

Transforming eCommerce Product Segmentation with Machine Learning

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Sponsor: Heyday

Motivation / Background

eCommerce Industry Today

Rapidly
Growing
Market

+



=

- Inventory
- Complexity
- Costs



Solution?

Inventory Management
using Advanced
Product Segmentation

Heyday

3000+
SKUs to Attract
CustomersUndifferentiated
Inventory Policy

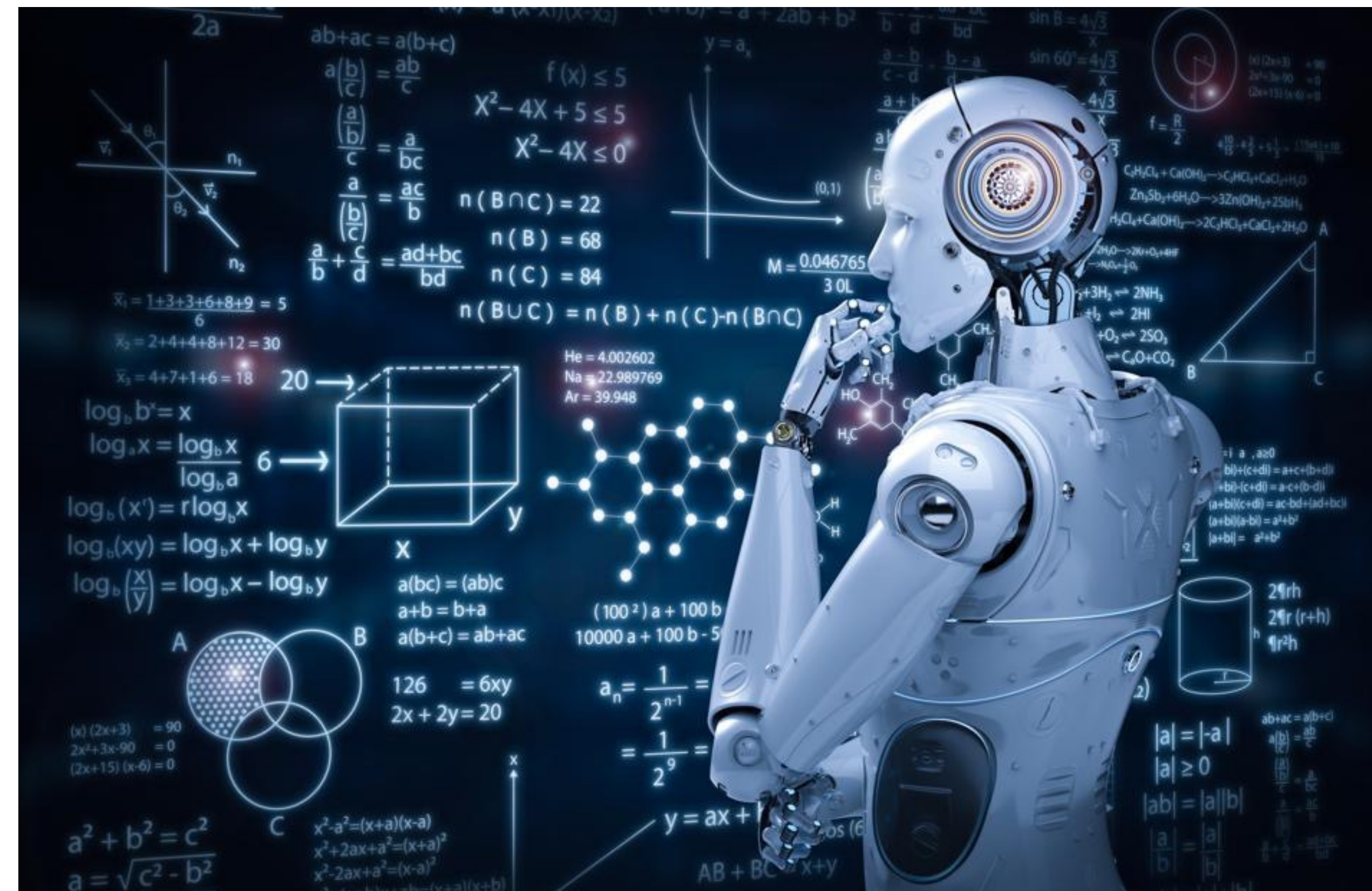
Key Question / Hypothesis



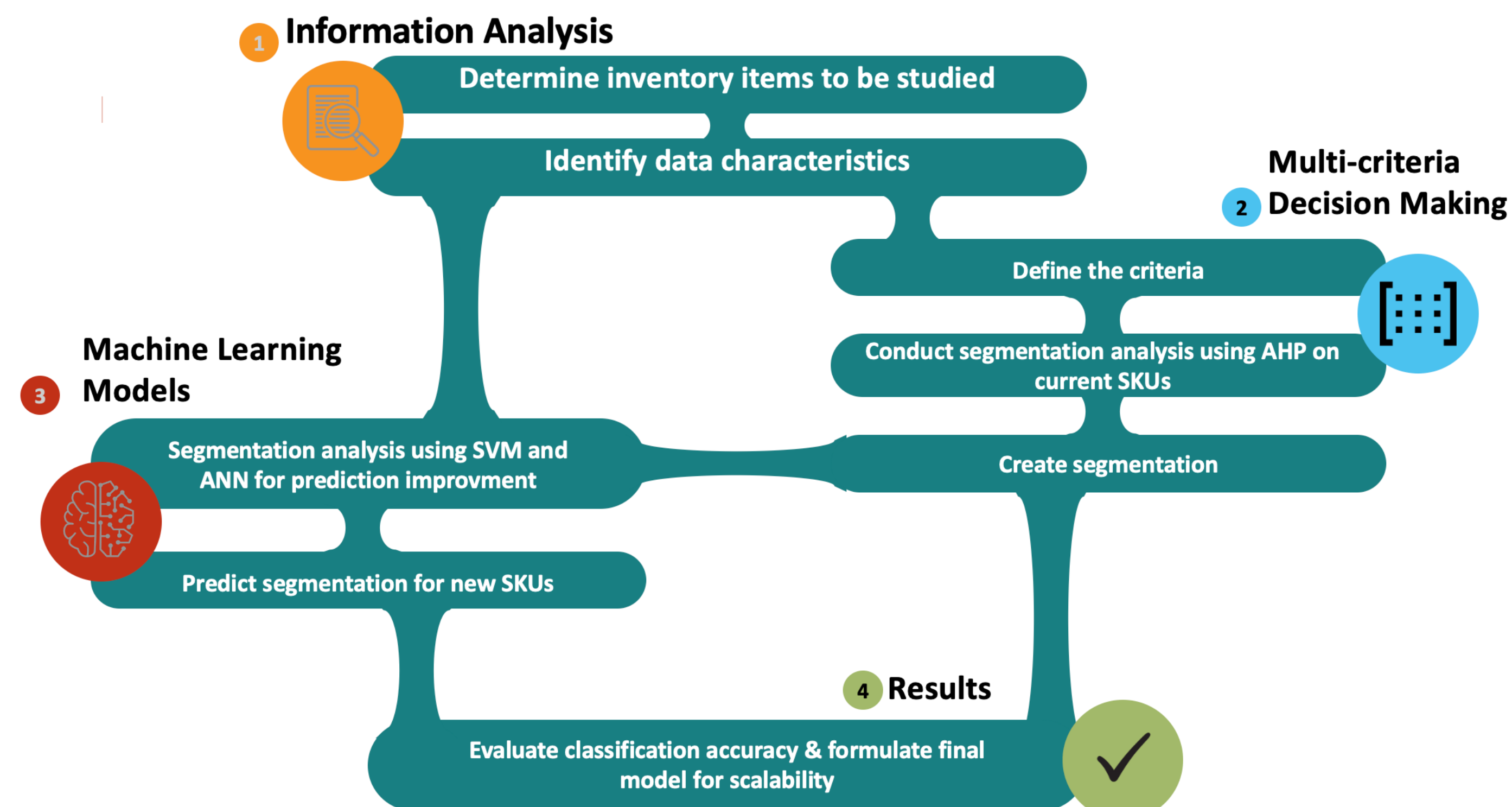
- How to segment SKUs into appropriate classes in order to determine the right target service level for inventory management?
- What are the most relevant product characteristics for inventory segmentation in an eCommerce portfolio?

