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Oracle Retail Analytics—Offering Actionable Retail Insights from Storage to Scorecard
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Introduction

Retail analytics is the art and science of turning the unknown into the known. It’s about finding opportunities and threats that you hadn’t anticipated, or finding new customers that you didn’t know existed. It’s about learning what’s really important, rather than what you thought was important. It’s about closing the loop between insight and action - detecting, then analyzing, then modeling, then acting, and then repeating the cycle.

As Robert Kaplan famously stated “You can’t manage what you can’t measure.” That’s all well and good, and retailers have been investing heavily in data warehouses and business intelligence (BI) tools with the hope that they can foster more data-driven business cultures, but few would claim success. Why is that? Technology vendors offer such a wide variety of outstanding applications for retailers to provide the rich data needed to power analytics. Plus, an array of database, middleware, hardware and BI platform products are available. All of the key ingredients for a successful retail analytics solution exist, yet most retailers still struggle.

Challenges Abound

The functional challenges span all major facets of a retailer’s business:

- **Product** - Align inventory with demand so you’re never out of stock or carrying excess inventory.
- **Pricing** - Charge exactly the price that customers are willing to pay at any moment.
- **Promotion** - Entice customers to buy.
- **Place** - Locate stores, distribution centers and other facilities in optimal locations based on customer and competitor insights.

Retailers also continue to face various non-functional BI challenges:

- **Remove data and BI silos** - Gain economies by eliminating redundancies, and also synergies by enabling cross-domain analysis.
- **Provide consistent BI semantics** - The proverbial “one version of the truth” not only means consistent metrics and KPI’s but also consistent definitions, terminology, etc., allowing users to truly “speak the same language.”
- **Enable self-service BI** - Too often IT is required to satisfy the business users’ BI requirements by creating reports, writing and running SQL, etc. It is much more efficient to put BI tools directly in the hands of the business user wherever possible.
- **Surface BI to users when, how and where needed** - Instead of a “go-get-your-reports” approach, where users have to spend valuable time hunting-down BI, it can be surfaced, properly-filtered, to the right people, and the right time, using the right delivery vehicle.
- **Discover hidden patterns through data mining** - Applying statistical algorithms to historical data can enable a better understanding your customers’ buying patterns and behaviors.
- **Maximize Value** - Employing more complete, “engineered” BI solutions that include integrated, plug-and-play BI applications on a complete business intelligence/data warehouse (BI/DW) tech stack minimizes
costs and maximizes time-to-value. Addressing these challenges can be a long, painful and expensive road (see Figure 1.) which is why while most retailers understand the value of BI and are investing heavily in it, they tend to be stalled somewhere around the “Accessible” or “Unified” stages of the following BI maturity model:

![BI Maturity Model Diagram](image)

**Figure 1: Retail analytics - A Long, Painful, Expensive Road**

**Oracle’s Approach**

Fortunately, Oracle is making it easy for retailers to unlock the value of their data with fast, pervasive, enterprise-level BI in an incremental, modular fashion with Oracle Retail Analytics. Oracle is in a very unique position in the retail BI space. With unmatched strength in retail software, Oracle has access to deep retail functionality and data. With Oracle’s dominance in database and data warehouse technology, Oracle has the ability to manage a retailer’s data in the most efficient and scalable manner. Some unique features in Oracle BI technology along with Oracle’s Common Enterprise Information Model enable a cohesive, enterprise-level analytical offering that blends retail with ERP and CRM subject areas.

Oracle Retail Analytics is a series of integrated, plug-and-play Oracle BI Applications that are offered in retail domain-specific modules, all based on the Common Enterprise Information Model (see Figure 2.) Oracle Retail Merchandising Analytics and Oracle Retail Customer Analytics are available today, while modules for Planning, Supply Chain and Stores are planned. Oracle Retail Analytics is pre-integrated with Oracle’s retail applications and is designed to easily accommodate data from non-Oracle data sources.
Some key Oracle Retail Analytics differentiators are:

- **Fusion Aligned**
  Oracle Retail Analytics is based on and works with Oracle BI Applications Fusion Edition, which provides analytics for Oracle’s Fusion ERP and CRM OLTP applications. Providing analytics for Oracle’s retail OLTP applications, Oracle Retail Analytics exemplifies the Fusion spirit of fully-integrated retail + ERP + CRM applications.

