Projects

Case Frameworks

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Contents

1 Introduction

This document is to help the user improve their business acumen and prepare for case interviews. The consulting firms all provide great support when interviewing. However, I am conscious a subset of applicants have advantages from connections, resources and excess time. Other applicants may be juggling other commitments, supporting families, dealing with crisis or lack networks to practise cases. This document is an aggregation of concepts, frameworks, mathematics and case resources to help prepare for the application process. **Remember to believe in yourself! It doesn't matter where you come from. You can achieve anything with the right mindset and support!**

2 Recommendations

2.1 General Advice

1. Don't introduce any more structure than necessary
2. Practise lots of maths
3. Remain calm, your interviewers are there to help you, not trip you up.
4. Interviews can be hit and miss with best having bad interviews at times. Don't let a bad interview get in the way. Keep swinging the bat!

2.2 BCG Case Interview Advice

1. Listen to the Interviewer and Ask Questions.
2. Don't rush into analysis without developing an understanding for the problem.
3. Structure the problem and develop a framework.
4. Focus on high impact issues.
5. Think before speaking.
6. Generate a hypothesis and explore options creatively.
7. Don't stick to an artificial framework.
8. Demonstrate business judgement.
9. Make quick and accurate calculations.
10. Synthesize your thoughts and draw conclusions from your analysis.
11. Don't panic if the answer is not apparent.
12. Don't defend your solution at all costs.
13. Be transparent about your thought process.
14. Don't circulate cases or use advance knowledge.
15. Engage with your interviewers and be yourself.

3 Concepts

This section outlines various concepts to improve business acumen.

1. Partitions
2. Finance
3. Economics

3.1 Partitions

These partitions break down various concepts related to business and solving cases. **Do Not Memorize to Use as Frameworks.**. Form frameworks organically as forcing a memorised framework will not accurately diagnose the problem at hand.

3.1.1 Profitability

- Profitability (π)
  - Revenue
    - Pricing
      - Segmentation
      - Geographies
      - Price per Unit
      - Product Mix
    - Volumetric Projections
      - Segmentation
      - Geographies
      - Product Mix
  - Cost
    - Variable
      - Input
      - Distribution
      - Marketing
      - Manufacturing
      - Packaging
      - Inventory
    - Fixed
      - Manufacturing
      - Labour
      - Marketing
      - Overhead
      - IT
      - SG&A
      - PPE

3.1.2 Customers, Competition, Company & Product

- 3C 1P
  - Customers
    - Perceptions
    - Loyalty
    - Switching Costs
    - Purchase behaviour
    - Segmentations
    - Necessities and Desires
    - Demographics
    - Response
  - Competition
    - Response (Market Entrant - Price Wars, Marketing)
    - Market Share/Size/Number
    - Displacement (Market Entry - Fracture Market)
    - Growth
    - Economies of Scale/Scope
    - Resources
  - Company
    - SWOT
    - Strategy and Vision
    - Culture
    - Brand
    - Financials
    - Capabilities (Manufacturing, Distribution)
    - Expertise (IP, Talent, Patents)
    - Value Chain (Always understand/clarify if uncertain)
  - Product
    - Compliments
    - Substitutes
    - Functionalities
    - Customer Needs (Met? New features/functions?)
    - Customer Wants (Met? New features/functions?)

3.1.3 The Four P's

- 4P
  - Product
    - Features and Capabilities
    - Quality and Reputation
    - Service and Warranties
    - Packaging and Size
    - Differientors and Commodities
    - Customer Needs and Wants
  - Place
    - Geography
      - Country
      - State
      - County
      - City
      - Suburb
    - Distribution Channels Access
      - Traditional
      - Digital
      - Alternative
    - Competitor Distribution Channels
    - Inventory
      - Levels
      - Turnover
      - Carrying Costs
    - Transportation
      - Alternatives
      - Efficiency
      - Costs

- 4P (Continued)
  - Price
    - Sensitivities
    - Retail or Discounts
    - Economic Incentives
    - Strategy
      - Market Size
      - Product Lifecycle
      - Competition
    - Comparisons
    - Price points
      - Premium
      - Homebrand
      - Mid Market
    - Perceived Customer Value
  - Promotion
    - Pull and Push
    - Consumer Awareness
    - Loyalty
    - Advertising Medium
    - Public Relations
    - Buying Process
    - Trial or Repurchase
    - Timing
    - Location
    - Competitor Promotion
    - Customer Emotional Response

3.1.4 M&A McKinsey

- M&A
  - Financial
    - Profitability
    - Growth
      - Market Share/Revenues
    - Objective Function
      - NPV (Cash Flow Projections and Discount Rate)
      - Breakeven/Payback Analysis (Initial Investment, Outgoing Costs, Incoming Revenues)
      - Opportunity Costs (NPV of other options)
      - Return on Investment (Net Profit After Tax / Initial Investment)
  - Non-Financial
    - Capabilities
    - Expertise
    - Brand
  - Synergies
    - Financial
      - Revenue Synergies (Bundling of products/features/functionalities)
      - Cost Synergies (Eliminate Overhead, Distribution, Licenses, Levy)
    - Customers (On-sell newly acquired products eg JPMorgan and E-Trade)
    - Distribution (eg Leverage large distribution networks)
    - Product (Combine IP, newly acquired technology from acquisition)
  - Other
    - Culture
    - Legal (Regulators concerned with monoplistic characteristics)
    - Feasibility

3.1.5 Mini-Frameworks

- Mini-Frameworks
  - I&E
    - Internal (Company, Product)
    - External (Competition, Industry)
  - The Two Qs
    - Quantitative (Units sales, number of stores)
    - Qualitative (Intangible, Brandname, Enivornment)
  - C&B
    - Costs
    - Benefits
  - BCG 2x2
    - Dogs (Low Market Growth, Low Market Share)
    - Cash Cows (Low Market Growth, High Market Share)
    - Question Marks (Low Market Growth, High Market Share)
    - Stars (High Market Growth, High Market Share)

3.1.6 Porters Five Force

- Porters Five Forces
  - Internal Rivalry
    - Concentration and Balance
    - Industry Growth
    - Product Differences
    - Exit Barriers
    - Overcapacity
    - Competitor Performance
    - Competitive Advantages
  - Threat of New Entrants
    - Barriers to Entry
    - Economies of Scale
    - Capital Requirements (eg Cost to Enter)
    - Assess to Distribution Channels
    - Competitor Responses
    - Brand Identity
    - Proprietary Product Differences (Protection of Key Technologies)
  - Threat of Substitutes
    - Switching Costs
    - Relative Pricing
    - Availability for Product Switching
    - Consumer Propensity for Product Switching
    - Percieved Substitute Differentiators
    - Substitute Performance
  - Bargaining Power of Suppliers
    - Ability to substitute the Suppliers
    - Supplier Concentration
    - Switching Costs
    - Threat of Forward Integration
    - Product differientation
  - Bargaining Power of Customers
    - Price Sensitivity
    - Buyer Concentration
    - Buyer Volume
    - Buyer Switching Costs
    - Ability to Back Integrate
    - Substitute Products

3.1.7 STP

Best for Market Research Cases

- STP
  - Segmenting
    - Customer Segments
    - Segment Characteristics
  - Targeting
    - Potential per Segment
    - Target Segments
  - Positioning
    - Market mix for the target segments

3.1.8 SWOT

Useful for assessign new businesses, new products, new trends and changes, strategic plans

- SWOT
  - Strengths (For the organisation, create advantages)
  - Weaknesses (For the organisation, create dis-advantages)
  - Opportunities (Favourable Trends in the Market)
  - Threats (Elements in the Market that could cause trouble)

3.1.9 Value Chain

Useful for product analysis, cost analysis, competitive advantages, management strategies.

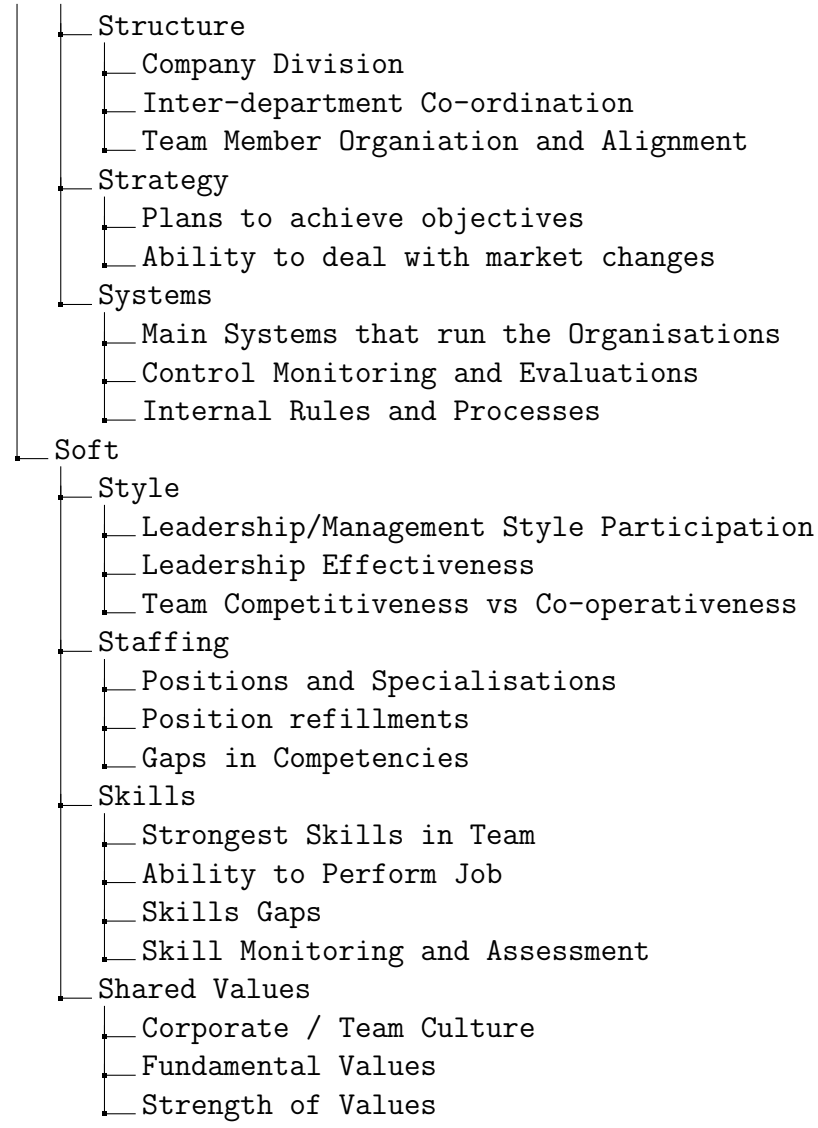
- Value Chain
  - Inbound Logistics (Processes related to receiving, storing and processing inputs internally)
  - Operations (Transformation activities to convert inputs into finished products)
  - Outbound Logistics (Processes to take a finished product to the consumer)
  - Marketing & Sales (Processes to pursuade clients to purchase your product)
  - Service (Processes related to maintaining the value of your product or service to your customers after purchase)

