

Oracle Retail Advanced Clustering

Today's consumers are becoming more demanding as they shop multiple retailers and expect a unique shopping experience in their channel of choice. Retailers must provide profitable and relevant assortments, promotions, and prices to compete in an evolving landscape of pure play, general merchants, and traditional competitors. Consumers speak to retailers with their purchase patterns, shopping preferences, and buying behaviors. With a view across stores, geographies, and markets, retailers can improve store performance and drive market share with a loyal customer base by understanding and catering to the unique needs of their customers.



CENTRALIZED ENTERPRISE SOLUTION

[Oracle Retail Advanced Clustering](#) is a capability that sits atop the Oracle Retail AI Foundation, which provides analytical insights to drive planning, buying, moving and selling decisions. These capabilities enable retailers to drive profit and remain flexible to the changing retail environment.

It is an enterprise-specific clustering solution that leverages data mining capabilities to create store and customer groupings at various product, customer, and location levels using multiple inputs. These inputs can include performance data, category purchase data, product attributes, store attributes, and third-party data such as demographic and/or market information, as well as consumer or customer segments.

Using embedded retail analytics and automation capabilities, retailers will be able to easily identify unique patterns within available data. This allows retailers to create customer-centric and targeted clusters to be utilized by downstream assortment planning, forecasting, allocation/replenishment, pricing, and promotions planning processes.

The analytical insights of Oracle Retail Advanced Clustering acknowledges retail specific scenarios and complexity when building the modeling approach and applying algorithms. The retail-specific analytics builds confidence in the recommended actions and ability solve issues relevant to the complexity of our industry.

A centralized and streamlined approach to the creation of clusters helps to support and align the business strategy across assortment, pricing, promotion, replenishment/allocation, marketing, and space specific processes. Integration with other Oracle Retail applications reduces complexity in creating this centralized view. The solution offers a range of distance metrics suitable for real-valued attributes, categorical attributes, profile-based measurements, as well as time-based performance metrics.

Key Benefits

- Leverage customer insights through analytics to drive a notable increase in sales
- Enable the creation of customer-centric, targeted clusters
- Increase financial performance and inventory productivity when leveraged in key planning processes
- Improve store operations
- Accommodate dynamic business priorities with a flexible solution
- Fully productized advanced analytics is available exclusively on the Oracle Cloud without a heavy capital investment

FIT FOR PURPOSE

The Oracle Retail Advanced Clustering provides retailers with multiple approaches and methods when generating clusters. The system is highly flexible and dynamic to support a number of different cluster algorithms, depending on your clustering needs. This comprises of the creation of simple, nested and/or mixed attribute clusters using multiple methods which support discrete / non-discrete attributes:

- Intelligent clusters utilizing machine learning (Selling Patterns, Attributes, Demographics, etc.)
- Performance-based clusters (Sales Revenue, Sales Units, Gross Profit %, etc.)
- Product attribute-based clusters (Brand, Color Family, Price Band, etc.)
- Location attribute-based clusters (Store Size, Climate, Population Size, etc.)
- Consumer profile-based clusters (Customer Demographics, Category Purchase behavior, Customer Purchase Behavior, etc.)
- Combination of one or more of above

The clustering process focuses around a very quick and intuitive 3-step process to create, review, and approve store clusters for downstream solution use. This includes providing the ability to define and use clustering templates which can be specific to given product/location combinations and easy drag/drop of stores into clusters for overrides. System generated rankings and importance factors help users understand complex statistical concepts.

Users are also able to access and use rich contextual reporting analysis to review and drive key decisions related to the clustering process. This includes:

- Assisting retailers to determine what categories or merchandise classifications benefit most from clustering, what level of customer data, product or location hierarchy to cluster at as well as what attributes should be leveraged
- Review key details related to the available cluster recommendations; assessing areas such as cluster composition, performance, attributes as well as store level scores (in relation to total cluster)
- Cluster scenario comparison; enabling users to visually assess differences between the respective cluster details

Key Features

- Ability to cluster at multiple levels within the available hierarchies
- Dynamic nesting/mixing of product attributes, location attributes, consumer segments, as well as performance data
- Available scoring logic provides the ability to easily identify outliers or areas of opportunity
- Pre-defined templates to drive a quick & efficient clustering process
- Embedded and automated data cleansing
- Embedded Retail AI Foundation, powering Oracle Retail Demand Forecasting Cloud Service with:
 - Forecasting Engine
 - Customer Segmentation
 - Advanced Clustering
 - Profile Science
 - Attribute Extraction & Binning
 - Customer Decision Trees
 - Demand Transference
 - Affinity Analysis
 - Innovation Workbench
- Further extensibility with:
 - Oracle Retail Home
 - Oracle Analytics
 - Oracle Application Express
 - Oracle REST Data Services
 - Oracle Machine Learning

ORACLE CLOUD INFRASTRUCTURE

All Oracle Retail Analytics and Planning cloud services are deployed as cloud-native Software-as-a-Service solutions within Oracle Cloud Infrastructure (OCI) upon Oracle's Autonomous Data Warehouse, and are based upon an architecture and technology stack that is optimally engineered for rapid, low-cost deployments and exceptional performance and scalability, and the highest levels of system availability and security - from storage to scorecard.

