Conjoint Analysis

Market Simulator with Tableau

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Question 1

To answer the question we assume that our Xiaomi smartphone is built with the **lowest attribute levels** which are:

- Screen = **LED**
- Sound = **Mono**
- Sim Card = **No Dual**
- Camera = **20 MP**
- Price = **$350**

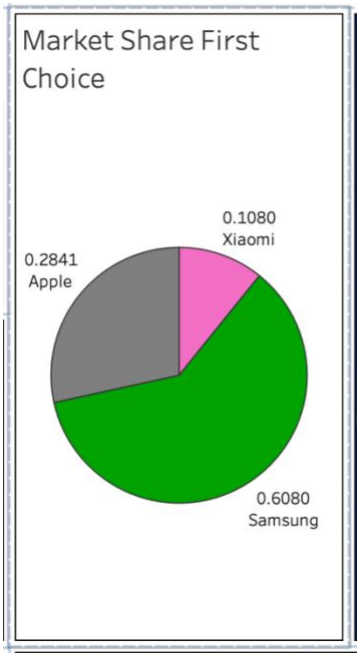
Our boss wants to know:

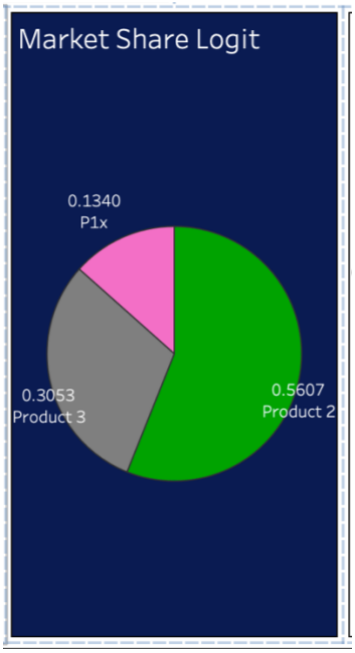
1. What is the **Preference Share** of this product using:
   - **First Choice** model
   - **Logit** model

2. If we were to **change the price** ($300, $400, $450), how would that impact **revenue**?

3. What price gives the **highest revenue**, and by how much does it increase?

1.1 Selected Xiaomi product is **P1b**, priced at **$350**:





➤ ***First Choice Model:***

Pie chart (**Market Share First Choice**) shows**:**

- **P1b (Xiaomi) = 10.80%**
- Samsung = 63.0%
- Apple = 26.41%

➤ ***Logit Model:***

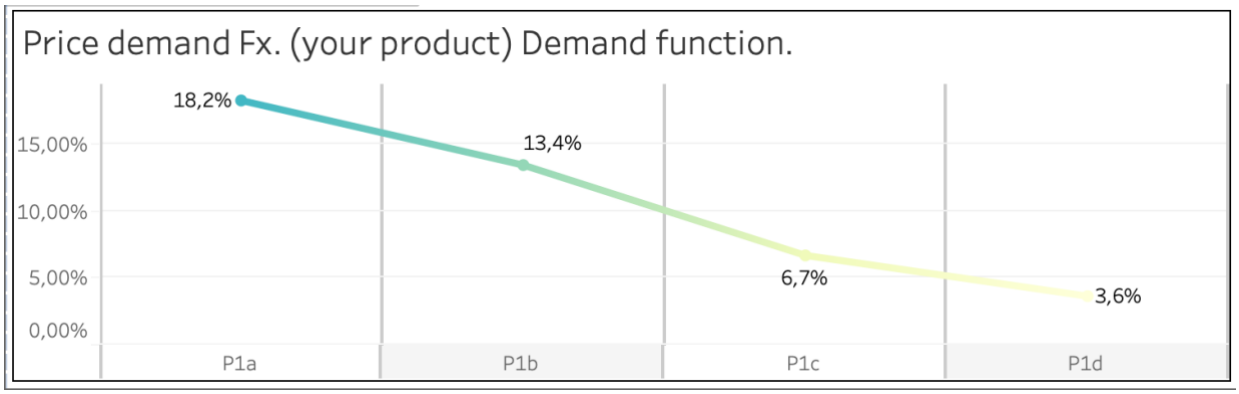
Pie chart **(Market Share Logit)** shows:

- **P1b (Xiaomi) = 13.40%**
- Product 2 (Samsung) = 50.07%
- Product 3 (Apple) = 36.53%

1.2 Revenue for each price level was calculated using the formula:

$$Revenue = Price \times Market\ volume \times Market\ share$$

where Markrt volume is 10 million smart phones in the EMEA-region.



