size for each group)

Solution

	Population	Purchases / Year	Cart Size	Market Size
Older Children	40,000,000	2	$20	**$1,600,000,000**
Adult Toy Enthusiasts	20,000,000	1	$80	**$1,600,000,000**
Parents	80,000,000	4	$25	**$8,000,000,000**
Grandparents	40,000,000	2	$40	**$3,200,000,000**
Total Market				**$14,400,000,000**

*Assume these figure based on number of households in the U.S., which is roughly 100 million

Question #3

Columbia Business School

Question

Show the candidate Exhibit #1 and ask them to explain the chart
How has the market share of each toy variety changed over the past decade? What societal trends could have caused these shifts?

Solution

Action Figures: superhero and action movies have caused increased popularity in action figures, especially among the adult toy segment; girls are purchasing action figures in higher quantities
Dolls: dolls have lost popularity as girls pursue stronger depictions of women in toys, some of this market share has shifted toward action figures
Outdoor Toys: parents are purchasing more outdoor toys to push their children toward a healthier lifestyle
Puzzles and Games: popularity of gaming and electronics has cannibalized indoor puzzles and board games

The annual market share of each toy variety is below. It's not necessary for a candidate to calculate each of these figures but encourage them to calculate some shifts in either raw numbers or share of the market

Varieties	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Dolls	36%	39%	38%	34%	34%	28%	29%	30%	28%	24%	23%	21%
Action Figures	26%	24%	25%	27%	28%	29%	30%	31%	33%	37%	38%	40%
Outdoor games	23%	23%	24%	23%	23%	25%	26%	25%	26%	27%	27%	28%
Blocks and Puzzles	15%	14%	13%	16%	15%	18%	15%	14%	13%	12%	12%	11%

Question #4

Columbia Business School

Question

Based off of the analysis of Exhibit #1, what recommendations would you make to Toy Co. to better position its offerings to match consumer trends? (Note: This questions tests the candidate's ability to brainstorm just as much as it tests his or her ability to organize thoughts)

Solution

Action Figures

- Toy Co. should aggressively pursue this segment
- Partner with movie studios or TV shows to build a more robust arsenal of characters
- Focus on girl character action figures to capture the declining popularity of dolls

Dolls

- Focus on the modern dolls that portray powerful female characters
- Consider Barbie's recent introduction of numerous new dolls of different races, heights, and body types
- This segment has seen the greatest decline recently due to the introduction of electronics and video games. Toy Co. should adjust its production accordingly
- Toy Co. can consider launching electronic versions of its classic games and entering the non-traditional toy space

Outdoor Games

- Toy Co. should expand its offerings in this category, capturing the push toward healthy living and outdoor games away from the screen

Conclusion

Columbia Business School

Recommendation

- The candidate can go either way with this recommendation – acquire or not acquire – as long as they remember that the client is the private equity firm

Rationale

- YES – there's movement in the growing industry and under strong management, Toy Co. can earn an even stronger position
- NO – 2% industry CAGR is not very compelling and electronics will continue to encroach on the traditional toy space