- **Storage-to-Scorecard**
  Oracle Retail Analytics is based on and works with Oracle’s complete BI and data warehousing architecture including Exadata, Exalogic and Exalytics. However, only Oracle Database, Oracle Data Integration and Oracle Business Intelligence (OBI) are required technologies, allowing retailers to deploy on traditional hardware/OS platforms (e.g. IBM/AIX, Solaris, Linux, etc.). Other optional Oracle technology (like Oracle Data Mining, Oracle Spatial and Oracle BI Mobile) need only be licensed to the extent needed. Customers therefore have a choice between an "optimized" or an "engineered" solution.

- **Model Once, Deploy Anywhere**
  Built on the Oracle BI Applications platform, Oracle Retail Analytics subscribes to Oracle’s Common Enterprise Information Model, enabling truly-integrated cross-domain analysis between vertical (retail) and horizontal (ERP/CRM) subject areas. Retailers gain synergies by crossing domains, for example:
  - Incorporating merchandising finance (sourced from Oracle Merchandising Financial Planning) with corporate finance (Oracle Enterprise Business System)
  - Assessing impact of loyalty program membership (Oracle Seibel Marketing) to retail sales/profit (Oracle Retail Merchandising System)
• Comparing labor costs (Oracle PeopleSoft) with sales per employee (Oracle Retail Merchandising System)

Looking at the Entire IT Ecosystem

Together, Oracle Retail Analytics and Oracle’s ERP and CRM BI Applications enable cross-domain, retail + ERP + CRM analytics, in a cohesive yet modular fashion, so retailers can mix-and-match select BI Apps to suit their unique BI needs and application environments (see Figure 3.) Further, with Oracle BI, intelligence can be pervasive and deployed anywhere — properly-filtered, surfaced where, how, when, and to whom it is needed.

Figure 3: Retail + ERP + CRM = Enterprise BI for Retail

• Closed-Loop Analytics
Oracle Retail Analytics enables more than just viewing reports, and more than deep analysis including data mining. With Oracle BI 11g, Oracle Retail Analytics also enables guided analytics that can lead a user to in-context and embedded actions — so users have the ability to initiate an action right from a dashboard or report. These actions can include things like triggering a workflow to order more stock, kicking off a promotion based on events, or metric thresholds being crossed. In addition, they can be simple things like notifying people of key information like guiding someone to do further analysis. We call this ‘closed loop analytics’ because it enables closing the loop between insight and action and Oracle Retail Analytics is designed with this capability in mind. Oracle Retail Analytics not only helps the user understand WHAT happened, but then also WHY it happened, HOW to respond, and then to ACT (see Figure 4.)
Figure 4: Closed-Loop Enterprise-Level Business Processes for Retail

- **Extreme Performance**
  Optimized for Oracle’s complete BI/DW tech stack, Oracle Retail Analytics is extremely fast, both on the load and on the query sides. Internal benchmarks simulate as many as 3.5M sales and 8M inventory transactions, with 400 concurrent users and over 5000 reports per hour — ensuring fast results and scalability on traditional BI/DW platforms like AIX and Solaris. Applying those same benchmarks to Exadata, Exalogic and Exalytics improves the performance of some operations by as much as 85 times.

Several notable features include:

- **As-Is /As-Was/Point-in-Time reporting** for the product and organization dimensions enabling users to account for changes to these dimensions when assessing historical performance. Note that each of these three types of reporting can co-exist in the same implementation.

- **Flexible aggregations**, for which a very large number of aggregate tables are available, can be leveraged to strike the optimal balance between query and load performance for a retailer’s unique BI/DW infrastructure and service levels.

- **Flexible data integration**, optimizing intra-day and near-real-time data loads as well as traditional nightly batch loads.

- iPad and iPhone access with Oracle BI Mobile (see sample in Figure 5.)

- **Role-based user security**.

- Unified Oracle Data Integration/OBIEE metadata enables report-to-source data lineage.

- Indexed/searchable BI metadata.

**Oracle Retail Merchandising Analytics**

Oracle Retail Merchandising Analytics, part of the Oracle Retail Analytics product family, provides retailers with an industry-specific solution for enabling insight into merchandising operations.
Hundreds of Merchandising-related business questions can be answered by Oracle Retail Merchandising Analytics:

- How are my products selling and why?
- How are my stores performing and why?
- How are my suppliers performing?
- How effective are my promotions and why?
- How effective are my markdowns and why?
- How profitable are we compared to last year and why?
- Which products aren’t selling and why?
- How profitable are my products and why?
- What are my sales projections?
- How is our pricing trending?
- How are sales and profit trending and why?
- What are my current and potential out-of-stock situations?
- How quickly is inventory turning and why?
- Which products aren’t selling and why?

