Customer Segmentation: Tailoring Products & Services To Fit Their Needs

ORGANIZATION

Our client is a prominent retail apparel chain headquartered in Texas, operating more than 1,500 stores across the United States and Canada. The company has strengthened its market presence by acquiring several major competitors, expanding its portfolio. They offer a wide range of products, including men's and women's clothing, footwear, tuxedo rentals, and suit pressing, with a strong focus on quality, style, and innovation. Supported by an extensive network of warehouse facilities and a highly efficient supply chain, the organization employs approximately 22,500 professionals worldwide, delivering exceptional, personalized shopping experiences across its diverse brands.

CHALLENGE

Our client faced challenges with customer churn and sought a deeper understanding of their customer base. This understanding aimed to achieve two key objectives: tailoring products and services to better meet customer needs and enhancing their ability to retain loyal customers. However, the client lacked a data-driven strategy for customer retention and sales optimization. As a starting point, it was essential to implement customer segmentation, which would enable the client to:

- Gain a deeper understanding of their customer base.
- Identify unsatisfied customer needs.
- Enable targeted marketing.
- Create customized campaigns.
- Discover cross-sell and up-sell opportunities.
- Gather insights for developing new product features.

XTIVIA's Data Science and Data Management Team supported our client with data collection, preparation, and model development, employing the most suitable machine learning algorithm to achieve optimal prediction accuracy.

TECHNICAL SOLUTION

XTIVIA's Data Science and Data Management team collected data, prepared data, built the Customer Segmentation model, evaluated the model, and presented the segments to the client's IT and business users.

1. **Data Collection:** Data quality is essential to better segment our clients' customers. These data included demographics, geographical, psychographic, and behavioral.
2. **Data Preparation:** Once the team collected the data, the next step was to prepare the data to be fit for modeling. This involved preliminary analysis, profiling, cleansing, and standardizing the data as required before using it for modeling and other analytics.

a. **Exploratory Data Analysis:** Conducting an initial investigation of the data prior to cleansing is crucial. This process helps identify missing values, temporal variables, frequency distributions (visualized through numerical plots), categorical variables, multicollinearity (interdependencies among predictor variables), and outliers.

b. **Feature Engineering:** The next step in data preparation involved preparing data to be "model-friendly." We determined how to handle missing values, leverage numerical and temporal variables, normalize all variables, convert categorical data into numerical values, use different techniques to resolve multicollinearity, and identify outliers.

c. **Feature Selection:** The final step in data preparation involved selecting the variables from the dataset that were most influential in segmenting the customers.

3. **Model Building and Evaluation:** Following the data preparation process, the next step involved selecting the most appropriate algorithm for prediction accuracy. In this case, the goal was an algorithm that provided the best clustering. Various clustering algorithms were considered, including Partition, Hierarchical, and Fuzzy. Next, we optimized the K-Means using the Elbow Method. Finally, we evaluated the performance and accuracy of the model by using visual representation, cross-validation, and the Adjusted Rand Index, which explains the similarity between points within each cluster.

BUSINESS RESULT

With XTIVIA's assistance, the client gained a better understanding of the customer segments and their behavior. They were able to discover cross-sell and up-sell opportunities across lines of business and customize campaigns to fit customer needs. This resulted in improved customer retention and assisted with designing effective pricing and promotion strategies.

BY THE NUMBERS

- 1,500+ North American Stores
- 65+ Million eCommerce site visits
- 37+ Million loyal customers

KEYWORDS

Machine Learning, Data Science, Artificial Intelligence, Clustering, Customer Segmentation

SOFTWARE

Python, Jupyter Notebooks, Snowflake Data Warehouse, SQL, Windows

ABOUT XTIVIA

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