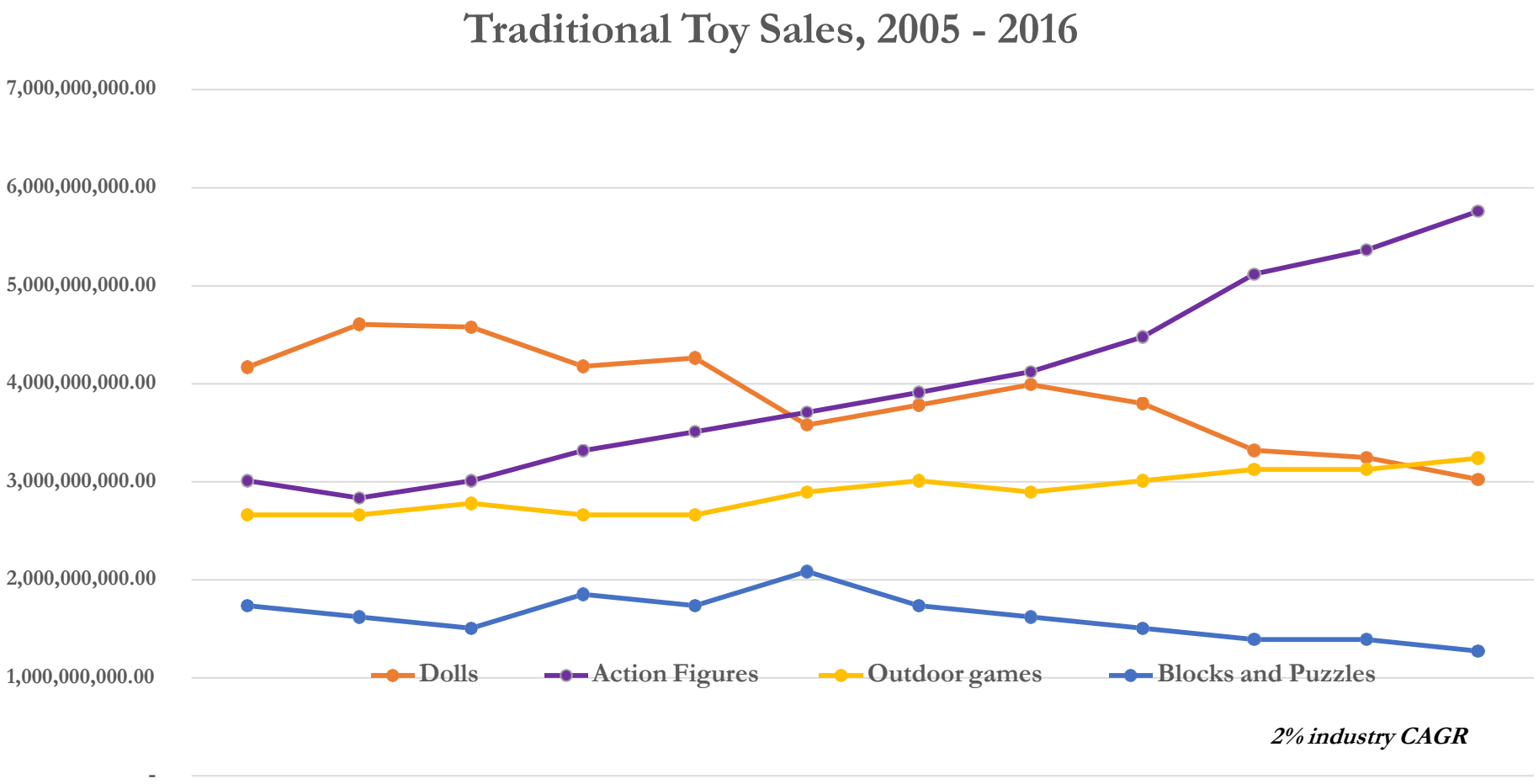
Risks

- As a legacy retailer, Toy Co. will resist new ownership and not implement recommendations
- Electronics will continue to grow and take away market share from traditional toys
- Movie studios will begin to manufacture their own toys, Toy Co will lose significant business in the action figure space

Next Steps

- Gain an understanding of Toy Co.'s financials – this case only dealt with the traditional toy market – to understand whether Toy Co. is the best business to acquire in this space
- Begin planning how Toy Co.'s production of toys can respond to different market trends

Exhibit #1


Traditional Toy Sales, 2005 - 2016
7,000,000,000.00
6,000,000,000.00
5,000,000,000.00
4,000,000,000.00
3,000,000,000.00
2,000,000,000.00
1,000,000,000.00
-
Dolls
Action Figures
Outdoor games
Blocks and Puzzles
2% industry CAGR

