

Review Article

Conjoint Analysis and its applications in Marketing Research

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Abstract - In this paper we will discuss about conjoint analysis and how it can be used by companies to make feature set selection to design their product or use differential pricing for different features in a product.

Keywords - Coefficient spread, Conjoint analysis, Marketing research, Product design, Utility.

I. INTRODUCTION

Conjoint analysis is a technique that can be used in marketing research to understand consumer preferences and choice of features in a product. Many important product decisions can be made using this technique to optimize for user engagement and revenue. For example, consider a case for a product with four features A, B, C and D. After running a conjoint analysis, the company finds that people prefer feature A the most followed by B then C then D. With this information, the company may decide to place feature A behind a pay wall to increase revenues and offer B, C and D as free to get new users. This analysis also reflects the trade-off the users are willing to make to be able to use a particular feature.

II. TYPES OF CONJOINT ANALYSIS

There are many kinds of conjoint analysis. The major ones used include the following:

1. Choice Based Conjoint Analysis: In this the user is made to choose between sets of features of products. This is used to understand the trade-off that the user considers while evaluating different possible combination sets. The results of this give the value each user places on each feature or part of the product mix.
2. Adaptive Conjoint Analysis: In this the survey questions are dynamic and each consecutive question is refined based on the previous answer. This reduces redundant questions and the answers which can be inferred from previous answers. After each choice, the user is presented with a more competitive set. This is often employed where the feature set is very large.
3. Full Profile Conjoint Analysis: In this the entire range of feature combination is presented to the user at once and then the user is asked to select/rank the sets. It yields a large amount of data but also runs the risk of causing user fatigue. Therefore, this should be only employed in cases where the number of combinations of feature sets ranges from small to moderate.
4. Max-Diff Conjoint Analysis: In this the user is asked to select their most and least favorite sets from all the available combination sets. This is faster and more user friendly than the other forms since the user does not have to spend time ranking the middle sets. It is easy for users to select the most preferred and least preferred sets. This will directly provide the best set but will not be able to provide value to each feature.

III. METHODOLOGY

To conduct a conjoint analysis, the company will first need to conduct a survey. The survey sets clearly needs to reflect the product, different combination of features and the associated costs. The data set thus collected is used to rank different combinations of feature sets and the price that the users are willing to pay.

The next step is to conduct a regression analysis. For this we can eliminate one feature set and convert the rest of the data into categorical variables. This will enable us to view each feature sub type as a different variable. In our previous example if the feature A has three different variations A1, A2 and A3 then for the purpose of regression we will convert each variation into a different feature/category/dummy variable with possible values as 1 or 0. After fitting the data into a regression model we check for the F value to understand if the model is significant or not and the P-value to get the significance of the features.



Next, we calculate the spread of the coefficients.

$$\text{Spread} = (\text{Max Value of coefficient}) - (\text{Min Value of coefficients})$$

Using spread, we calculate the Utility of each feature as,

$$\text{Utility} = \frac{(\text{Coefficient of the level}) - (\text{Min. coefficient of all levels})}{\text{Spread}}$$

The final utility number will give us the best possible combination of features among all levels.

As an example, a conjoint analysis for a smart phone pricing can be done on features like the camera quality, memory, color, battery life, build quality and the price that the customer is willing to pay. This will give us a price range and the associated features that customers expect to get in the mobile. The company can also use this analysis to form different models of the smart phone to cater to different needs of the customer cohorts.

IV. CONCLUSION

Conjoint analysis is a very strong tool which can help companies decide on the feature sets and their pricing for a product and improve user engagement and improve profits. The analysis also gives the company the value that users put on their product.

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