Choice-Based Advanced Analytic Techniques: MaxDiff & Conjoint

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Overview

“Science is a way of equipping yourself with the tools to interpret what happens in front of you.” - Neil deGrasse Tyson

Maximum Differential Analysis (MaxDiff) and Conjoint Analysis are two choice-based analysis presenting respondents with options for preferred selection - in both cases it replicates real-world choices made by consumers. The two methodologies diverge to fill different purposes; in MaxDiff, respondents are asked to choose the best and worst from a set of options and in Conjoint, respondents are given real-life scenarios or products and looking at all the attributes decide which they prefer.

In this guide, we will walk through typical example use cases for MaxDiff and Conjoint to illustrate the differentiations between the two analyses.

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When do I use MaxDiff (Maximum Differential Analysis)?

MaxDiff is best used when you want to identify a preference in attributes from most to least. If you use a rating question instead of MaxDiff, respondents would likely rate all attributes as important, because who doesn't want it all! This doesn't help prioritize what features are most important to respondents.

Let's think about pizza. A client wants to develop a new frozen pizza; the attributes to consider are crust-type, toppings, type of cheese, size of the pizza, price and amount of cheese.

Respondents then decide between "Most Important" and "Least Important" for each of the attributes. Best practice would be to show each of the attributes 3-5 times with only 5 attributes at one time, in this pizza case it would be 5 sets (# attributes/ attributes per set x time attribute is shown).

Most Important		Least Important
◯	 Toppings	◯
◯	 Crust-type	◯
◯	 Amount of Cheese	◯
◯	 Type of Cheese	◯
◯	 Price	◯
◯	 Size of the Pizza	◯

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How it Works

From the data you will be able to tell what the rank order of importance for the pizza attributes are and just how much value is placed on those attributes.

Attribute	Share of Importance
Toppings	30%
Crust-type	22%
Type of Cheese	18%
Size of the Pizza	13%
Price	11%
Amount of Cheese	6%

The MaxDiff Analysis shows that toppings are the most important attribute, with a share of 30%. Meanwhile, the amount of cheese had little impact on what people chose. Advertising and in-store messaging for our frozen pizza client will now focus on all the various toppings they have to choose from.

MaxDiff is great for naming studies, menu items, messaging for marketing, brand preference, feature development on products.

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When do I use Conjoint?

Conjoint Analysis, known as the cousin of MaxDiff, is best when you want to understand how consumers value different features and attributes of a product or service. Similar to MaxDiff, if you ask a straight question about each attribute; i.e. “crust” you may find that people like thin crust best and that people want to pay $6 for pizza, but you aren’t able to see the impact that each attribute has on one another.

Our frozen pizza client has come back and wants to develop a new type of pizza, since we know toppings are key, we want to evaluate a few topping options, along with other attributes.

We will now be comparing:

1. Toppings (4)
Meat Lovers, Veggie, Hawaiian, BBQ Chicken

2. Crust-type (3)
NY Style, Chicago Deep Dish, Thin Crust

3. Amount of Cheese (3)
2 oz, 4 oz, 6 oz

4. Type of Cheese (3)
Mozzarella, Parmigiano-Reggiano, Provolone

5. Price (3)
$7, $8, $9

6. Size of the Pizza (3)
10 in, 12 in, 14 in

There are now **972 potential options** for the new pizza. Using conjoint we give respondents real-life scenarios to react to regarding the pizza options and they choose which they would be most likely to buy.

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Choice-based conjoint analysis (CBC) is the most common form of conjoint analysis, it requires the respondent to choose their most preferred full-profile pizza option. This choice is made repeatedly from sets of 3–5 full-profile pizza options. Through this form of questioning we learn what attributes people want and which they are willing to give up for the perfect pizza.