Relevant Literature

- Patil, H., & Divekar, Brig. R. (2014). Inventory Management Challenges for B2C E-commerce Retailers.
- Pannu, S. S. (2021). Dynamic Classification Of Fast-Moving Consumer Goods in Warehouses Using Forecasting For A Third-Party Logistics Provider.
- Kartal, H., Oztekin, A., Gunasekaran, A., & Cebi, F. (2016). An integrated decision analytic framework of machine learning with multi-criteria decision making for multi-attribute inventory classification.



Methodology

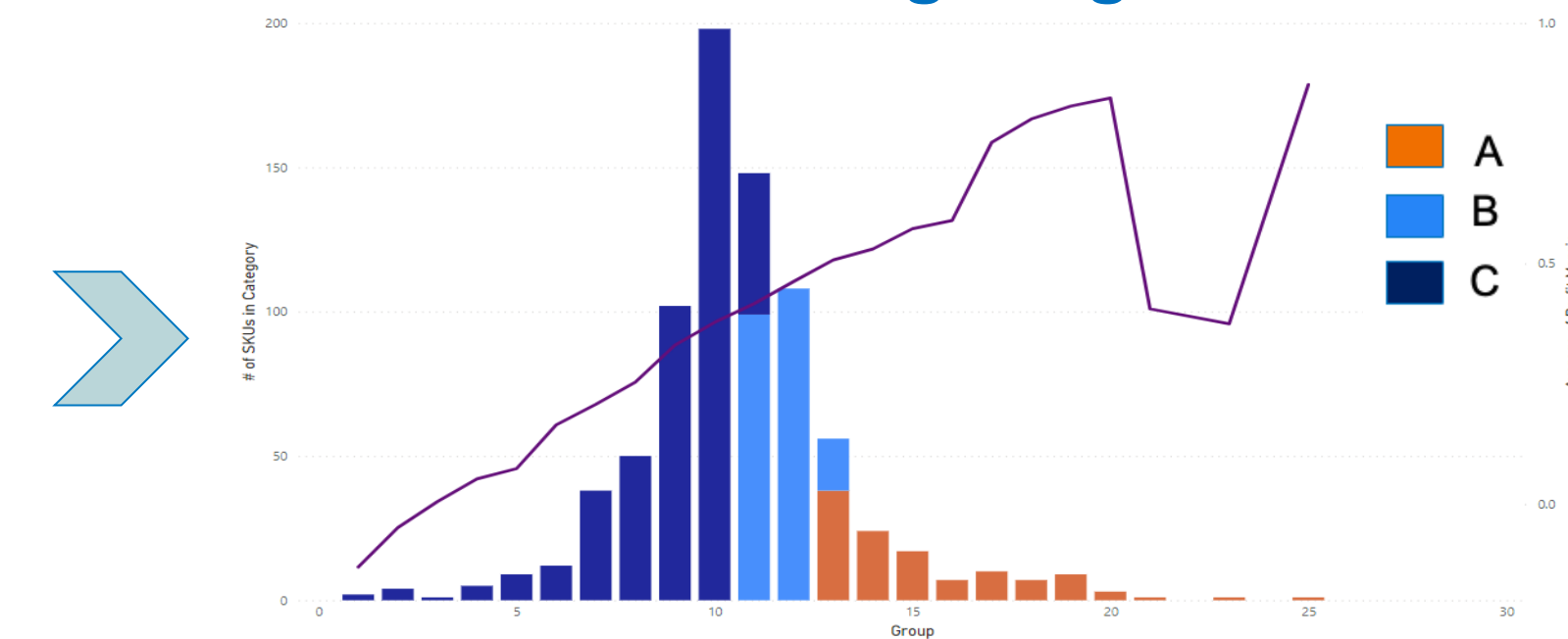


Results