Product	Price ($)	Logit Share (%)	Revenue (in million $)
P1a	300	18.2	300 × 10M × 0.182 = **546**
P1b	350	13.4	350 × 10M × 0.134 = **469**
P1c	400	6.7	400 × 10M × 0.067 = **268**
P1d	450	3.6	450 × 10M × 0.036 = **162**

1.3 Considering the revenue:

- Max Revenue at $300 = $546M
- Current Revenue at $350 = $469M
- Revenue Gain: $\$546M \times \$469M = +\$77M$

Conclusion:

- Xiaomi smartphone with the current low-end configuration at a price $350 would secure:
    - **10.8%** market share under a First-Choice model
    - **13.4%** market share under a Logit model
- At a price of **$350**, the estimated revenue is **$469 million**
- The **optimal price point** based on revenue is **$300**, generating an estimated **$546 million**, a **$77 million increase** over the base case

Question 2

To answer the question we are going to determine which **single attribute improvement** would yield the **highest revenue** for the new Xiaomi smartphone, assuming:

- Price is fixed at **$350**
- Market volume is **10 million units**
- Only one attribute (Screen, Sound, Sim Card, or Camera) can be upgraded from its base level

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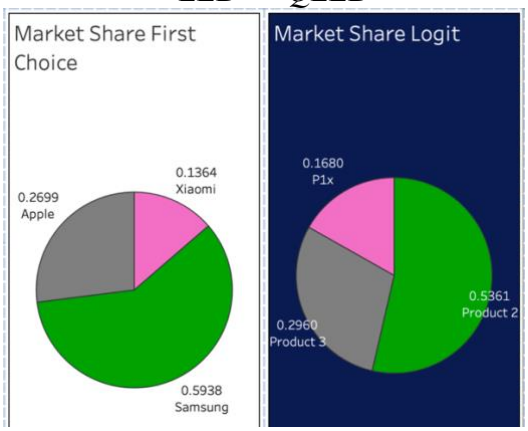
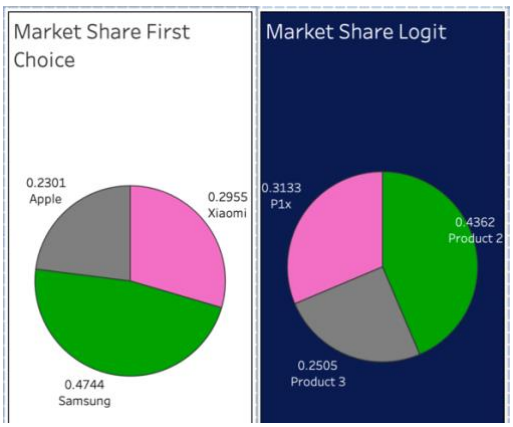
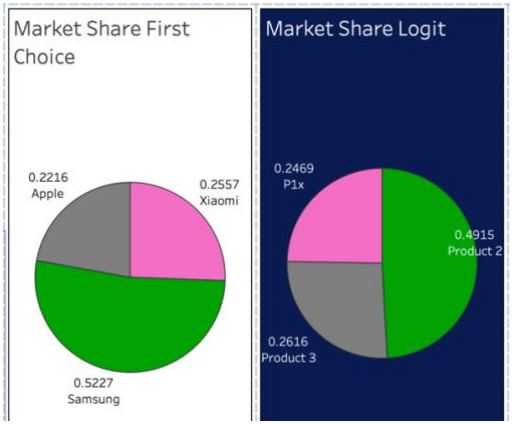
LED → QLED



