

THE TECH INTERVIEW

PRODUCT MANAGEMENT & PRODUCT MARKETING

Rice Business School
September 21, 2019
By Lewis C. Lin

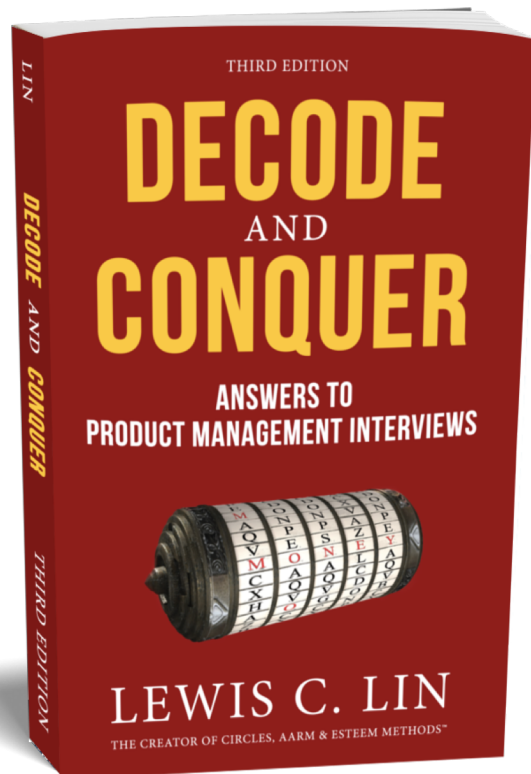


WELCOME

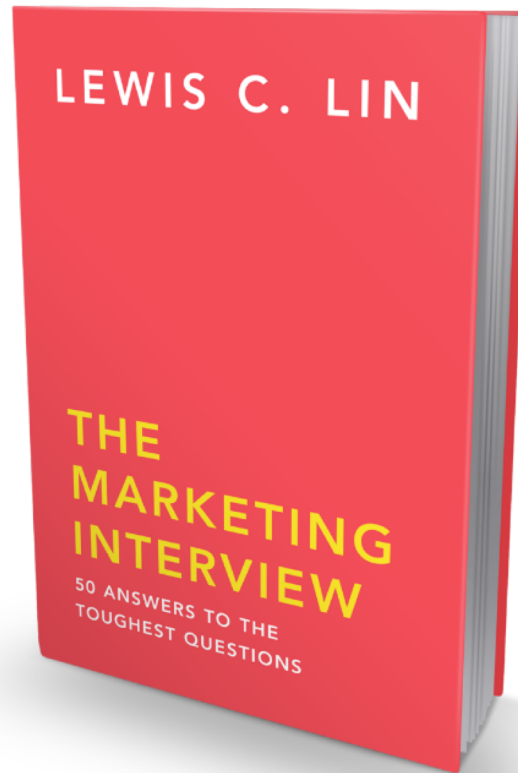
Introduction



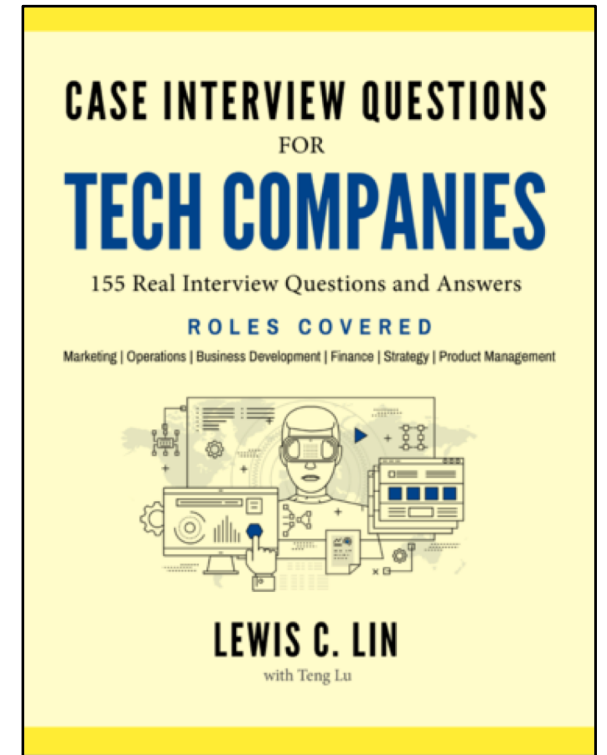
MY BACKGROUND



PM Interviews



Marketing Interviews



More Practice

MY INTERVIEW PREP BOOKS ON AMAZON

DECODE AND CONQUER: answers to Product Management Interviews Lewis Lin

Notes: Sacha Chua 2014-01-29

Critiquing Design

Frameworks help!

- ★ Innovative
- ☑ Useful
- ☑ Understandable
- ☑ Honest
- ① Share your criteria
- ② Explain
- ③ Be specific

CIRCLES Method

- ① Comprehend situation — what? Who? Why? How?
- ② Identify customer — RR Personas
- ③ Report customer needs — as I want @ that — estimate?
- ④ Cut, through prioritization → R
- ⑤ List solutions
- ⑥ Evaluate trade-offs — thoughtful and clear, objective
- ⑦ Summarize recommendation — what, recap, why is others

Coming up with solutions

- Reversal
- Attribute mix & match
- Why? Challenge Status quo

Think big
Creative vision
at least 3 ideas
avoid defensiveness

Disclosure: I received a review copy of this book. For more notes, see sach.ac/visual-book-notes

Websites, mobile apps

- ☑ Do your homework → Bring a redesign to the interview
- ☑ Memorize best practices
- ☑ No need to reinvent the wheel
- ☑ Show your empathy with users' problems
- ☑ Use personas, connect recommendations to expected results

Warning: when using frameworks, avoid sounding scripted!
Have personality
Adapt to competition

5 Whys

- Why? Because...
- Why? Because...
- Why? Because...
- Why? Because...
- Why? Because...

Look for root causes & unarticulated problems

Stress → Exposure, practice; reset if stuck

Strategizing

- Trade offs
- New market entry
- Market competition
- Company fit
- Framework
- See Porter's five forces
- Vision: unique, memorable + solution → doability

Write solution.

- Review.

Explain assumptions
Bottom up
ex: observing customers in one store
Behavior story: Dramatize indicate alt. Go through Summarize impact

Pricing

- framework, specific recommendation
- Metri
- Acquis
- Activa
- Retent
- Moner

Technical Interview

- Understand what is being asked → clarify
- Start with the case
- Talk aloud.



FREE INTERVIEW CHEAT SHEETS

First Half

Interview Process

Analytical

Marketing

Second Half

Product Design

Technical

Metrics & A/B Testing

TODAY'S AGENDA

Overview of Tech Roles



TOP ROLES FOR TECH-BOUND MBAS

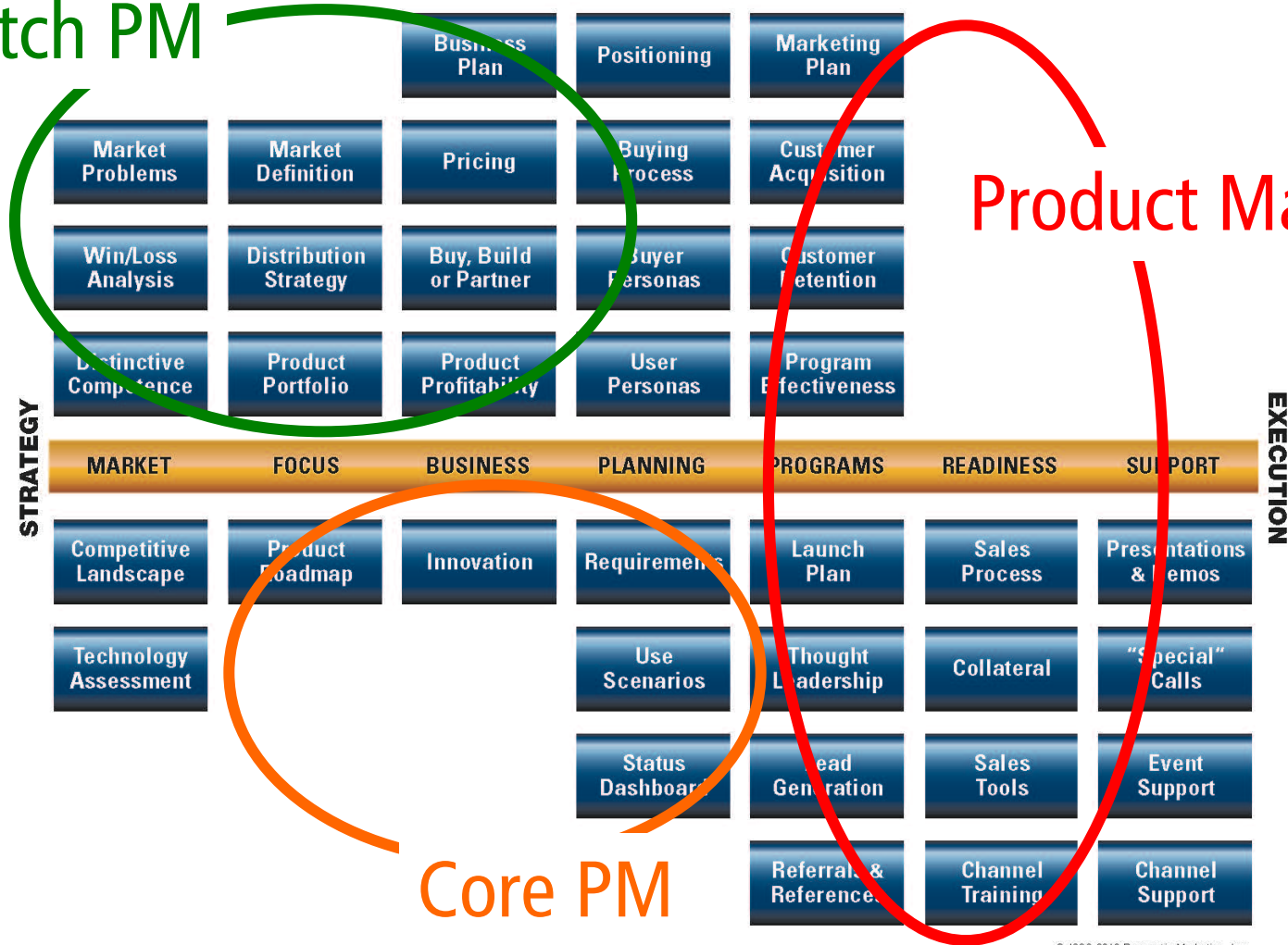


WHAT PROD. MANAGERS TYPICALLY DO



WHAT PROD. MKTG. TYPICALLY DOES



Stretch PM



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WHAT PROD. MARKETERS TYPICALLY DO

Case Questions

Job Type	PM Question	Company
Finance	What is the lifetime value of an Amazon Prime customer?	
Analytics	What top metrics would you track for the Tinder online dating app?	Tinder
Product manager	Improve the Disneyland user experience, relevant to a Google product.	
Operations	Describe how Apple's supply chain works. What challenges does Apple face on a day-to-day basis?	Apple
Marketing	Create a marketing campaign for Microsoft Office 365.	Microsoft

RECENT TECH QUESTIONS

Analyze profitability

Critique a product

Design or improve a new
product

Solve a technical problem

Price a new product

Price an existing product

Calculate lifetime value

Define metrics for a product

Discuss business strategy

Enter a new market

Develop a product vision

Endure a stress test

CASE QUESTIONS

Analytical



CUSTOMER LIFETIME VALUE

Average
Contribution
Per Sale



```
graph LR; A[Average Contribution Per Sale] --> B[Sales Per Year]; B --> C[Average Length of Customer];
```

Sales Per Year

Average Length
of Customer

LIFETIME VALUE FRAMEWORK



EXERCISE, CUSTOMER LIFETIME VALUE

Just ask
Focus group of 10

GETTING ASSUMPTIONS

What's 65% of 21,000?

