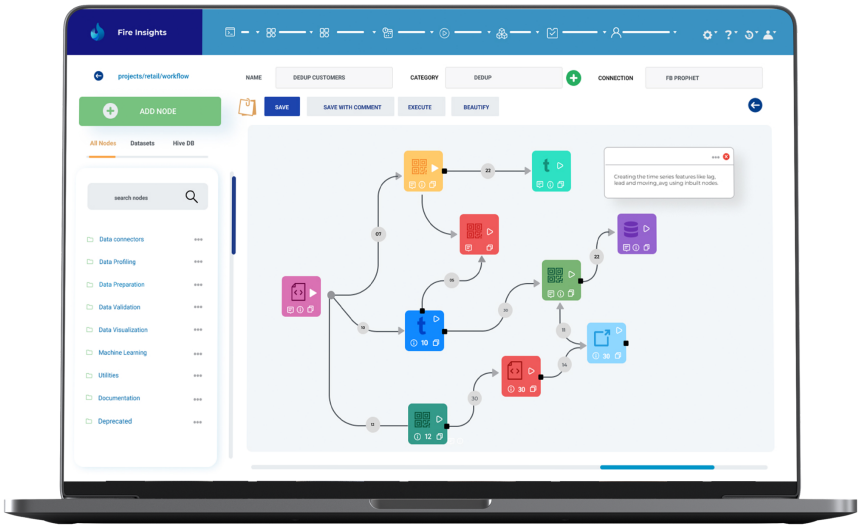
sparkflows.io



Accelerate Business Growth of Industries with Best-In-Class Self-Service Vertical Use case Builder.

Business Solution for Store Segmentation

Business Objective of the Case Study

- Our client is a Global Firm in the Health and Hygiene Industry. The Firm needed to identify the local stores which are most suitable for optimizing product sales . It wanted to locate businesses near the center of their potential consumer population to attract the greatest amount of customers.

Challenges

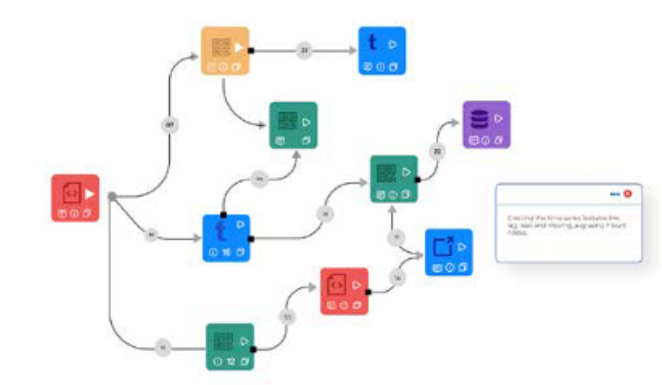
- Assortment relevance is a major challenge
- Understanding the patterns of items and categories
- Retail assortment planning is very hard
- Manual categorization is extremely time consuming due to wide variations
- Lack of statistical knowledge among retail managers
- Lack of real-time grouping
- Various types of clustering makes the process extremely complex.

Solution Approach

- Clustering on the basis of stores where we split stores into segments so that product assortments, size allocations, and promotional offers can be localized as needed.
    - Stored similar to each other are bundled together in a segment so that product assortments, size allocations, and promotional offers can be localized as needed; while stores with different characteristics are assigned to different segments.
- Evaluated sales performance by category leads to a more precise understanding of variations in level of demand across stores. This way, assortment breadth, and depth can be treated differently for each category.
- Performed Geographic analysis and developed KPIs
- Developed K-Mean Model using the relevant business attributes
- The resulting model could accurately provide the retail clusters.

Implementation Process

- Dataset Definition
- Exploratory Data Analysis
- Data Enrichment
- Feature Engineering
- Customer Clustering
- Cluster Evaluation



Dataset Definition

The Source data contains historical transactions of various customers.

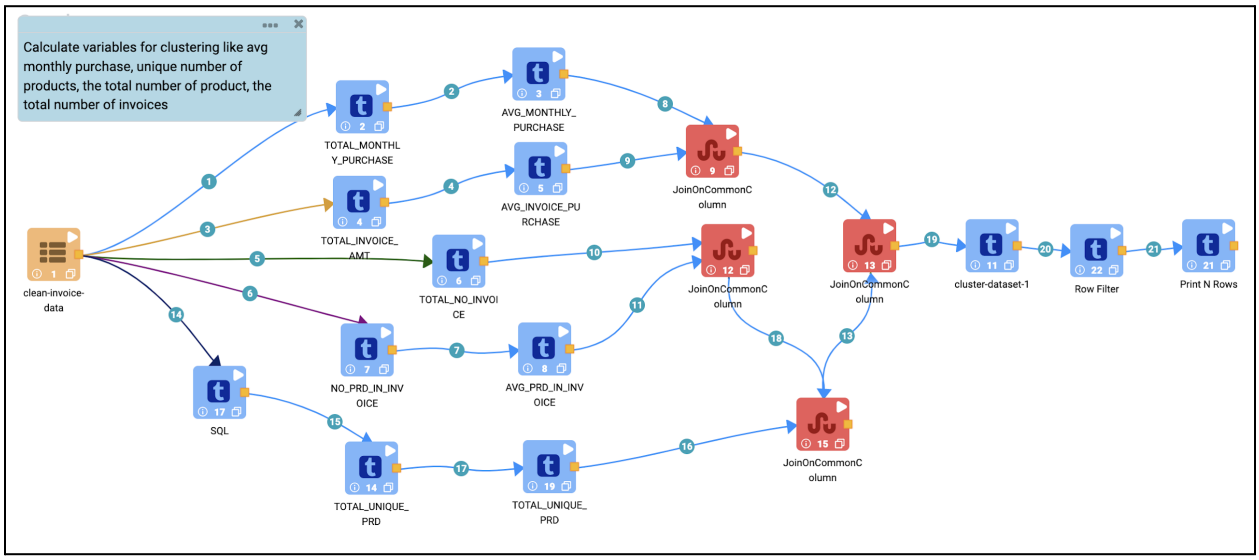
Average monthly billing
Average count of invoices
Total unique parent product purchased
Total Number of invoices
Average number of parent products in an invoice

