



dunkin'
brands®

Advanced Analytics at Dunkin Brands

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Disclaimer

All data used is sample data for presentation purposes only and is not actual corporate sales or consumer data



About Dunkin Brands



60+

YEARS OF BRAND
HERITAGE



SIGNIFICANT U.S.
& GLOBAL GROWTH
OPPORTUNITY

ASSET-LIGHT, NEARLY

100%

FRANCHISED BUSINESS

MORE THAN 18,000 RESTAURANTS WORLDWIDE

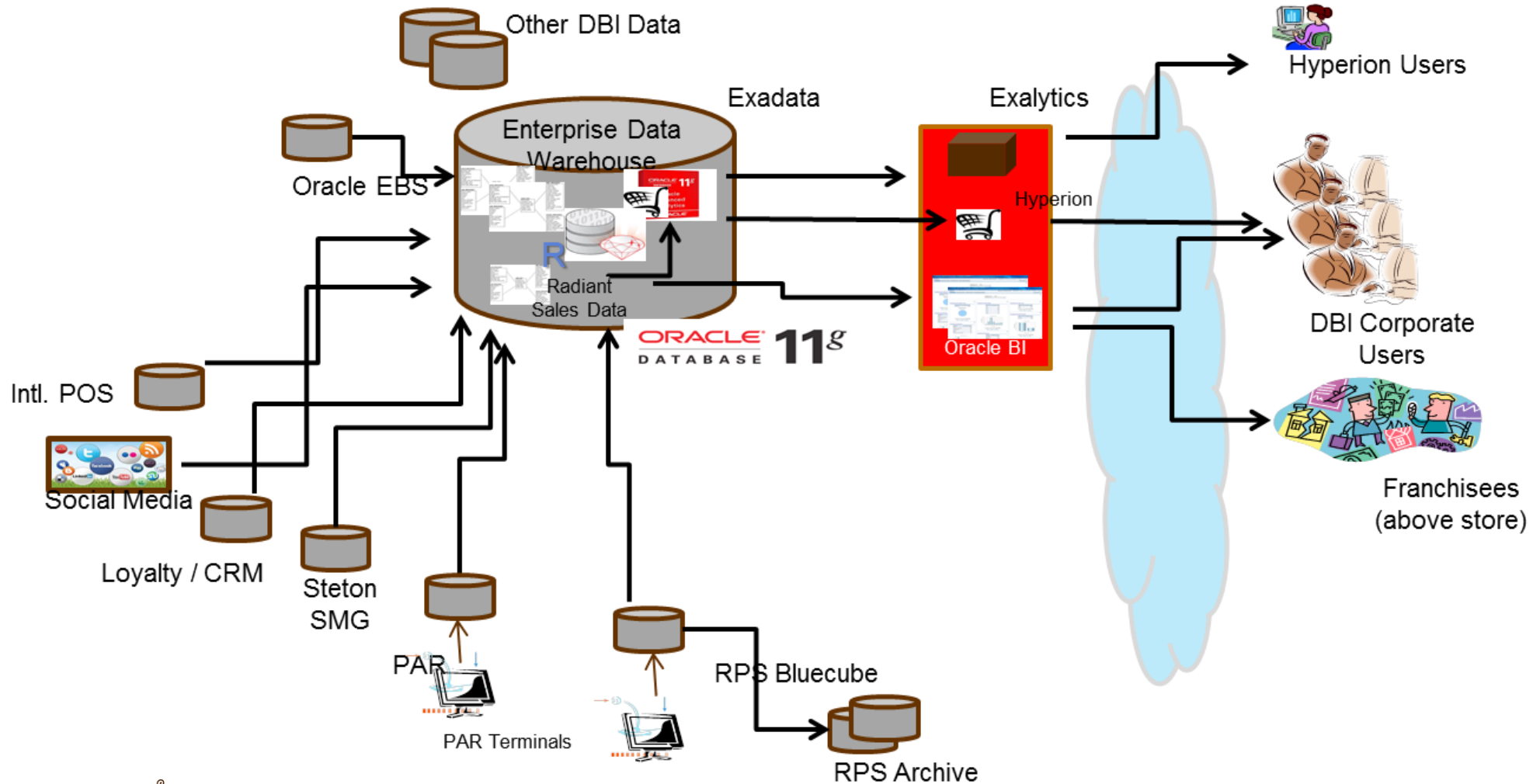


BI Program At Dunkin Brands

- ▶ First launched at DBI in 2007
- ▶ 1000+ BI users today with role based access to 504 dashboard pages
- ▶ Mature governance process
- ▶ Advanced Analytics practice since 2013
- ▶ Domestic POS sales analysis to increase comparable store sales and profitability of DD and BR in U.S.
- ▶ Store development dashboards to identify opportunities to continue DD U.S. contiguous store expansion
- ▶ International reported sales analysis to drive accelerated international growth across both brands.