INTERVIEW MATH

$$DCF = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \dots + \frac{CF_n}{(1+r)^n}$$

DISCOUNTING CASH FLOWS

Product Design

Design an new iPad app for Google spreadsheet?

Design a new personal finance app?

How would you design a better smoke detector?

PRODUCT DESIGN EXAMPLES

CIRCLES Method

- ⑥ Comprehend situation — what? Who? Why? How?
- 2? Identify customer — 22 Personas
- ⑥ Report customer needs — as __, I want __ so that __
- ¹
2 3 Cut, through prioritization → ROI estimate?
- ¹ —
2. —
3. — List solutions
- ✂ Evaluate trade-offs — thoughtful, analytical, objective
- 💬 Summarize recommendation — What, recap, why vs. others

CIRCLES DESIGN FRAMEWORK

Uninspired brainstorming
Superficial customer empathy

THE 3 BIGGEST CHALLENGES



EXERCISE, BRAINSTORMING



102 WAYS TO EMPLOY YOUR PET

by Pirates of the Coffee Bean

INNOVATION IS A VOLUME GAME



Technologists

- 54 Dog employed as Google StreetView or Google Earth cameraman
- 55 Dog blogger / live streamer running around with a video camera on its head
- 56 Fish as a random number generator – every few seconds it swims in a new direction and generates a new random number
- 57 iPhone charger powered by a hamster or by any other pet running around a lot (via a sensor)

OFF THE WALL IS OKAY

walking around on top of your back



Doggie gym trainers

- 28 Dogs as running partners next to you on the treadmill (they'll never get tired)
- 29 Dogs as trainers, doing tugs-of-war for resistance training
- 30 Dogs as weight-lifting weights (lift a heavy dog instead of bar bells)
- 31 Dogs as golf ball collectors at the driving range
- 32 Dogs as tennis ball collectors at the tennis court
- 33 Dogs as tennis trainers, holding the racket with their mouths and hitting balls back

IDEAS BUILD ON TOP OF EACH OTHER

Event planning specialists

- 59 Dogs as wedding videographer's assistants, covering unusual angles and candid shots
- 60 Dog as a prop in wedding photo booths
- 61 Geese hired to fly in formation for celebrations (instead of planes)
- 62 Pets in clown or other outfits as entertainment for children's parties

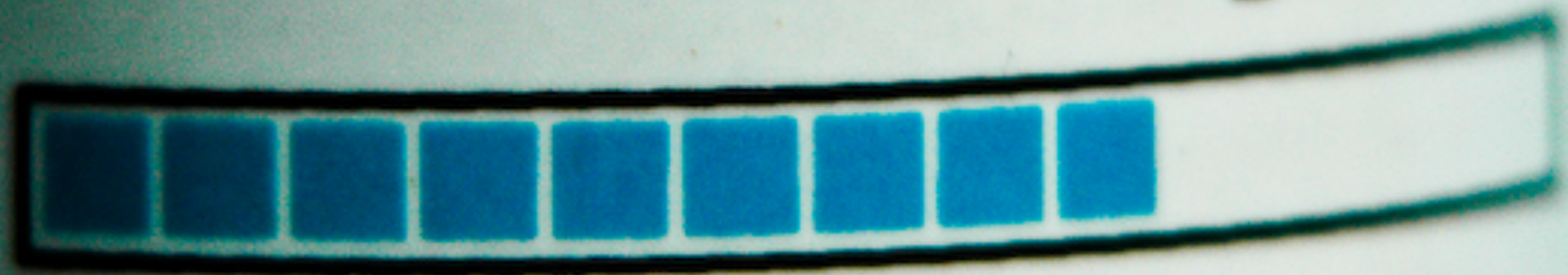
running in a hamster wheel to power a generator



Rental accessories

USE CATEGORIES AS PROMPTS

Thinking



Please Wait

ALWAYS PAUSE TO BRAINSTORM

Rant about a problem related to
household cleaning

EXERCISE, EMPATHY

em·pa·thy

noun

the ability to understand and share the **feelings** of another.

PRACTICE OF CUSTOMER EMPATHY

feelings

Fear of heights,
fear of ladders,
fear of climbing
+ "how the hell
I'm going to get
down from here"

Yeah, I

Mindmap of me

ESCAPING DRUNK PEOPLE

by climbing on top of a building

why?
It was on a national holiday in Finland where 50 000 people get wasted for two days and go to a picnic near where I live. I hate holidays.

sounds
Like a planet of rabid monkeys would try to invade earth by screaming.

feelings
Fear of heights,
fear of ladders,
fear of climbing
+ "how the hell
I'm going to get
down from here"

how?
I went to our backyard and saw the ladder and immediately realized it was my escape.

view
From the roof?
Like the biggest AA-meeting from Hell decided to have a field trip.

smells
A bit like someone would have crashed the dumpster truck into a McDonald's restaurant. With a handbrake turn.

THE END

Smells

A bit like someone would have crashed the dumpster truck into a McDonald's restaurant. With a handbrake turn.

st pee now. hold.

STOP! have a beer!

THE END

RANTING HELPS US FEEL

Metrics

Identify

- You're the PM for _____. What metrics would you track?

Prioritize

- What's the most important metric?

Diagnose

- Let's say _____ metric went down X% week-over-week. How would you diagnose?

Recommend

- How would you fix?

Other

- Evaluate the data. What conclusions can you draw? And what actions do you recommend?

METRIC QUESTION EXAMPLES

Identify Metrics

You're the PM for ____.
What metrics would you track?

EXAMPLE IDENTIFY METRICS

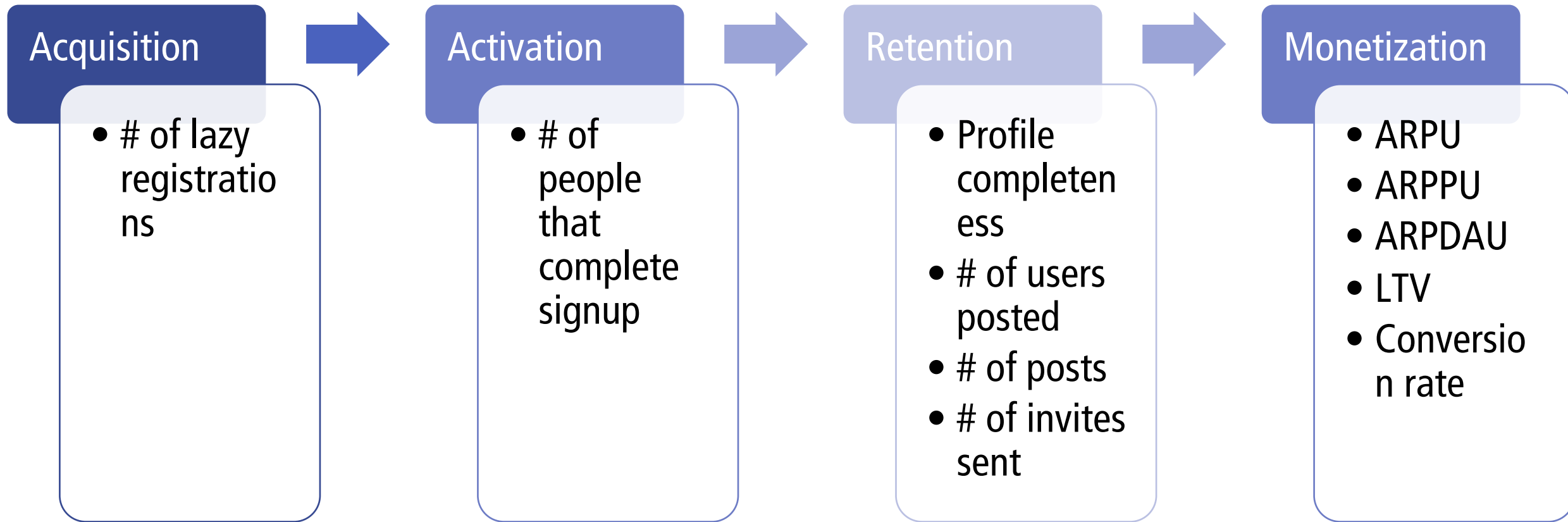
Acquisition	Activation	Retention	Monetization
<ul style="list-style-type: none"> • Daily sessions • CPA • CPC • CPM • Mobile app D/L • Top search engine terms leading to website • Mailing list: CTR, open rate, conv rate 	<ul style="list-style-type: none"> • New registered users • Mobile app opens • Number of searches on website or app • New cart started • User information given (address, credit card) • New customers w/ purchase 	<ul style="list-style-type: none"> • Conversion rate • Recommendation engine conversion rate • Cart abandonment • Cart size • Visits from registered users per month 	<ul style="list-style-type: none"> • Revenue per customer • Lapsed customers • Purchases per year • Revenue per click • Cost of sale (ad spend / revenue) • CLV • Cost of shipping

AMAZON'S AARM™ METRICS

Other

- Avg listing position on the Google search results page
- COGS
- Shipping time
- Stockouts
- Returns
- Checkout errors
- # of reviews left by customers
- Number of users that each customer refers (viral coefficient)
- Market share
- Customer engagement on social media
- Net or gross margin

AMAZON'S AARM™ METRICS



AARM™ METRICS

Prioritize Metrics

What's the most important metric?