Case #32 : Tristar Home Appliances

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Difficulty: Medium
Industry: Manufacturing
Case Type: Market Expansion

Concepts Tested

- Supply chain
- Market sizing
- Mental math

Problem Statement Narrative

Tristar is a large international manufacturer of electronics, home appliances, software, and biotech products. Their home appliance line (refrigerators, washers & dryers, microwaves) has been very successful in the United States, mostly through a B2C model: they get their products into retailers like Best Buy, Sears, Home Depot, etc. Tristar management has set aggressive revenue targets for the coming year, and the home application business unit director has some concerns about meeting them. She has asked your firm for help in evaluating a new opportunity: B2B sales, specifically the home builders market. Tristar would sell appliances to builders, who would then install them in their new units. Sales could also occur for home remodeling

Case Notes

This case is not particularly complicated, but there is a lot of data to work with. The candidate needs to demonstrate an ability to quickly digest the content of charts.

Note: this case is structured slightly different than other cases in this case book – questions are all part of the <u>case flow</u> section.

Question #1 / Framework

Should Tristar enter the B2B market?

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Guidance for Interviewer

The candidate should recognize that home builders is a fundamentally different market, with significant distribution challenges. This case focuses on revenues, but the candidate should recognize that there will be some potential additional costs in setting up the new distribution system. **See Case Flow for full guidance on the case**

Clarification Answers if Asked

- The builders market is split 50/50 between two competitors: GE and Whirlpool.
- If the candidate needs guidance to recognize the difference in the market, you can explain that with a retailer like Best Buy the firm simply supplies sufficient inventory, whereas in the builders market deliveries must occur on a particular day to a particular building site.
- Tristar has strong sales throughout the US.

Sample Framework

1. Market
   a. Competition
      i. How much market share can we realistically capture in the builders market?
      ii. What will the competitive response be?
   b. Risks
      i. What are the prospects for the housing market in the next several years? Is this a reliable new revenue stream?
2. Company
   a. Does the firm have the capability to meet demand in this market?
      i. Production capacity
      ii. Distribution capacity
3. Revenues
   a. Volume
      i. What is the size and growth of the market?
   b. Pricing
      i. Can we command a higher price in this new market, or will we have to lower our prices to compete for market share?
4. Costs
   a. Not central to the case, but would there be additional costs due to:
      i. Changes in distribution?
      ii. Additional administration?

Case Flow & Questions

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Case Flow Overview

1. Introduce case and answer candidate questions. Don't share charts yet; if the candidate asks about the specifics of the revenue targets say that you will share information later
2. Candidate should take time to develop and talk through a framework. Candidate should lay out various salient issues, but should focus on revenue projections as the first place to start. Costs can be ignored for this case
3. **Give Exhibit #1** – revenues and targets. The candidate should identify that the gap is **$1.1B** between targets and projections. Prompt her: do you think we close this gap through this established retail channel or do we need to explore the other opportunity? Tristar has **~23% market share** and is aiming for **~30%**; this is an ambitious expansion given the saturation of the market
4. If needed, prompt the candidate: what do you want to know in order to assess the home builders market? She should identify the need for volume and price figures, i.e. how many new homes starts and remodelings, and expected revenue for each. At this point, **Give Exhibit #2** – details of the home builders market. The candidate should calculate the market size (see sample calculations). The candidate should note that the remodeling market is actually the larger one **($7.6B vs. $4.2B)**, but that most importantly, the combined market is huge – **$11.8B**. If Tristar were to capture just 10% of this market they could make up the gap between targets and projections
5. Ask the candidate to identify the factors and considerations that will determine the feasibility of entering this new market. She should identify factors including production capacity, upfront costs, and – most importantly – the new distribution model. At this point, **Give Exhibit #3** – chart of distribution channels. The candidate should recognize that through our existing relationship with large distributors we can serve both the small and large distributor/builders, though we can also build a direct relationship and thus capture more value. While we can reach the large builders directly, this distribution would likely be quite different from our current operation
6. The candidate should ask for information on what percentage of the market is attributable to each of these entities, at which point you should **Give Exhibit #4** – market share of distributors and builders. With this data it becomes clear that a focus on the distributor/builders is most favorable, especially given that they account for **80%** of the market, and Tristar is aiming to capture **10%**