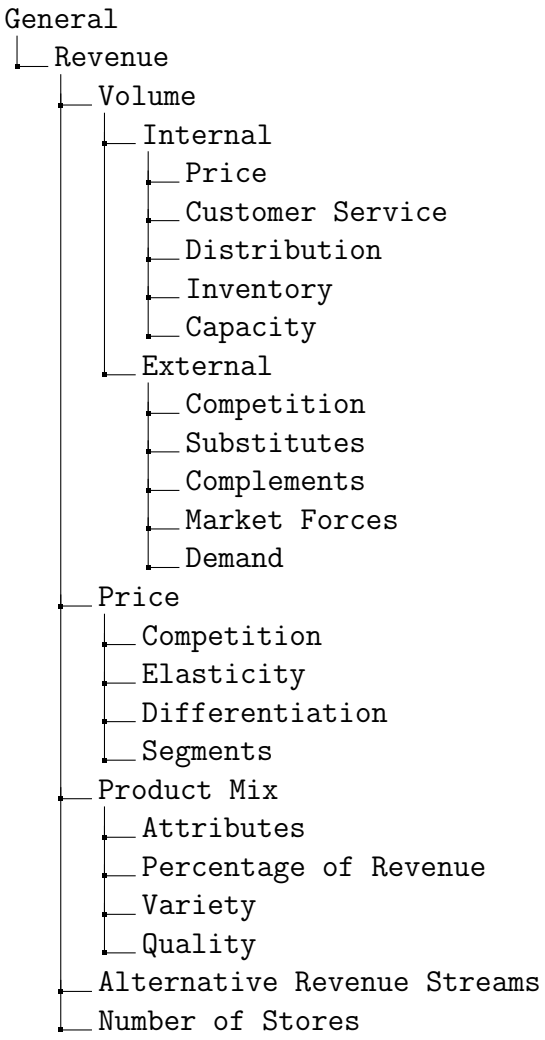
3.1.10 Supply and Demand

- S&D
  - Supply
    - Quantity Demanded by Consumers
    - Δ Quantity
    - Segmentation of Suppliers
  - Demand
    - Quantity willing to buy
    - Δ Quantity Bought
    - Segmentation of Demand

3.1.11 McKinsey & Company 7-S Model

Useful for company improvements, strategy implementations, alignment for companies during changes (restructuring, new systems, organizational merger, etc.)




General
Revenue
Volume
Internal
Price
Customer Service
Distribution
Inventory
Capacity
External
Competition
Substitutes
Complements
Market Forces
Demand
Price
Competition
Elasticity
Differentiation
Segments
Product Mix
Attributes
Percentage of Revenue
Variety
Quality
Alternative Revenue Streams
Number of Stores

- General (Continued)
  - Costs
    - Fixed Costs
      - Manufacturing
      - Labour
      - Marketing
      - Overhead
      - IT
      - SG&A
      - PPE
    - Variable Costs .4 Inputs
      - Distribution
      - Marketing
      - Maintenance
      - Packaging
      - Inventory
    - Balance Sheet Items
    - Benchmark Opportunity Cost .3 Cost Accounting
    - Capacity Utilisation
    - External
      - Union Strikes
      - Technology
      - Currency
      - Fluxuations
      - Tariffs
      - (De)regulation
  - Competition
    - Rivals (Structure)
    - New Entrants
    - Substitutes
    - Reaction
    - Position
  - Customers
    - Market Size
    - Segments
    - Needs
    - Purchase Drivers
    - Price Elasticity
    - Retention/Loyalty

- General (Continued)
  - Processess
    - Manufacturing
    - Marketing
    - Sales
    - Distribution
    - Customer Services
    - IT
    - R&D
    - Forecasting
  - Company
    - Core Competencies
    - Cost of Capital
    - Brand
    - Organisation/Incentives
    - Controls
    - Financial Capability
    - Management Capability
  - Macro
    - Legislation
    - Unions
    - Technology
    - Economy
      - Oil
      - Interest Rates
      - Unemployment
    - International Issues
      - Politics
      - Regulations
      - Taxes
      - Tariffs
    - Environment
    - Socio-Economic
    - Demographics
  - Supply Chain
    - Suppliers
    - Distributions
  - Indusrty
    - Barriersto Entry/Exit
    - Lifecycle
    - Consolidation
    - Government Policy
    - Capital Costs
    - Access to Technology
    - Access to Distribution

3.2 Financial

3.2.1 Present Value

$$FV = PV \times (1 + r)^t$$

3.2.2 Annuity

$$PV_{\text{Annuity}} = \frac{CF}{r} \times (1 - \frac{1}{(1 + WACC)^t}$$

3.2.3 Free Cash Flow (FCF)

$$\text{FCF} = EBIT \times (1 - t) + DA - CAPEX - (\Delta NWC)$$

3.2.4 Constant Average Growth Rate (CAGR)

$$\text{CAGR} = \frac{\text{Value}_{\text{Final}}}{\text{Value}_{\text{Initial}}}^{\frac{1}{\text{(Number of Years)}}} - 1$$

3.2.5 Weighted Average Cost of Capital

$$WACC = \frac{D}{E + D + K} \times r_d \times (1 - t) + \frac{E}{D + E + K} \times r_e + \frac{K}{D + E + K} \times r_k$$

$$r_e = r_f + \beta \times (r_m - r_f)$$
$$r_d = \frac{i}{D}$$
$$r_k = \frac{Div}{MV_{ps}}$$

D = Book value of debt ($m)
r_f = Risk free rates (%)
K = Market value of preferred equity ($m)
r_d = Pre-tax cost of debt (%)
r_e = Cost of ordinary equity (%)
Div = Preference Dividends ($)
MV_{ps} = Market value of preference shares ($)
r_k = Cost of preferred equity (%)
t = Effective tax rate (%)
i = Cost of borrowings (%)
β = Market risk co-efficient (%)
r_m = Market return (%)
E = Market value of equity ($m)

3.2.6 Value of Perpetuity

$$\text{Value of Perpetuity} = \frac{\text{Annual Cash Flow}}{DiscountRate}$$

3.2.7 Net Present Value (NPV)

$$\text{NPV} = \sum_{t=1}^{T} \frac{\text{Cash Flow}_t}{(1 + WACC)^t}$$

3.2.8 Enterprise Value (EV) I: Perpetuity

NPV and Terminal Value calculated from Perpetuity. Note: g_T and $WACC_T$ are the growth and WACC respectively at the end of cash flow forecasts. Both assumed constant for Perpetuity. These are assumptions as changes in E, D and K change WACC. Growth(g) assumed to grow at constant rate. Changes in g could be the result of a company initially having a competitive advantage e.g. New Tech, outgrowing the industry average. As the competitive advantage is slowly lost, growth decays to the industry average.

$$\text{EVI: Perpetuity} = \sum_{t=1}^{T} \frac{\text{Cash Flow}_t}{(1 + WACC)^t} + \frac{\text{Cash Flow}_t \times (1 + g)}{(WACC_T - g_T)}$$

3.2.9 Enterprise Value II: Terminal Multiple (TM)

NPV and Terminal Value calculated from Comparable Terminal Multiples. The terminal value is the expected cash flow to be realised at the end of the assets life.

$$\text{EVI: TM} = \sum_{t=1}^{T} \frac{\text{Cash Flow}_t}{(1 + WACC)^t} + \frac{((\text{Company Metric}) \times \text{Industry Terminal Value}_{\text{Ave}})}{(1 + WACC)^T}$$

3.2.10 Enterprise Value III: Multiples

Enterprise value expresses the cost of the right to buy the businesses entire core cash flow. Follow the subsequent process to use multiples. **These multiples may also be used for Precedent Transaction Multiples**

1. Determine the industry average of the multiples
2. Multiply the relevant company metric by the multiple to get the enterprise or equity value.

1. (EV / Revenue)
2. (EV / EBITDA)
3. (EV / EBIT)
4. (EV / FCF)
5. (EV / Capacity)

3.2.11 Equity Value I: Multiples

Equity value expresses the value of shareholders claims on the assets and cash flows of the business. Follow the subsequent process to use multiples. **These multiples may also be used for Precedent Transaction Multiples**

1. Determine the industry average of the multiples
2. Multiply the relevant company metric by the multiple to get the enterprise or equity value.

