

# Item Affinity Analysis and Recommendations Using Amazon SageMaker

## ORGANIZATION

The organization is a well-recognized retail apparel chain headquartered in Texas and operating 1,500+ stores in the US and Canada. The company has acquired many big market players as its subsidiaries. They offer men's and women's clothing, footwear, tuxedo rentals, and suit pressing with quality, fashion, and innovation as central parts of each product. The company has many warehouse facilities with a reliable supply chain mechanism. Globally, around 22,500 employees provide high-touch, high-quality shopping experiences across their brands.

## CHALLENGE

This project aims to drive sales by creating a recommendation engine for customers to suggest items they might be interested in based on multiple factors such as prior search history, purchase history, and customer segment.

## TECHNICAL SOLUTION

XTIVIA used AWS SageMaker Machine Learning to implement the recommendation system. The team split the data into an 80/20 ratio for training and testing. The team performed data wrangling on input data to prevent the engine from making non-relevant item recommendations. The team used our domain and data expertise to perform feature engineering and feature selection, improving performance and model accuracy. The team used apriori for association rules learning. We trained the model using production-like data. The team minimized overfitting problems by using regularization techniques.

## BUSINESS RESULT

As a result of XTIVIA's efforts, the organization could drive revenues by increasing basket value, improve customer satisfaction (as evidenced by positive feedback), and gain insights into the revenue-making potentials from specific item combinations.

### KEYWORDS

- Data Science
- Machine Learning
- Artificial Intelligence
- Association
- Market Basket Analysis
- Affinity Analysis
- Recommendation System

### SOFTWARE

- Python
- Jupyter Notebooks
- AWS SageMaker

### HARDWARE/PLATFORM

- AWS

## ABOUT XTIVIA

XTIVIA is a proven technology integration and innovation company known for delivering leading-edge technology solutions to our clients' specific requirements, regardless of project complexity. We bring next-level business operations to reality through Application Development, Business Intelligence, Data Warehousing, Database Support & Management, Enterprise Information Management, Digital Experience Solutions, and Enterprise Resource Planning. Our success stems from a demonstrated ability to deliver deep expertise via professional services, empowering clients to leverage their chosen technology successfully, competitively, and profitably. XTIVIA has offices in Colorado, New York, New Jersey, Missouri, Texas, Virginia, and India. [www.xtivia.com](http://www.xtivia.com)