EXAMPLE PRIORITIZE METRICS

Metric Name	Pros	Cons
Cart abandonment		
Visits from registered users per month		
Lapsed customers		
Purchases per year		

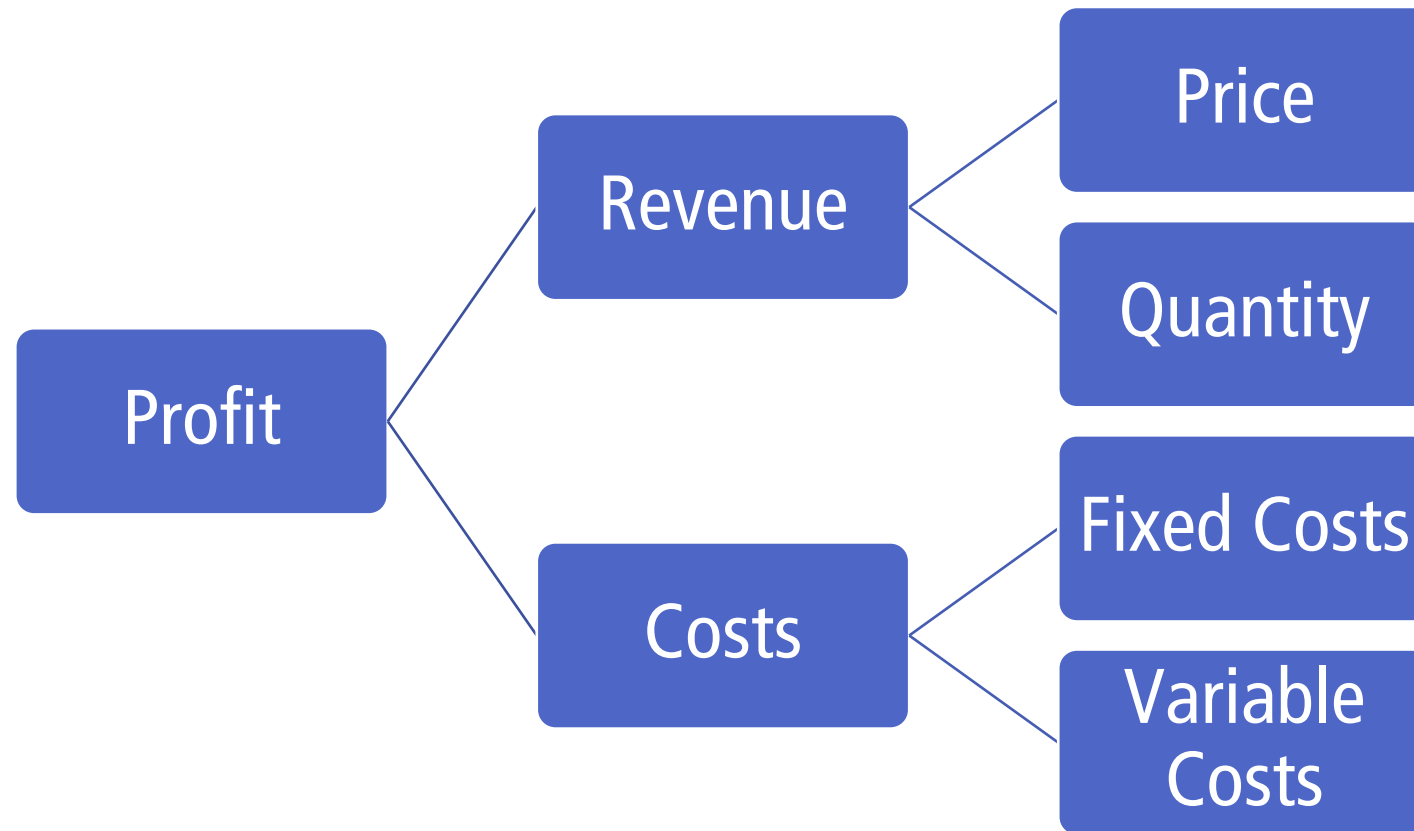
MY PRIORITIES

Diagnose a Metric

Let's say ____ metric went down $X\%$
week-over-week.

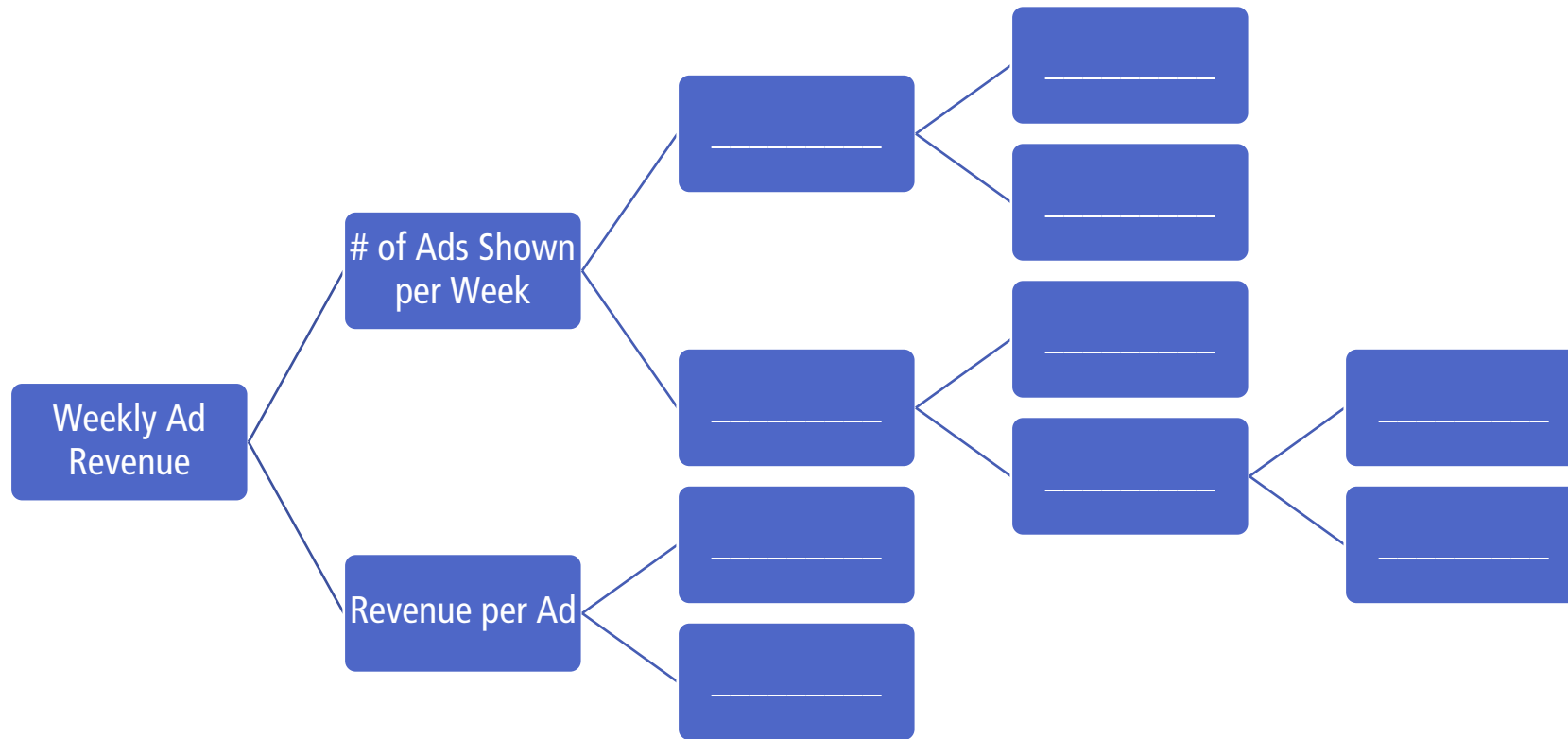
How would you diagnose?

EXAMPLE DIAGNOSE A METRIC



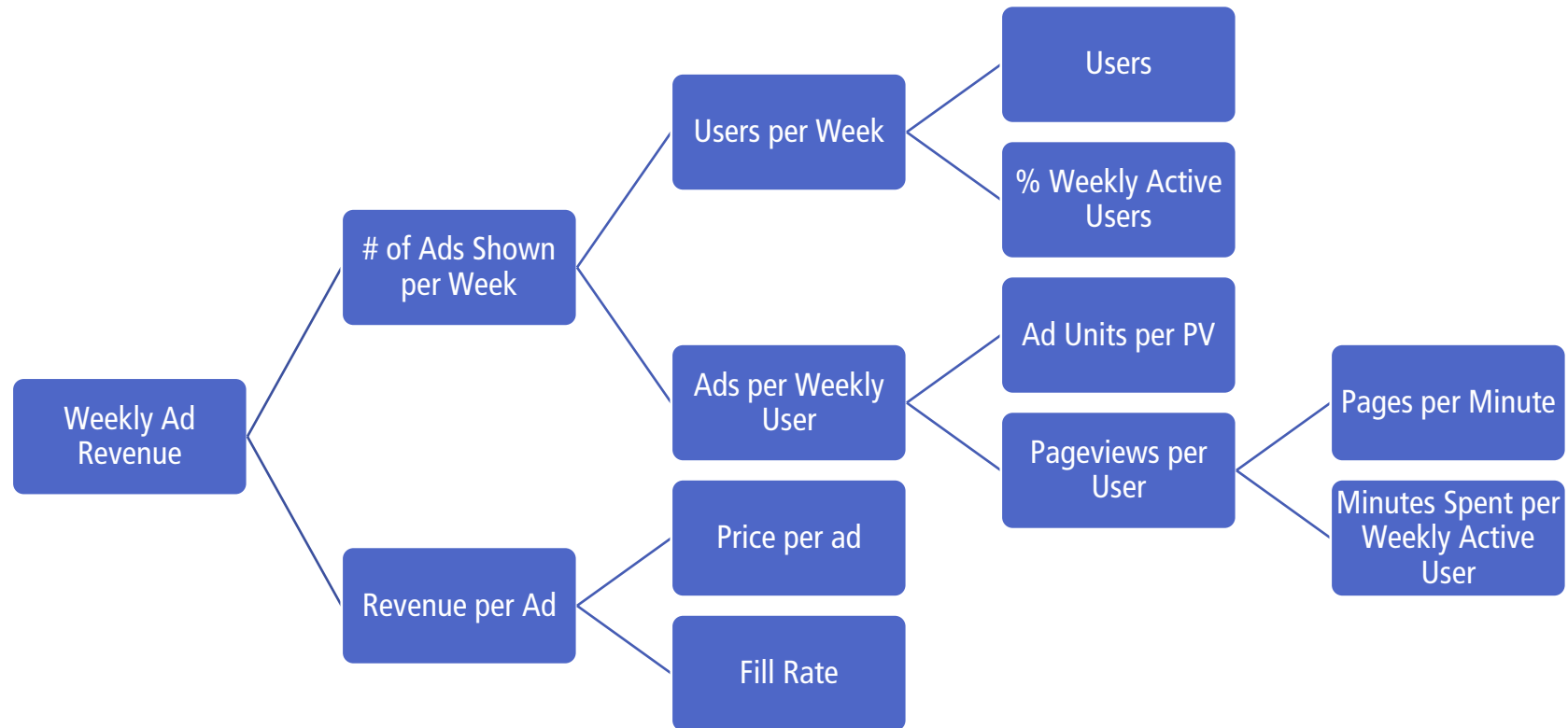
ISSUE TREE EXAMPLE

Issue Tree: Ad Revenue inside Amazon's Mobile App



EX. ISSUE TREE, AMAZON ADS

Issue Tree: Amazon's Mobile Ad Revenue



ISSUE TREE, AMAZON ADS

Recommend a Solution

A/B Testing

LinkedIn is testing a new upload feature...

