metropolitan appliance

SHOWROOM CONSULTATION ANALYTICS PROJECT

TEAM A6 >>>

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Background

Metropolitan Appliance is a locally owned retail supply store that sells and installs kitchen appliances throughout the Puget Sound region.

The business is in Seattle's SODO neighborhood and employs 35 people working in an assortment of roles related to sales,

Phase I Discover & Plan → Phase II Plan, Analysis & Design → Phase III Develop Solutions → Phase IV Optimize & Deploy

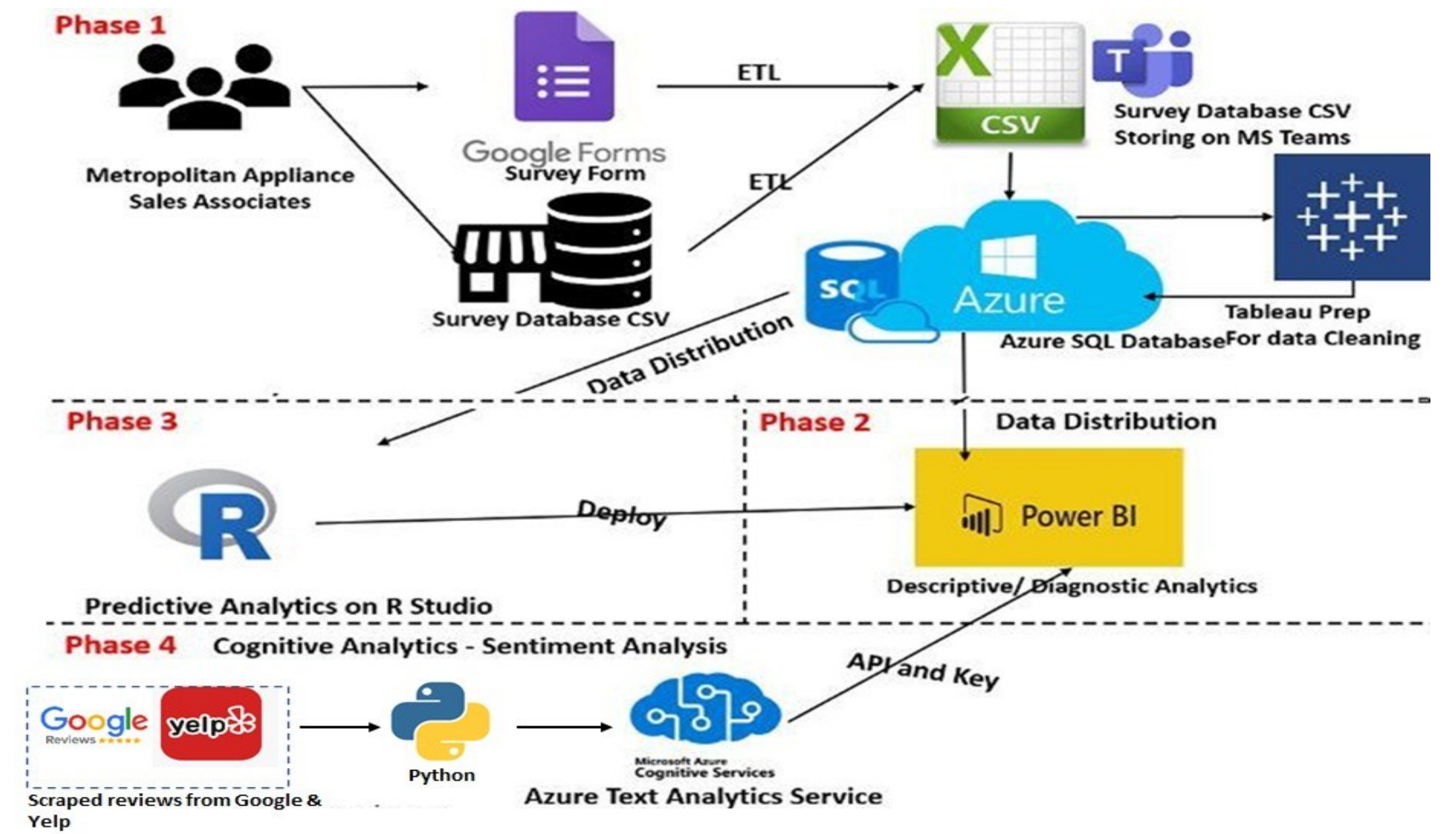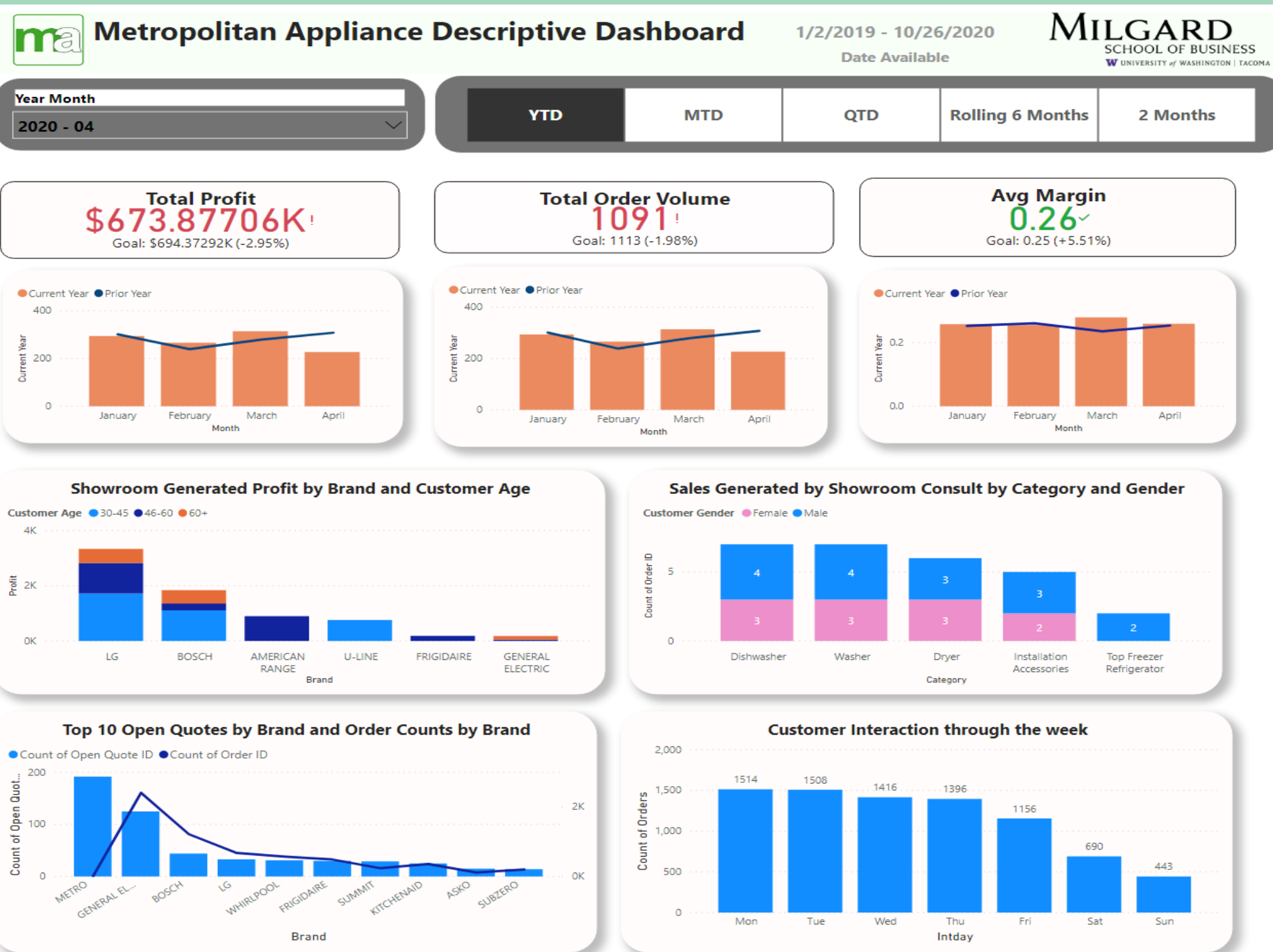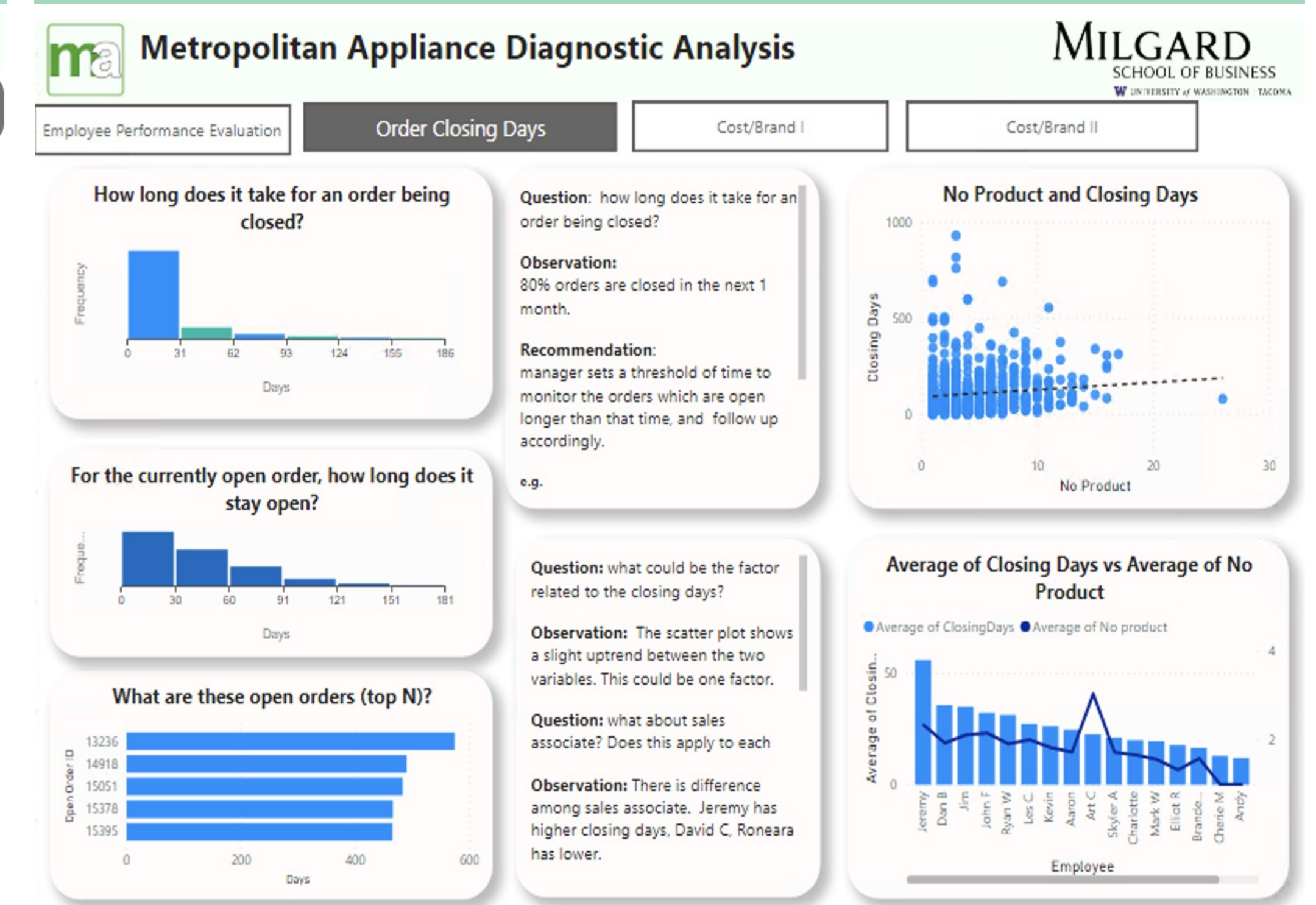## Objectives