Conclusion

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Recommendation

- Tristar should definitely pursue this opportunity as a means to close the gap between target and expected revenues

Rationale

- The home builders market is highly concentrated, but Tristar is of similar size to the other two firms so it has a good chance of capturing market share, and needs only 10% to meet revenue targets

Risks

- Investment required in new distribution model
- Risk of diverting attention and resources from core business
- Housing market volatility

Next Steps

- Study competitive landscape to determine which markets to attack and how to set prices
- Study distribution channels to determine best path for establishing direct relationship with builder/distributors

Exhibit #1 : Retail sales opportunity

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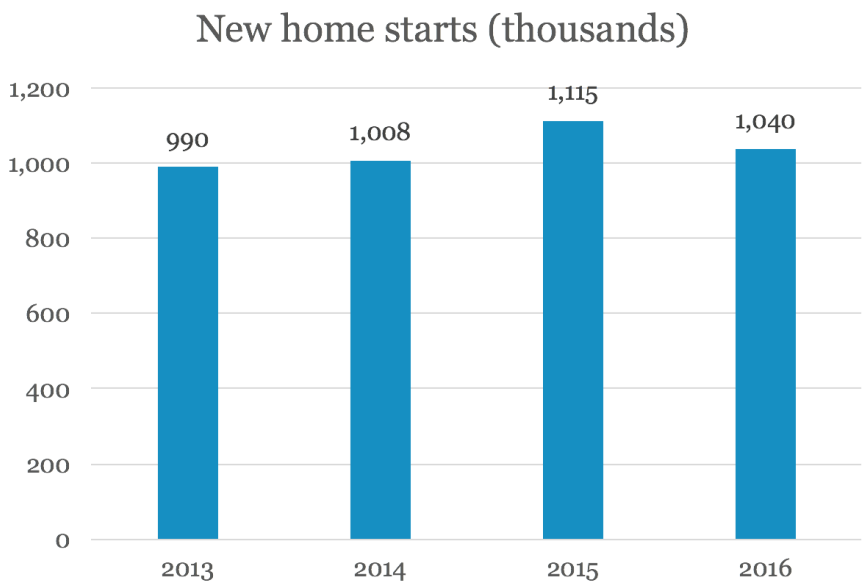
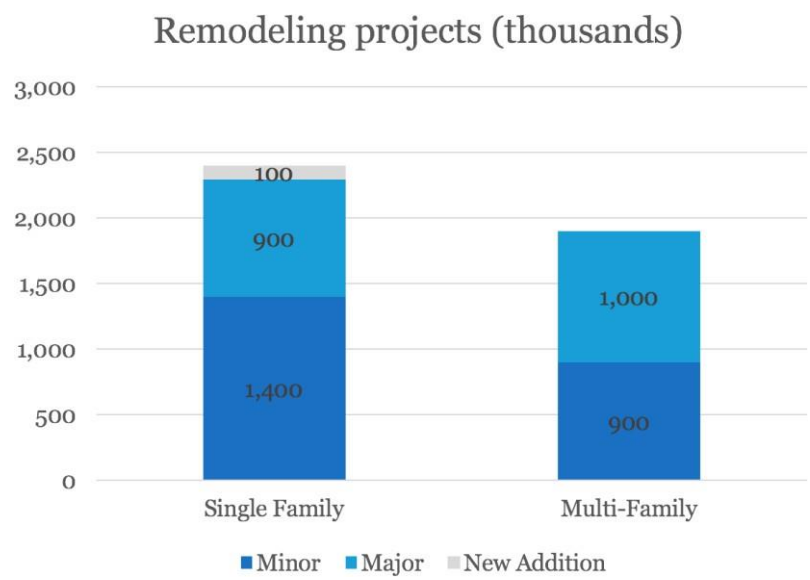
Target and expected retail sales ($ millions)