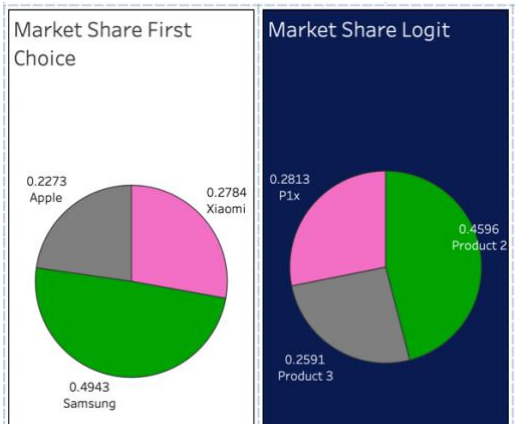
Mono → Stereo:



No Dual → Dual:



20 MP → 60 MP:



Attribute	New level	First Choice share(%)	Logit share (%)	Revenue (M $)
Screen	QLED	13.64	16.80	350 × 10M × 0.168 = 588
Sound	Stereo	29.55	**31.33**	**350 × 10M × 0.3133 = 1,096.55**
Sim-card	Dual	25.57	24.69	350 × 10M × 0.2469 = 846.15
Camera	60MP	27.84	28.13	350 × 10M × 0.2813 = 984.55

Conclusion:

Among the single attribute improvements evaluated, upgrading the **Sound** from **Mono to Stereo** yields the **highest revenue**, with a Logit share of **31.33%** and an estimated revenue of **$1,096.55 million**.

Question 3

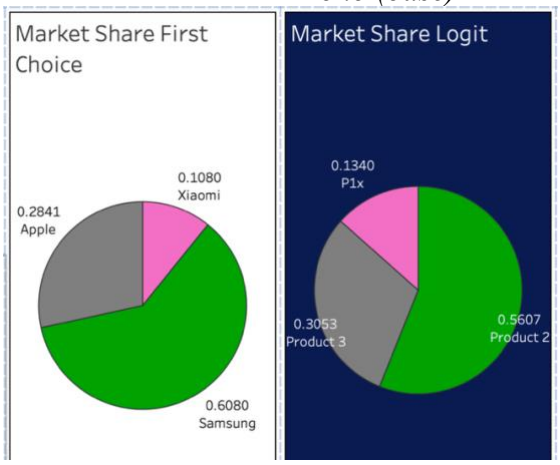
R&D department gives us the opportunity to improve **two attributes**: **Screen** and **Sound**. Each improvement comes with a **cost per unit**, and the goal is to find:

1. **Which configuration gives the highest revenue?**
2. **Which configuration gives the highest profit**, assuming:
    - Base production cost = **$200**
    - Market volume = **10 million smartphones**

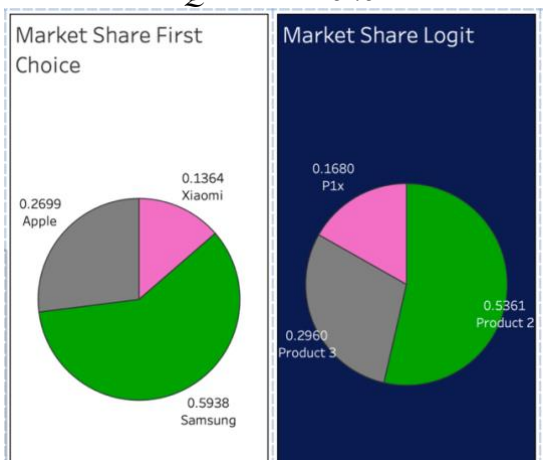
The following table shows by how much the manufacturing cost per unit will increase for different attribute improvements.

	Screen	Manufacturing cost per unit
Improve from LED to	QLED	+20$
Improve from LED to	OLED	+40$
	Sound	**Manufacturing cost per unit**
Improve from Mono to	Stereo	+10$
Improve from Mono to	Atmos	+40$

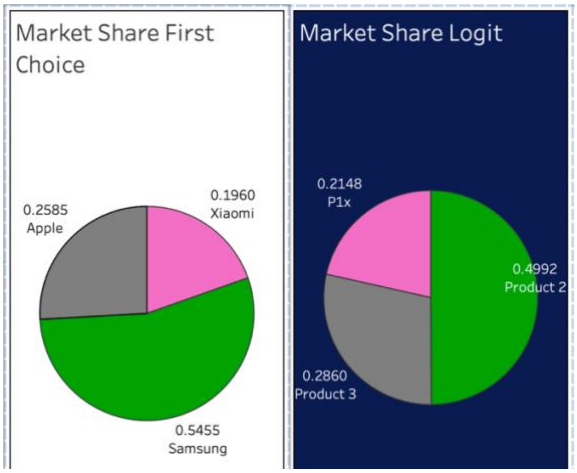
LED + Mono (base)