- (Price per Share / EPS)
- (Price / Cash Flow)
- (Price / Book Value)
- (Price to Earnings Ratio / Growth Rate)
- (Price / Sales)

3.2.12 Breakeven/Payback Period Analysis

Disclaimer: Does not account for time value of money. Solve for t to find the period.

$$\text{BEA} = (\text{Annual Incoming Revenue} - \text{Annual Outgoing Costs}) \times t - \text{Initial Investment}$$

3.2.13 Return on Investment

$$\text{ROI} = \frac{NOPAT}{Investment}$$

3.2.14 Rule of 72

$$\text{Rule of } 72 = \frac{72}{r}$$

- r = rate of return p.a
- r = 7%, Investment doubles every 10 years.
- r = 10% Investment doubles every 7 years.

3.2.15 Little's Law

$$\text{Inventory} = \text{Thoroughput} \times \text{Flow Time}$$

The subsequent list outlines ways to improve operations.

1. Reduce work in progress inventory, reducing lead time.
2. Add additional resources to increase capacity of the bottleneck.
3. Improve efficiency of process capacity, increasing bottleneck capacity.
4. Move work away from the bottleneck.
5. Reduce complexity in design or redesign for better manufacturability.

3.2.16 Inventory Turnover

$$\text{IT} = \frac{\text{COGS}}{\text{Inventory}_{\text{Average}}}$$

3.2.17 Days of Inventory

$$DOI = 365/\text{Inventory Turnover}$$

3.2.18 Receivable Turnover

$$\text{IT} = \frac{\text{Annual Credit Sales}}{\text{Accounts Receivable}}$$

3.2.19 Average Collection Period

$$DOI = 365/\text{Receivable Turnover}$$

3.2.20 Payables Turnover

$$\text{IT} = \frac{\text{Annual Credit Operating Expenses}}{\text{Accounts Payable}}$$

3.2.21 Average Payment Period

$$DOI = 365/\text{Payables Turnover}$$

3.2.22 Profitability (π)

$$\pi = (\text{Price per Unit - Variable Cost per Unit}) \times \text{Number of Units} - \text{Fixed Costs}$$

3.2.23 Breakeven

$$\text{BE Units} = \frac{\text{Fixed Costs}}{\text{Contribution Margin per Unit}}$$

3.2.24 Gross Margin

Note: Also expressed per unit.

$$\text{GM} = \frac{Sales - OperatingCosts}{Sales}$$

3.2.25 Net Margin

$$\text{NM} = \frac{NetIncome}{Sales}$$

3.2.26 Markup

$$\text{Markup per Unit} = \frac{PriceperUnit - CostperUnit}{CostperUnit}$$

3.2.27 Return on Assets (ROA)

$$ROA = \frac{NetIncome}{TotalAssets}$$

3.2.28 Return on Equity (ROE)

Note: The last two formula are **Du Pont Analysis**

$$\begin{aligned} ROE &= \frac{\text{Net Income}}{\text{Total Shareholders' Equity}} \\ &= \frac{\text{Net Profit}}{Sales} \times \frac{\text{Sales}}{Assets} \times \frac{\text{Assets}}{Equity} \\ &= \text{Operating Efficiency} \times \text{Asset Efficiency} \times \text{Financial Leverage} \end{aligned}$$

3.2.29 Net Working Capital (NWC)

ΔNWC is a component of Free Cash Flow.

$$\Delta NWC = \Delta\text{Current Assets} - \Delta\text{Current Liabilities}$$

3.2.30 Income Statement

This section breaks down the flow of income statement items.

$$\begin{aligned} &\text{Sales} \\ &- \text{COGS} \\ &= \text{Gross Profit} \\ &- \text{SG\&A} \\ &= \text{EBITDA} \\ &- \text{D+A} \\ &= \text{EBIT} \\ &- \text{Interest Expense} \\ &= \text{EBT} \\ &- \text{Tax Expense} \\ &= \text{NOPAT} \end{aligned}$$

3.2.31 Liquidity Ratios

Firms ability to meet short term obligations.

- **Quick**: (Current Assets-Inventory)/Current Liabilities
- **Current**: Current Assets/Current Liabilities

3.2.32 Financial Leverage

Indication of long term solvency

- **Debt**: Total Debt / Total Assets

- **Debt to Equity**: Total Debt / Total Equity
- **Time Interest Earned**: EBIT / Interest

3.3 Economics

3.3.1 Consumer Surplus

$$CS = \text{Willingness to Pay - Price}$$

3.3.2 Adverse Selection

Situation in which an individual's demand for insurance is aligned to their risk of loss (i.e. people with the highest expected value will buy insurance) and the insurer cannot account for this correlation in the price.

- Restrict choice
- Equalize information
- Signaling

3.3.3 Consumer Surplus

Economic gain achieved when consumers purchase a product for a price less than their willingness to pay.

3.3.4 Economies of Scale

The average cost per unit for a business entity is reduced by increasing the scale of production.

3.3.5 Economies of Scope

The average cost for a business entity is reduced by producing two or more products.

3.3.6 Elasticity (Price)

- E > 1, decrease price to increase revenue. (Price elastic)
- E < 1, decrease price leads to lower revenue (Price inelastic)

3.3.7 Elasticity (Cross)

Measures the responsiveness of the quantity demanded of a good to a change in the price of another good.

$$E(C) = \% \text{ of change in Quantity for Good 1 / } \% \text{ of change in Price for Good 2}$$

3.3.8 Insurance

Form of risk management used to hedge against the risk of a loss in which the cost is equal to expected loss.

3.3.9 Law of Diminishing Returns

At some point in the production process, the addition of one more unit of output , while holding everything else constant, will eventually lead to a decrease in per unit returns.

3.3.10 Marginal Cost

Cost of one more unit of output.

3.3.11 Marginal Revenue

Revenue of one more unit of output.

3.3.12 Monopoly

Entity is the only supplier of a particular good.

- Lack of competition leads to produce less and charge more
- Barriers may include government regulation, networks, patents, etc.
- Revenue is the midpoint of the demand curve

3.3.13 Moral Hazard

The unobservable actions and risks that humans may take once a contract is signed since they don't bear consequences. It is a special case of information asymmetry that affects the cost of transaction.

3.3.14 Oligopoly

Market is dominated by a small number of sellers.

- Dominant strategy is always better
- Sequential games – commitments help

3.3.15 Perfect Competition

- Firm take the price (MR=P)
- Maximum Profit is MR = MC
- Shutdown when P < AVC

3.3.16 Price Discrimination

Situation in which identical goods are sold at different prices from the same provider.

1. Different price for different willingness to pay
2. Different price for different quantities
3. Different price for different segments

3.3.17 Risk Adverse

Individuals who prefer certainty over the uncertain for the same expected value (EV).

3.3.18 Risk Neutral

Individuals who are indifferent on risk taking if the EV is the same.

3.3.19 Risk Seeking

Individuals who prefer risk even if the EV for a certain event and the risk is the same.

3.4 General

3.4.1 Arbitrage

The purchase of securities on one market for immediate resale on another market in order to profit from a price discrepancy.

3.4.2 Break-Even

Total amount of revenue needed to offset the sum of a firm's costs. Implies that the firm's profit will be $0.

3.4.3 CAGR

Compound Annual Growth Rate (Most likely to show up in a case with graphs and exhibits)

3.4.4 Capacity

The maximum level of output of goods and/or services that a given system can potentially produce over a set period of time.

3.4.5 Competitive Advantage

When a firm is able to deliver benefits equal to competitors but at a lower cost OR able to deliver greater benefits than competitors.

3.4.6 Contribution Margin

C=P-V, where P is unit price, and V is variable cost per unit.

3.4.7 Core Competencies

The activities that a firm does well to create competitive advantage.

3.4.8 Customer Lifetime Value

The present value of the future cash flows attributed to the customer during his/her entire relationship with the company.

3.4.9 Customer Segmentation

Subdivision of a market into discrete groups that share similar characteristics.

3.4.10 Discount Rate

Also known as cost of capital. There is an opportunity cost associated with every investment, with the cost being the expected return on an alternate investment.

3.4.11 Entering New Market

Three main methods: start from scratch, form joint venture, acquire an existing player.

3.4.12 Five Cs

Company, Customer, Cost, Channels, Competition

3.4.13 Fixed Costs

Costs that do not change with an increase or decrease in the amount of goods or services produced.

3.4.14 Four Ps

Product, Price, Promotion and Place

3.4.15 Gross Margin

A Company's total sales minus its cost of goods sold, divided by the total sales revenue, expressed as a percentage.

3.4.16 Horizontal Integration

The acquisition of additional business activities at the same level of the value chain.

3.4.17 International Expansion

Main mechanisms: exporting, licensing, franchising, joint venture, foreign direct investment (acquisition or startup).

3.4.18 Inventory Turnover

A ratio showing how many times a company's inventory is sold and replaced over a period. Should be compared to industry averages: low turnover implies poor sales or excess inventory; high ratio implies either strong sales or ineffective buying.

3.4.19 Learning Curve

Visually shows how new skills or knowledge can be quickly acquired initially, but subsequent learning becomes much slower. A steeper curve indicates faster, easier learning and a flatter curve indicates slower, more difficult learning.

3.4.20 Market Share

The percentage of market size controlled by an individual firm.

3.4.21 Payback Period

The length of time required to recover the cost of an investment.

3.4.22 Market Size

Total size of a population (usually measured in number of people or actual dollar value) that would purchase a company's goods or services. Market size is always relevant and is a question that should be asked.

3.4.23 Product Lifecycle

Four main stages: market introduction, growth, maturity, decline.

3.4.24 NPV

The difference between present value cash inflows and present value cash outflows.

3.4.25 Product Mix

Total number of product lines that a company offers to its customers. Often an important area to explore in profitability cases to identify loss-making products.

3.4.26 Porter's Five Forces

Buyer Power, Supplier Power, Threat of new entrants, Substitutes, Internal Competition. Used for evaluating markets. Also key to think about complements even though that's not mentioned by Porter.

3.4.27 Profit

Revenue minus cost.

3.4.28 Promotion

Coupons, discounts, trials, etc. designed to increase sales of a product or service.

