

## Case 3

**Input :** Modified Advertisement, Product, Category, Selling Point Options

- **Option 1:** Correct selling point - The actual selling points for the specific product in the advertisement
- **Option 2:** Same category but different product - Selling points from a different product in the same category
- **Option 3:** Same category and same/similar product - Same or similar product (sharing similar keywords) in the same category
- **Option 4 & 5:** Different categories - Selling points from products in completely different categories

Summary for case 3

**All models struggled with product identification, with 55-70 mismatches across models**

**Most errors involved selecting selling points from the same category but different product (38-40%)**

**Common confusion pairs included car/bike and air conditioner/air purifier**

**Visual similarity between products led to higher confusion rates**

**Products like baby care, clothing items, and jewelry showed high confusion even when correctly identified**

**Word overlap similarity between correct and selected selling points was consistently low (around 0.13)**

**Bi-directional confusion occurred for product pairs with functional or visual similarities**

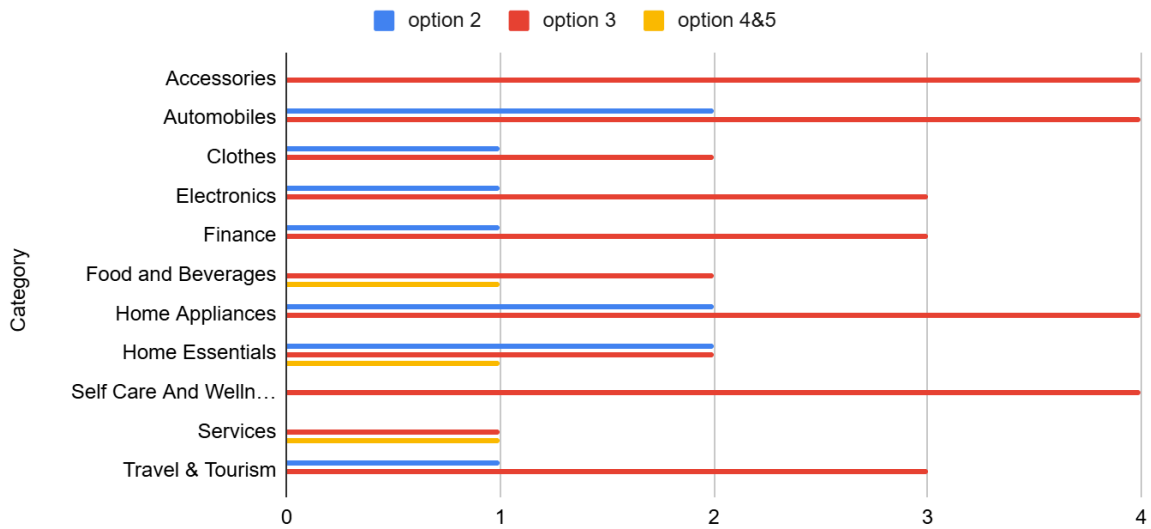
llava\_next (55 mismatches)

**There are no cases in the 350 images where a product is part of two different categories**

Count for each option

- **Option 2 (Same Category, Different Product):** 10 cases (40.6%)
- **Option 3 (Same Category, Same Product):** 32 cases (46.9%)
- **Option 4/5 (Different Category):** 3 cases (12.5%)

### Case 3, llava\_next, category distribution across options



### Different Category Mismatches

1. **Services** → **Automobiles: 1**
2. **Food and Beverages** → **Home Appliances: 1**
3. **Home Essentials** → **Self Care And Wellness: 1**

### Same Category, Different Product Mismatches

Original	Selected	Count
air purifier	air conditioner	1
bank services	bank (payment platform)	1
bike	car	1
car	bike	1
clothes	clothes (shorts)	1
delivery services	car	1
disinfectant (floor cleaner)	cloth disinfectant	1
facial tissues	detergent	1
fridge	air conditioner	1
mobile	laptop	1

### Categories with misidentified products

- **bi-directional confusion between some product pairs:**

- **Car and Bike (confusion goes both ways)**
- **Air purifier and Air conditioner (confusion goes both ways)**
- **Visual similarity between products (like different types of cleaning products)**
- **Functional relationships (delivery services associated with cars)**

