Swire Demand Analysis

Group 1

Louis Ackumey Gustav Vollo Shane Nisley Aiden Coutin

Introduction

Develop a predictive model to accurately forecast demand for Swire’s limited-release products

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Ensure production meets consumer demand, preventing overproduction and shortages

Adapt production strategies to reflect evolving consumer preferences and trends

Project Goal Overview

Utilize market insights for diet energy and SSD beverages to refine forecasts based on consumer preferences and product dynamics

6-month demand
Diet Energy Moonlit
Cassava 2L Multi Jug

13-week demand
Peppy Gentle Drink Pink
Woodsy 0.5L Multi Jug

Project Goal Overview

Utilize market insights for diet energy and SSD beverages to refine forecasts based on consumer preferences and product dynamics

6-month demand
Diet Energy Moonlit
Cassava 2L Multi Jug

Pen[illegible] Drink Pink
[illegible] Jug

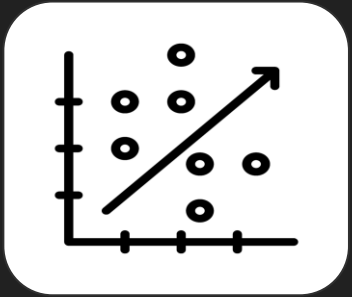
Our Recommendation

6-month demand for
Diet Energy Moonlit Cassava 2L Multi Jug

Demand Prediction: **15,000 units**
Production Recommendation: **11,000 units**

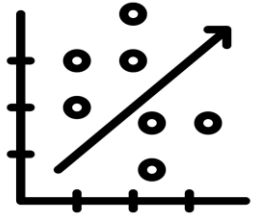
Model Selection

Linear Regression



Model Selection

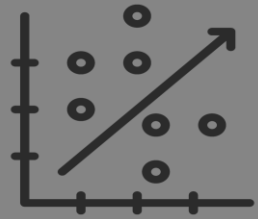
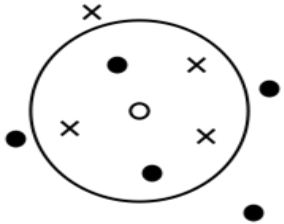
Linear Regression



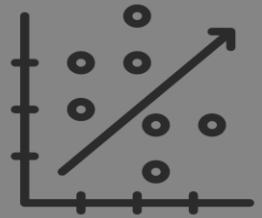
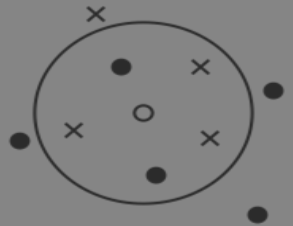
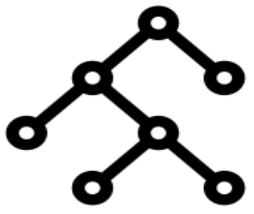
$R^2 = 0.86$

Lack of similar products in data

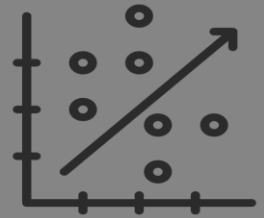
Model Selection

Linear Regression	k-Nearest Neighbor
	
$R^2 = 0.86$	$R^2 = 0.87$
Lack of similar products in data	Volatile outcomes depending on hyperparameters