Figure 5: Sample iPad dashboard
Oracle Retail Merchandising Analytics provides packaged integration with the following Oracle Retail applications:

- Oracle Retail Merchandising System: Enables retailers to execute on their core merchandising activities, including foundation data management, purchasing, replenishment and financial inventory valuation.
- Oracle Merchandise Financial Planning: Uses a cleansed view of history (adjusting for stock outs) to seed a top-down financial plan and allows the creation of top-down, bottom-up, and middle-out financial planning.
- Oracle Retail Invoice Matching: Provides all of the data necessary to support efficient processes for the verification of invoice accuracy and resolution of discrepancies prior to payment.
- Oracle Retail Price Management: A strategy-based pricing solution that executes pricing decisions.
- Oracle Retail Sales Audit: Provides the tools to evaluate point-of-sale data to ensure the accuracy and completeness of information exported to downstream systems used in optimization processes, financial reporting, and analysis.

Approximately 1400 retail-specific Oracle BI metrics and 40 packaged reports, spanning core retail data warehouse fact areas such as:

- Cost
- Forecast
- Inventory Position
- Inventory Receipts
- Markdowns
- Planning
- Price
- Profit
- Promotion
- Sales
- Sales Pack
- Stock Ledger
- Supplier
- Supplier Compliance
- Supplier Invoice
- Wholesale/Franchise
A baseline production Oracle Retail Merchandise Analytics implementation can be performed in just a few weeks to a few months with several dedicated and properly-skilled resources. The duration and/or required resources can grow with significant customizations.

Oracle Retail Merchandising System customers often implement Oracle Retail Merchandise Analytics along with Oracle Retail Merchandising System, or immediately following an Oracle Retail Merchandise System implementation. Some Oracle Retail Merchandise Analytics customers, however, chose to implement Oracle Retail Merchandise Analytics first, integrating with their legacy merchandising systems to get a “before” history of merchandising performance, then re-pointing Oracle Retail Merchandise Analytics to Oracle Retail Merchandise System after its implementation.

Oracle Retail Customer Analytics

Retailers are now compiling more data on their customers and their purchases than ever before, providing a potential wealth of insight into their demographic attributes, tastes, preferences and buying patterns. These insights can be leveraged to optimize product offerings and promotions, enabling custom offers to specific customer segments or even precisely targeted customers, driving higher returns and greater customer satisfaction. Oracle Retail Customer Analytics provides retailers with deep customer-specific insights to enable a better understanding of who their customers are, how they behave and why, supporting intelligent product and promotion decisions.

Oracle Retail Customer Analytics provides retailers with an industry-specific solution for enabling insight into customers. Oracle Retail Customer Analytics is complementary to Oracle Retail Merchandising Analytics, and includes packaged Oracle Data Integrator transforms and loads (custom extracts required) for the Oracle Customer Hub, and for various external data sources of customer attributes, customer segment definitions, promotion budget/forecast/actual and selected loyalty levels. Oracle Retail Customer Analytics enables customer segment analysis based on demographics, RFM scoring, lifetime/potential value, and behavior and item importance. Additionally, it provides retailers with the ability to perform market basket/product affinity analysis, customer loyalty analysis and scoring, promotional halo/cannibalization, promotional trial and repeat, and promotional response rate and offer conversion. It is optimized for Oracle technology (Oracle Business Intelligence, Oracle Data Integrator, Oracle Data Mining, Oracle Database and optionally Exadata/Exalogic/Exalytics), providing unmatched performance, lowering total cost of ownership and simplifying support.

Hundreds of customer-related business questions can be answered by Oracle Retail Customer Analytics, but listed here are just some examples:

- How are my products selling across various customer demographics?
- How are my products selling across various customer behavioral attributes?
- What are my most valuable customer segments?
- Which are the best selling styles for my customer loyalty groups?
- What affinities exist between subclasses on promotion?
• What halo effects can I expect on my promotions?
• What cannibalization effects can I expect on my promotions?
• Are my promotions resulting in repeated sales?
• How are my promotions performing?
• Which items should I promote, and using which methods?
• What are my top product affinities?
• What is my promotional lift?
• Which are the best products on offer that I can target 1-1 to a specific customer based on what they have bought recently?
• What upsell makes sense for a specific customer so I can send a coupon?
• Where do I have extra inventory and how do I best formulate an offer for a specific customer based on the buying habits?
• Are there customers who have dropped off in visits and what can I use to entice them back?
• Which are my most profitable customers and what do they buy? How can I entice them to buy something additional?