### Same Category, Same Product

- Baby Care products - difficulty in matching correct selling points even when the product is correctly identified
- Products with potentially similar visual appearances in advertisements show high confusion rates: Different clothing types, Jewelry and watches

### Count of misidentified products

Count	Pairs
3	Car = Car, Baby care = Baby care, Jewelry = Jewelry
2	Milk = Milk, Clothes = Clothes, Mobile = Mobile, Bank services = Bank services, Air conditioner = Air conditioner, Airline = Airline
1	Laptop = Laptop, Water purifier = Water purifier, Shampoo = Shampoo, Hotel = Hotel, Consulting firm = Consulting firm, Insurance = Insurance, Detergent = Detergent, Facial tissues = Facial tissues, Watch = Watch

### Similarity Scores of selling points

Word Overlap similarity is consistently low across both options:

**Average Similarity when Category Matches: 0.1393**

**Average Similarity when Category Differs: 0.1185**

**Mean Similarity: 0.1379**

**Median Similarity: 0.1099**

**Standard Deviation: 0.1359**

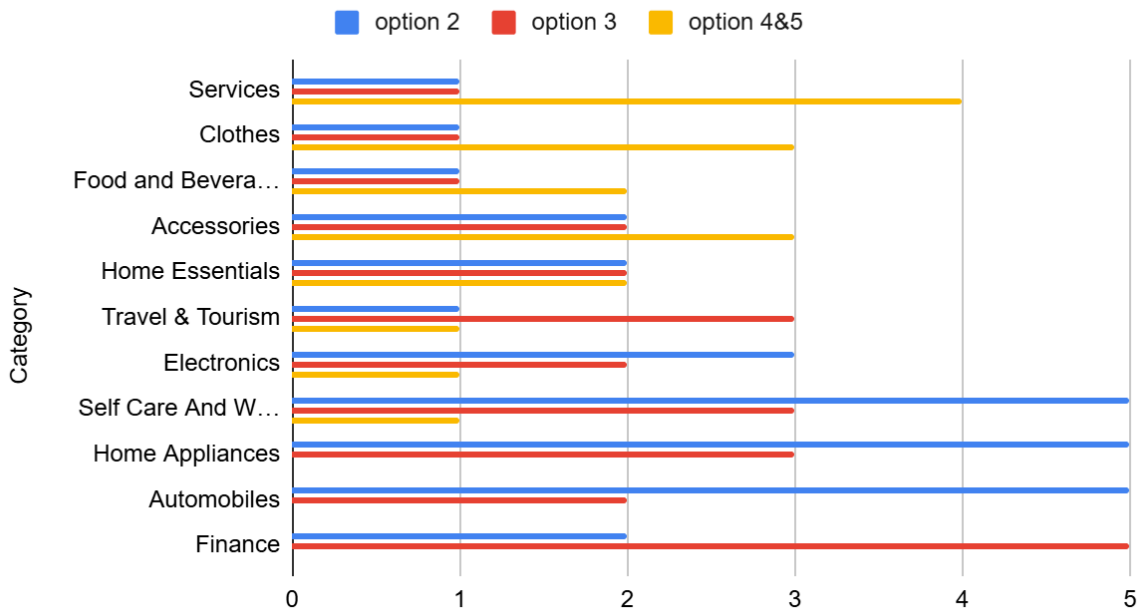
### llava\_onevision (70 mismatches)

#### Count for each option

- **Option 2 (Same Category, Different Product): 28 cases (38.2%)**

- **Option 3 (Same Category, Same Product):** 25 cases (32.4%)
- **Option 4/5 (Different Category):** 17 cases (29.4%)

### Case 3, llava\_onevision, category distribution across options



### Different Category Mismatches

- Accessories → Home Appliances: 2
- Services → Automobiles: 1
- Services → Electronics: 1
- Services → Finance: 1
- Self Care And Wellness → Home Appliances: 1