3.4.29 Rule of 72

Also known as the rule of 70, AKA rule of 69. Simply put 72, 70 or 69 in the numerator and the projected annual growth rate in the denominator to give you the amount of time until the investment doubles.

3.4.30 Sales per Square Foot

The average revenue a business creates for every square foot of sales space. Used in the retail industry as a measure of efficiency.

3.4.31 Same Store Sales

A statistic used in retail industry to determine what portion of new sales has come from sales growth and what portion from the opening of new stores.

3.4.32 SWOT Analysis

Strengths, Weaknesses, Opportunities and Threats. Very basic framework, probably not a good idea to put down as your case framework, but good to have as a mental checklist.

3.4.33 Synergies

The idea that the value and performance of two companies combined will be greater than the sum of the separate individual parts. Used mostly in M&A.

3.4.34 Value Chain

Another concept from Michael Porter. His Value chain: Inbound Logistics, Operations, Outbound logistics, Marketing and Sales.

3.4.35 Variable Costs

Costs that vary depending on a company's production volume; they rise as production increases and fall as production decreases.

3.4.36 Vertical Integration

Degree to which a firm owns its backward suppliers or forward buyers.

3.4.37 Weighted Average

An average in which each quantity is assigned a weight. These weightings determine the relative importance of each quantity on the average.

4 Maths

This section provides methods and training exercises to prepare to the analytical components of case interviews. It is really important to be good at arithmetic and mental math.

4.1 Long Addition

$$\begin{array}{r} {\scriptstyle 1} \\ 4\,5.0\,5 \\ +\quad 7\,8.4 \\ \hline 1\,2\,3.4\,5 \end{array}$$

4.2 Long Subtraction

$$\begin{array}{r} 7\,8.4\,0 \\ -\,4\,5.0\,5 \\ \hline 3\,3.3\,5 \end{array}$$

4.3 Long Division

4.3.1 Steps

Long division works in a similar way to long multiplication.

1. Convert the divisor to an integer by multiplying the divisor by factors of 10 (Only if necessary).
2. Multiply the dividend by the same 10^n as the divisor.
3. Move from left to right along the dividend until first X digits are larger than the divisor (See Example).
4. Find the largest factor where the divisor multiplied by this factor is less than the number found in step 3. Write this factor above the one's column in the number expressed in step 3.
5. Subtract the factor multiplied by the divisor from the number derived from the dividend to get a remainder.
6. If remainder exists, continue steps 3-5 by bringing down the necessary X numbers from the dividend until no remainder exists. The number expressed above the dividend is the answer.

4.3.2 Example (longdivision (LaTeX)): 0.9882 divided by 8.1

First, multiply the divisor and dividend by 10^1 to convert the divisor to an integer. Next, do the long division.

$$
\begin{array}{r}
0.122 \\
81\overline{)9.882} \\
8.1 \\
\hline
1.78 \\
1.62 \\
\hline
162 \\
162 \\
\hline
0
\end{array}
$$

4.3.3 Example (xlop (LaTeX)): 0.9882 divided by 8.1

$$
\begin{array}{rl}
9\,8\,8\,2 & \mid\ 8\,1\,0\,0\,0 \\
9\,8\,8\,2\,0 & \mid\ 0.1\,2\,2 \\
1\,7\,8\,2\,0\,0 & \mid \\
\quad 1\,6\,2\,0\,0\,0 & \mid \\
\qquad\qquad 0 & \mid
\end{array}
$$

4.4 Long Multiplication

1. Multiply the left hand side number by the far left number
2. Add the corresponding number of zeros for the number multiplied
3. Repeat steps 1 and 2 for the other digits to find all
4. Add the totals to find the total.

If a decimal, follow the procedure if integers, ignoring the decimals. After, add a decimal to the position corresponding to the figure

4.4.1 Example: 423 x 211

$$
\begin{array}{r}
\times\ 4\,2\,3 \\
\underline{2\,1\,1} \\
4\,2\,3 \\
4\,2\,3 \\
\underline{8\,4\,6\ \ } \\
8\,9\,2\,5\,3
\end{array}
$$

$$
\begin{aligned}
84600 &= 423 \times 2 \times 100 \\
4230 &= 423 \times 1 \times 10 \\
423 &= 423 \times 1 \times 1 \\
89253 &= 84600 + 4230 + 423 \\
&= 89253
\end{aligned}
$$

4.4.2 Example: 34.64 x 4.51

$$
\begin{array}{r}
3\,4\,6\,4 \\
\times\quad 4\,5\,1 \\
\hline
3\,4\,6\,4 \\
1\,7\,3\,2\,0 \\
1\,3\,8\,5\,6\quad \\
\hline
1\,5\,6\,2\,2\,6\,4
\end{array}
$$

Therefore, 156.2264 since there are 4 decimal places total between the two digits.

4.5 Mental Math

The python script subsequently listed helps you practice mental math calculations to prepare for interviewing.

```
# Mathematics.py is a script to generate arithmetic problems related problems
# to practise mental math for consulting interviews.

# Imports useful python packages.
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import scipy as sc
import sklearn as skl
import csv as csv
import openpyxl as pyxl
import pathlib
import os
import pydrive
import random as rd

# Defines the mathematics class
#################################
# Do not touch
#################################
class mathematics:
    # Defines long_multiplication
    def arithmetic_practise(self, questions, answers, max_figures,
                            max_decimals, arithmetic_type):
        """Generates problems to practise arithmetric

        Args:
            questions (dict): Dictionary of mental math questions
            answers (dict): Dictionary of mental math answers
            max_figures (int): Maximum randomly generated number, expressed in multiples of 10 (10,100,1000 etc.)
            max_decimals (int): Maximum number of decimal places (1,2,3 etc.)
            arithmetic_type (str): Type of operation to be applied (addition, subtraction, multiplication or division)

        Returns:
            questions (dict): Updated dictionary of mental math questions
            answers (dict): Updated dictionary of mental math answers
```

```
        """
        # loops through the questions dictionary
        for key in questions:
            # Generates random values to practise
            num_1 = round(rd.random() * max_figures,
                          round(rd.random() * max_decimals))
            print(num_1)
            num_2 = round(rd.random() * max_figures,
                          round(rd.random() * max_decimals))
            # Set questions and answers if multiplication
            if arithmetic_type == 'multiplication':
                #Calculates the answers from the numbers generated
                answers[key] = num_1 * num_2
                # Stores the question in the question string
                questions[key] = str(num_1) + ' x ' + str(num_2)
            # Set questions and answers if division
            elif arithmetic_type == 'division':
                #Calculates the answers from the numbers generated
                answers[key] = num_1 / num_2
                # Stores the question in the question string
                questions[key] = str(num_1) + ' / ' + str(num_2)
            # Set questions and answers if addition
            elif arithmetic_type == 'addition':
                #Calculates the answers from the numbers generated
                answers[key] = num_1 + num_2
                # Stores the question in the question string
                questions[key] = str(num_1) + ' + ' + str(num_2)
            # Set questions and answers if subtraction
            elif arithmetic_type == 'subtraction':
                #Calculates the answers from the numbers generated
                answers[key] = num_1 - num_2
                # Stores the question in the question string
                questions[key] = str(num_1) + ' - ' + str(num_2)
            else:
                # Sets a no operation appplied
                questions[key] = 'No operation applied!'
        # Returns the answers
        return questions, answers

    def quiz(self, questions, answers):
        """Generates a quiz to ask mental math questions

        Args:
            questions (dict): Dictionary of mental math questions
            answers (dict): Dictionary of mental math answers
        """
        # Print welcome message
        print('Answer the following questions in turn')
        # Loop through the question dictionaries.
        for key in questions:
            # Prints the question
            print(questions[key])
            # Sets a tolerance
            tol = 1e-3
            # Ask the intial question
            ans = float(input("Please enter your answer: "))
            while abs(ans - answers[key]) > tol:
                # Ask if would like to try again
```

```
95                  retry = input("Incorrect! Would you like to try again (
    Type 'Y' or 'N'): ")
96                  if retry == 'N':
97                      print('The answer is ',answers[key])
98                      break
99                  print('Please try again')
100                 ans = float(input("Please enter your answer: "))
101         # Print finishing message
102         print('Congratulaions, you finished the quiz')
103
104 ############################
105 # End of Class Definition
106 ############################
107
108 # Initialises an object to use the mathematics class
109 mental_math = mathematics()
110
111 # Initialises the input dictionaries and other variables (User changes
    these inputs)
112 questions = {
113     1: 'NA',
114     2: 'NA',
115     3: 'NA',
116     4: 'NA',
117     5: 'NA',
118     6: 'NA',
119     7: 'NA',
120     8: 'NA',
121     9: 'NA',
122     10: 'NA',
123     11: 'NA',
124     12: 'NA',
125     13: 'NA',
126     14: 'NA',
127     15: 'NA',
128     16: 'NA',
129     17: 'NA',
130     18: 'NA',
131     19: 'NA',
132     20: 'NA',
133 }
134 answers = {
135     1: 'NA',
136     2: 'NA',
137     3: 'NA',
138     4: 'NA',
139     5: 'NA',
140     6: 'NA',
141     7: 'NA',
142     8: 'NA',
143     9: 'NA',
144     10: 'NA',
145     11: 'NA',
146     12: 'NA',
147     13: 'NA',
148     14: 'NA',
149     15: 'NA',
150     16: 'NA',
```

```
    17: 'NA',
    18: 'NA',
    19: 'NA',
    20: 'NA',
}
question_reset = questions
answer_reset = answers
max_fig = 100
max_dec = 3
modes = ['addition','subtraction','multiplication','division']

# Sets active mode
active_mode = modes[1]

#Creates a series of mental math problems to solve
questions, answers = mental_math.arithmetic_practise(
    questions, answers, max_fig, max_dec, active_mode)

# Run the quiz
mental_math.quiz(questions, answers)
```

5 Statistics

This section lists useful statistics.