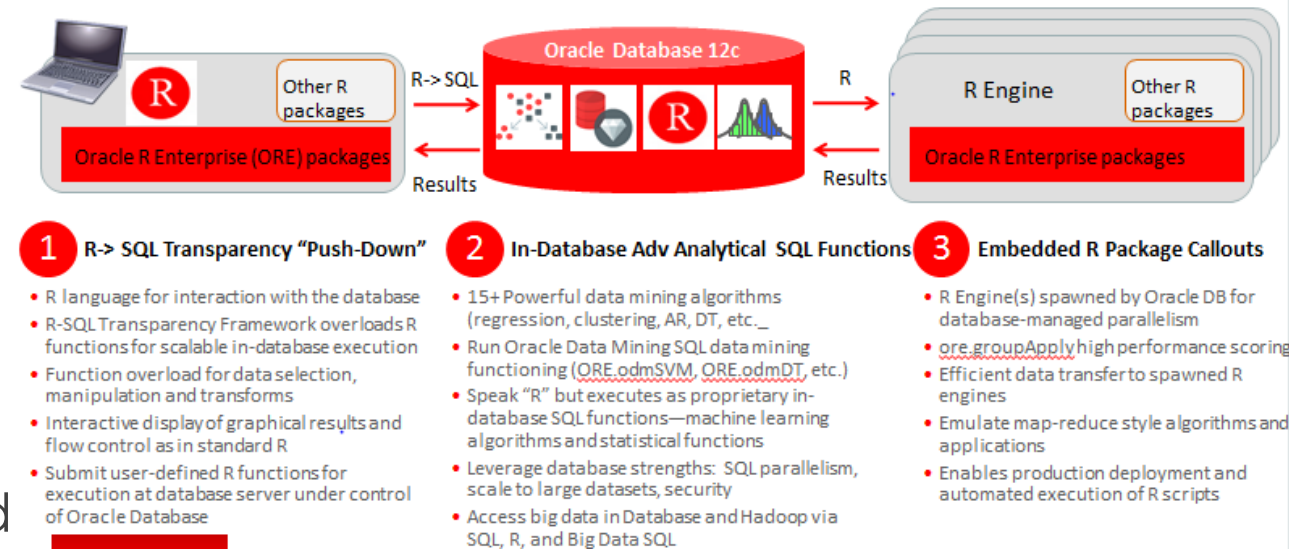


BI Architecture at Dunkin Brands

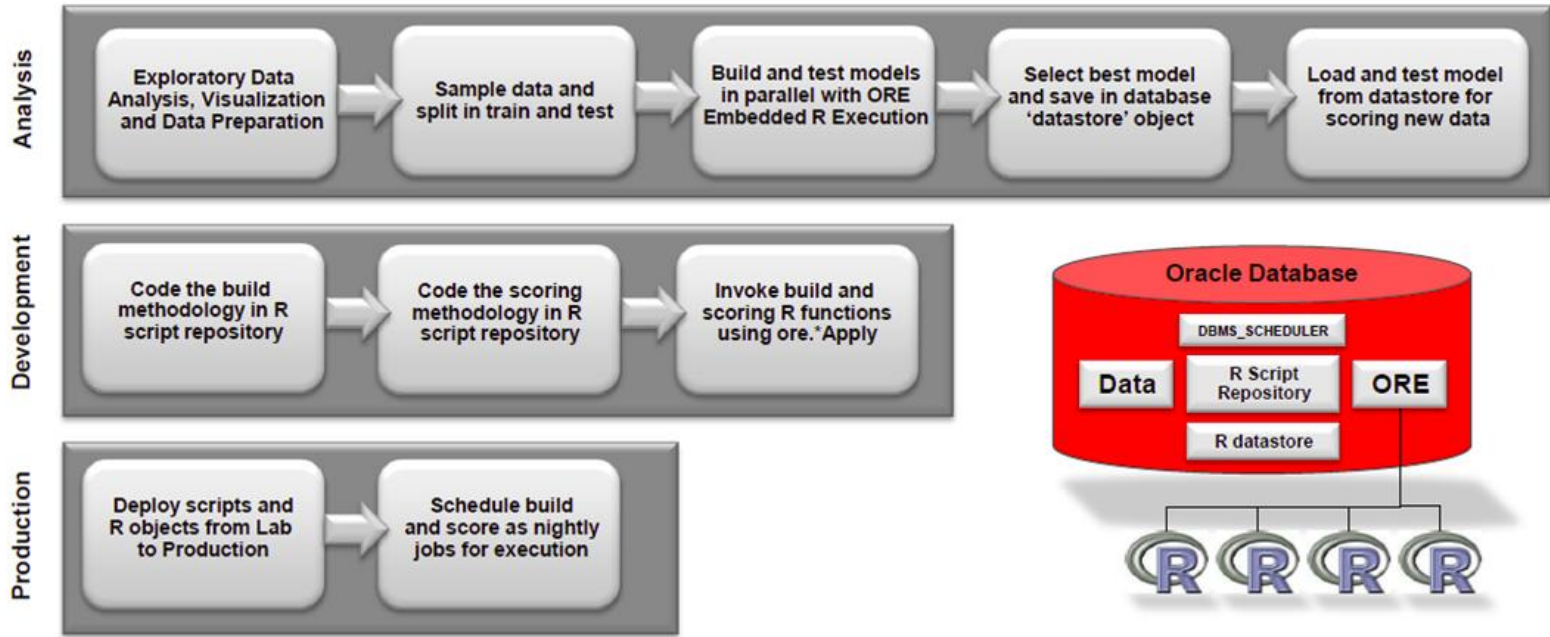
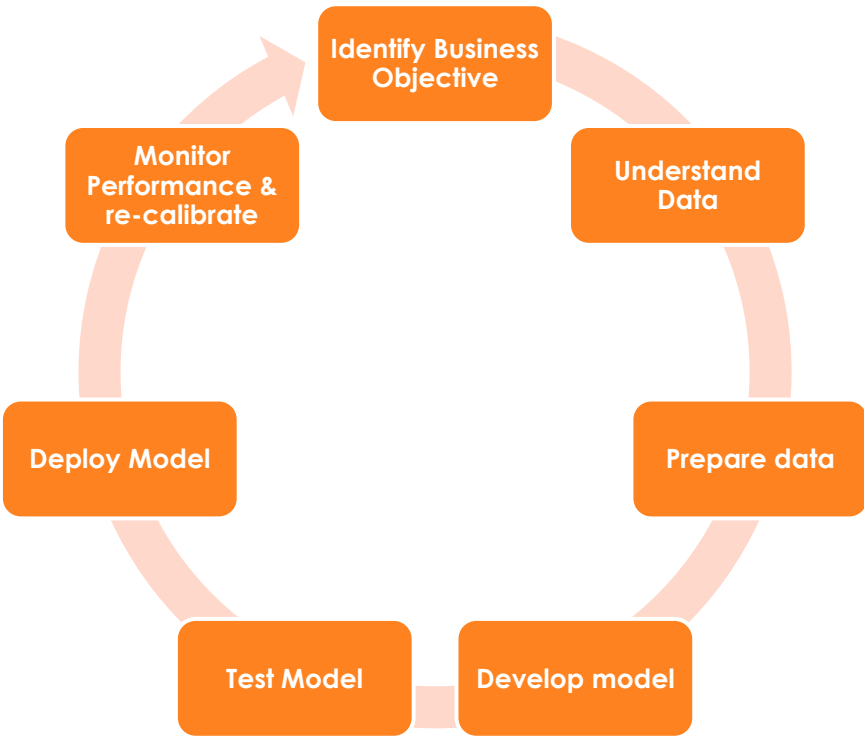


Advanced Analytics platform - OAA

- ▶ Chose Oracle Advanced Analytics
- ▶ Excellent fit with existing BI / IT infrastructure
- ▶ All the benefits of Open source R
- ▶ Scalability of Oracle 11G on engineered systems