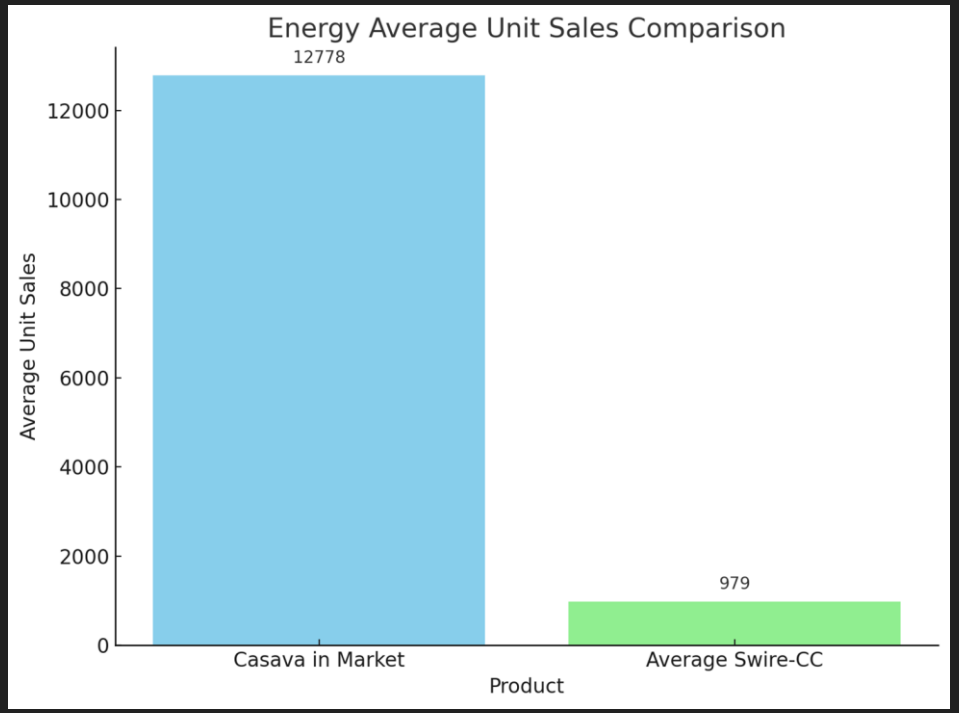
Model Selection

Linear Regression	k-Nearest Neighbor	**Decision Trees**
		
$R^2 = 0.86$	$R^2 = 0.87$	**$R^2 = 0.84$**
Lack of similar products in data	Volatile outcomes depending on hyperparameters	Lack of similar products in data

Model Selection

Linear Regression	k-Nearest Neighbor	Decision Trees	**Time Series**
			
$R^2 = 0.86$	$R^2 = 0.87$	$R^2 = 0.84$	**$R^2 = 0.94$**
Lack of similar products in data	Volatile outcomes depending on hyperparameters	Lack of similar products in data	Requires data filtering for similar products

Model Considerations



Focused on one product for demand conversions

Market with Cassava was about **13x higher** than Swire-CC

One 2L-jug sale for every **1.7 units** of 16-Small sold

Flavor derivation: lack of specific data meant this couldn't be applied

Additional Modeling Conditions

Expected CAGR: **8.1%** *

Launch period: **First 26 weeks**

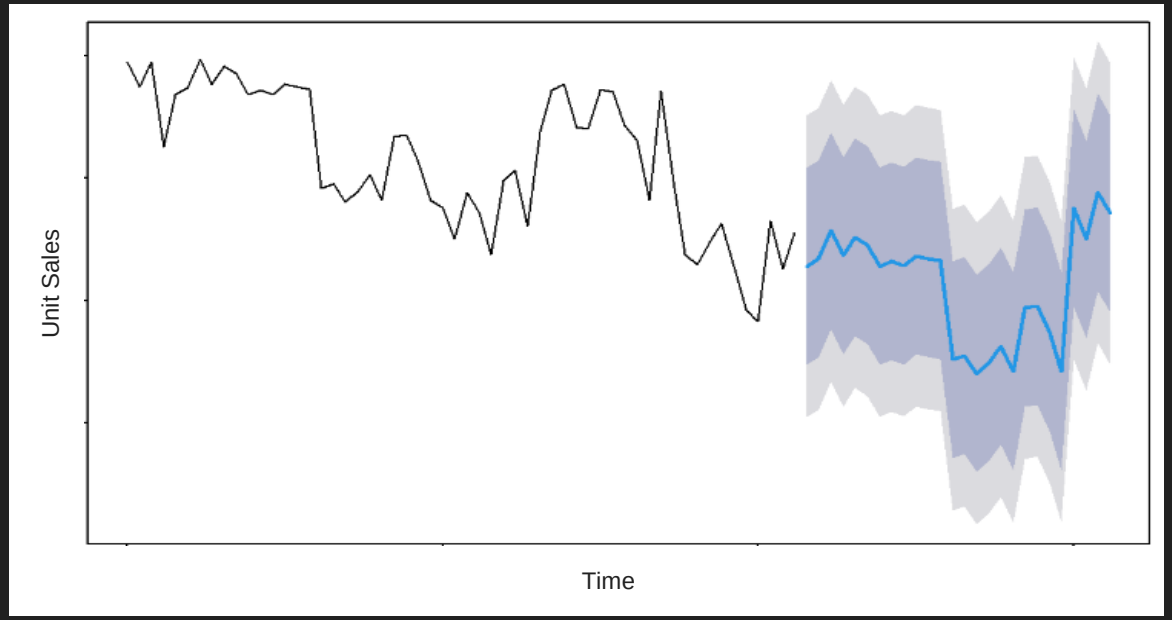
Other assumptions

- Market growth applies to Swire-CC
- Market demand ratio applies to Swire-CC

* https://finance.yahoo.com/news/united-states-energy-drink-market-223000902.html?guccounter=1

Penalty of Incorrect Prediction

Nominally predictive value is only optimal if overage costs and underage costs are equivalent



