

Big Data Cloud Visualization.

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Blue Detergent Case Simulation: Final Strategies:

Background: Make data-based manufacturing and marketing decision-making for Blue Detergent and run simulation to examine the outcomes for key decisions. Dataset to analyze including blue product features, consumer demographics, financial stats, trade channel, and media expense.

Simulation goal: Consumer focus, determine the production and pricing and marketing strategy to increase Blue's market share.

Executive Summary: Strategy involved two stages, initial decision making based on historical dataset analysis from 2015-2018 (*Stage Before*) and decisions adjustments regarding real-time market situation from (*Stage After*). To make decisions in 2019, we considered the current competitive advantage of Blue and also combined with the market momentum for the industry. The initial decisions and targeting customers are following:

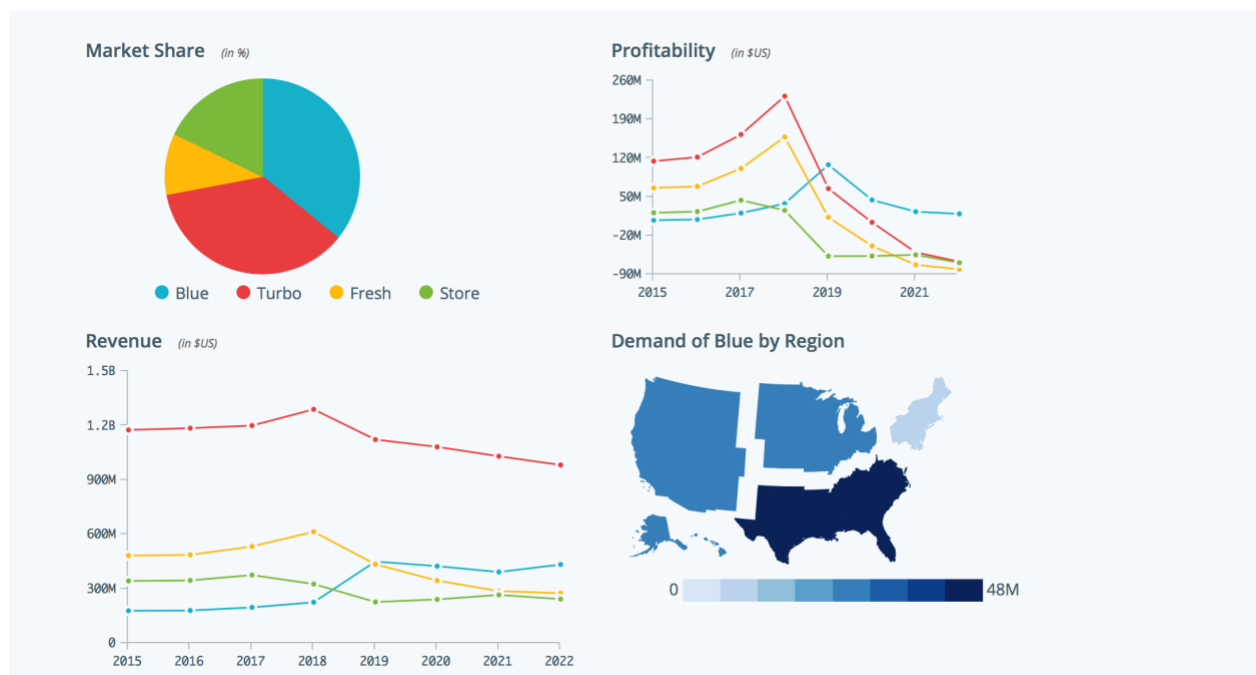
DECISION MAKING	2019	TARGETING CUSTOMER	2019
Unit to Produce	90 Million	Age	Under 35, 55 and older
Channel Price/100 loads	\$5	Ethnicity	White
Formulation	Pods	Household size	2,3,5
Product Features	Odor elimination	Income	Under \$20,000
		Region	Southeast, Central, West
Convenience	\$10.0 Million		
Club	\$9.5 Million		
Grocery	\$2.5 Million		
Mass	\$3.0 Million		
Print	\$4.0 Million		
Tv	\$3.5 Million		
Radio	\$1.3 Million		
Digital Ads	\$3.8 Million		

Key analysis bullet points:

1. To make decisions, we need to consider the current position of blue that analyzes its current production decisions, marketing strategy and competitive advantages. In addition, it is important for us to understand the major market trends if we aim to expand the brand significantly.
2. As of the end of 2018, Blue has the lowest market share (11%) and product demand compared with three competitors. The goal is to maximize the revenue with controllable cost.
3. Market share (revenue) for blue is highest for age groups of under 35, 35 to 45, Household size of 4 and 5+. However, consumers who are in the age group of 55 and plus accounts for most for the industry.