### Same Category, Different Product Mismatches

Original	Selected	Count
car	bike	4
air conditioner	air purifier	3
mobile	laptop	2
baby care	skin care	1
air purifier	air conditioner	1
alcohol	ice cream	1

bank services	bank (payment platform)	1
baby care	soap	1

### Count of misidentified products

Category	Count
Clothes	4
Automobiles	4
Electronics	3
Home Essentials	4
Home Appliances	5
Finance	3
Food and Beverages	1
Self Care And Wellness	1
Services	1
Travel & Tourism	0
Accessories	0

### Same Category, Same Product

#### Count of misidentified products

Count	Pairs
3	Car = Car, Baby care = Baby care, Jewelry = Jewelry
2	Milk = Milk, Clothes = Clothes, Mobile = Mobile, Bank services = Bank services, Air conditioner = Air conditioner, Airline = Airline
1	Laptop = Laptop, Water purifier = Water purifier, Shampoo = Shampoo, Hotel = Hotel, Consulting firm = Consulting firm, Insurance = Insurance, Detergent = Detergent, Facial tissues = Facial tissues, Watch = Watch

## Similarity Scores of selling points

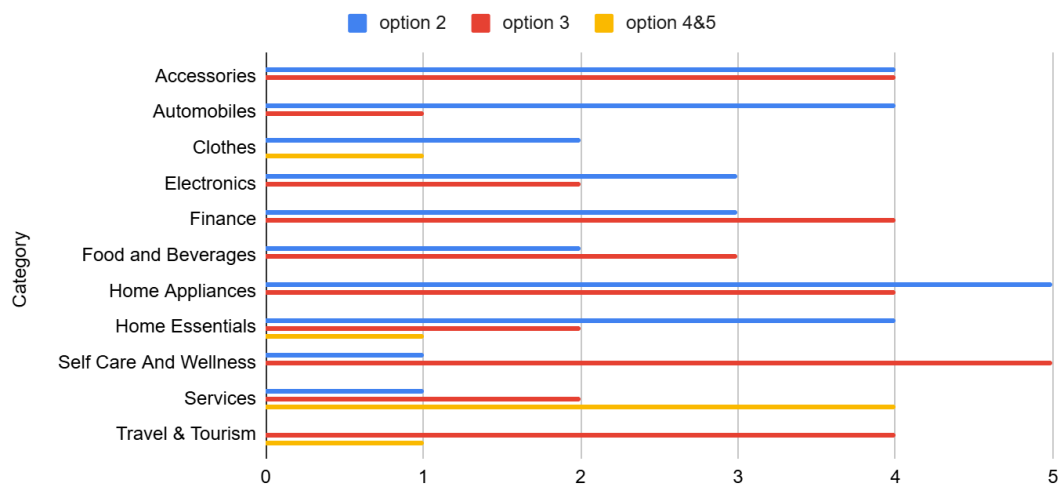
- Average Similarity when Category Matches: 0.1204
- Average Similarity when Category Differs: 0.1026

## qwen2.5 (67 mismatches)

### Count for each option

- **Option 4/5 (Different Category):** 7 cases
- **Option 2 (Same Category, Different Product):** 26 cases
- **Option 3 (Same Category, Same Product):** 31 cases

Case 3, qwen2.5, category distribution across options



## Different Category Mismatches

- Services → Automobiles: 2
- Services → Electronics: 1
- Clothes → Self Care And Wellness: 1
- Home Essentials → Self Care And Wellness: 1
- Services → Home Appliances: 1

## Same Category, Different Product Mismatches

Original	Selected	Count
car	bike	4
air conditioner	air purifier	3
bank services	bank (payment platform)	2

clothes	clothes (sports shorts)	2
mobile	laptop	2
clothes	clothes (shorts)	1
clothes	clothes (winter jacket)	1
air purifier	air conditioner	1

- The most common mismatch is between Car and Bike (4 instances), where both are transportation methods but different vehicle types.
- Air conditioner and Air purifier are confused in both directions maybe because these home appliances have visual or functional similarities.
- This shows that the model can identify general categories but sometimes struggles with fine-grained distinctions
- Might be confusing visually similar products
- Sometimes selects a more specific sub-category within the correct general category