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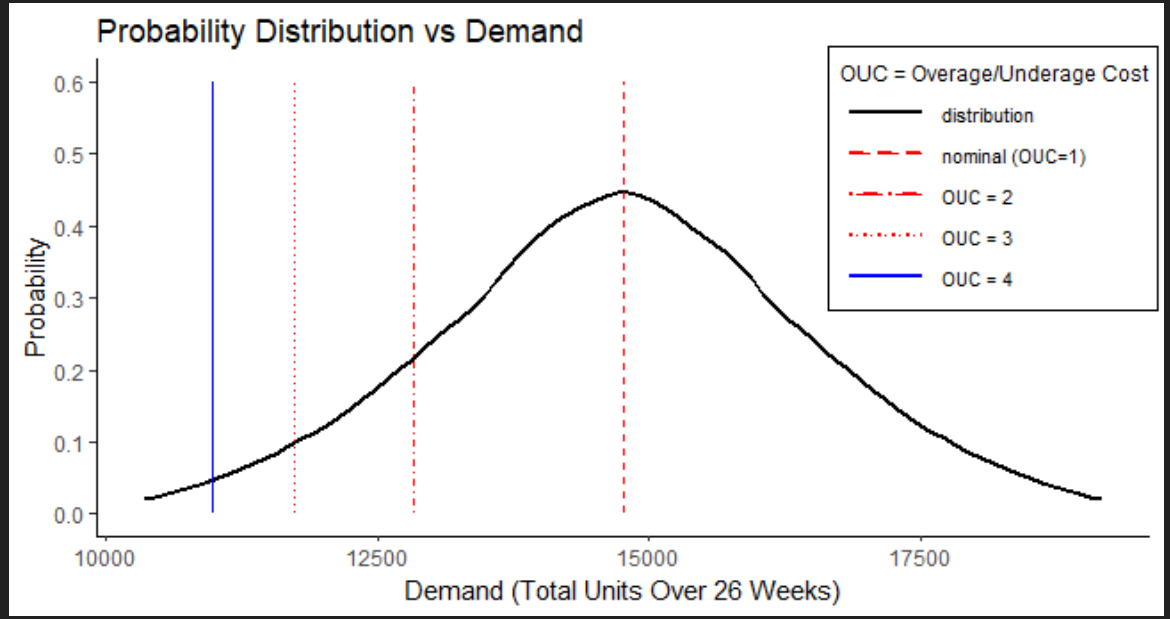

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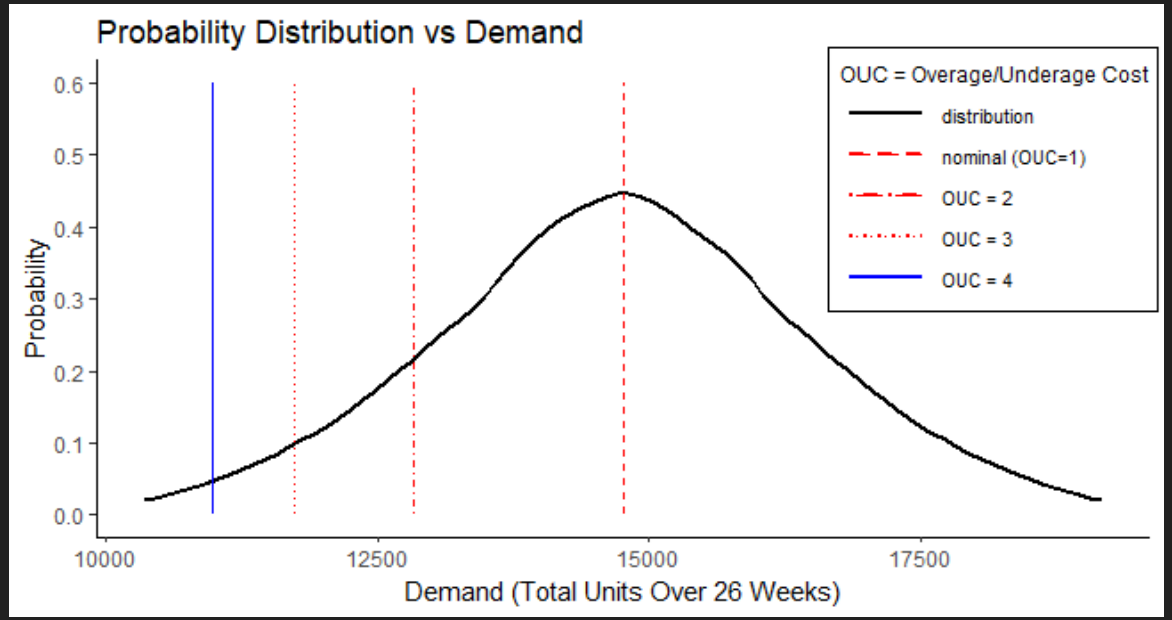

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Recommendations and Future Work

Our recommendation for 6-month demand of Diet Energy Moonlit Cassava 2L Multi Jug is **11,000 units**

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Use **confidence intervals** to balance predicted demand vs recommended production

Lastly, every business analyst’s dream: **MORE DATA**

Questions?

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