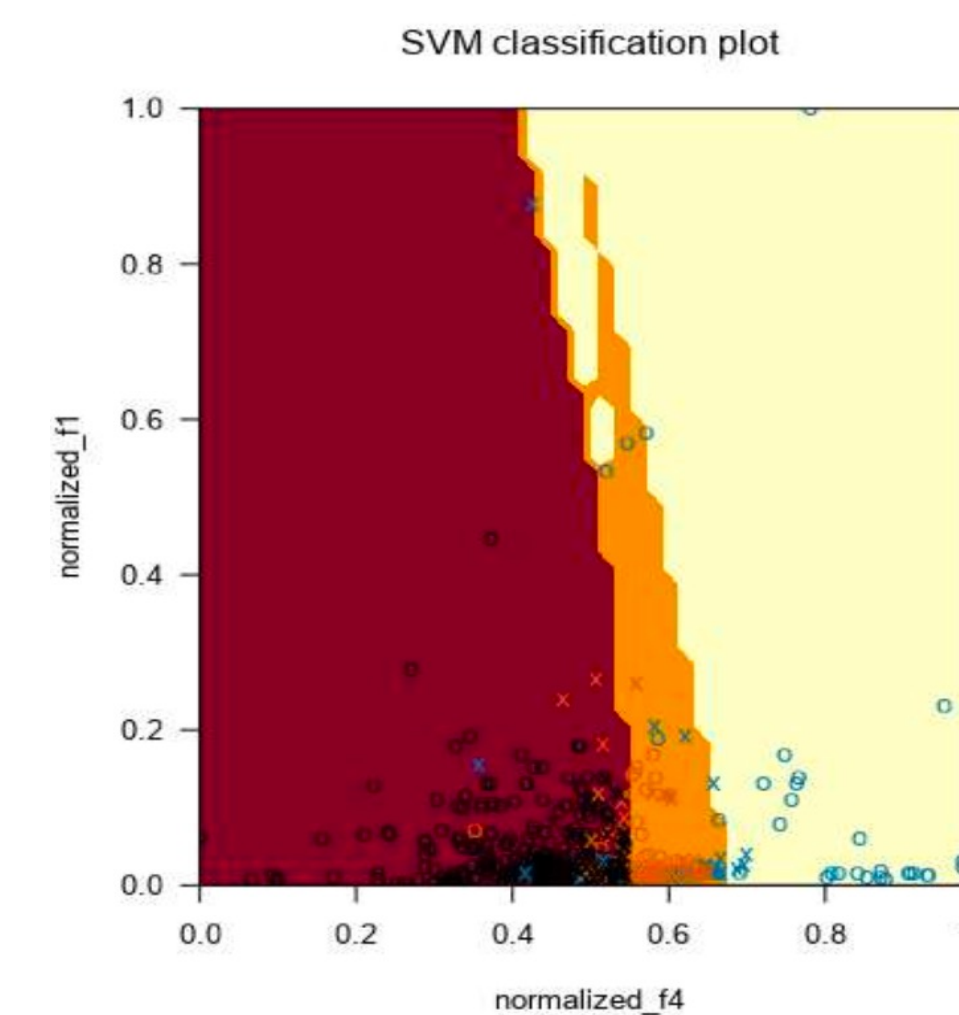
Product attributes

1. Profit Margin
2. Annual demand
3. Demand fluctuation
4. Inventory turnover
5. Unit price
6. Priority

Classes obtained using weighted score



Machine Learning for class prediction of SKUs

Prediction accuracy using
support vector machines

92.3%

Contribution

Advanced product
segmentation
framework to transform
inventory policy

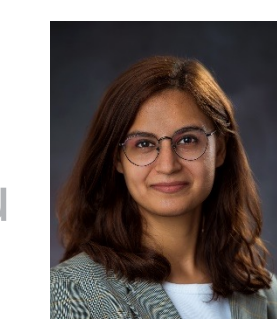
Prevent stockouts



Avoid excess inventory



Optimize use of capital

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