	THE HOME DEPOT	SEARS	BEST BUY	LOWE'S	Others	Total
Total Revenue Opportunity	3,500	2,400	2,100	2,000	5,000	**15,000**
Tristar Target (~30% market share)	1,050	720	730	600	1,500	**4,600**
Tristar Expected 2017 Sales	785	540	555	450	1,130	**3,460**

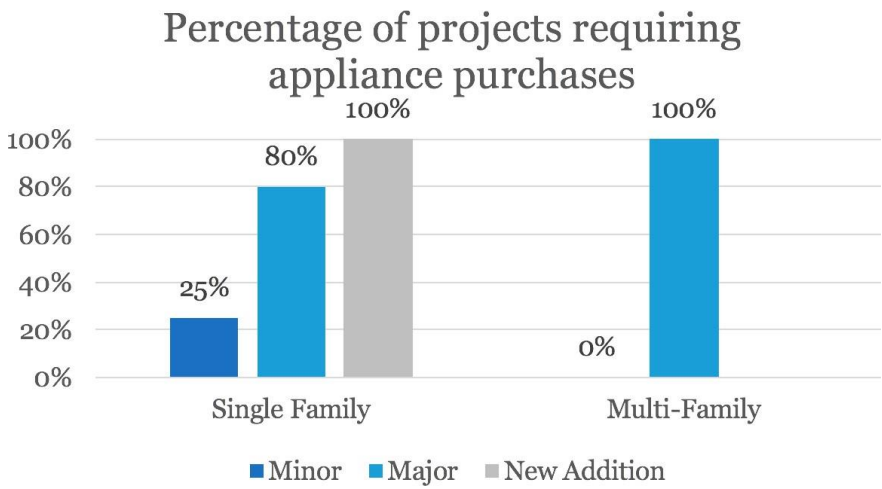