EXERCISE, A/B TESTING

Technical

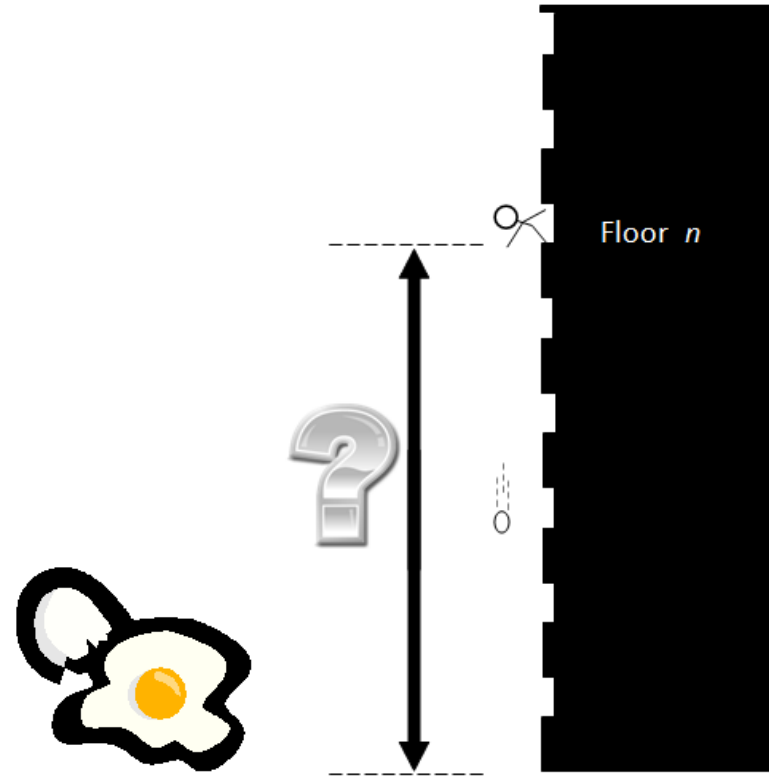


EXERCISE, TECHNICAL

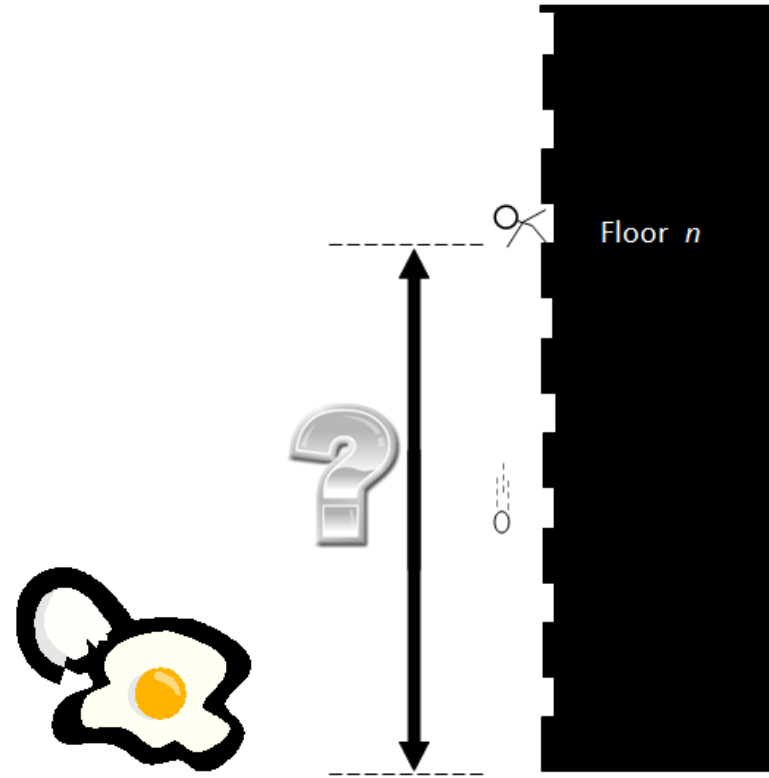
There is a building of 100 floors. If an egg drops from the N th floor or above it will break. If it's dropped from any floor below, it will not break. You're given 2 eggs.

Find N , while minimizing drops for the worse case.

EGG DROP PROBLEM



1ST TRY: START FROM THE 1ST FLOOR



2ND TRY: PARTITION THE DROPS

We want the # of drops for the 1st egg to be similar to # of drops for the 2nd egg. i.e. minimize the sum.

With each 1st egg drop, there are fewer 1st egg drops left. I.e. if the drop does not break, we need to jump up just (n-1) floors each time.

This can be expressed in a summation:

- $n + (n-1) + (n-2) + \dots + 1 \geq 100$
- $n(n+1)/2 \geq 100$
- Solve for $n = 14$.
- 14 is also the worst case # of drops (at floor 98)

3RD TRY: LOAD BALANCE THE DROPS

Drop for Egg A	Floor
1	14
2	27
3	39
4	50
5	60
6	69
7	77
8	84
9	90
10	95
11	99
12	100

ILLUSTRATED SOLUTION



MOST DON'T ASK TECHNICAL QUESTIONS

Technical trivia
Algorithms and data structures
System design
SQL queries

TYPES OF TECHNICAL QUESTIONS

Understand what is being asked
Work through the simple base case
Talk aloud
Write the technical solution, if necessary
Review the code