5.1 Assumptions

These assumptions may be used in market sizing exercises. However, make sure you document your assumptions and only apply relevant assumptions to the case. You must be able to explain every assumption you make and question the following assumptions as necessary.

1. Number of People per Household (Developed Nations, includes China): 3
2. Number of People per Household (Developing Nations eg Africa): 5
3. Average Male Life Expectancy (World, 2021): 70 years
4. Average Female Life Expectancy (World, 2021) : 75 years
5. Global Inflation : 3% (Approximation from Statistic 2015 - 2024)
6. Global Unemployment Rate: 5% (Approximation from The World Bank as at 20 September 2020)
7. Assume either uniform or normal distributions for populations.
8. Cost of Capital (Assumption): 5 or 10 % - This makes NPV calculations easy as 20x or 10x if perpetuity.
9. Mature Industry Growth: 3%
10. Global Population Growth (The World Bank, 2020): 1%
11. Large City: 8-12m (except Shanghai 22m)
12. Medium City: 3-8m
13. Small City: 1-3m

5.2 Populations

The following statistics relate to 2020-21. These are approximations. Recorded populations are 1m or greater.

1. North America (Inc Mexico): 500m
    - USA: 330m
        - New York, USA: 8m
        - Los Angeles, USA: 4m
        - Chicago, USA: 3m
        - Houston, USA: 2m
        - Philadelphia, USA: 2m
        - Boston, USA: 1m

- Canada: 40m
  - Toronto: 3m
  - Montreal: 2m
  - Calgary: 1m
- Mexico: 130m
  - Mexico City, Mexico: 12m

2. South America: 430m
   - Brazil: 215m
     - Sao Paulo: 10m
     - Rio de Janeiro: 6m
     - Salvador: 3m
   - Columbia: 50m
     - Bogota: 8m
     - Cali: 2m
     - Medellin: 2m
     - Barranquilla: 1m
   - Argentina: 45m
     - Buenos Aires 13
     - Cordoba 1
     - Rosario 1
   - Peru: 30m
     - Lima 8m
   - Venezuela: 30m
     - Caracas 3m
     - Maracaibo 2m
     - Maracay 2m
     - Valencia 1m
   - Chile: 20m
     - Santiago 5m
3. Europe: 750m
   - UK: 70m
     - London 8m

- Germany: 80m
  - Berlin: 3m
  - Hamburg: 2m
  - Munich: 1m
- France: 70m
  - Paris: 2m
- Spain: 50m
  - Madrid: 3m
  - Barcelona: 2m
- Italy: 60m
  - Rome: 2m
  - Milan: 1m
- Greece: 10m
  - Athens: 0.7m
- Norway: 5m
  - Oslo 0.6m
- Sweden: 10m
  - Stockholm: 2m
- Finland: 6m
  - Helsinki: 0.6m

4. Asia: 4600m
   - Russia: 150m
     - Moscow: 10m
     - Saint Petersburg: 5m
   - China: 1400m
     - Shanghai: 22m
     - Beijing: 12m
     - Tianjin: 11m
     - Guangzhou: 11m
     - Shenzhen: 10m
     - Wuhan: 10m
   - India: 1400m

  - Mumbai: 13m
  - Delhi: 11m
  - Bengaluru: 5m
  - Kolkata: 5m
  - Chennai: 5m
- Bangladesh: 170m
  - Dhaka: 10m
  - Chittagong: 4m
  - Khulna: 1m
- Philippines: 110m
  - Quezon City: 3m
  - Manila: 2m
- Pakistan: 220m
  - Karachi: 12m
  - Lahore: 6m
  - Faisalabad: 3m
- Saudi Arabia: 35m
  - Riyadh: 4m
  - Jeddah: 3m
  - Mecca: 1m
  - Medina: 1m
- Israel: 9m
  - Jerusalem: 0.8m
  - Tel Aviv: 0.4m
- Iraq: 40m
  - Baghdad: 7m
- Iran: 80m
  - Tehran: 7m
  - Mashhad: 2m
- Afghanistan: 40m
  - Kabul: 3m
- Japan: 130m

        - Tokyo: 8m
        - Yokohama: 4m
        - Osaka: 3m
        - Nagoya: 2m
        - Sapporo: 2m
    - North Korea: 25m
        - Pyongyang: 3m
    - South Korea: 50m
        - Seoul: 10m
    - Thailand: 70m
        - Bangkok: 5m
    - Indonesia: 275m
        - Jakarta: 8m
5. Pacific
    - Australia: 25m
        - Sydney: 5m
        - Melbourne: 4m
        - Brisbane: 2m
        - Perth: 2m
        - Adelaide: 1m
    - New Zealand: 5m
        - Auckland 0.5m
        - Wellington 0.4m
        - Christchurch 0.4m
    - Fiji: 1m
6. Africa: 1400m
    - Nigeria: 210m
        - Lagos: 9m
        - Kano: 4m
        - Ibadan: 4m
    - South Africa: 60m
        - Cape Town: 3m

  - Durban: 3m
  - Johannesburg: 2m
- Chad: 16m
  - N'Djamena: 0.7m
- Zimbabwe: 15m
  - Harare: 2m
- Ethiopia: 120m
  - Addis Ababa: 3m
- Egypt: 100m
  - Cairo: 8m
  - Alexandria: 4m
  - Giza: 2m

6 Problem Solving

This section outlines McKinsey & Company's problem solving approach. This structured approach is useful for solving many problems. A detailed outline can be found here

6.1 Overview

This section provides a overview of the 7 stage problem solving approach aggregated into 4 categories.

1. **Define:**
    - 1) Define the Problem
2. **Structure**
    - 2) Structure Problem and Generate Ideas
    - 3) Prioritise Issues
3. **Analyse**
    - 4) Plan Analyses and Work
    - 5) Conduct Analysis
4. **Synthesise**
    - 6) Synthesise Findings
    - 7) Develop Recommendations

6.2 Define

Discuss and agree on the definition of the core problem to align the team around the problem and methodology. The following structure helps define the problem:

1. Perspective/Context
2. Criteria for Success
3. Scope for Solution Space
4. Constraints within Solution Space
5. Stakeholders
6. Key Sources of Insight

6.3 Structure

Identify the best problem solving framework, prioritise and target key issues, to bring the right approach to the problem.

1. Structuring the Problem
    - Structure using an Issue Tree
    - Ensure each branch is relevant to the problem statement

- Ensure each sub-issue is consistent
- Ensure the entire issue tree is **Mutually Exclusive and Collectively Exhausted (M.E.C.E)**

2. Prioritize Issues
   (a) Prune the issue tree (Maybe based on intuition or address each branch in turn)
   (b) Develop a framework to prioritize
      i. 2x2 matrix can quickly form a criteria for assessment
      ii. Quick and informal
      iii. Approach to get day-one answer
      iv. Judgement and intuition
      v. No need to be exact
   (c) Apply this framework to prioritise the scope of your selected branch (Usually a series of Y/N decisions)

6.4 Analyse

Use the most appropriate analytical tools, ensuring analytic rigor is applied to the process, to prevent confidence in incorrect answers. Data/Calculations and other insights come into here. This is an iterative process

6.5 Synthesize

Synthesize findings and develop recommendations, engage and leverage leadership, to build momentum around the recommendation.

1. Synthesize findings
   (a) Take Data/Observations and Insights from Analysis phase.
   (b) Implications: Further Synthesis of Multiple Insights that describe what they together mean/imply for the client.
   (c) Provide a Concise Statement for the Strategic Direction.
2. Make a Recommendation: Communicate your recommendation top down using the pyramid principle.
   - Synthesize your recommendation
     (a) Facts, Assumptions
     (b) Analyse results
     (c) Insights, reasons, steps, benefits
     (d) So What?
   - Communicate your results in the reverse order to synthesis and convey in the following structure. Address What, Why, How. Finally, ensure coherence in

the structure.

- Chapters
- Sub Chapters
- Key Points

7 Case Structure

This section outlines how cases are typically structured during interviewing.

1. Introduction
   - Understand the case and the problem statement
   - Ask your interviewer questions
   - Non-Evaluative
2. Framework
   - Structure your approach to the rest of the case
   - Create an issue tree or key buckets to explore
   - Tailor your framework
3. Calculations
   - Read the exhibit and understand the data
   - Perform calculations by pen and paper
   - Deduce key insights
4. Hypotheses
   - Generate hypothesise based on the data
   - Link this to your overall framework
   - Specify next steps
5. Conclusion
   - Synthesise your findings to key insights and a set of recommendations

8 Methodology

This section outlines a strategy for solving the cases in interviewing. This is a deviation from the McKinsey

1. Setup
2. Analysis
3. Recommendation

8.1 Setup

Setup is required for most cases.

1. **Information**: Listen and write information down. Draw diagrams if necessary.
2. **Clarify**: Ask for any missing information if necessary.
3. **Objective**: State objective of the case eg Determine if acquisition is profitable and will lead to X% growth in Y years.
4. **Hypothesis**: Generate of hypothesis on the case objective to give confidence. It's great to inform your hypothesis using your own experience e.g. Expand New Private Jet Business to New Market with no incumbants. It's feasible based on thin-slicing.
5. **Framework**: Create a framework to find paths for achieving the objective. Keep this framework separate from information and workings.
6. **Strategy**: Strategize the process you will take using the framework.
    - Firstly, I will look into the potential Market Share to be captured by entering the market.
    - Secondly, I will determine if it is profitable to enter the market.
    - Lastly, I will assess the competitions response to a new entrant to determine if I can stay in the new market.

8.2 Analysis

Analysis comes from exploring your proposed framework, diagnosing the problem and solving the case objective. There will be multiple stages of analysis in a case. They could be interpreting graphs, performing calculations etc.