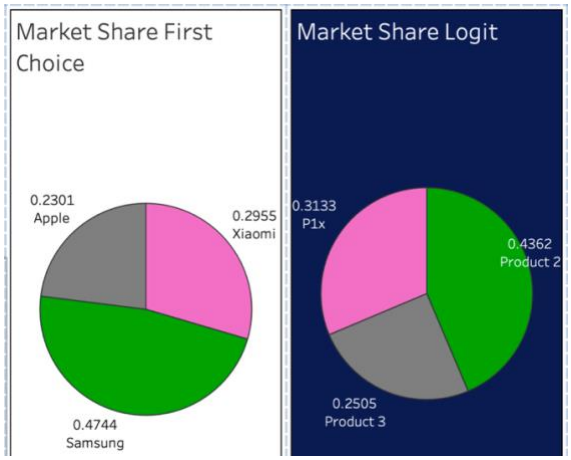
QLED + Mono



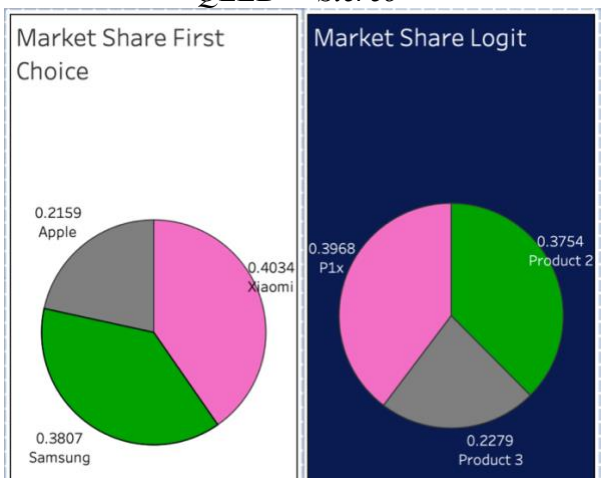
OLED + Mono



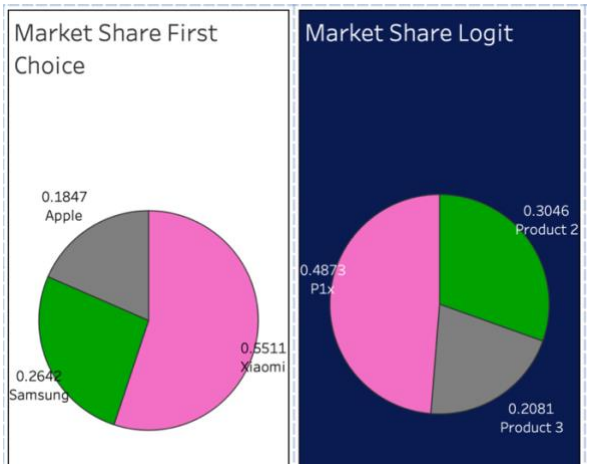
LED + Stereo



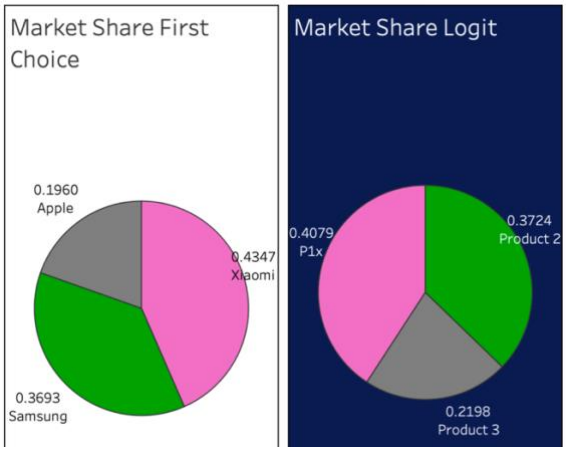
QLED + Stereo



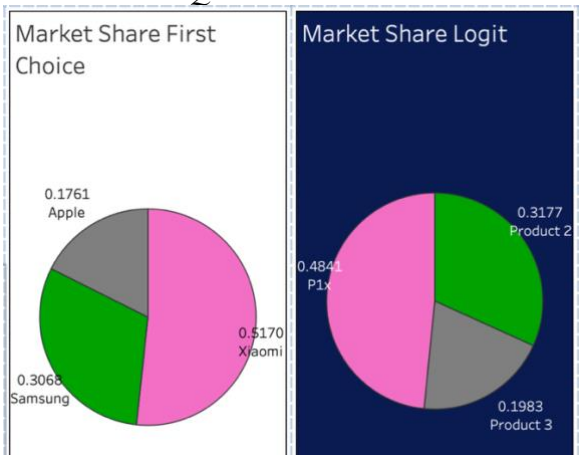
OLED + Stereo



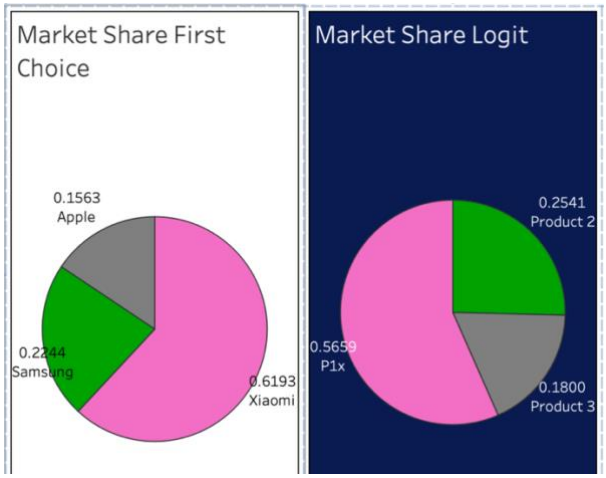
LED + Atmos



QLED + Atmos



OLED + Atmos



Screen	Sound	Cost($)	First Choice share(%)	Logit share (%)	Revenue (M$)	Profit(M$)
LED	**Mono**	200	10.80	13.40	350 × 10M × 0.134 = 469	(350-200) × 10M × 0.134 = 201
QLED	**Mono**	220	13.64	16.80	350 × 10M × 0.168 = 588	(350-220) × 10M × 0.168 = 218.4
OLED	**Mono**	240	19.60	21.48	350 × 10M × 0.2148 = 751.8	(350-240) × 10M × 0.2148 = 236.3
LED	**Stereo**	210	29.55	31.33	350 × 10M × 0.3133 = 1,096.6	(350-210) × 10M × 0.3133 = 438.6
QLED	**Stereo**	230	40.34	39.68	350 × 10M × 0.3968 = 1,388.8	(350-230) × 10M × 0.3968 = 476.2
OLED	**Stereo**	250	55.11	48.73	350 × 10M × 0.4873 = 1,705.6	(350-250) × 10M × 0.4873 = **487.3**
LED	**Atmos**	240	43.47	40.79	350 × 10M × 0.4079 = 1,427.6	(350-240) × 10M × 0.4079 = 448.7
QLED	**Atmos**	260	51.70	48.41	350 × 10M × 0.4841 = 1,694.4	(350-260) × 10M × 0.4841 = 435.7
OLED	**Atmos**	280	**61.93**	**56.59**	350 × 10M × 0.5659 = **1,980.7**	(350-280) × 10M × 0.4841 = 396.1

Conclusion:

- To **maximize revenue**, the optimal configuration is:
  - **OLED screen + Atmos sound**
  - Estimated Revenue: **$1,980.7 million**
  - Cost per unit: $280

- To **maximize profit**, the optimal configuration is:
  - **OLED screen + Stereo sound**
  - Estimated Profit: **$487.3 million**
  - Cost per unit: $250

Launching the **OLED + Stereo** model is the best balance of **high market share and optimal profitability**. This setup outperforms all others in profit, while still capturing nearly half the market.