Attributes	**Product concepts to choose from**		
Toppings	Meat Lovers	BBQ Chicken	Meat Lovers
Crust-type	NY Style	Thin Crust	Deep Dish
Amount of Cheese	6oz Cheese	6oz Cheese	2oz Cheese
Type of Cheese	Provolone	Mozzarella	Mozzarella
Price	$9	$9	$8
Size of the Pizza	10 in.	14 in.	10 in.
	◯ Choose **Pizza 1**	◯ Choose **Pizza 2**	◯ Choose **Pizza 3**

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How it Works

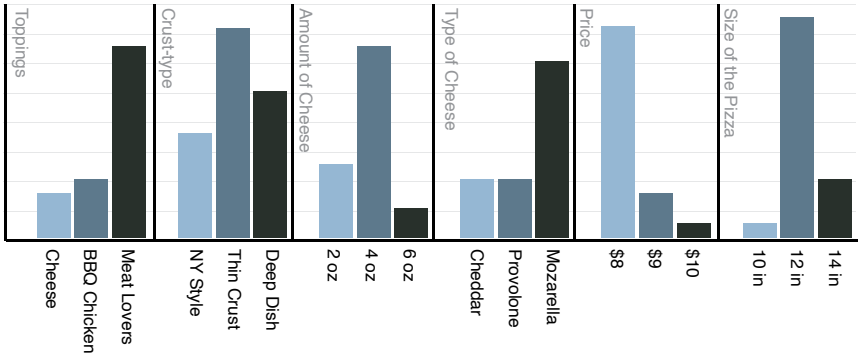
As respondents make their choices it simulates actual shopping behavior when someone is looking for a frozen pizza. The importance and preference for certain attributes like price, toppings, crust are all taken into consideration.

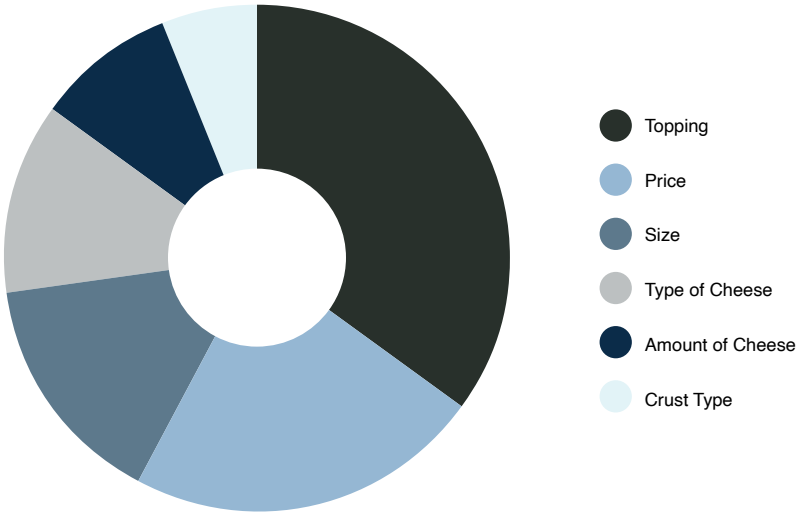
Results come in two ways:

1. Utility Scores (Preference Scores) for each of the attributes; i.e. thin crust, mozzarella cheese, 10 inch pie, etc. This allows for evaluating on how different attributes impact preference of the different pizza options.

2. Relative Importance of Attributes which allow for looking at what of the attributes are the biggest drivers in preference; i.e. topping choices, crust type, etc.

Results from our frozen pizza study show that the preferred combination determined by respondents is a 12 inch, thin crust, Meat Lovers, with 4oz of Mozzarella cheese priced at $8





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Conclusion

Both MaxDiff and Conjoint forces tradeoffs, which lead to greater understanding of preference among respondents. These choice based analysis can strongly guide product development by highlighting what consumers value most.

The key difference between MaxDiff and Conjoint is that Conjoint is based on an additive model, where the value of an overall product concept is equal to the sum of its parts. On the other hand, the MaxDiff method is not an additive model. It is an individual item/attribute-score-based technique.

While in general, MaxDiff and Conjoint serve two separate functions, the two methodologies are not mutually exclusive. Knowing when to use one or the other, or a combination of the two, is the role of research and data professionals.