1. **Information**: Listen and write additional information. Add to the framework as necessary.
2. **Clarify**: Ask for any missing information if necessary.
3. **Strategy**: Outline a strategy for the analysis. Subsequently, walk through your proposed strategy with your interviewer before beginning.
4. **Assumptions**: Gather a list of initial assumptions if necessary.
5. **Workings**: Follow the proposed strategy, constrained by assumptions, to find the solution for the question asked by the interviewer . Add assumptions if needed as

you progress.

6. **Interpretation**: Interpret the solution and relate to a wider context. E.g. This projected sales/store to achieve X market share seems feasilble given the potential revenue synergies discussed.

8.3 Recommendation

The recommendation section outlines the key findings from your analysis to determine if you can meet the objective of the case.

1. **Recommendation**: Outline key points from your analysis and answer the objective of the case. e.g. Our Analysis indicates it is feasible to expand to that market to achieve X growth by Y.
2. **Risks**: Identify key risks associated with the analysis. e.g. Cash flow projections are deterministic.
3. **Next Steps**: Address risks with mitigation strategies and next steps for the objective e.g. Perform a sensitivity analysis to better inform cash flow projections and begin invetigating the culture impacts an acquisition would have on the target.

The methodology is to inform analysis. Do not memorise the approach. Good luck!

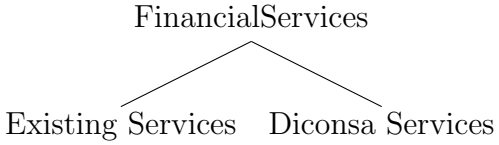
9 Case Practise

This section transcribes the workings from practise cases.

9.1 McKinsey & Company Practise Cases

9.1.1 Diconsa

This case is found on the McKinsey & Company Careers Website. Please go to the link to be fully briefed on the case. In summary, McKinsey has been asked to investigate and assess the possibility of using the Diconsa network to provide a basic set of financial services to supplement the limited number of state-bank branches. The offer would start with dispensing government-benefit payments and move progressively to include savings accounts, bill payment, insurance, credit, and other financial products. It is important to first layout a high level structure expressing factors to consider when assessing the implementation of a new distribution channel/service. My initial thoughts are to compare the incumbent with the new entrant. The example looks quite simply at the risks and benefits of using the diconsa network for major stakeholders.



- Location of Diconsa vs State-Banks (Spread, Distance)
- Crime
- Delivery
- Education (Ability to upskill rural communities)
- Schedules/Plans (When/what time rural communities are visiting the state-banks)
- Technology (Uptake of mobile devices, Thailand as a comparison)

After calculating the number of rural families who receive benefits and annual saving per family, you will find an annual saving of 450m peso can be achieved. These savings can be re-invested to drive further savings (i.e. more efficient transportation, programs gtargeting financial literacy etc).

After interpreting the graphs, the following points are raised:

- Region B is both considerably less happy, less trusting and less secure in collecting than A and B. Potentially, they may be more stressed and face higher crime.
- Region A is most satisfied across nearly all questions.
- All three regions agree greater efficiencies can be achieved in receiving benefits.
- Security is a concern across all regions.
- Regions B and C raise concerns about costing less. This may be because of unforeseen transactions at Diconsa sites before receiving tracks or deviates from the route.

The final part is the most enjoyable as involves presenting new ideas. Both education

and crime will need to be addressed. To address crime, basic public infrastructure is a low cost solution. The installation of 24 hour light fixtures, transparent bus shelters, collection only during daylight hours etc. Onboard local community groups/trusted sponsors to build trust in using services with the local populations. Run pilot programmes in more receptive areas to build trust in less receptive areas. Introduce two way factor authentication for Diconsa users to raise security.

9.1.2 SuperSoda

McKinsey asked to help SuperSoda, a top three beverage company to launch a new product. An new electrolyte drink which replenishes electrolytes but has lower sugar content. SuperSoda's vice president of marketing has asked McKinsey to help analyze the major factors surrounding the launch of Electro-Light and its own internal capabilities to support the effort.

Firstly, I'd use a 2x2 matrix to analyse whether to launch electrolyte in order to organise my thoughts.

1. Customer
    - Needs and Wants (Electrolyte meet the needs of customers not already met)
    - Segmentation (How are customers divided)
    - Target (Who is too be targeted?)
2. Competition
    - Market Share of existing competition
    - Growth of competitors, ability to capture existing/new market share.
    - Competitor strength (Brand, distribution channel control etc.)
3. Company
    - Brand/values align with selling the product (Oil and Gas with Renewable Energy etc.)
    - Existing expertise (production capabilities, switch over capabilities, existing channels)
    - SuperSoda Financial Health
4. Product
    - Cannibilisation of existing products
    - Growth rates of electrolyte/other markets (Could be something better to pursue)
    - Pricing (Position in new market)
    - Financial costs/revenues (Continue economies of scale etc.)

An assessment of these factors, using a payoff/probability scoring matrix in combination with a risks and mitigations evaluation will help inform the decision whether to launch Electro-Light.

After, you must determine the share of the Electrolyte market SuperSoda must capture for Electro-Light to breakeven.

1. Determine contribution margin per unit
2. Determine total number of units to cover fixed costs
3. Convert number of units to galleons
4. Determine share of the market.

The correct answer will come to 12.5%, therefore become number two in the market. SuperSoda executives believe that the company's position as a top three beverage company gives them strategic strengths toward achieving the desired market share. However, they ask the team to outline what would be needed to achieve the target of 12.5 percent share of the electrolyte-drinks market. What would SuperSoda need to do to gain the required market share for Electro-Light following its launch?

I would consider the following:

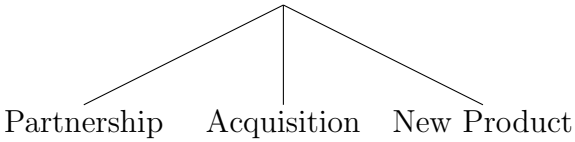
- Marketing (Tell an emotional story on why this product is different, better than alternatives, convince swing buyers)
- Anticipate competitor response, tie to top three brand image.
- Develop repeat purchasing behaviour. It is hard to displace incumbents who prefer a certain product (Coke vs Pepsi). Usually eliciting an emotional response is best.
- Tie the product up in an experience (Continue to drive sales)
- Monitor sales and production capabilities to increase production as necessary and avoid unnecessary fixed costs, consider production capacity (switch existing capacity vs build new)

The problem gives you a couple graphs.

- The two market leaders have a combined 70 and 80 percent customer identification with Leisure Drinks and Energy Replenishing drinks.
- Customers would buy Sports drinks across most places but prefer to buy other beverages in super markets.
- It's easier to displace other drinks market share than the two incumbent brands.
- We recommend advertising the drink as Healthy Natural Drink (Other). There needs to be a reassessment in marketing strategy to identify and make accessible.

9.1.3 GlobaPharm

This is a mergers and acquisitions case.



1. Financial (Revenue, profits, units sold, drug quality, Growth, Valuation (Overpriced?), Assets (Buildings etc). Intellectual property,)

2. Non-Financial (Culture, Branding, Marketing (Theranos), Good biological pharmaceuticals?, Strategy, relationships with key opinion leaders)
3. Synergies (Eliminate cost, useful IP, Revenue synergies, Market expansion)
4. Other factors (How doe biologicals compare to competitors, Legal issues, speed acquisition can take place, Material impact)

The second question looks at a range of potential issues when evaluating the drug pipeline. Good to divide into external and internal factors if possible.

- Internal: Drug safety and reliability (Assess clinical trial data, how likely to get regulatory approval)
- Internal: Number of uses per user, geographies, demographics (segmentation and target)
- External: 'Biological diseases' potency, frequency of illness/infection
- External: Competitive landscape (Are competitors producing biologicals? How effective are their products, how likely are competitors to replicate)
- External: Drug History / Public Perception
- Internal: Financial (R and D, Value of each unit, Market Size and Share, Costs to produce, Press Issues)

The third question was a little tricky as you need to use expected values:

1. Find Value of drug after phase 2
2. Determine the percentage increase from both stages 1 and 2 combined by adding the investment to the value of passing phase two
3. Add this percentage increase to old percentage increase from passing both phases 1 and 2.
4. Form a linear expression and solve for the increase in success rate. (Should be 40% increase).

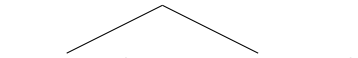
The forth question is about major risk in integrating R&D functions of both firms.

- Culture: GlobaPharm and BioFuture may have different cultures/values. Employees./management may be more likely to clash over issues **Process/Legacy vs Entrepeneurial**
- Organisational: Changes to organisational charts, creation of redundancies/obsolete jobs, create friction.
- Equipment: Relocation/installation costs of expensive hardware - Create integration issues.
- Personal: - Where are the main labs, foreclosure of facilities, relocate employees which may create non-financial issues. Uplift family from support network/community. Language issues (German, English)

9.1.4 Transforming a National Education Centre

- Loravia (Country), 20m population
- Transform school system to provide better quality and quantity of education for children.
- Education to help transform the economy over the next 10 years, support economic aspirations.
- Public schools (5 - 18 years old)

Diagnose the current issues with the education system and identifying most important areas for improvement Firstly, what issues would you like to investigate to diagnose the issues?



Another good split framework is very quality vs quantity factors.