4. Pods have the highest variable cost among three formulations but are the future of detergent formulation, which is preferred by all groups in different levels.
5. Odor eliminated products have considerably higher demand than other three types of attributes and dominated all markets excluding the northeast area.
6. Income under \$20,000 are the main customers contributing to the industry.
7. White people are the majority of the consumers.
8. All groups of consumers demand most for products with \$5 or less.
9. There are variables are depended by a key factor:
 - **Media** spends by *age*
 - **Brand attribute** by *geographics*
 - **Trade channel** demand by *income*

Simulation Results:



The final Market shares of Blue increased to 35.9%. Blue comes to the second largest market share compared to the peers, relatively catches up to the domain brand of Turbo (36.1%) in a four-year period. And the brand is the only company that has positive operating profits which gives the company more potential to grow for future.

Stage Before Analysis (Decision-Making in 2019)

Consumer Demographics Analysis:

Age:

- For Blue, under 35 is responsible for most revenue and market share, have high demand for Pods; consume media through Digital Ads the most

Ethnicity:

- For Blue, White demographic ethnicity account for most profit and Hispanic demographic ethnicity account for most market share; have high demand for Pods; consume media through Print and TV the most; and care about odor elimination

Household Size:

- For Blue, Household size 3 is responsible for highest market share and account for second highest profits; have high demand for Pods; consume media over Print and TV; care through about odor elimination
- For Blue Household size 5+ is responsible for next highest market share, however account for the highest profits; have high demand for Pods; consume media through Print and TV; care most about odor elimination

Income:

- For Blue, Income under 20,000 is responsible for most revenue and market share; have high demand for Pods; consume media through Print and TV; care most about odor elimination

Region:

- For Blue, West is responsible for most revenue and market share; have high demand for Pods; consume media through Digital Ads, Print, and TV; care most about odor elimination

Product Features and Positioning

Product Formulation:

- Controlling for the features of white ethnicity, central region, southeastern region, western region, household sizes of 2, 3, and 5, and income under \$20,000, it becomes very obvious that we should double-down on our pods product as the formulation demand in the Central and West regions is achieving more than double the growth of any other product in the regions in any given year, with over .026% average year-to-year growth.
- In the Southeastern region, the margin of average year-to-year growth for the pods product is slightly less than in the other two regions, but the product still always performs greater than any other in the region with an average year-to-year growth always at least .007% higher than that of any other product.
- In the central, southeast, and western regions the pods had a higher aggregate formulation demand in every age group except for those under 55 years and older in the west, where slightly more than

1.5 M customers preferred powder formulation. Once again reiterating that pods are clearly the future of detergent formulation and are mostly preferred by all groups in different levels.

Brand Attribute:

- Out of all the different types of attributes, odor eliminating products have substantially higher demand in all regions except the northeast.
- The 2015 to 2018 brand attribute data it became apparent that our odor elimination product's average brand attribute demand had drastically fallen from 2015 to 2016 by 1.04%, and in 2018 still had over .75% left to grow in order to once again reach its 2015 level of brand attribute demand.
- Brand attribute is determined by geographical factors. Therefore, we decided to target consumers in the southeast, central, and western regions with our odor elimination products.
- From 2015 to 2018, the white ethnicity formed the grand majority of average brand attribute demand, independent of any product. Within the white ethnicity, the aggregate demand for odor elimination products from 2015 to 2018 was over 900,000 customers more than that of the product with the second highest aggregate demand, scent with 399,000.
- By also focusing on targeting customers under 35 or 55 and older, white, have an income under \$20,000, and a household size of 2, 3, or 5, we were eventually able to achieve incredible success with our strategy in the long haul.

Competitor Analysis Overview:

Analysis for Fresh vs Blue:

- **Target Fresh Demographic:** White + Income under 20,000 (demographic that is producing the most profit and sales for Fresh)
- **Observations for Fresh:**
 - All household sizes contribute similarly to the profit; highest is household size 3 (by a small margin)
 - White demographic group is responsible for most profit and revenue
 - Income under 20,000 demographic group is responsible for most profit and revenue
 - Across all ages, South East region contributed the most for profit and revenue, followed by Central and West
 - Across all regions, Age under 35 contributed the most for profit and revenue, followed by 55 and over
- **Strategies for Blue:** Because Fresh and Blue are direct competitors, we want to target the demographic that account for most profit in Fresh, to target demand and sales improvement for Blue
 - Formulation demand: Blue can focus on Pods because the target demographic has high demand for Pods