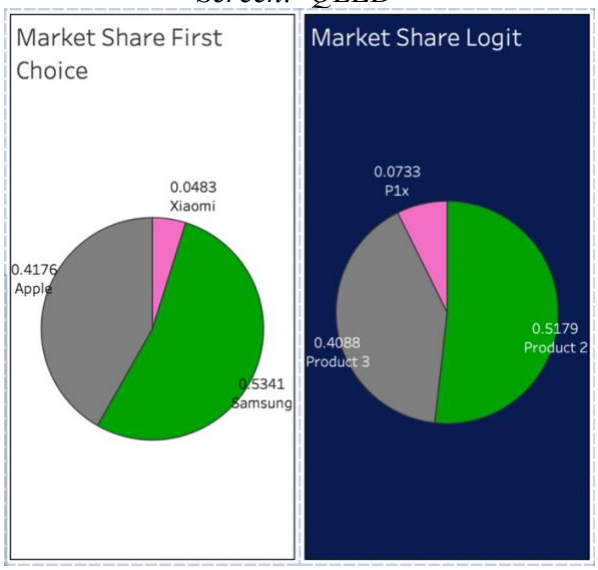
Question 4

Two key competitor changes have occurred:

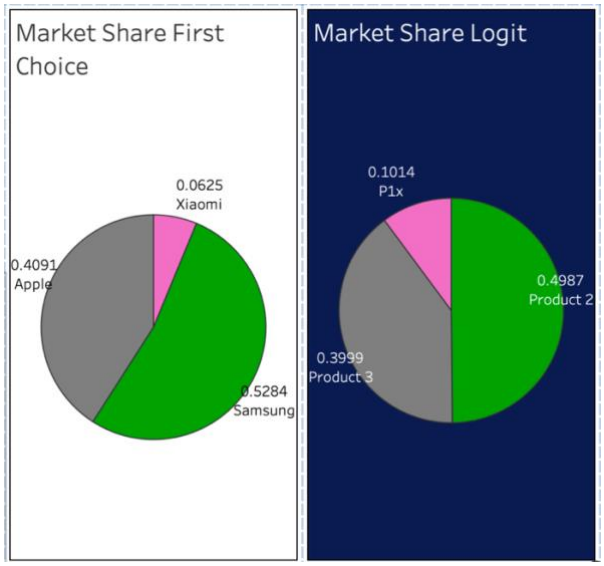
- **Apple** upgrades its camera to **60 MP**, keeping the price at **$450**.
- **Samsung** cuts its price by **$50**, bringing it to **$350**.

Xiaomi can **only upgrade one attribute** of its base model. The goal is to identify which upgrade will **maximize profit**.