APPROACH TO TECHNICAL Q'S

Marketing Case Questions

Create a positioning statement

Develop a marketing campaign

Price a new product

Change the price of a current product

Deal with declining sales

Launch a new product

Defend against the competition

Compete against generic competition

Critique a marketing effort

Critique advertising

Deal with PR disasters

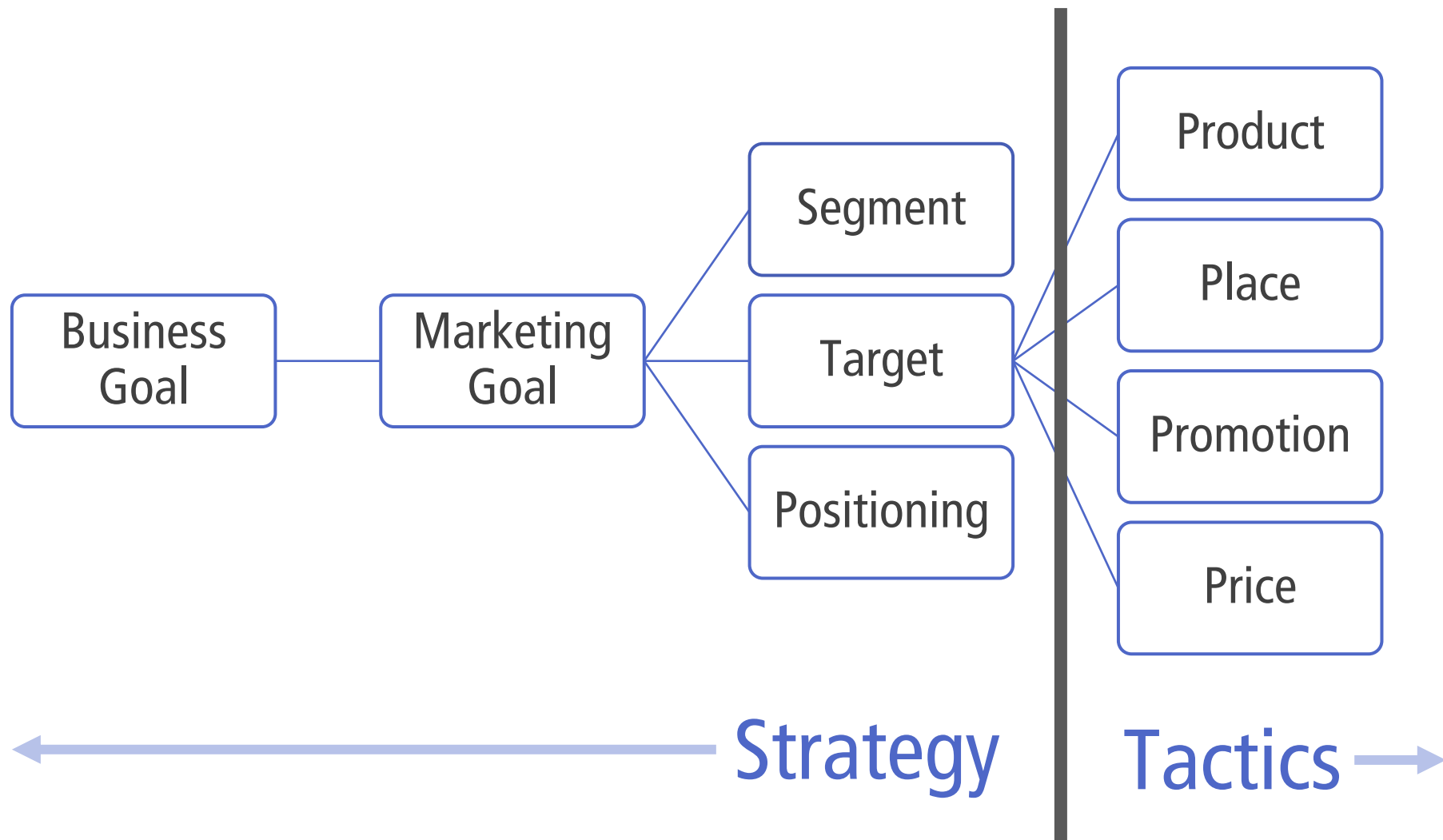
Get analytical: estimations

Get analytical: ROI calculations

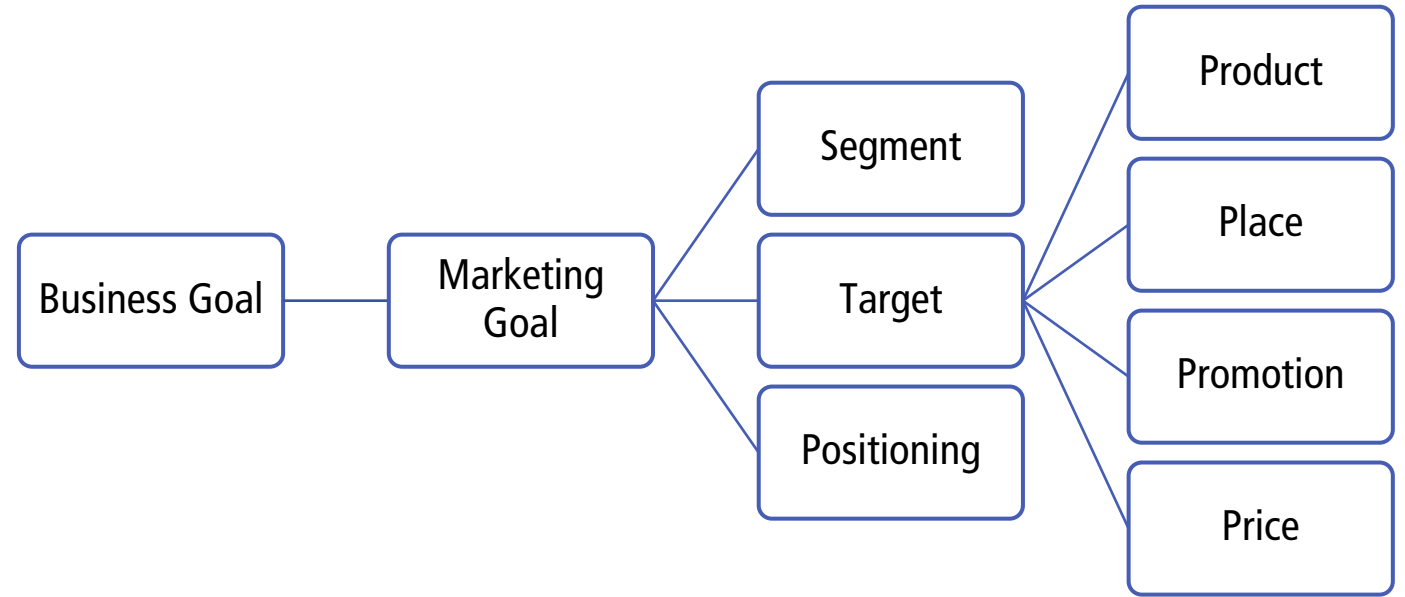
Strategize: CEO-level issues

CASE QUESTIONS

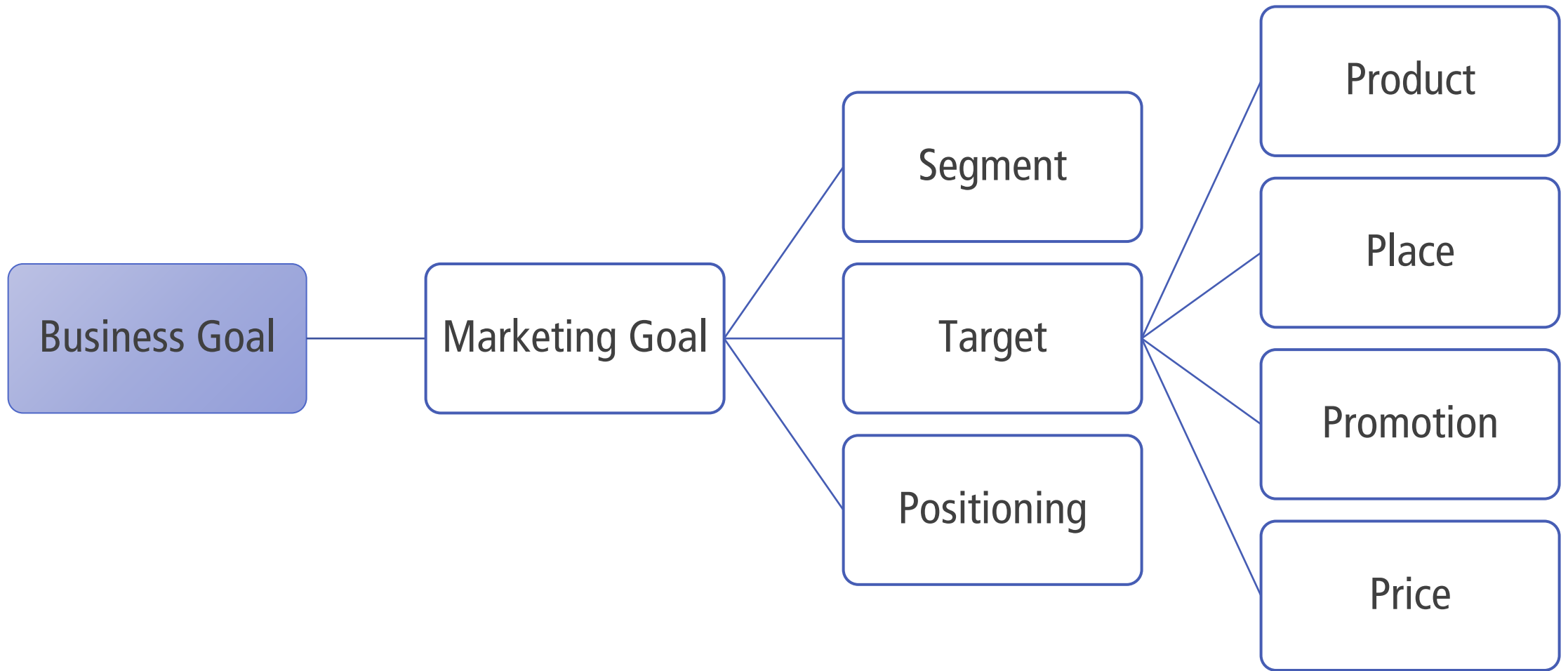
Developing a Marketing Plan



MARKETING FRAMEWORK



APPLE WATCH



BUSINESS GOALS

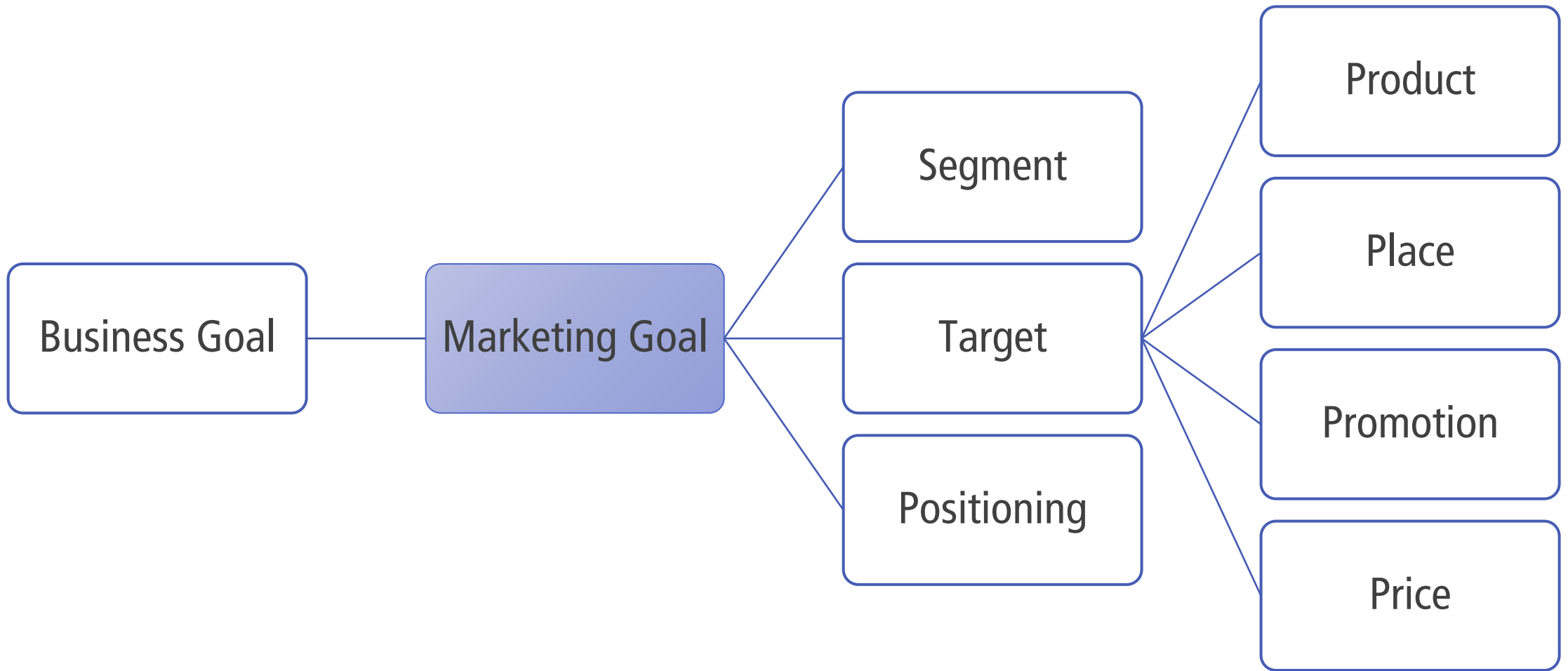
1 Increase US market share **2** of sugar-free
energy drinks **3** by 300 basis points among
4 men and women between 25 to 34 within
the next 12 months **5**