- Brand Attribute: For the target demographic with both age group under 35 and over 55, Blue can focus on Odor Elimination for region Central + Southeast; for region West, also consider Cold Water along with Odor Elimination
- Media: Blue can focus on Digital Ads for age under 35 and focus on Print + TV for age over 55
- **Analysis for Store:**
 - **Store demographic: White, Age 55 and over, Household size 1, Income 60,000 and over, Region West (is producing the most profit and sales)**
 - **Observations for Store:**
 - White demographic group is responsible for most profit and revenue
 - Age group 55 and over contributes most to the profit and revenue
 - Income under 60,000 and over demographic group is responsible for most profit and revenue
 - Region West contributes for most profit and revenue for Store
- **Production and Pricing**
 - To take the market share from our competitors, we decide to decrease the price of our products to the lowest price in the market. At the same time, we will increase the production to satisfy the increasing demand due to our decision on the price.
 - All groups of consumers demand most for products with \$5 or less.
- **Financial Facts:**
 - The operating profit of Blue kept increasing gradually from 2015 to 2018.
 - Based on the pie chart, the market share of Blue decreased in 2016 and increased in 2018. Store's market share decreased a lot in 2018, as both Fresh and Turbo's market share increased.
 - In 2018, in the age groups of under 35 and 35-44, Blue has a higher market share comparing other age groups, but in the largest age market (55 and over), Blue has the lowest market share.
 - Blue has the highest market share in the largest ethnicity group of white.
 - For income groups, the market share of under 20,000, 40,000-59,999, and 60,000 and over are similar. The largest market is under 20,000.
- **Trade Channel:**
 - Analysis of given trade channel dataset shows that people preferred using convenience the most and the next was club
 - This trend was almost same across all ethnicities and age group
 - The difference was in the volume of people using it
 - For ethnicity, white and Hispanic people were higher in volume compared to other ethnicities who were using convenience and club
 - Similarly, for income groups Under 20k (preferred convenience) and in range 20k-40k (prefer club) were higher in volume compared to other income groups.

- The trend followed the same pattern for all the given years in the dataset.
- Media Spending:
 - The bar graph analysis on tableau clearly stands out for media spending on Print the most and then TV with different parameters we tried
 - The trend was again similar across all income group and age group as well i.e., Print and TV were top two highest on media spending
 - The difference observed was the volume of customers in different categories (income group, ethnicity, age group, household size)
 - The two-step analysis highlighted that particularly in age over 55 and income group under 20K and range 20K-40K bagged the highest volume of population and also relying on more print and TV
 - As we wanted to invest and target the population who were highest in volume, our analysis is more based on them.

Stage After Analysis (Decisions in 2020,2021, 2022)

- Year 2019:

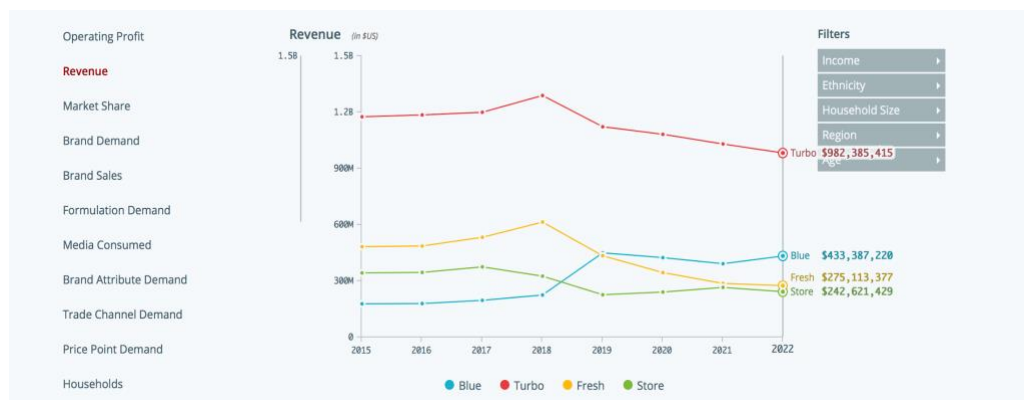
Yearly reports: The Brand market share increases significantly because of the price decreasing from \$7 to \$5. Our brand provides the most competitive price in the industry (lowest among peers). The production meets the demands perfectly.

Reflection: Targeting a larger market in the future by increasing customer groups. Increase the demand by decreasing price. Conservatively increase production units.

Decision Adjustment for 2020:

Price was changed to \$4.70. Production units increase by 5m to 95m.