Exhibit #2 : Builders Market





New home price/cost information

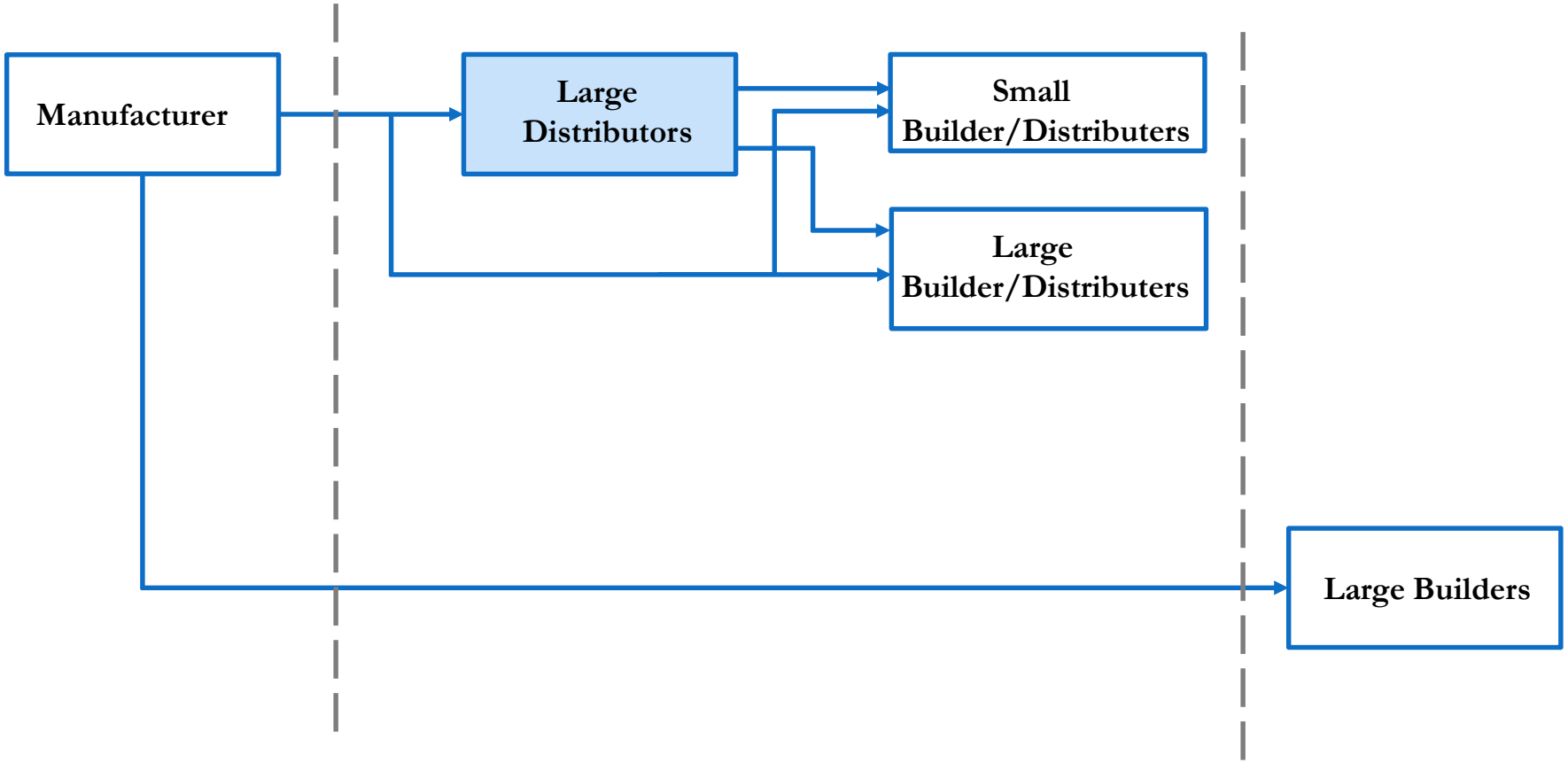
Average price: $300,000
Builder's margin: 6%
Land: 15% of price
Other non-construction costs: 10% of price
Appliance costs: 2% of construction costs



Expected appliance spend in remodeling projects:

