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In this report, I compare two smartphone ranking systems: one based on personal perceptions of the brand and model (Phase 1), and the other based on technical attributes and the Multi-Attribute Utility Theory (MAUT) model (Phase 3). The MAUT model incorporates several key technical attributes—such as network, display, platform, and battery (and others)—into a scoring function that objectively ranks the smartphones. The comparison between the two rankings provides insight into how personal biases differ from a more data-driven analysis.

**Comparison Between Personal Ranking and MAUT Model**

**Personal Ranking**:

1. iPhone 16 Pro Max = 8
2. Galaxy A16 5G = 7
3. Xiaomi Redmi A3 Pro = 6
4. Huawei Pura 70 Ultra = 5
5. Honor 200 Smart = 4
6. Asus Zenfone 11 Ultra = 3
7. OPPO K12 Plus = 2
8. LG W31 = 1

**MAUT Model Scores**:

1. Galaxy A16 5G = 430
2. iPhone 16 Pro Max = 429
3. OPPO K12 Plus = 411
4. Xiaomi Redmi A3 Pro = 406
5. Honor 200 Smart = 389
6. Huawei Pura 70 Ultra = 369
7. Asus Zenfone 11 Ultra = 357
8. LG W31 = 211

**The Best Smartphone Comparison: Personal Ranking**: The iPhone 16 Pro Max was ranked as the best. **MAUT Model**: The Galaxy A16 5G scored the highest (430), slightly ahead of the iPhone 16 Pro Max (429).

**Conclusion**: The **best** smartphone is **not the same** in both rankings. According to my personal preference, the iPhone ranked highest, but based on the technical attributes, the Galaxy A16 5G took the lead.

**The Worst Smartphone Comparison Personal Ranking**: The LG W31 as the worst smartphone. **MAUT Model**: The LG W31 also scored the lowest in the MAUT model with a score of 211.

**Conclusion**: The **worst** smartphone is **the same** in both rankings.

**Correct Preference Relations** There are **28** possible pairwise comparisons between the 8 smartphones, based on the fact that, with 8 alternatives, the number of unique pairs of alternatives can be calculated using the formula for combinations: C(n,2)=n(n−1)/2. Where:

* n=8 (the number of smartphones)
* So, C(8,2)=8(8−1)/2=28 pairwise comparisons.

Each pair represents a comparison between two smartphones to see if their relative order is consistent between your personal ranking and the MAUT model. After comparing the two rankings we have 18 **Correct preferences** and result that 10 comparisons were inconsistent between the personal and MAUT rankings (**incorrect preferences)**. Let's check a few pairs to clarify:

**Personal ranking**: iPhone 16 Pro Max = 8, Galaxy A16 5G = 7 **MAUT model**: iPhone 16 Pro Max = 429, Galaxy A16 5G = 430 Here, the relative order flips, so this would be an **incorrect preference**. However: **Personal ranking**: iPhone 16 Pro Max = 8, LG W31 = 1 **MAUT model**: iPhone 16 Pro Max = 429, LG W31 = 211 Both rankings agree that the iPhone is better than the LG W31, so this would be a **correct preference**. This differences arise because personal preferences often consider subjective factors like brand loyalty and past experience. In contrast, the MAUT model is purely based on technical specifications. The percentage of incorrect preference relations is calculated by dividing the number of incorrect relations by the total number of comparisons:

Percentage of incorrect preferences=10/28×100≈35.71%

A 35.71% error rate means that over a third of your initial preferences do not align with the objective evaluation from the MAUT model.

At the end one way to improve the model might be to revisit the importance ratings you have assigned to each technical attribute. For example, if you value brand reputation or aesthetics more than technical features, these elements could be incorporated into the model.