Buyer Prediction Model

Commercial Real Estate Services Company

Built a predictive model to identify the most likely buyers for a commercial real estate property based on past buyer purchases, using density based clustering algorithms such as “DBSCAN” and vector techniques such as “one-hot transformation”.

Buyer Prediction Model for a Commercial Real Estate Firm

Buyer Prediction Model

Situation

- The client's property sales line of business (LOB) was not efficient or targeted because brokers typically approached 5,000+ potential property buyers for a deal
- Partnered with the client to leverage historical transactions data available with the LOB to build a predictive model generating a ranked actionable list of potential buyers for a property

Accordion Value Add

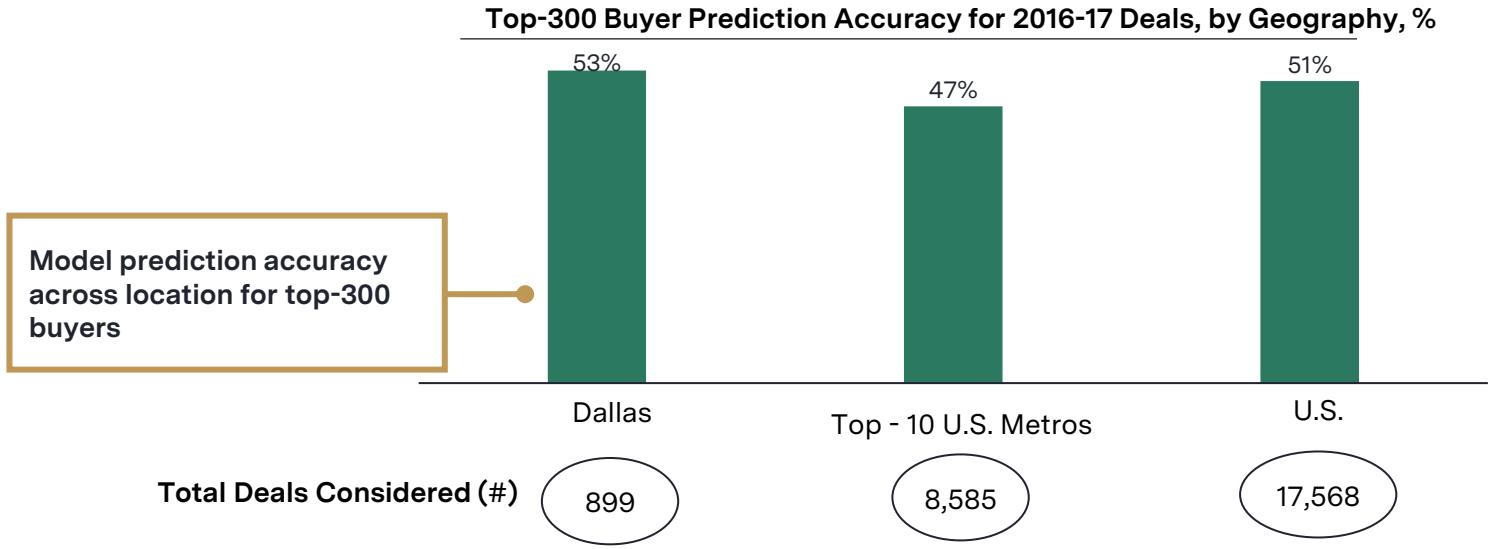
- Identified key metrics to determine market trends considering commercial real estate transactions over last 14 years
- Identified important characteristics of a deal by analyzing purchase deals for building the buyer recommendation system
- Processed deal data into numerical vectors to calculate distance to score buyers, using models such as "one-hot transformation"
- Potential buyers were clustered using density based clustering algorithms such as "DBSCAN"

Impact

- Developed a buyer recommendation system that provided a ranked actionable list of 100 potential buyers for each property
- When deals during last two consecutive years in the U.S. were considered, the actual buyer was present in top-100 predicted list in ~60% of cases, which made the deal sales process more efficient for the brokers
- Worked with the client development team to integrate the buyer recommendation system with their internal deal flow management software

Key Recommendations and Accuracy Insights

Characteristics Considered for Modelling			
Characteristic Type	**Characteristics**		**Description**
Geographic	• Region • State • Metro	• Market • Sub-Market	These property geography-specific characteristics were used to identify preferred geographies of buyers
Property Specific	• Property Type • Property Sub-Type • Property Age	• Property Value • Tenancy • Cap Rate	These property-specific characteristics were used to identify property related preferences of buyers
Deal Specific	• Purchase Objective • Deal Type	• Purchase Frequency • Deal Year/Month	These characteristics were used to identify purchase preferences of buyers



Methodology Flow for Buyer Recommendation System

Processed test & train data into the required format...

...used vector distance calculations to score buyers based on how similar their past purchases were to the test property...

...and recommended the most likely buyers