### Same Category, Same Product

Count	Products
4	baby care
3	air conditioner, bank services, jewelry
2	airline, detergent, hotel, milk
1	car, coffee, consulting firm, insurance, laptop, mobile, network provider, shampoo, watch, water purifier

## Case 4

**Input :** Modified Advertisement, Product, Category, Selling Point Options

- **Option 1:** Correct selling point - The actual selling points for the specific product in the advertisement
- **Option 2:** Same category but different product - Selling points from a different product in the same category
- **Option 3, 4 & 5:** Different categories - Selling points from products in completely different categories

## Summary for case 4

Models showed higher error rates when distinguishing between categories  
Qwen2.5 had 48 mismatches with 69.1% being same category/different product errors

Llava\_onevision had 53 mismatches with higher cross-category confusion (31 cases)

Llava\_next had 31 mismatches with a 50/50 split between same category and different category errors

Car→bike was consistently the most common product mismatch (5-7 instances)

Services category had high confusion with travel, automobiles, and electronics

Similarity scores were slightly higher for same-category mismatches than different-category mismatches

## Qwen2.5 (48 mismatches)

Count for each option

- **Option 2 (Same Category, Different Product):** 32 cases (69.1%)
- **Option 3/4/5 (Different Category):** 16 cases (30.9%)

case 4, qwen 2.5, category distribution over options



## Different Category

Top Category Mismatches:

Accessories → Home Appliances: 2

Services → Automobiles: 1



Services → Travel & Tourism: 1  
Food and Beverages → Home Essentials: 1  
Food and Beverages → Home Appliances: 1

## Same Category

Top Product Mismatches when Category IS EQUAL (Option 2):

car → bike: 7  
mobile → laptop: 2  
clothes → clothes (winter jacket): 2  
air conditioner → air purifier: 2  
clothes → clothes (sports shorts): 2  
bank services → bank (payment platform): 2  
airline → hotel: 1  
delivery services → logistics: 1  
water purifier → air purifier: 1  
shampoo → baby care: 1

Category	Option 2
Automobiles	7
Clothes	7
Self Care And Wellness	3
Home Appliances	3
Travel & Tourism	3
Electronics	2
Home Essentials	2
Finance	2
Food and Beverages	1
Services	2
Accessories	0

## Similarity Scores

Average Similarity for Option 2 (Same Category, Different Product): 0.1130

Average Similarity for Options 3,4,5 (Different Categories): 0.0922

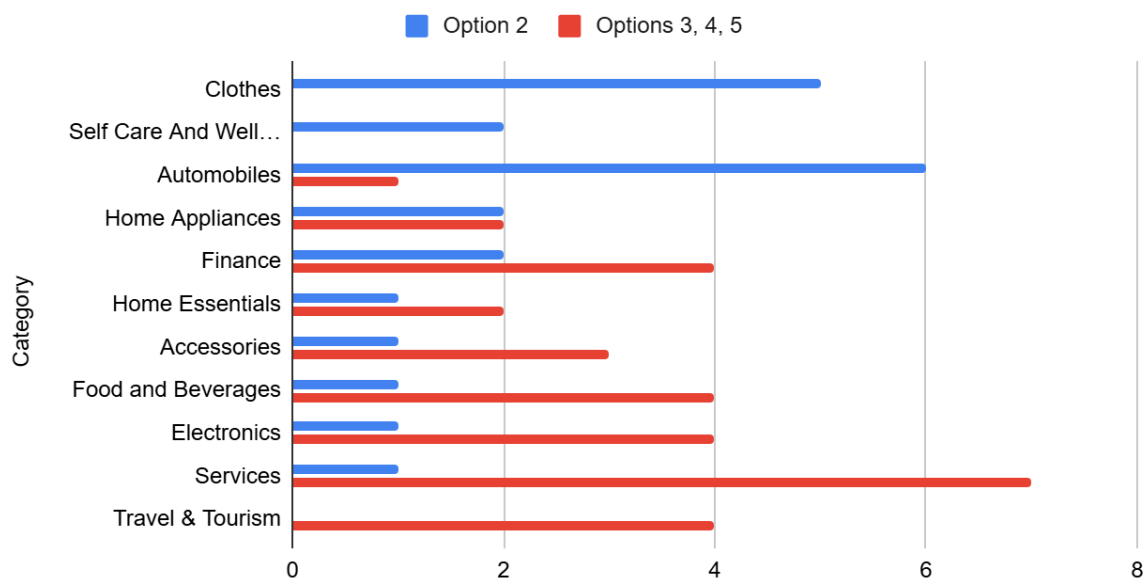
## llava\_onevision (53 mismatches)