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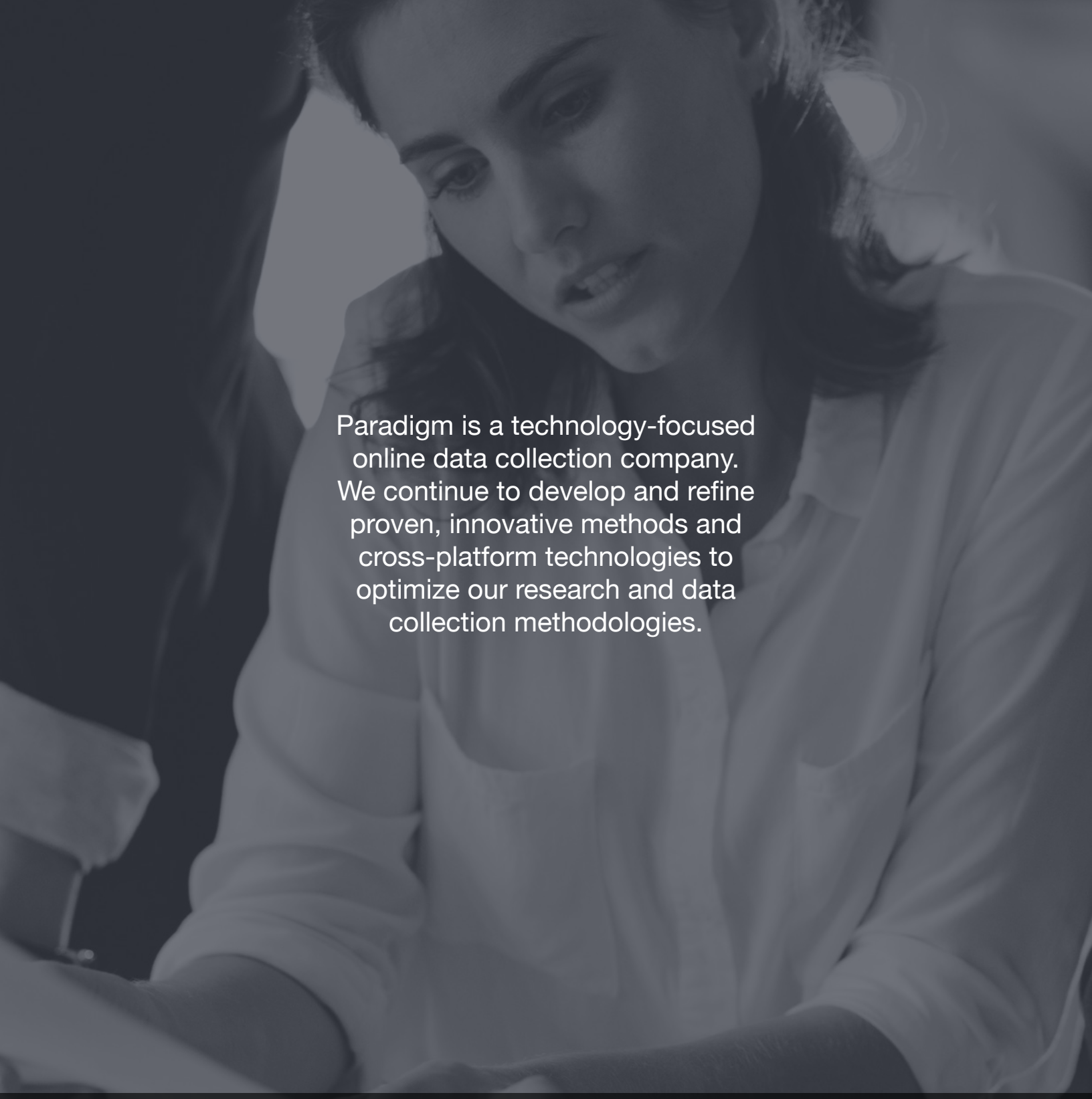

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