Consumer Insight Consultants

Non-negative Matrix Factorization (NMF)

Topics for NMF

- Some Background
  - When to Use
  - EMS Principles

- Data Collection
  - Selections of Items from a List
  - Maxdiff

- Analytics
  - Non-negative Matrix Factorization

EMS ANALYTICS

Some Background

When NMF?

Line Optimization

Group Channels and Consumers by Channels Used

Group Products and Consumers by Products Considered, Used, Purchased, etc.

Claim/Messaging Optimization

Bundling

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EMS Principles

Multiple Lenses

All techniques have strengths and weaknesses. It's important to know what they are and then use the best ones.

Because no technique is perfect, an mix of approaches (ensemble) is almost always best.

Best Statistics ≠ Best Solution

While Cluster Matching is a powerful and useful tool; it is only one piece of the analysis. Other inputs, including real-world constraints must also be considered

Competitive Context

What your competitors are doing matters, so they should be included in all analyses where it makes sense.

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Data Collection

Two Most Common Survey Approaches*

Item Selection from List

Maxdiff

*Can also use transaction data

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Select Items from List

For this approach we show a list of potential items, including a full listing of competitors if appropriate, and ask people to identify which they would consider purchasing.

Below are many different flavors and brands of ice cream. Please select those that you would consider buying.

☐ Brand A – Chocolate
☐ Brand B - Chocolate
☐ Brand C - Chocolate
☐ Brand A – Strawberry
☐ Brand B – Strawberry
☐ Brand C - Strawberry
☐ Brand A – Vanilla
☐ Brand B - Vanilla
☐ Brand C - Vanilla

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Maximum Difference Scaling (Maxdiff)

Of the products shown below, which one would you buy most often, and which one would you buy least often?

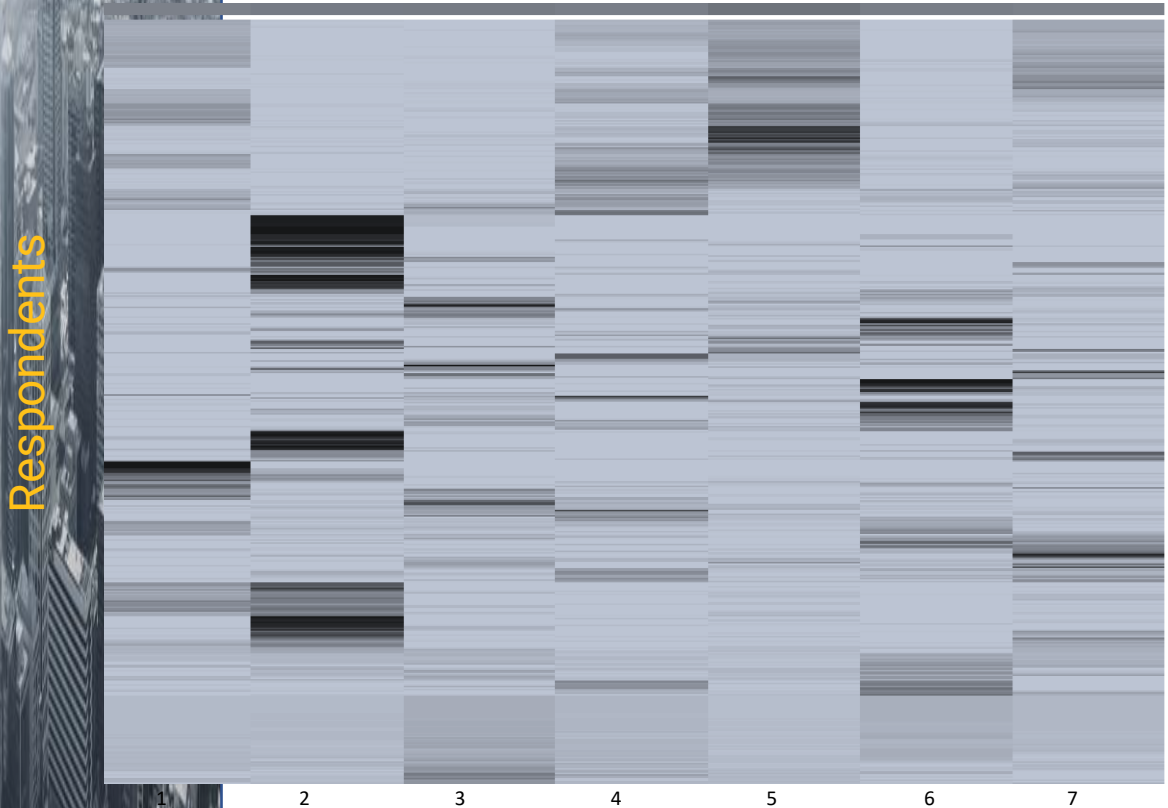| Most Often		Least Often
○	Variant 12	○
○	Variant 6	○
○	Variant 2	○
○	Variant 10	○
○	Variant 3	○
○	Variant 9	○

From the data collected scores can be estimated for each individual.

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Analytics

NMF - Respondents and Items can be Grouped Simultaneously

Respondent Distribution across Seven Components

In this example, we identified 7 groups of items that were "liked" by different groups of people. This allows us to identify lines and who those lines appeal to.

Item Distribution across Seven Components

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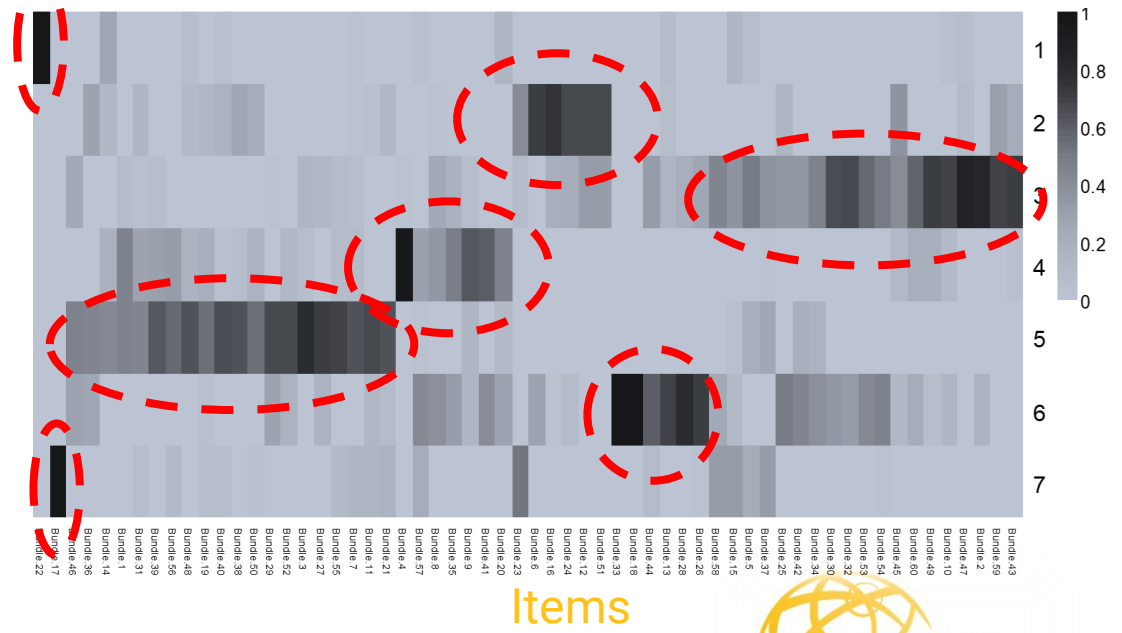
Effective Solutions, Grounded Results