- Year 2020:



Yearly reports: There is a demand shrinking for the detergent industry in 2020. Our demand also suffered a minimal decrease.

Reflection: Decreasing the price to boost the demand. We also consider including more groups as our target customers. Hispanic groups are the second largest ethnicity group and with no significant contradiction with our current marketing strategy. Introduce our products also to the income group of \$20,000-\$39,999 to further expansion. The trade channel is adjusted accordingly by the new income group. Considering positive marketing spending and lower price rate, we keep the same production growth for this year.

Decision Adjustment for 2021:

Price was changed to \$4.49. Besides the ethnicity of white, we started to target the Hispanic population this year. The production unit is 100m.

- **Year 2021:**



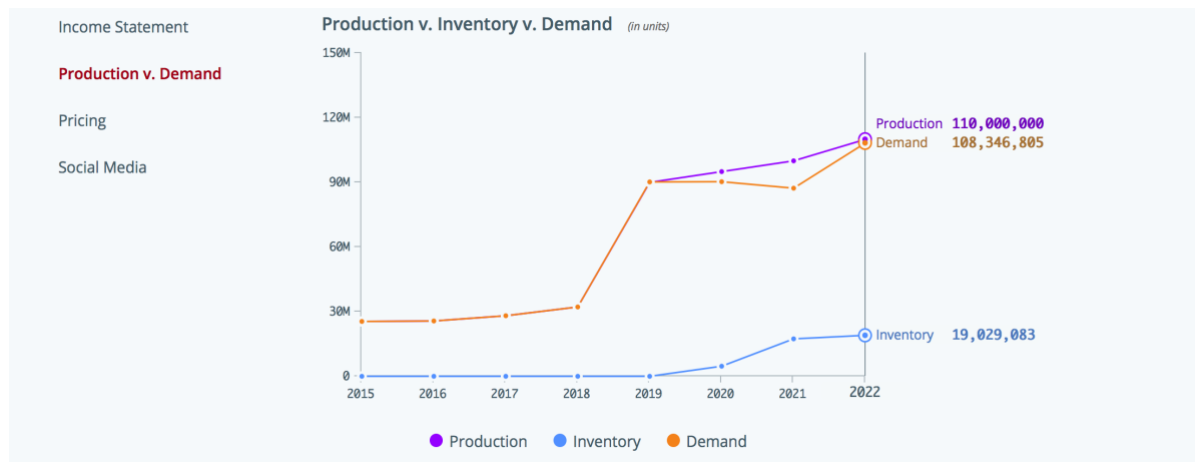
Yearly reports: Stores cut their price aggressively, from \$5.25 to \$4.50 which has a negative impact for our market share. Our price as \$4.49 has less advantages than the previous year. However, we are the only company that has positive operating profits among our competitors.

Reflection: Further decrease the price to provide the most competitive price to our customers. We aim to benefit from our positive operating profit by investing in more consumer groups to expand the market share. We targeted one more income group of \$40,000 to \$59,999 and an age group of 35-44. Based on the features of our new customer groups, we slightly increased radio expense. Since we expect the new price will attract more customers and bring higher market shares for us in next year. Instead of keeping the 5 million units' growth, we decided to increase 10% production units.

Decision Adjustment for 2022:

Price was changed to \$4.00. The production units are 110m. Slightly increase 3% of radio expense. Slightly increase 5% of mass channel due to expansion to the income group of \$40,000 to \$59,999.

- **Year 2022:**



Final Results: Our market share is roughly 36% as this year. We gained more than 25% of market shares in 4 years. We are the only company that has the positive operating profit among competitors. The production exceeded the demand by 2 million units properly. However, there are 19 million units left in inventory which is stable compared with last year.

Implementation and Discussion:

We used the 5 essential steps for implementing Data-Driven Decision-Making which made the process easier for our team.

- Determining Business Questions and Issues
- Strategize and Identify Goals
- Target Data
- Collect and Analyze Data
- Making Decisions Regarding Findings