- Built a google survey form and a repository database
- Built an analytics dashboard that loads and merges the data from the showroom survey data and the sales transaction data.
- Built a Machine Learning tool in R that recommends the products to sell with the product that the customers come to see on the showroom floor.
- Built a sentiment analytics tool in Power BI using Microsoft Azure Cognitive Analytics on customer feedbacks from Yelp and Google Review for Metropolitan
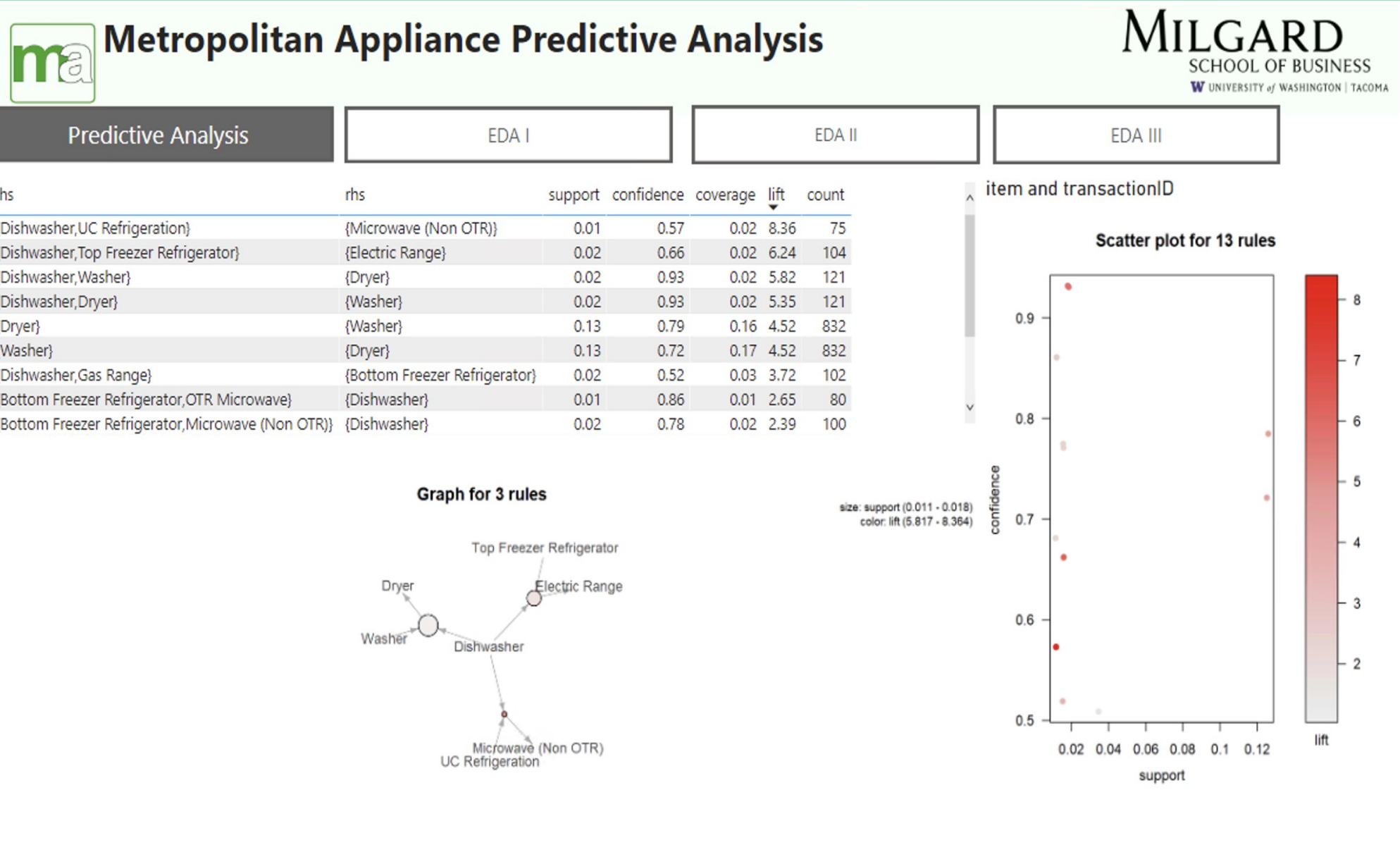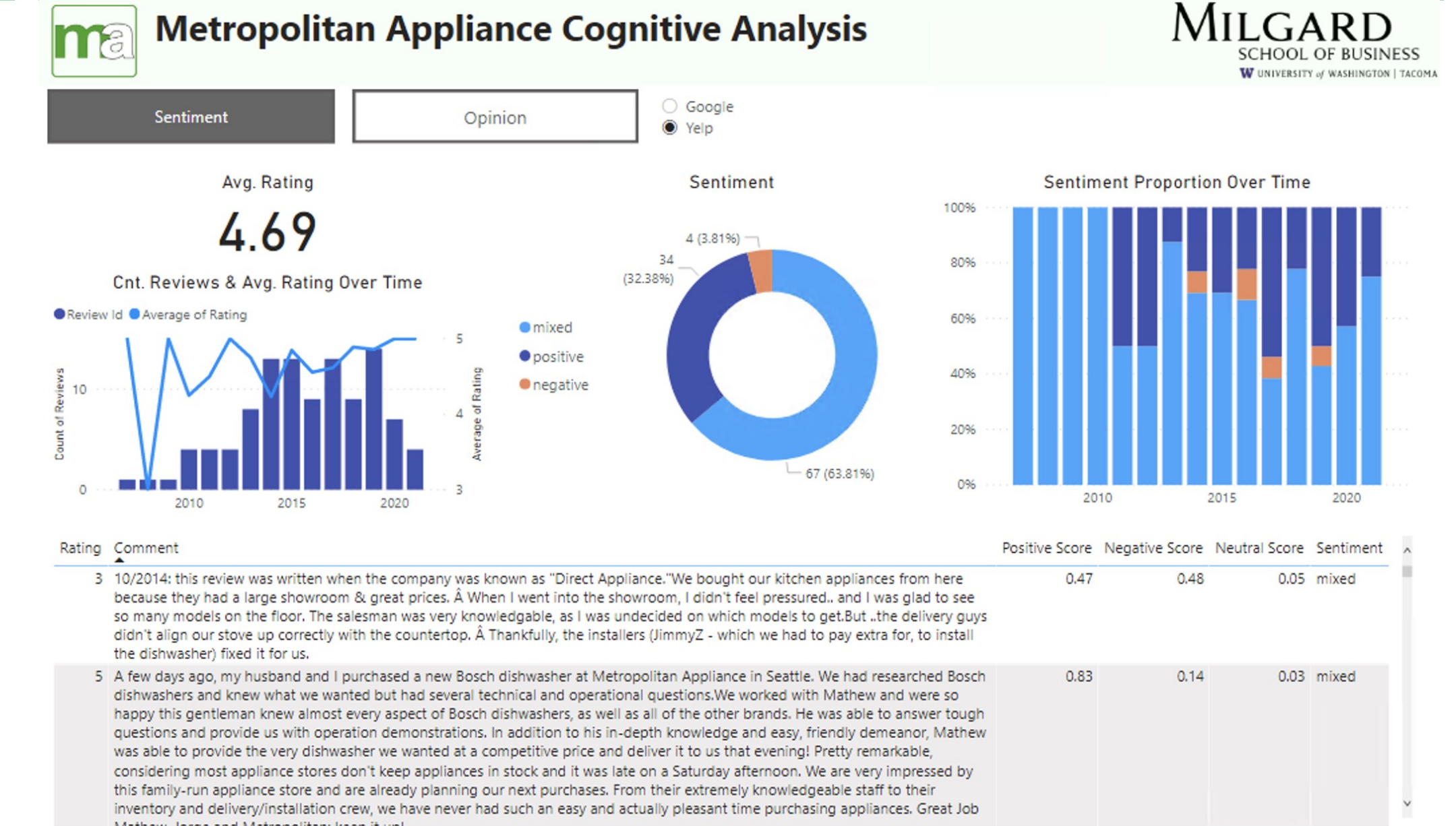