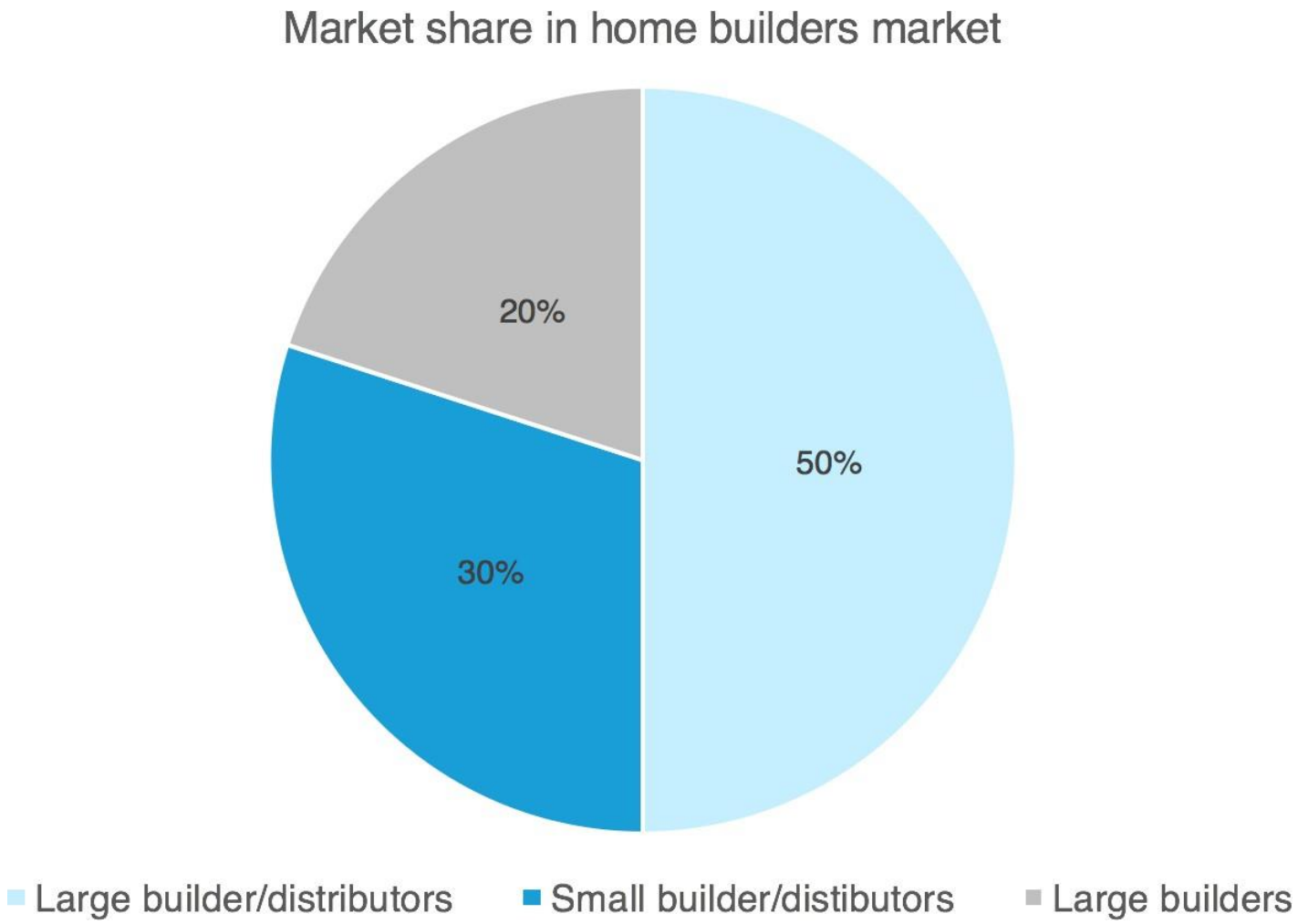
	Minor	Major	New Addition
Single Family	2,000	5,000	8,000
Multi-Family	1,500	2,500	

Exhibit #3 : Distribution Channels



Indicates Tristar has an existing relationship

Exhibit #4 : Distribution Market Share



Sample Calculations

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Sample Calculations: Market Sizing

New Homes:

Remove the builder's margin, land cost, and other non-construction costs, so construction costs are equal to 70% of the price:

300,000 * 70% = 210,000 (mental math: 70% of 100,000 would be 70,000; multiply by 3)

We know that the cost of appliances are 2% of the construction costs:

210,000 * 2% = 4,200 (mental math: 1% of 210,000 is 2,100, multiply by 2)

Take 1M as the approximate number of new home starts per year:

Market size (new) = 4,200 * 1M = $4.2B

Remodeling:

	Type	# Projects (thousands)	% Purchasing Appliances	# Purchasing Appliances	Average spend/project	Total expected revenue
Single Family	Minor	1,400	25%	350	2,000	700,000
	Major	900	80%	720	5,000	3,600,000
	New Addition	100	100%	100	8,000	800,000
Multi-Family	Minor	900	0%	-	1,500	-
	Major	1,000	100%	1,000	2,500	2,500,000
						7,600,000

Market size (remodeling): **$7.6B**

Total size for builders market: **$11.8B**