Babson Analytics Hackathon 2022
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Goals:
Exploratory data analysis of the datasets shows that 89.86% of the products do not have WayMore content. Considering the limited resources and time that Wayfair has, we aimed to optimize its supplier outreach strategy and content strategy to increase conversion rate, boost revenue, and improve customer experience.

Assumptions:
- Due to diminishing marginal returns, product classes with low revenue and few modules on average have more potential for revenue growth.
- Once a customer has clicked a product page, he or she is driven by detailed product content to add the product to the shopping cart.

Problem-solving:
We used the following three metrics:
- Revenue = 12-month Revenue + Projected Revenue
- Conversion Rate = Number of Orders Placed / Traffic Amount
- Customer Experience = Number of Times That a Product Has Been Added to Cart / Traffic Amount

1. Revenue/Conversion Rate
In this section, we wanted to build the connection between WayMore content types and suppliers using product types that have the potential for more growth.
We performed K-Means clustering twice on a total of 48 product classes. One was based on the average revenue and average module number of each product class, and a cluster with 22 product classes was selected. The other was based on the average conversion rate and average module number, and a cluster of 29 product classes was selected. For each of the 13 common product classes, not only did we look into the most wanted content types based on customer research results, but we also narrowed the suppliers down by their production scales. The content types were highly generalizable to a mass of products in the same category.

2. Customer Experience
In this section, we wanted to find the most special WayMore content types that impact customers' likelihood to add products to carts.
Different from the previous section, we only used the existing Waymore content for analysis. We applied statistical tests to explore the relationship between WayMore content/product class and customer experience. Because the data did not satisfy the assumptions of ANOVA, we performed the Kruskal-Wallis Test, a non-parametric test, and found that some content types/product classes were significantly different from others, either positive or negative, in terms of customer experience.
Then, we leveraged a post-hoc analysis using the Wilcoxon rank-sum test and determined what they were in specific. Finally, we obtained the effectiveness of each type/product class by examining their respective group means.

Insights:

- To optimize content most cost-effectively, we would recommend focusing on the 13 product classes because they have few Waymore content, less revenue, and low conversion rate.
- Based on our findings, we would recommend having the top suppliers of those product classes add content of specific types to boost revenue.
- Warranty & Guarantees, Visual Details, and Product Feature are expected to enhance customer experience. If customer experience is a major concern, we would recommend these three content types as opposed to About the Brand, Safety Certifications & Details, and Product Capacity.
- Products with more design elements, such as Wall Art and Mattress Toppers and Pads, achieve better results in terms of customer experience if more content is present on PDPs. In comparison, products focused more on utility, such as Desks and Sofas, might not be suitable for rich content. Further research can look into the simultaneous impact of product usage and WayMore content on customers' likelihood to add a product to their carts.