Exploratory Data Analysis

- Powerful Exploratory Data Analysis Workflow can be designed using the Fire Insight Studio.The workflow provides crucial insights in graphical form.

- The workflow is creating features like average monthly purchase, total number of products and other features which could provide more predictive power to the K-means model which will be trained in the next step.

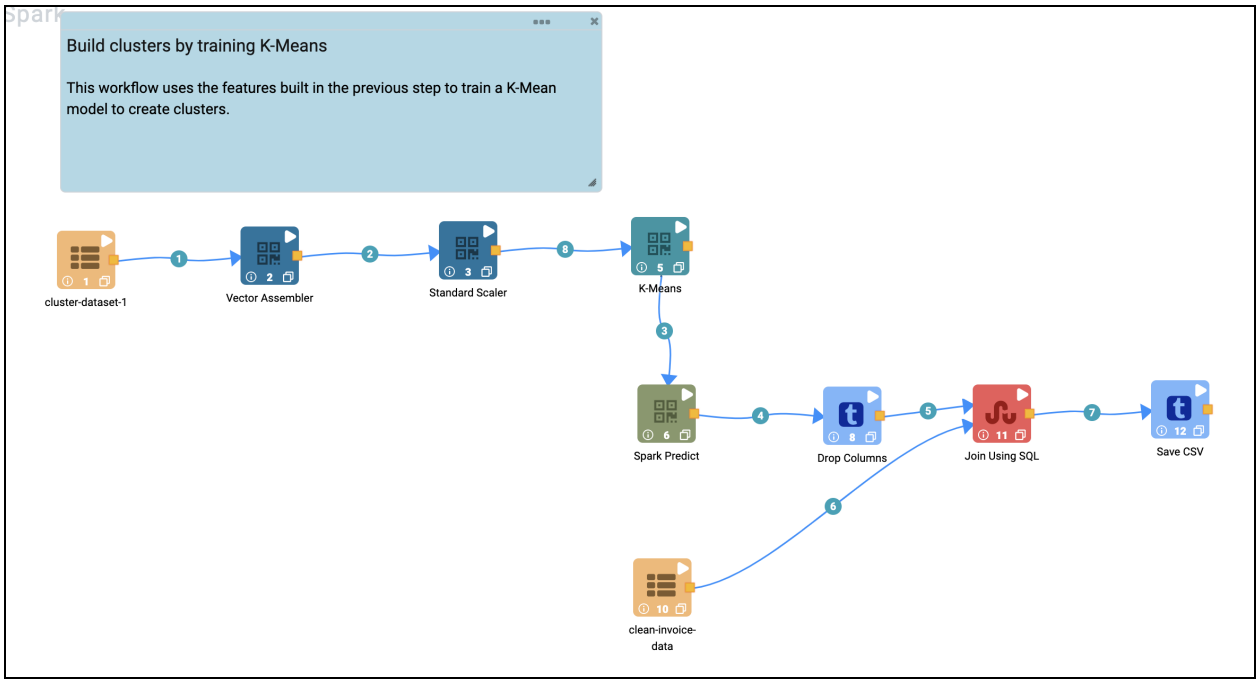
EDA Workflow View



Machine Learning Workflow

Create Clustering Model

The workflow is training a K-Means model on the prepared data from the previous workflow to find the optimal number of clusters to group the data into.



Cluster Evaluation

#Cluster	#Stores	Avg Monthly Purchase	Avg Invoice	Total Unique Products	Avg Products In Invoices
0	500	5m	6m	50	8
1	1000	300k	200k	5	1
2	1400	14M	3m	25	4

- From above clustering results, we observe that:

- Cluster 0 are large operations stores based on the number of unique products that they have kept, the average invoice purchase and average products in the invoices.

- Cluster 1 is a small operational store based on the unique products that they keep, the number of stores, the average monthly purchase compared to other clusters
- Cluster 2 is a medium operational store lying between the small and big stores.

Business Impact

- Quick Business Decision on allocating Items
- Better localization of goods.
- Great personal shopping experience to the local customers.
- Heterogeneous multi-location environment
- Efficient Inventory management

References

https://www.sparkflows.io/

https://docs.sparkflows.io

https://www.sparkflows.io/videos

https://www.sparkflows.io/data-sheets