1. Financial
    - Income (National Budget Allocation, Donations, Sponsorships)
    - Expenses (Payroll, Utilities, Overheads, Teaching Resources)
    - Assets (Infrastructure)
    - Liabilities (Any debt owing, contributions required to be made).
2. Non-Financial
    - Teaching (Number teachers, attitudes towards education (A good teacher makes all the difference))
    - Students (Demographics, Access, Target, Acquisition, Retention, Conversion)
    - Curriculum (Contribute to developing in-demand skills, opportunities after graduation)
    - Challenges (Transition from communist to free-market system)
    - System (International rankings)

The provision of data comparing Loravia to other nations generates some interesting insights. **Remember to provide explanations for observations**

- Generally, Increases in government spending on education per student leads to increases in international assessment scores (Inline with hypothesis)
- Similar economies with more students, larger class sizes and less spend per student are performing better. However, their may be other factors at play.
- Raise question on quality of investment scores (higher scores may not correspond to increases in professional performance)
- Students per teacher alone does not explain score, spend. MOre
- Loravia spend more on education than most neighbours and economic peers

- However, it has a lower score than most neighbours and economic peers. This may point to curriculum and resourcing issues.
- Students per school is unlikely to be the main factor in determining score as long as the school are appropriately resourced.
- Difference in geographies may lead to the difference in number of students per school (urban vs rural).

The calculation is relatively straight forward:

1. Determine total number of students in loravia
2. Determine total number of schools in loravia
3. Determine change in number of school with Neighbour C ratio of students per school (including percentage change)

After the calculation, you will come to a reduction of 2250 schools (37.5%). This is not realistic as a significant closure of 37.5% of school creates many problems. Without more geographical information, it may be difficult to take in this many students. The remaining schools may not have capacity to take this many students in. Additionally, students may not be able to commute to the schools that can take these students in. Low attendance and staffing issues may be the result.

The final question is an assessment of what has been covered thus far and suggestions moving forward.

1. The objective was to assess the issues in the incumbent education system for children and make recommendations to help Loravia develop it's economy as it develops the free-market system.
2. Quality and Quantity-related issues were highlighted including funding, students, staff, economic goals, infrastructure and suitability of success rankings.
3. Comparisons between neighbours, developed nations and similar economies gave few insights. Generally, wealthier nations with greater education spend per student perform better but their was no obvious corelation between students per school, students per teacher and spend per student amongst pairs and neighbours. Other factors were may have been at play like the curriculum and resourcing concerns.
4. A theory was proposed to reduce to the number of schools to a a similar student per school ratio as neighbour C. The 37.5% reduction from 6000 to 3750 seems impractical, leading to issues with staffing, resourcing or attendence.
5. It is recommended further analysis be placed into the geographical makeup of school on whether slight consolidation is feasible and investigate the curriculum, attendence and staff performance to analyse where improvements can be made.

9.2 BCG Interactive Case Library

There are two cases in this interactive library.

9.2.1 Airline Case

9.2.2 Drug Case

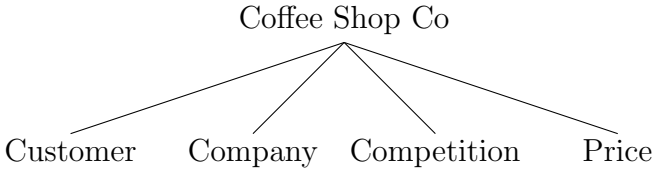
This case has you develop a pricing strategy for a new drug preventing deep vein thrombosis (DVT) developed as a complication from hip replacement surgery (PrevenT). DVT can caused pulmonary embolism of major bleeding. Clearvenax is an established product, sold at $4 per dose while costing $1 per dose. The objective is to develop a pricing strategy for PrevenT. After completing this case, you will have covered the following:

- Concepts of economic value
- Maximum pricing based on economic value
- Targeting segments with higher contribution margin
- Adjusting pricing strategies to force competitors out of the market

9.3 Bain & Company

9.3.1 Coffee Shop Co

The case is found here. In summary, a friend has proposed opening a coffee shop in Cambridge, a large university city. Firstly, you need to setup the case using a framework.



1. Customer
    - Target Customer (Customer behavior etc)
    - Segmentation on Campus
    - Values (What do your customers values (Undergraduate, graduate etc))
    - Needs/Wants (Inline with campus schedule)
2. Company
    - Branding
    - Go-to Market Strategy (Worth entering and not pivot to another venture)
    - Values
    - Size (Single shop, takeaway)
    - Funding ()
3. Competition
    - Market size, opportunity, and growth rate
    - Market share (Potential market size to capture)

- Location (On-Off Campus)
- Products (Absorb Market Share)

4. Product
    - Type of coffee (Premium, Discount etc.)
    - Pricing, Revenue(Price/Quantity), Expenses (Fixed/Variable), Profit
    - Turnover/estimated sales
    - Resources (Ingredients, coffee machines)
    - Funding (VC, Angel Investors, Friends, Family?)

The second question asks you to size the market. I attempted a top down market sizing approach.

- Population of Cambridge Residents.
- Number of Residents who attend Cambridge University (Undergrad, Postgrad and Professionals).
- Number of attendees who drink coffee
- Number of coffee drinkers who buy coffee
- Average number of coffees bought and consumed by these coffee drinkers per day (Would fluctuates per day).

After this analysis, you have the average daily number of units possible to sell per day. After, you estimate the market with a couple figures.

- Population of Cambridge Residents (100,000)
- Number of Residents who attend Cambridge University (Undergrad, Postgrad and Professionals) (100,000 x 25% as university town).
- Number of attendees who drink coffee (25,000) x 50% = 12,500).
- Number of coffee drinkers who buy coffee (12,500 * 20% = 2,500) - Assumption high proportion buy coffee.
- Average number of coffees bought and consumed by these coffee drinkers per day (Would fluctuates per day) (1 coffee, so 25,000 coffees)
- (Whole market - 2500 per day, coffees)
- Assumption of 5 major coffee shops, so average 500 coffees sold per day (Assume 7 days per week).

After, perform the calculation to determine if it is viable to open a coffee shop based on 24,000 market size.

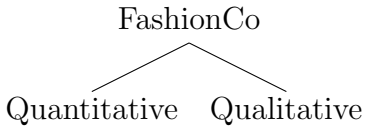
- Price per Coffee = 3 pounds
- Cost to open shop = 245,610 pounds
- Cost to run shop each each year = 163,740 pounds (Assume fixed cost).

- Cost per cup of coffee = 1 pound

After using the formula $\frac{\text{Fixed Cost}}{\text{Contribution Margin Per Unit (Price per Unit - Cost per Unit)}}$, you get 204,675 units. Under the current market sizing assumptions of 500 coffees per day, it is estimated a 182,000 coffees per year could be sold. This is 22,675 coffee sales shy of breaking even. If our old friend was prepared to recuperate the initial investment over multiple years, it would be viable to open the shop as the revenue would exceed operating expenses by 200,260 pounds. The shop would operate in it's second year of operating. However, this is a purely monetary strategy. Other factors (expressed in the structure e.g. Marketing, Differientiating from other competitors etc will need to be considered.

9.3.2 FashionCO

An incumbent for many years in the Women's fashion industry is facing declining revenue and wants to know why. The objective is to drive revenue. Firstly, devise a matrix to determine revenue growth.



1. Quantitative
    - Revenue = Quantity x Price (If no subscription/other revenue generating services)
    - Pricing - Elasticity
    - Number of Units Sold (Assess volume, digital, change style)
    - Costs? A larger proportional reduction in costs may lead to an increase in profits).
2. Qualitative
    - Branding (Bad Publicity)
    - Product Mix (Dare I say out of fashion)
    - Supply Chain Issues (Not enough stock is getting to stores)
    - Competitors (Strategy, Assessment of Needs, Product Comparison)
    - Customers (Tastes and Preferences, Target customers aged out)
    - Macro-Market (New Trends, Discretionary Market Slow Down)

The next question asks for a better understanding of the market and customer trends

- Who are our target customers and how are they segmented
- What markets do you operate in?
- What are our customers shopping behaviour?
- What is the competitive landscape, how do you compare to competitors.
- What styles are on offer?

- What is the composition of brick and mortar to online sales?
- Do you have any relevant sales data over the last five years we can look at?
- What loyalty schemes are in place? Do consumers want more?

The next asks for additional ways to generate revenues

- Introduce new products in collaboration with other brands/partners (Coke Cola x Tommy Hilfiger) (Collaboration, medium term for designs and partnership to form)
- Introduce loyalty scheme to drive return sales (Easy to do, quick lead time, very practical/cost effective)
- Introduce an essentials/basics line to cater to a different market segment (Medium lead time, require more analysis on segment to target and consumer group)
- Investigate a potential acquisition of a competitor to create synergies and boost revenue (Long lead time in deals/transactions, not very practical at the moment).
- Introduce new marketing campaigns to retailor business to consumer needs (ESG investing etc, practical but may not make the most material difference).

The next is a comparison of two strategies: A rewards programme and intermittent sales. After preforming the calculations, Option A and Option B generate 1075M and 1150M in revenue respectively. If thinking short term, the recommendation would be to drive revenue with option B instead as will generate 75m more in revenue than A, if you chose to select one of these two measures. However, the consumer and market factors should be investigated as well. Option A may be better long term if generate more sign ups. The rewards scheme should be investigated to see if more signup do occur. Style and technology questions should still be researched in more depth. Both strategies could be used in combination to drive revenue growth.

9.4 Wharton Case Book

These section describes the lessons learned from completing the cases in the 2008 Wharton Case Book. Access the casebook here. Additionally, compare your answers to my own here.

9.4.1 Case I: Microfinance in India

1. When addressing criticism consider looking at **Market Environment, External Factors and Internal Factors**.
2. Make sure to question data/graphs from previous information e.g. Government agency MFI highly subsidized, therefore the cost of insurance from Government MFI on the graph does not reflect the true cost.
3. When making Recommendations, also address risks/mitigations and plausible next steps.

9.4.2 Case II: Outsourcing to China

1. Remember to consider quality, seasonality, brand and public perception factors with an outsourcing decision.
2. If an outsourcing is a feasible solution, consider new reoccurring revenue streams from excess production capacity.
3. Don't forget any costs/information.
4. Remember to continue to build out you framework when designing an answer.