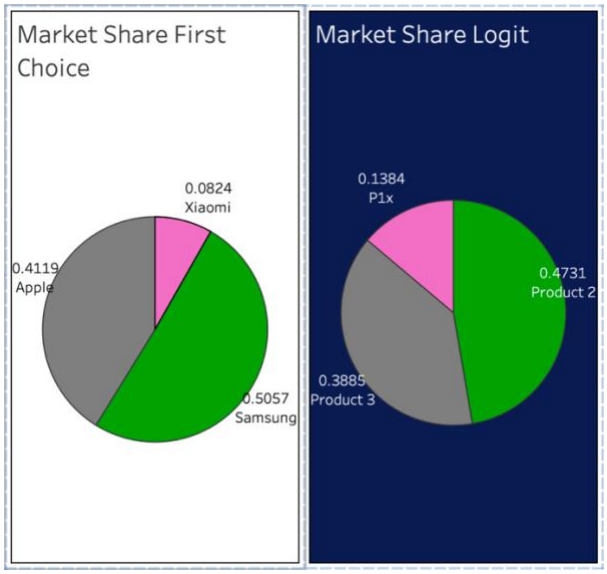
Screen: QLED



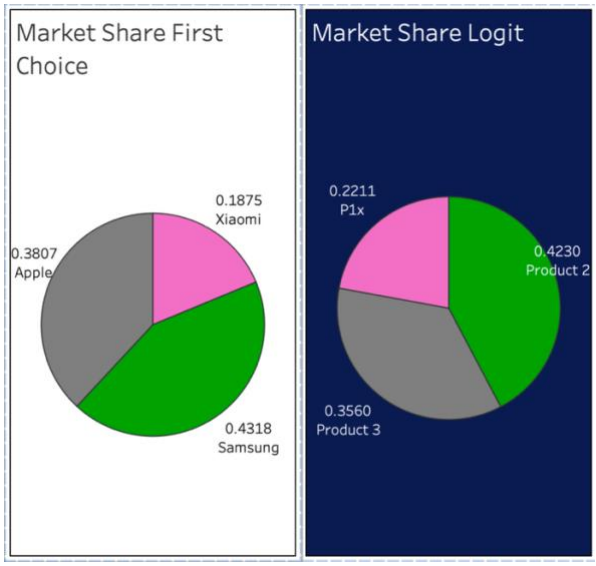
Screen: OLED



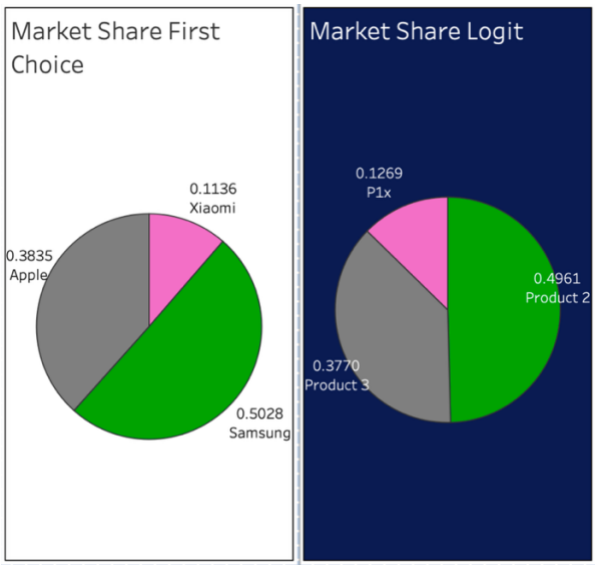
Sound: Stereo



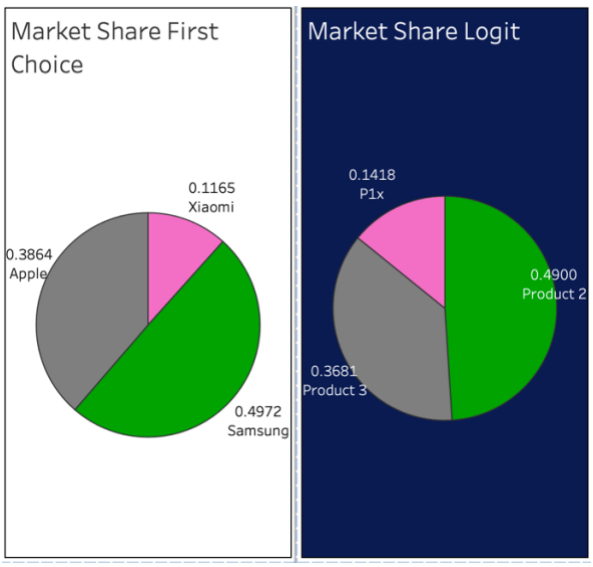
Sound: Atmos



Dual Sim



Camera: 60MP



New level	Cost ($)	First Choice share(%)	Logit share (%)	Revenue (M$)	Profit(M$)
QLED	220	4.83	7.33	350 × 10M × 0.0733 = 256.55	(350-220) × 10M × 0.134 = 95.29
OLED	240	6.25	10.14	350 × 10M × 0.1014 = 354.90	(350-240) × 10M × 0.168 = 111.54
Stereo	210	8.24	13.84	350 × 10M × 0.1384 = 484.40	(350-210) × 10M × 0.2148 = 193.76
Atmos	240	**18.75**	**22.11**	350 × 10M × 0.2211 = **773.85**	(350-240) × 10M × 0.3133 = **243.21**
DualSim	220	11.36	12.69	350 × 10M × 0.1269 = 444.15	(350-220) × 10M × 0.3968 = 164.97
60MP	260	11.65	14.18	350 × 10M × 0.1418 = 496.30	(350-260) × 10M × 0.4873 = 127.62

Conclusion:

In light of heightened competitive activity, Xiaomi's best strategy is to:

Upgrade Sound from Mono to Atmos

This option results in:

- The **highest profit** among all single-attribute upgrades: **$243.2 million**
- A strong **Logit market share** of **22.11%**

Launching Xiaomi's new smartphone with **Atmos sound**, priced at **$350** is the most profitable single-attribute upgrade in this competitive market.