Architecture diagram: Phase 1 – Metropolitan Appliance Sales Associates → Google Forms Survey Form / Survey Database CSV → ETL → CSV / Survey Database CSV Storing on MS Teams → Azure SQL Database / Tableau Prep For data Cleaning. Phase 2 Data Distribution → Power BI Descriptive/Diagnostic Analytics. Phase 3 → R Predictive Analytics on R Studio Deploy. Phase 4 Cognitive Analytics - Sentiment Analysis: Scraped reviews from Google & Yelp → Python → Microsoft Azure Cognitive Services Azure Text Analytics Service, API and Key.

Descriptive Analytics

Metropolitan Appliance Descriptive Dashboard (1/2/2019 - 10/26/2020). Total Profit $673.87706K, Goal $694.37292K (-2.95%). Total Order Volume 1091, Goal 1113 (-1.98%). Avg Margin 0.26, Goal 0.25 (+5.51%). Showroom Generated Profit by Brand and Customer Age; Sales Generated by Showroom Consult by Category and Gender; Top 10 Open Quotes by Brand and Order Counts by Brand; Customer Interaction through the week.

Diagnostic Analytics

Metropolitan Appliance Diagnostic Analysis. How long does it take for an order being closed? Observation: 80% orders are closed in the next 1 month. Recommendation: manager sets a threshold of time to monitor the orders which are open longer than that time, and follow up accordingly. For the currently open order, how long does it stay open? What are these open orders (top N)? No Product and Closing Days scatter plot. Average of Closing Days vs Average of No Product.

Descriptive & Prescriptive Analytics

Metropolitan Appliance Predictive Analysis. Association rules table (lhs, rhs, support, confidence, coverage, lift, count). Scatter plot for 13 rules. Graph for 3 rules.

lhs	rhs	support	confidence	coverage	lift	count
{Dishwasher,UC Refrigeration}	{Microwave (Non OTR)}	0.01	0.57	0.02	8.36	75
{Dishwasher,Top Freezer Refrigerator}	{Electric Range}	0.02	0.66	0.02	6.24	104
{Dishwasher,Washer}	{Dryer}	0.02	0.93	0.02	5.82	121
{Dishwasher,Dryer}	{Washer}	0.02	0.93	0.02	5.35	121
{Dryer}	{Washer}	0.13	0.79	0.16	4.52	832
{Washer}	{Dryer}	0.13	0.72	0.17	4.52	832
{Dishwasher,Gas Range}	{Bottom Freezer Refrigerator}	0.02	0.52	0.03	3.72	102
{Bottom Freezer Refrigerator,OTR Microwave}	{Dishwasher}	0.01	0.86	0.01	2.65	80
{Bottom Freezer Refrigerator,Microwave (Non OTR)}	{Dishwasher}	0.02	0.78	0.02	2.39	100

Cognitive Analytics

Metropolitan Appliance Cognitive Analysis. Avg. Rating 4.69. Cnt. Reviews & Avg. Rating Over Time. Sentiment donut (mixed, positive, negative): 57 (63.81%), 34 (32.38%), 4 (3.81%). Sentiment Proportion Over Time. Rating/Comment table with Positive Score, Negative Score, Neutral Score, Sentiment.

Recommendations & Transformation Plan

- Continue monitoring overall Key Performance Indicators
- Continuously evaluate the drilled-down analyses such as cost per brand, order closing days, and employee performance evaluations

- Recommend complimentary products, change store layout, offer post-transaction coupons based on the association rules
- Track customers' sentiment and opinion to improve areas not performing well