9.4.3 Case III: Caskets M&A

1. $FCF = EBIT(1-t) + DA - CAPEX - \Delta NWC$
2. Consider financial (profit, growth, CF), non-financial, Synergies and Other in M&A.

9.4.4 Case IV: Bottled Water Market

1. No comment

9.4.5 Case V: De Beers Retail Venture

1. No comment

9.4.6 Case VI: Hospital Administrative Software

1. In 2021, there are 6090 hospitals in the US. An approximate population of 330m leads to an assumption 1 hospitals serves 54187 people on average.
2. The case uses 50,000. Learn to balance accuracy with practicality.

9.4.7 Case VII: Jamaica Land Investment

1. No comment

9.4.8 Case VIII: Academic Performance in Schools

1. Don't rush calculations and read the questions thoroughly.
2. Underutilization may lead to excessive overheads in the underutilized department.

9.4.9 Case IX: Mobile Phone Insurance

1. Churn rate is the rate of customer attrition.
2. ARPU is an important consideration in increasing revenues.
3. Calculating using incremental data will save time and complexity on calculations.

9.4.10 Case XI: Organic Pizza Crust

1. Trust your instincts and back yourself

2. Structure out you logic before sizing the market backing up every number with an assumption and/or personal experience if you have to.
3. Always structure out steps before any calculation.

9.4.11 Case XI: Traffic Signal Company

1. Trust your instincts and back yourself.
2. NPV analysis may not use discounting for simplicity.
3. When making assumptions, make them feasible, realistic and easy to calculate with e.g 2000 vs 2500 vs 1237 traffic signals Manhatten etc.

9.4.12 Case XII: Travel Channel

1. No comment

9.4.13 Case XIII: Channel

1. A competitor going bankrupt may be an opportunity. Strategic acquisitions may be good for targeting/expanding into areas with little presence. The acquisition of divested assets may be available at an affordable price too.
2. If they liquidate, cheap stock may flood market and hurt sales.
3. If they restructure, they become smaller

9.4.14 Case XIV: All-Mart

1. Market entry cases may follow the enumerated strategy
   (a) Assess market viability (What is the size of the market, realistic market share to be captured, competitive landscape and response)
   (b) Assess profitability and cost savings of the opportunity
   (c) Assess the expansions alignment with overall strategy and culture, expansion expertise (Global operating capability, the presence of a first mover advantage).

9.4.15 Case XV: Loonilever

1. Don't do mathematics when tired. Simple computations can be done incorrectly.
2. Make sure you clarify an overall objective with key metrics when it is not clear in the case description.
3. Don't introduce any more structure if not needed
4. Clarify if their is any more information (related to competitors, case structure etc.)
5. There are new additions to the market expansion explained in the above timeline (This may continue to change on a case by case basis).
   (a) Market (Similar to Case XIV)
      - Market Share and Growth.

- Segmentation Information.
- Competitor Response
- Consumer Needs, Wants and Trends

(b) Profitability (Revenue and/or Costs)

- Pricing Strategies
- Volumetric Projections
- Variable Costs (Materials, Labour, Overhead per Unit)
- Fixed (Overhead, Marketing, Admin, Labour)

(c) Strategy Alignment

- Destabilisation of Existing Market Share
- Alignment with Overall Company Strategy and Culture
- Opportunity to expand into adjacent markets
- Create new capabilities (Expansion etc.)

6. When presented with a spread of product prices, an average price can be calculated. When entering a new market, a pricing decision must take place:

(a) At the maximum price (e.g. Multi-national selling premium versions in case XV example)

- More demanding, higher income population. Greater training/expertise may be required to sell the product.
- Likely to be extremely competitive as multinationals will guard market share with deep pockets and marketing expertise
- More profitable at a higher cost point (assuming costs are consistent)

(b) At the minimum price (e.g. Local companies selling discount versions in case XV example)

- Low margins (Loonilever in Case XV is no concerned as objective is 100m revenue).
- Less challenging as the market is commoditised and local competitors wont be as marketing savvy as multinationals.
- Distribution networks will likely need to be very strong due to spread (rural, towns and cities). Likely the case due to being a market leader in another low point entry product.

(c) A price between the maximum and minimum price (e.g.)

- This strategy is to focus on geographies with rapid expanding incomes.
- Combines strengths in marketing and distribution.
- Sacrifice margin to build revenue base, inline with case objective.

- Don't expend resources competing with multinationals in a competitive market
- Could de-establish entrenched players, forcing bleeding and matching price point.

(d) Option 3 is the best of these outcomes as continues with case examples.

7. Sensitivity analysis are good suggestions for validating projections.

9.4.16 Case XVI: BevCo

1. Remember to initially frame your analysis with a hypothesis.

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9.4.17 Case XVII: Mosquito Repellent

1. Remember the possibility of adding new products to the product mix to adjust account to address falling revenues.

9.4.18 Case XVIII: Cash Rich Energy Company

1. There are several investment criterion to assessing an acquisition. If asked to evaluate the different options, you'll need to be
   (a) NPV (Free Cash Flow Projections and Discount Rate)
   (b) Breakeven/Payback (Initial Investment, Outgoing Costs, Incoming revenues)
   (c) Return on Investment (Net Profit after tax / Initial Investment)
   (d) Opportunity Costs (NPV of other options)
2. Remember to refer to case specific risks after the recommendation is made.

9.5 Michigan 2006

These cases supplement the Wharton Case Book. Review the Michigan examples here.

9.5.1 Case I: Great Burger

1. Remember to consider incremental changes when comparing with cannibilisation.
2. In M&A, remember to consider the companies ability for M&A and cultural simularities.
3. M&A is a great way to use the larger companies capital to invest in and expand the target's operations e.g. Instagram acuired by Facebook.

9.5.2 Case II: Magna Health

- Be specific with reasons on analyses e.g. behaviour studies on demographic shifts.
- Remember to compare similarities and differences.

- Physician may face a malpractise lawsuits in the Midwest of US. Keep this under consideration when doing medical cases.

9.5.3 Case III: Granite Investments

- Take caution in forcing a framework to an orgnanic flow in solving a case. Some involve a back and forth
- Don't fall into the trap of
- Ask for clarification on any concepts that are unfamiliar with your interview eg. Serving of transactions for websites (Enabling them to go through).

10 Company Research

This section outlines the research conducted in the various consulting companies.

10.1 McKinsey & Company

10.1.1 Purpose

To create positive, enduring change in the world.

10.1.2 Mission

To help our clients make distinctive, lasting, and substantial improvements in their performance and to build a great firm that attracts, develops, excites and retains exceptional people.

10.1.3 Mission, Vision, Values

1. **Adhere to the highest professional standards**
    - Put client's interest ahead of the firms
    - Maintain high standards and conditions for client service
    - Observe high ethical standards
    - Preserve client confidences
    - Maintain an independent perspective
    - Manage client and firm resources cost-effectively
2. **Improve our client's performance significantly**
    - Follow the top-management approach
    - Pursue holistic impact
    - Use our global network to deliver the best of the firm to all clients
    - Bring innovations in management practise to clients
    - Bring client capabilities to sustain improvement
    - Build enduring relationships based on trust
3. **Create an unrivaled environment for exceptional people**
    - Be non-hierarchical and inclusive
    - Sustain a caring meritocracy
    - Develop one another through apprenticeship and mentoring
    - Uphold the obligations to engage and dissent
    - Embrace diverse perspective with curiosity and respect
    - Govern ourselves as a "one firm" partnership

10.1.4 Qualities in Successful Candidates

1. Personal Impact (Interacting with people in challenging circumstances to create positive, enduring change).
2. Entrepreneurial Drive (Innovative mindset, an openness to new approaches, and a continuous quest for learning and growth).
3. Inclusive Leadership (Harness the power of diverse thinking to drive results requires the ability to lead diverse teams and cultivate a sense of belonging).
4. Problem Solving Skills (Help clients solve tough problems and implement solutions requires strong intellectual capabilities and rigor with a combined sense of practicality).

10.2 Boston Consulting Group (BCG)

10.2.1 Values

1. Integrity
2. Respect for the Individual
3. Diversity
4. Client comes first
5. The Strategic Perspective
6. Value delivered
7. Partnership
8. Expanding the Art of the Possible
9. Social Impact

10.3 Bain & Company

10.3.1 Mission

Our mission is to help our clients create such high levels of value that together we set new standards of excellence in our respective industries.

10.3.2 Values: Guided by True North

- **Passion & Commitment**:(We have a passion for results aligned with our clients' success, and a commitment to the highest level of professionalism and ethical standards in everything we do.)
- **Honesty & Openness**: (We have a deep intellectual honesty, and the candor to tell it like it is in straightforward language. We remain open to the possibility that current beliefs could be wrong.)
- **Practical**: (We combine bold thinking with a practical approach that focuses on getting the job done, turning decisions into action and delivering results.)

- **One Team**: (We work as one global team—both with each other and our clients—to direct our collective energy toward achieving the extraordinary.)
- **Additional**: Results not reports, Putting our money where our mouth is, Results delivery

10.4 Oliver Wyman

10.4.1 Values

- Self-Starters and free thinkers who work well in teams.
- Common aspiration, collective endeavor, shared success.
- Straightforward, open, respectful interaction.
- Opportunity without artificial barriers, anti-kudza
- Balanced life and sense of fun.
- Commitment for doing what is right.
- Hunger for deeper understanding.
- Constantly striving for excellence.
- Insistence on impact.
- Harnessing the power of individuality and differences.
- Trust between ourselves and clients.

10.5 L.E.K Consulting

10.5.1 Mission

Not easily found on website

10.5.2 Values

Not easily found on website

10.6 Kearney

10.6.1 Mission

Kearney helps you drive high-impact strategic transformations by taking full advantage of exponential technology change and getting to the core of multiple issues and opportunities quickly and efficiently.

10.6.2 Values

Not easily found on website