A WELL-WRITTEN GOAL

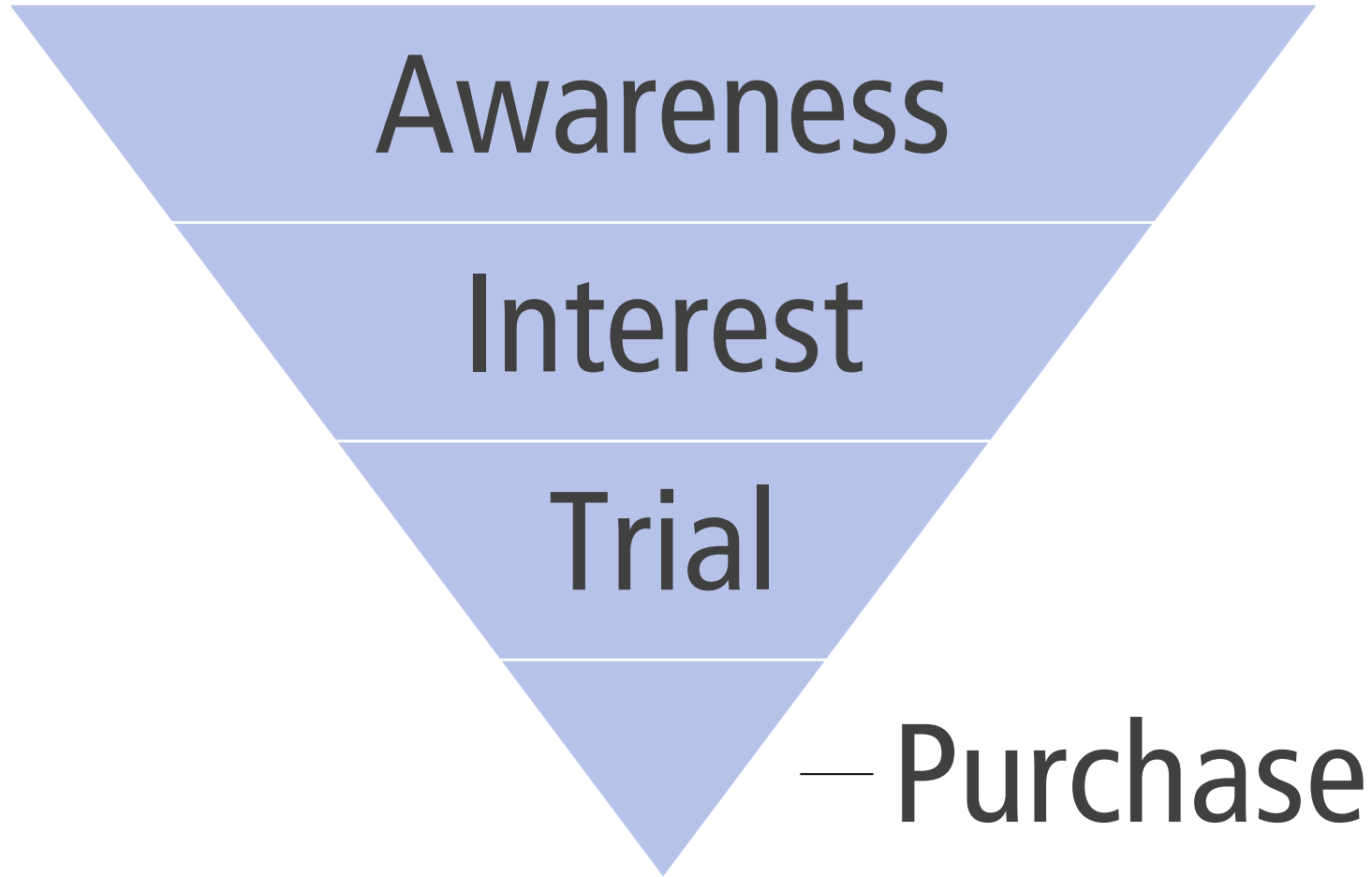
Profits / Revenues
Share / Adoption



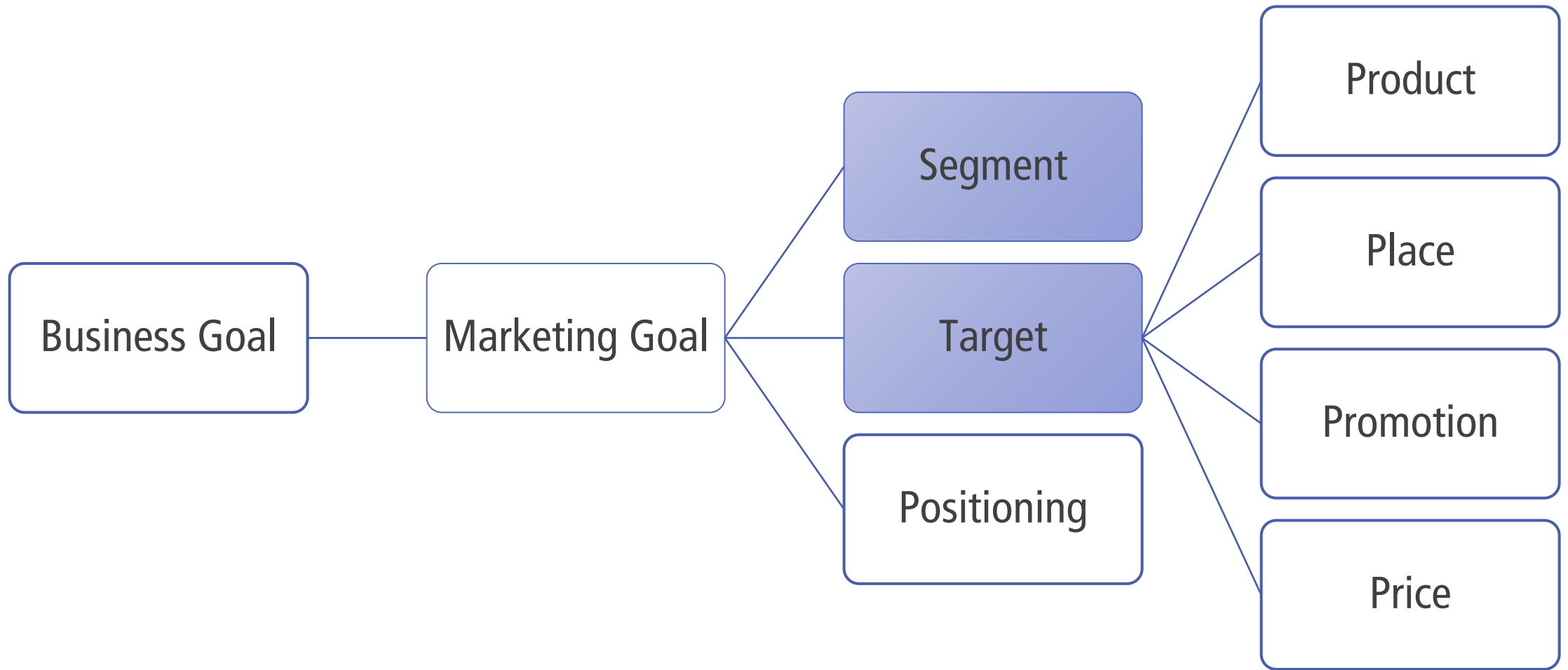
POSSIBLE BUSINESS GOALS



MARKETING GOALS

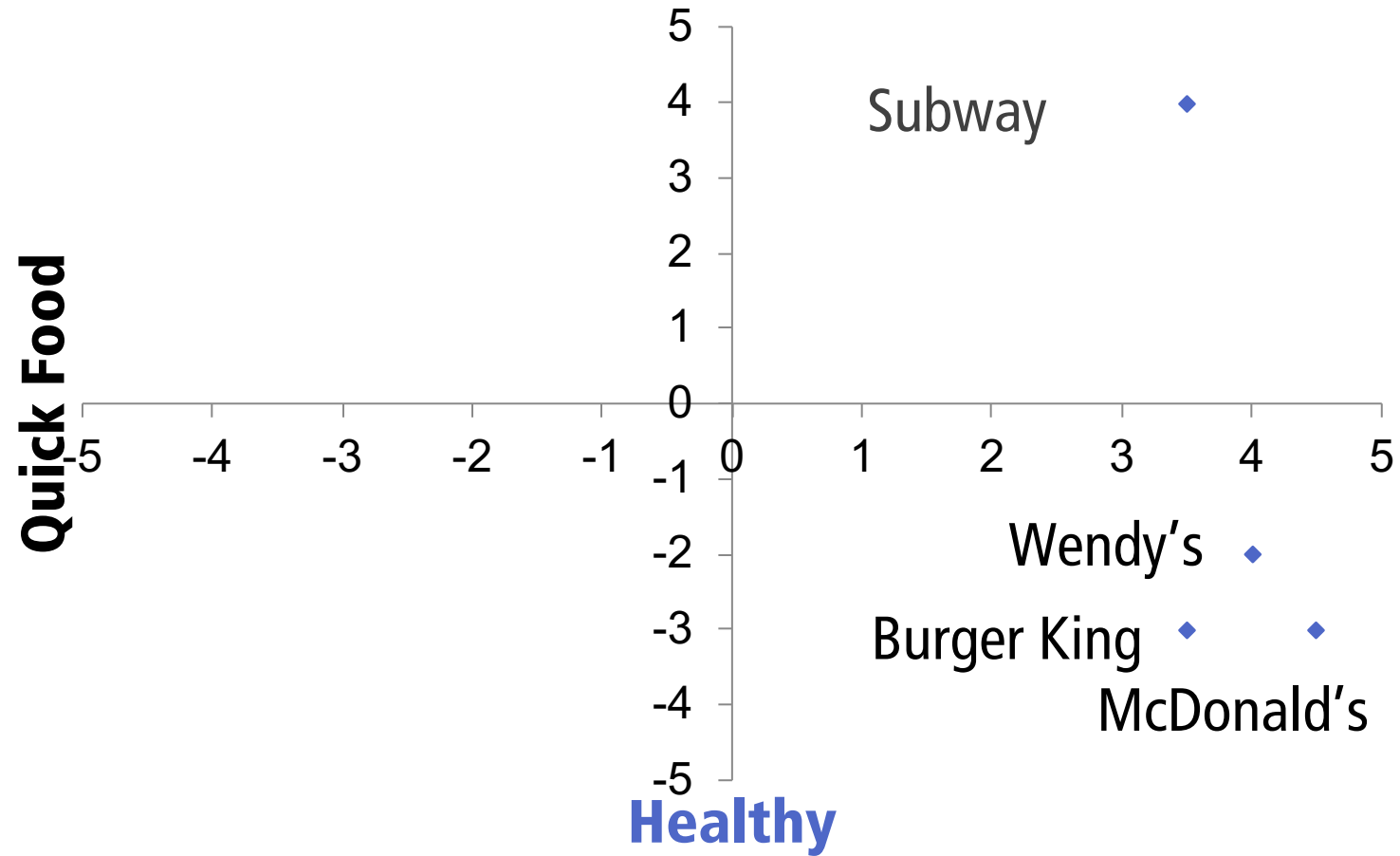


MARKETING GOALS



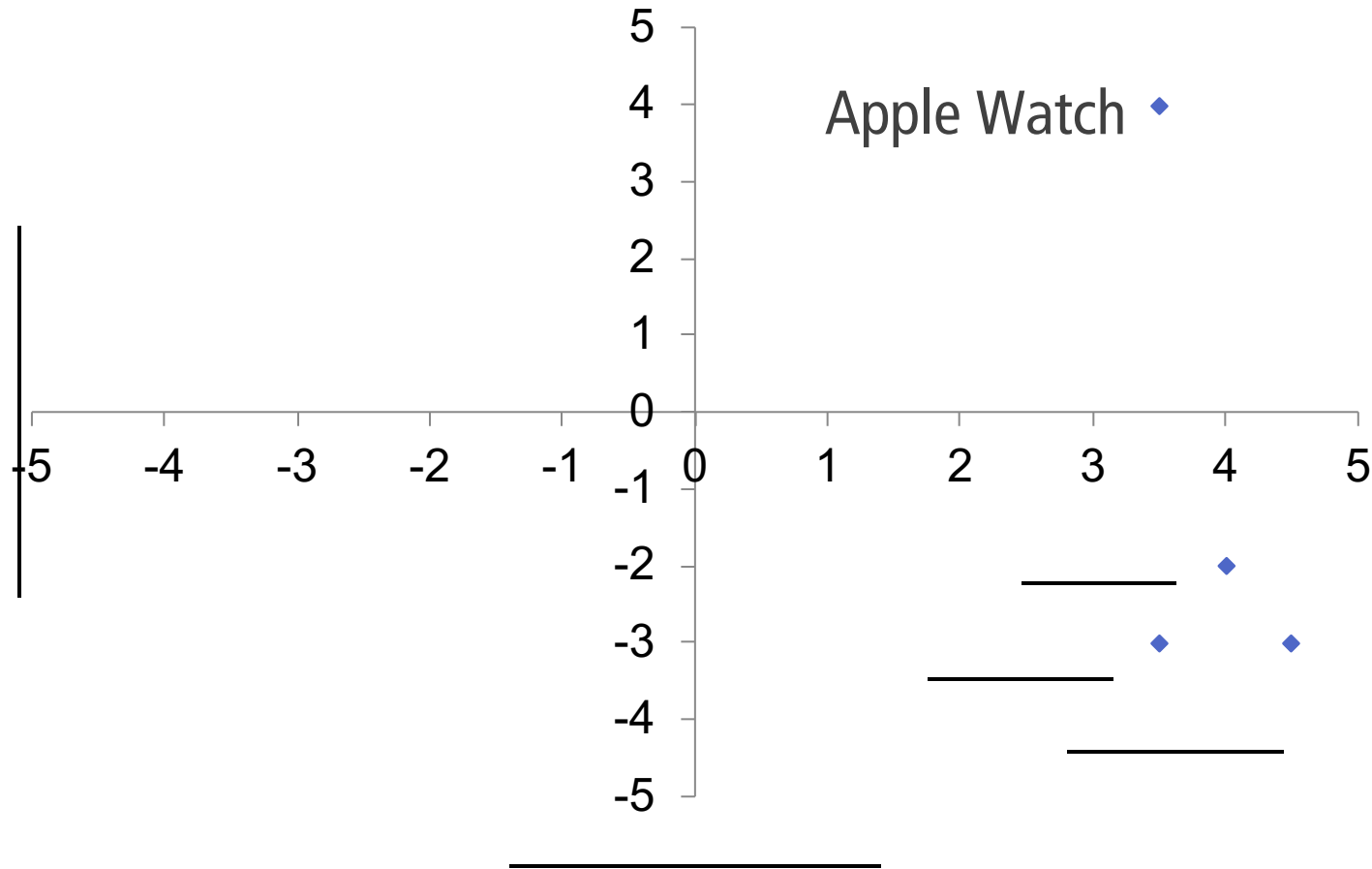
SEGMENTATION & TARGETING

Subway's Perceptual Map

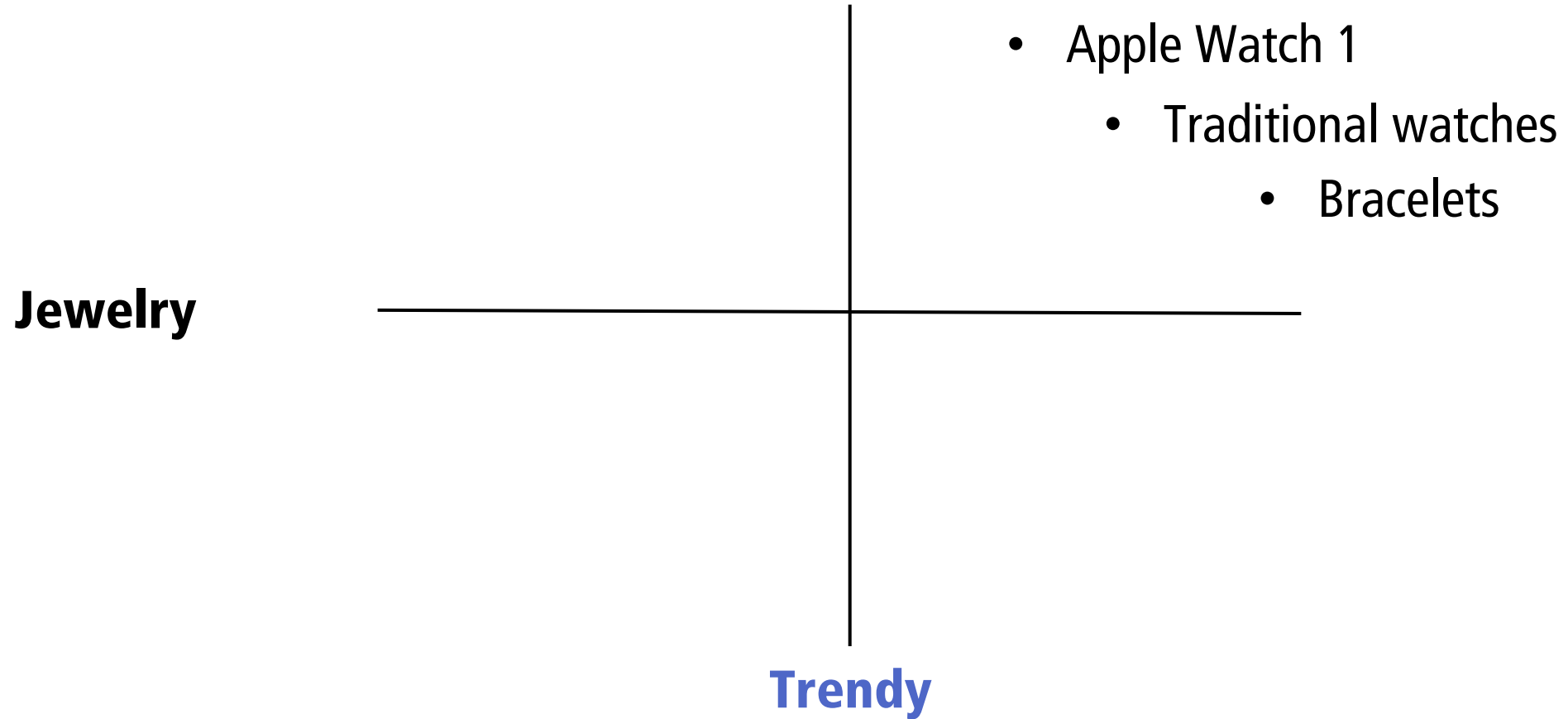


PERCEPTUAL MAP

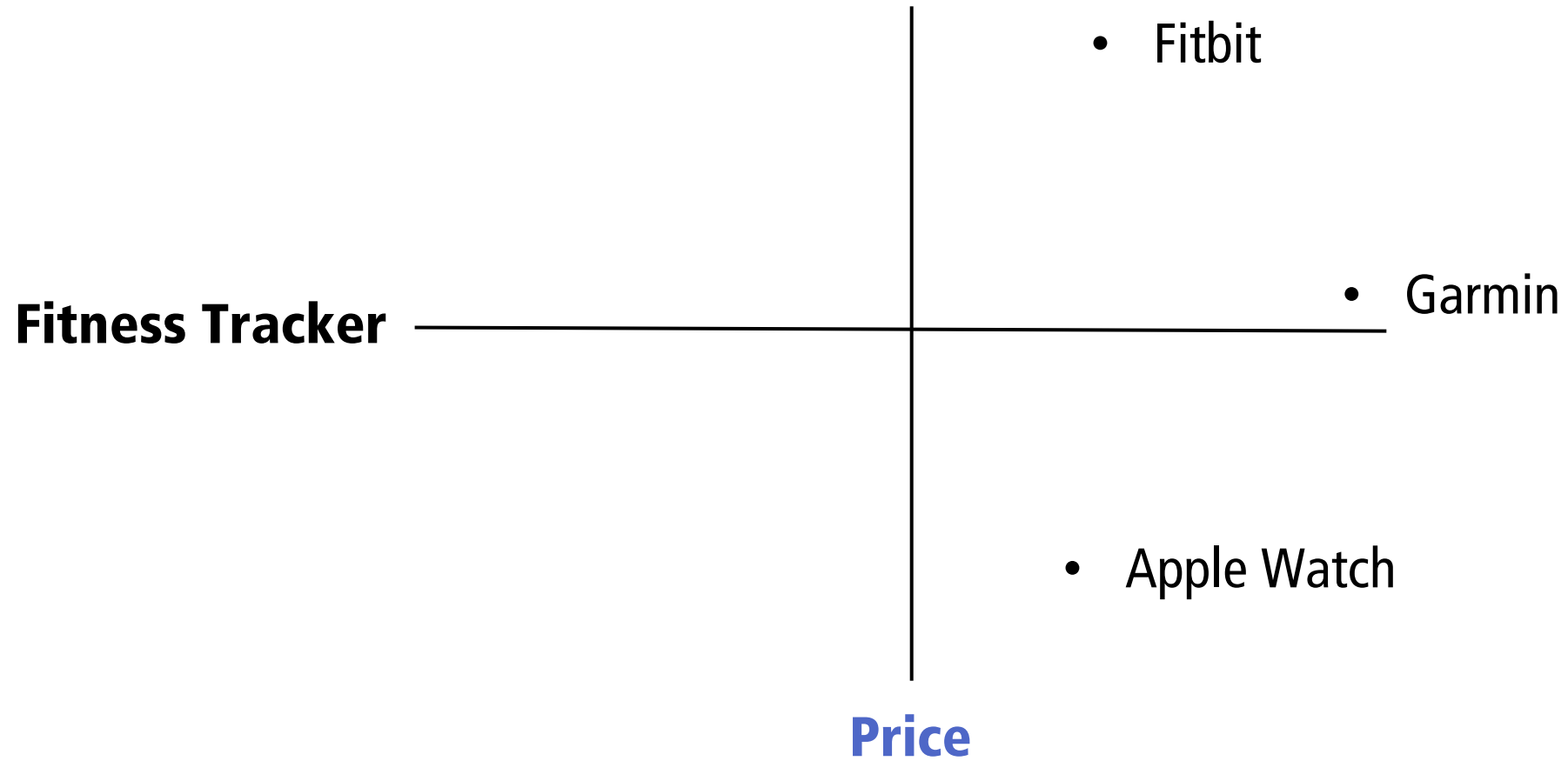
Perceptual Map for Apple Watch



EXERCISE, PERCEPTUAL MAP



P-MAP: JEWELRY+ FASHION



P-MAP: FITNESS + PRICE

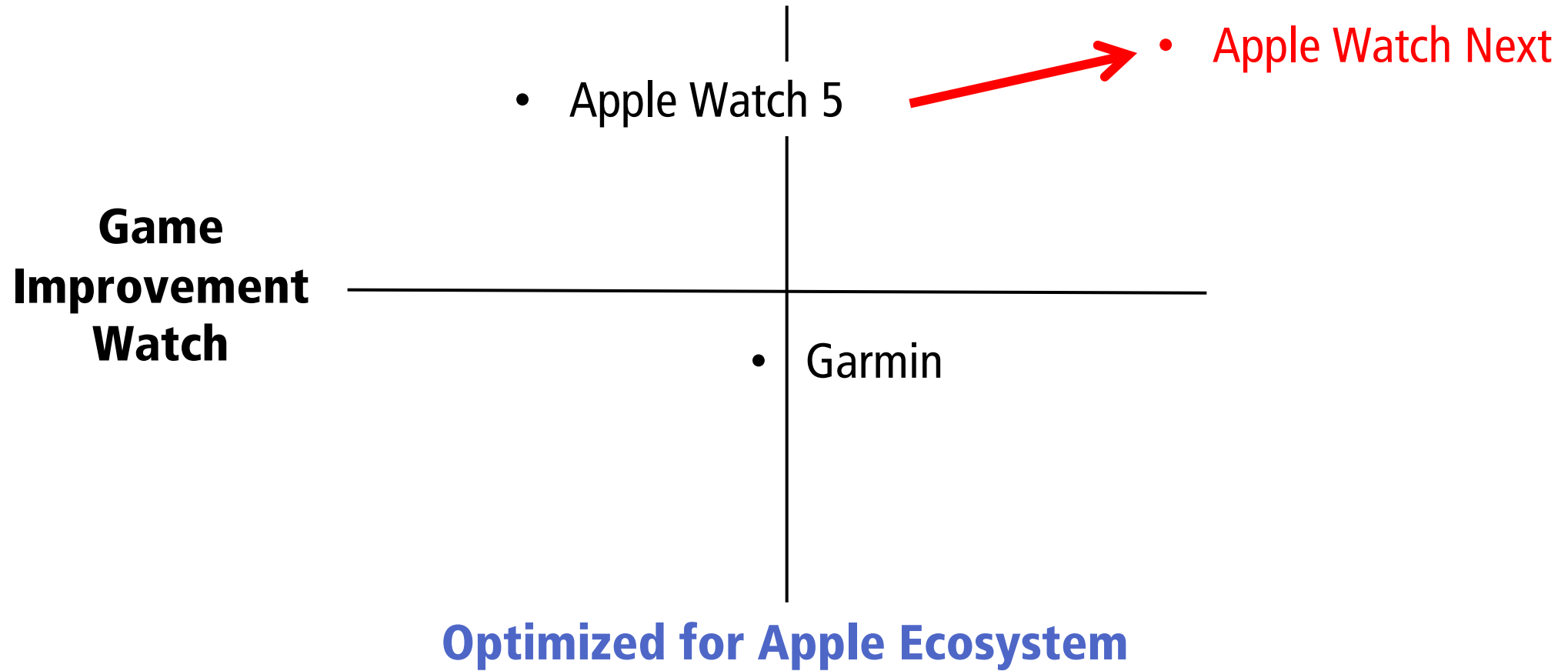
Smartwatch