Count for each option

- **Option 2 (Same Category, Different Product):** 22 cases
- **Option 3/4/5 (Different Category):** 31 cases

The model has more cases where it did not even pick the right category

case 4, llava\_onevision, category distribution over options



### Different Category

#### Top Category Mismatches:

- Services → Travel & Tourism: 2**
- Services → Automobiles: 2**
- Electronics → Automobiles: 2**
- Accessories → Clothes: 2**
- Home Essentials → Self Care And Wellness: 2**

### Same Category

#### Product mismatches

- car → bike: 6
- air conditioner → air purifier: 2
- delivery services → logistics:

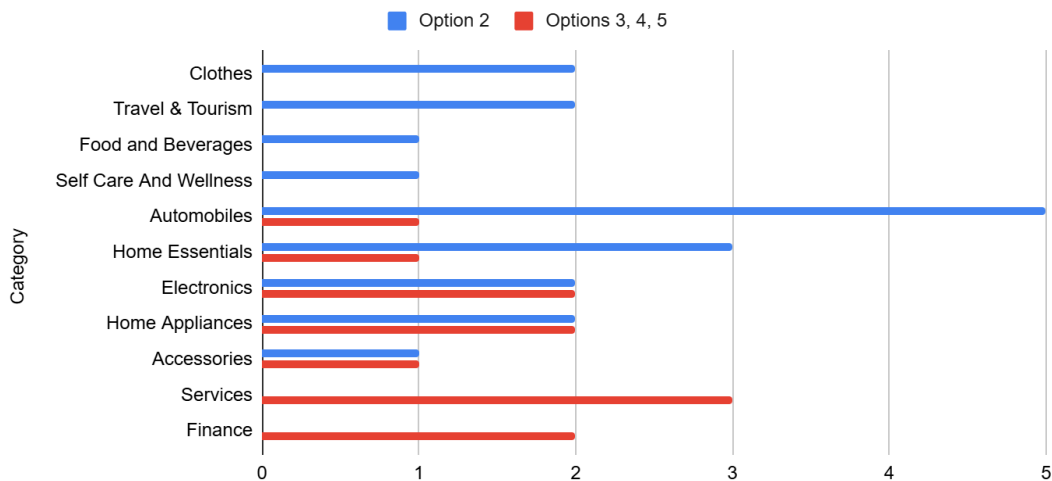
- mobile → laptop: 1
- clothes → clothes (winter jacket): 1
- baby care → shampoo: 1
- clothes (winter jacket) → clothes: 1
- milk → coffee: 1
- clothes → clothes (sports shorts): 1
- washing (fabric softner) → cloth disinfectant: 1

## lava\_next (31 mismatches)

Count for each option

- **Option 2 (Same Category, Different Product):** 19 cases(50%)
- **Option 3/4/5 (Different Category):** 12 cases (50%)

case 4, llava\_next, category distribution over options



## Different Category

**Top Category Mismatches:**

**Electronics → Automobiles: 2**

**Services → Travel & Tourism: 1**

**Automobiles → Food and Beverages: 1**

**Services → Home Appliances: 1**

**Finance → Accessories: 1**

## Same Category

**car → bike: 5**

**mobile → laptop: 2**

**baby care → skin care: 1**

**clothes → clothes (sports shorts): 1**

**washing (fabric softner) → cloth disinfectant: 1**

**nutrition drink → milk: 1**

**jewelry → watch: 1**

**air conditioner → air purifier: 1**

**fridge → air conditioner: 1**

**facial tissues → disinfectant (floor cleaner): 1**