Some notable features include:

• Customer segment analysis based on:
  o Demographics
  o RFM scoring
  o Lifetime/potential value of your customers
  o Behavior
  o Item importance
• Customer loyalty analysis & scoring
• Market basket analysis / affinity
• Promotional halo / cannibalization
• Promotional try & repeat
• Promotional response rate & offer conversion

The expected data sources for Oracle Retail Customer Analytics are:

• Optional Oracle Customer Hub (customer master data)
• Optional Promotion Planning (non-Oracle Retail source for promotion actual/budget/forecast)
• Optional External (customer segment)
• Oracle Retail Merchandising Analytics and relative data sources

To Oracle Retail Merchandising Analytics, Oracle Retail Customer Analytics adds approximately 100 retail-specific Oracle BI metrics and 13 packaged reports, spanning fact areas such as:

• Affinity
• Loyalty Score
• Promotion Actual / Budget / Forecast
• Trial and Repeat

Oracle Retail Customer Analytics’ Market Basket Analysis uses Oracle Data Mining’s statistical algorithms to associate product purchases and determine affinities (i.e. what products often sell together – see Figure 6 for a sample screenshot.) Those affinities are then associated with customer attributes and promotions to assess promotional response relative to customer segment, and potential promotional halo and cannibalization effects.

**Figure 6: Market Basket Analysis**

**Oracle Retail Planning Analytics (Future)**

Oracle Retail Planning Analytics is envisioned to enable planners, buyers, category managers, marketing managers, and pricing analytics to make informed and timely decisions on pricing, space, assortments, and promotions based on actionable insights. It is largely through Oracle Retail Planning Analytics that retailers will
progress from enterprise BI to true Enterprise Performance Management by directly underpinning all key planning decisions with BI.

Packaged data integration is expected with Oracle Retail Planning applications, such as Space Management, Price Optimization, Item Planning, Size Profile Optimization, Category Management, Clearance Optimization and Assortment Planning, but will also be designed to support data from other sources.

**Oracle Retail Supply Chain Analytics (Future)**

Oracle Retail Supply Chain Analytics intends to give retailers the insight to more accurately forecast demand and more efficiently manage supply to meet that demand.

Packaged data integration is expected with Oracle Retail Supply Chain applications, such as Replenishment Optimization, Allocation, Inventory Planning, Warehouse Management and Demand Forecasting, but will also be designed to support data from other sources.

**Oracle Retail Stores Analytics (Future)**

Oracle Retail Stores Analytics is anticipated to help store management improve store operations by balancing store-centric customer, promotion, employee, inventory, and financial concerns.

Packaged data integration is expected with Oracle Retail Stores applications, such as Central Office, but will also be designed to support data from other sources.

**Oracle Retail Analytics + Oracle’s ERP/CRM BI Applications**

**Oracle ERP Analytics**

Oracle’s ERP Analytics help front line managers improve cash flow, control expenses, manage headcount and employee performance, stream-line spend and supply chain operations, and track the financial performance of major projects.

Some sample ERP Analytics BI applications are:

- Oracle Enterprise Asset Management Analytics
- Oracle Financial Analytics
- Oracle Human Resource Analytics
- Oracle Manufacturing Analytics
- Oracle Procurement and Spend Analytics
- Oracle Supply Chain & Order Management Analytics
Packaged data integration is available with Oracle ERP applications, such as EBS, JD Edwards, Fusion and PeopleSoft, as well as with SAP.

Oracle CRM Analytics

Oracle’s CRM Analytics provides fact-based insight into the entire sales process and into product demand, customer price sensitivity, and overall pricing effectiveness. They enable firms to manage and track campaign performance and to segment and retain the most valuable customers. Organizations can assess the effectiveness of loyalty promotions and partner relationships, track and analyze key service center metrics, and generate a complete picture of contact center performance.

Some sample CRM Analytics BI applications are:

- Oracle Sales Analytics
- Oracle Contact Center Telephony Analytics
- Oracle Customer Data Management Analytics
- Oracle Loyalty Analytics
- Oracle Marketing Analytics
- Oracle Service Analytics
- Oracle Price Analytics

Packaged data integration is available with Oracle CRM applications, such as Siebel CRM and EBS.

Conclusion

Success with retail analytics can be daunting and elusive, but success with Oracle Retail Analytics is easy. With unmatched strength in retail software, Oracle has access to deep retail functionality and data. With Oracle’s dominance in database and data warehouse technology, Oracle has the ability to manage a retailer’s data in the most efficient and scalable manner. And subscribing to Oracle’s Common Enterprise Information Model enables a cohesive, potentially enterprise-level analytical offering with actionable insights – from storage to scorecard.

For more information, please visit:

- Oracle Retail Merchandising Analytics
- Oracle Retail Customer Analytics
- Oracle Business Analytics