- Apple Watch

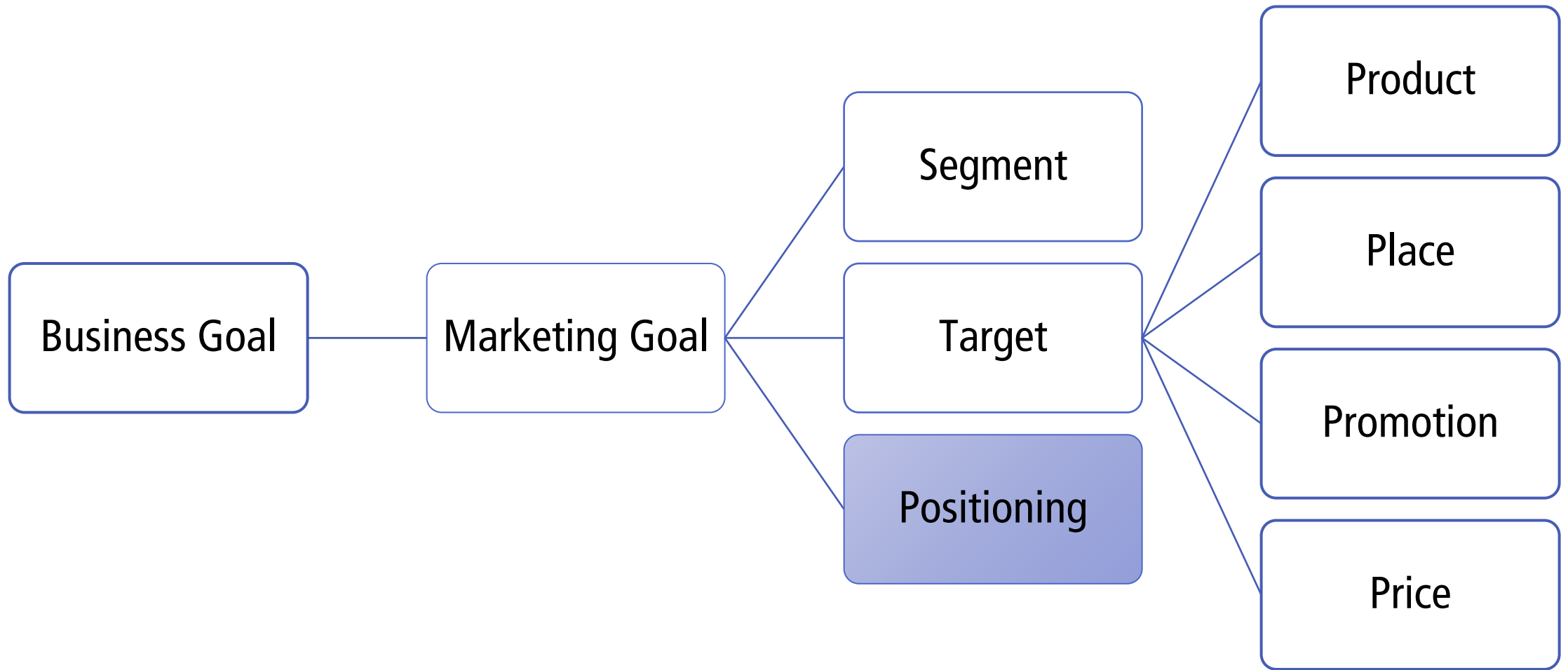
- Android Wear

Optimized for Apple Ecosystem

P-MAP: S-WATCH + APPLE ECOSYSTEM



P-MAP: GAME IMPROVEMENT



POSITIONING

For [target end user]
Who wants/needs [compelling reason to buy]
The [product name] is a [product category]
That provides [key benefit].
Unlike [main competitor],
The [product name] [key differentiation]

POSITIONING STATEMENT

For first-time computer buyers, the Samsung Chromebook is as sexy as the MacBook Air, but costs 80 percent less.



POSITIONING STATEMENT EXAMPLE

Memorable?

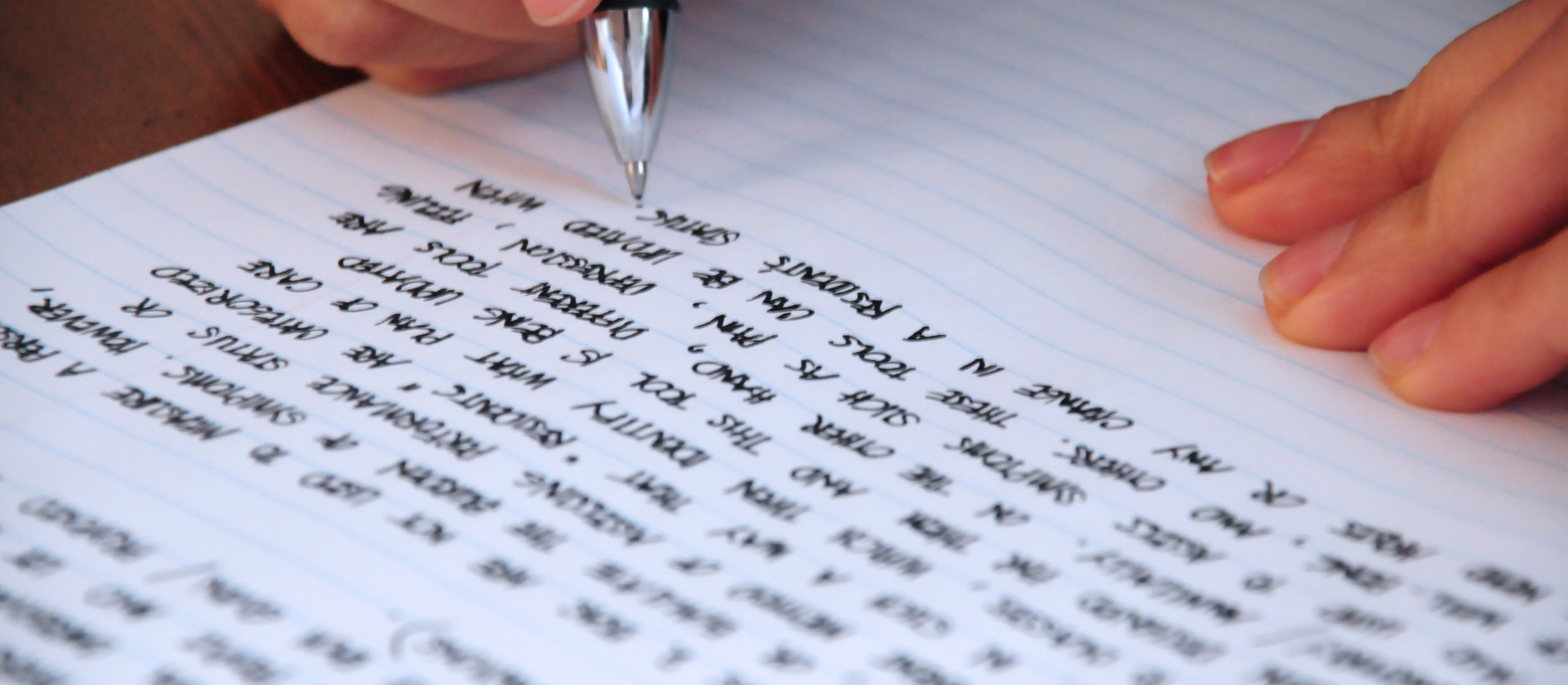