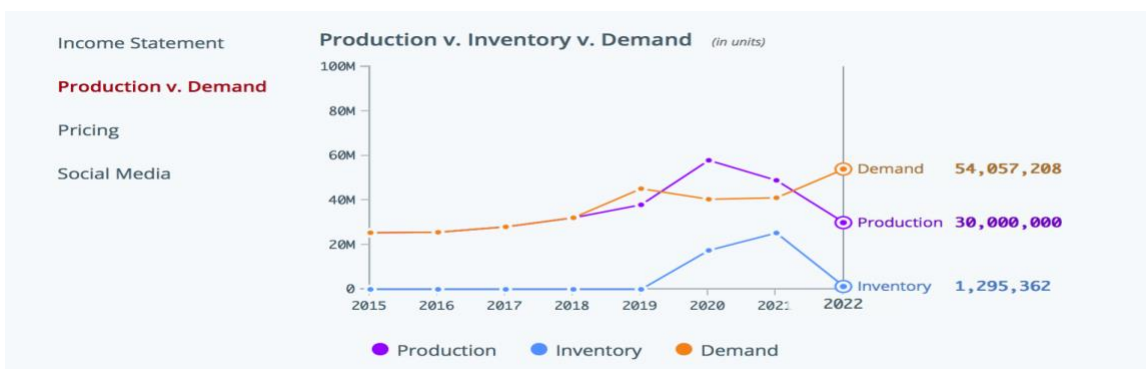
The starting point for our analysis was to both understand the current position of Blue and the market momentum. From the production, manufacturing and financial statistics, we understand the competitive advantage for Blue. However, considering the company accounted for the lowest market share in the industry, we needed to learn from our competitors who have larger market share to forecast the market trend in the near future.

One of the biggest challenges for us was to use the historical data to forecast the future. We forecast demand by our assumption. However, there was a market uncertainty. In the year 2021, one of our competitors cut their price sharply, which negatively impacted our demand. In 2020, there was a shrinking demand for the industry, which decreased the total volume of our revenue. It could not be possible for us to predict these market changes from the experience.

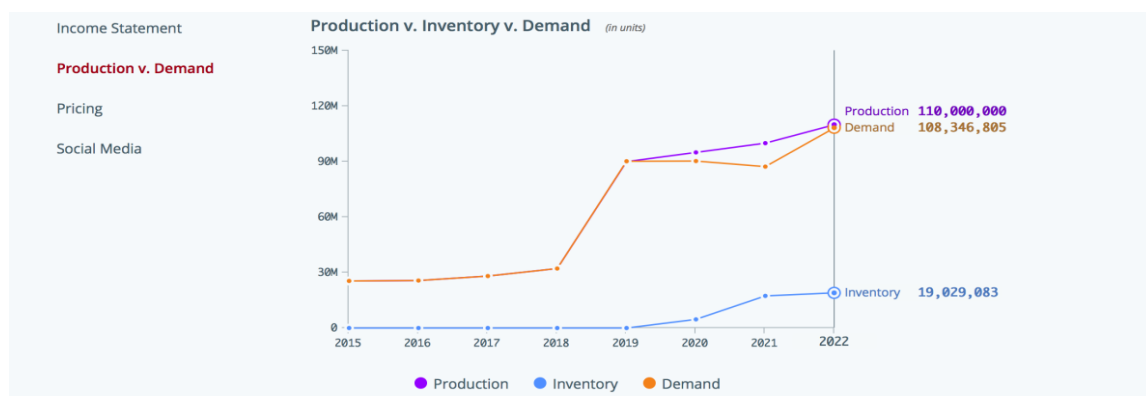
Moreover, our media spending is focused more on digital ads as our target audience is under 35. However, we had most consumption with Print and Tv as it reaches out to more mass especially our second target audience, people over the age of 55 and for the same reason in the following year, we changed our media spending and gave slightly more percentage to TV.

All of our competitors kept changing their tactics, keeping up with them was necessary. For example, our competitor Turbo kept fluctuating their prices each year from the year 2019, they changed their prices from \$10(2019) to \$9(2020) to \$8.50(2021) and back to \$9(2021), similarly other competitors also showed the same fluctuations and to compete we did the same but better in order to capture the market share.

Furthermore, we had to adapt quickly and change our tactics. In our first simulation, we began with \$7.20 as our price for the product and kept increasing it until the year 2021, where we reduced our prices to fight against competitors, which didn't really help our goals of covering at least 35% market share. We also kept our production low following the forecast, which was proved wrong with the higher demand and were able to gain only 13% of market share in the year 2019. Hence, we changed our strategy in the final simulation and began the simulation with a lower price of only \$5 and kept reducing the price to fight against the competitors and against the market which was eventually hit by a recession in 2021. As for the production, we predicted a higher demand due to slashing price, which worked out perfectly as we were pretty parallel with the demand and as a result, we were able to gain a market share of 30.6% from 11% in the previous year and also increase our profitability.



(Production vs Inventory vs Demand in our first simulation)



(Production vs Inventory vs Demand in our final simulation)

Moreover, we switched our target market including Income group, Ethnicity, Age group and Household size. The decision impacted our demand and market share massively. The change was so massive that we were able to gain our goal from the market share of 17.9% in the first simulation to 35.9% in the final simulation.



(Market share in the final simulation)