ORACLE RETAIL AI FOUNDATION

Core retail AI and machine learning (ML) powers all Oracle Retail Analytics and Planning cloud services. For example:

Forecasting Engine - Provide an intelligent starting point for your planners, increasing automation and accuracy. Move to a more touchless and exception management planning process.

Customer Segmentation - Group customers based on attributes, behaviors, and transactions to tailor offers, pricing, and assortments accordingly, incorporating previously hidden patterns in your data.

Advanced Clustering - Cluster your stores based upon traditional approaches of volume, square footage, region, etc., or leverage machine learning techniques to cluster stores based upon similar selling patterns, truly creating a customer-centric assortment.

Profile Science - Determine the best size ratio for your buys by understanding the true demand of your sizes while considering stock-outs.

Attribute Extraction and Binning - Extract item attributes from free-form descriptions, correcting short forms, misspellings, and other inconsistencies, and apply them to Demand Transference, Customer Decision Trees, Advanced Clustering, and more.

Customer Decision Trees - Understand how your customers are shopping your assortments to drive attribute-based alternate hierarchies and effectively plan your assortment the way your customer shops.

Demand Transference - Understand how unique your items are and the incremental revenue that item brings to determine the most optimal assortment for your customer.

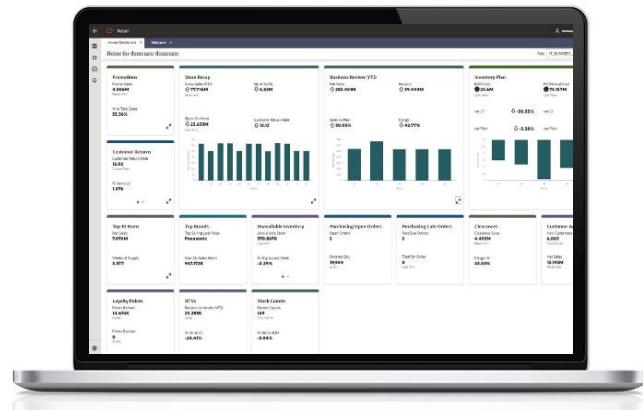
Affinity Analysis - Determine how items interact with each other to drive a more effective promotional strategy within your financial planning process.

Innovation Workbench - Leverage open source along with your data science team to create your own AI and ML models. Utilize the language of your choice with Jupyter/Zeppelin notebooks.

ORACLE RETAIL HOME

Oracle Retail Home is a single access point, to simplify a user's interactions with the data and applications that are most relevant to their roles, and to better empower them to anticipate informed actions, and to inspire engagement.

Based on a robust and flexible portal framework, Retail Home is intended first to provide timely and role-specific high-level insights, and second to enable selectively drilling into relevant applications for more details.



ORACLE ANALYTICS

Oracle Analytics can be used to generate and consume analytics from Oracle Retail AI Foundation data, and in turn can also surface dashboards to Oracle Retail Home.

Oracle Analytics is a comprehensive platform that parlays data into information to provide business insights, federating a broad array of features to suit business users, power users and data scientists:

Governed	Self-Service	Augmented
• Corporate Dashboards	• Data Preparation	• Natural Language Processing
• Pixel Perfect Report	• Data Visualization	• Voice and Chatbot
• Semantic Models	• Storytelling	• Data Enrichment
• Role-based Access Control	• Sharing and Collaboration	• One-Click “Explain”
• Query Federation	• Mobile Apps	• Adaptive Personalization

Beyond the extensibility afforded by the Oracle Retail AI Foundation's Innovation Workbench, Oracle Analytics, and Oracle Retail Home, also included are Oracle Data Store, Oracle APEX, and Oracle REST Data Services.

ORACLE DATA STORE AND APPLICATION EXPRESS

Oracle Retail Data Store can supply data for Oracle Application Express (APEX) apps and Oracle REST Data Services, which both are included. APEX is a low-code development platform that enables you to build scalable, secure enterprise apps with world-class features that can be deployed anywhere.

Developers can quickly develop and deploy compelling apps that solve real problems and provide immediate value using APEX. You won't need to be an expert in a vast array of technologies to deliver sophisticated solutions. Focus on solving the problem and let APEX take care of the rest.

ORACLE REST DATA SERVICES

Oracle REST Data Services bridges HTTPS and your Oracle Database, providing, among other things, a REST API, SQL Developer Web, a PL/SQL Gateway, SODA for REST, and the ability to publish RESTful Web Services for interacting with the data and stored procedures in your Oracle Database.

ORACLE MACHINE LEARNING

Oracle Machine Learning supports data exploration, preparation, and machine learning modeling at scale using SQL, R, Python, REST, AutoML, and no-code interfaces. It includes more than 30 high-performance in-database algorithms producing models for immediate use in applications.

By keeping data inside the database, organizations can simplify their overall architecture and maintain data synchronization and security. It enables data scientists and other data professionals to build models quickly by simplifying and automating key elements of the machine learning lifecycle.

[Learn more or request 1:1 demo](#)

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