Unique?

Believable?

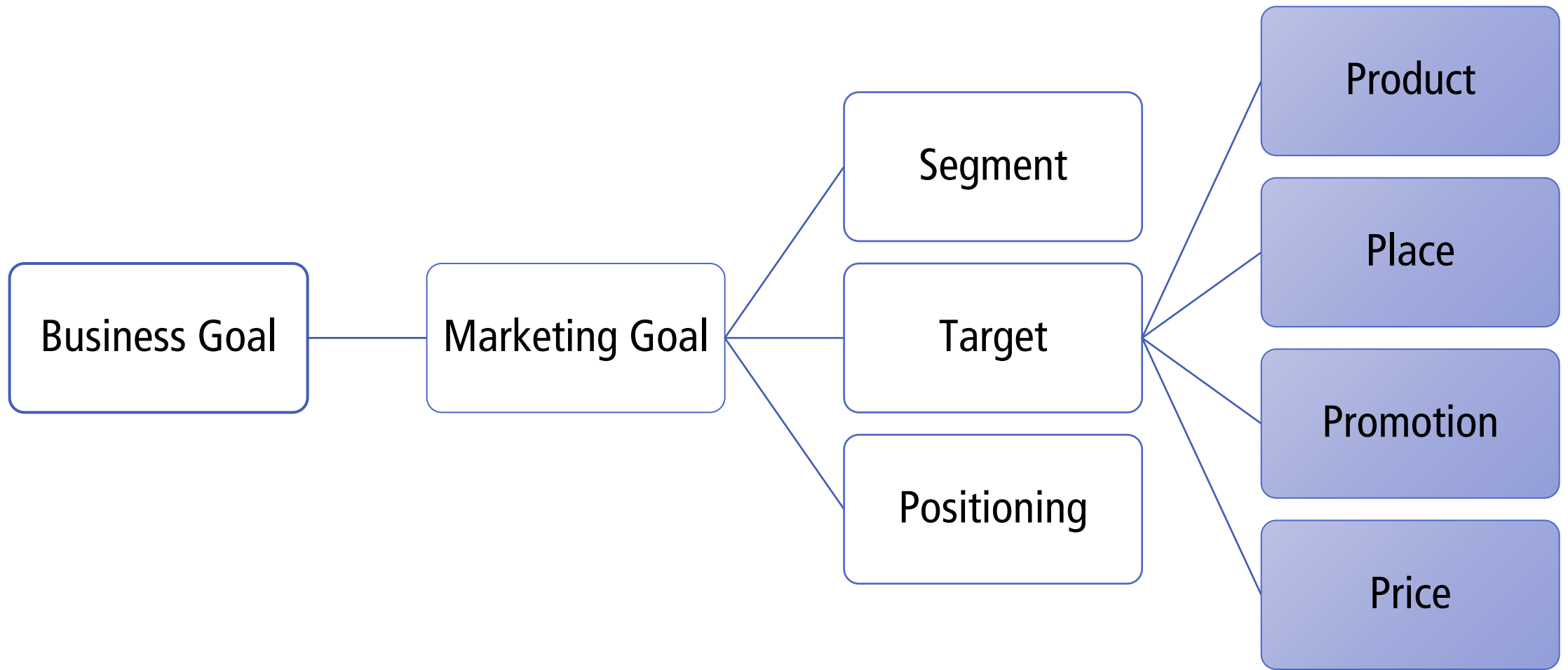
Actionable?

For first-time computer buyers, the Samsung Chromebook is as sexy as the MacBook Air, but costs 80 percent less.

EVALUATING POSITIONING STATEMENTS



EXERCISE, POSITIONING STATEMENT



FOUR P'S



EXERCISE, PROMOTIONAL TACTICS

The brick walls are there for a reason. The brick walls are not there to keep us out. The brick walls are a chance to show how badly we want something. They stop other people. Those who don't want it badly enough.

Randy Pausch, The Last Lecture

lewis@impactinterview.com

FINAL THOUGHT