Advanced Analytics Framework

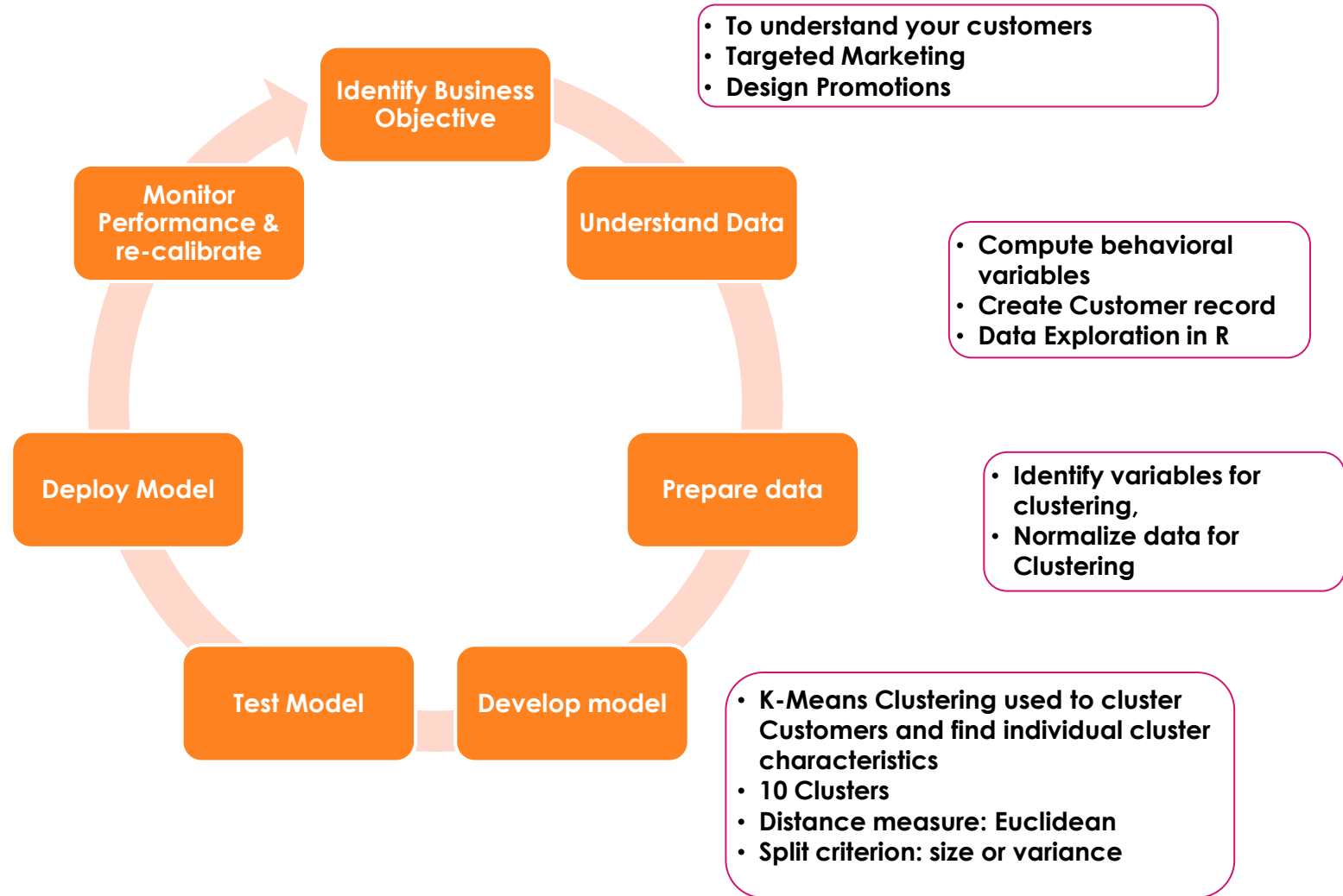


Loyalty Customer Profiling: Attributes

List of customer attributes used as-is or derived from their transactional history

Descriptive	Spend/ Check	Transaction/Frequency	Store Features	Historical Purchase
<ol style="list-style-type: none"> Customer ID City State DMA Age Profession 	<ol style="list-style-type: none"> Min Check Max Check Total Spend Average Weekly Spend Total points earned % Points redeemed Total No. of coupons redeemed Total discount amount (Coupons) Avg weekly coupon redeemed 	<ol style="list-style-type: none"> Start Date Last transaction date Days since last transaction Total transactions/Visits Average weekly visits % discounted visits Top Day part Daypart - % Visits Preferred Store Multi Store flag Average DD Card Recharge Amount Average DD Card Recharge Frequency Days since last recharge Current card balance Transaction Activity in weeks 	<ol style="list-style-type: none"> POS: drive thru or not Combo or not Wifi 	<ol style="list-style-type: none"> Total Spend /Category % spend on each Category % spend Sub category Average number of items per transaction Preferred item combo

Loyalty Customer Segmentation



- Model displays cluster means – Cluster properties
- Number of Customers in a cluster
- Deployed for targeted Marketing and Monitoring Customer behavior

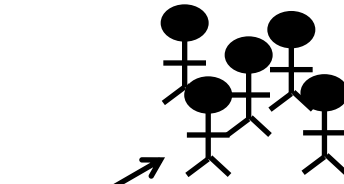
Loyalty Customer Segmentation

Demographic	Spend/ Check	Transaction/Frequency	Store Features	Historical Purchases
1. Customer ID	1. Min Check	1. Start Date	1. POS: drive thru or not	1. Total Spend
2. City	2. Max Check	2. Last transaction date	2. Combos or not	2. % spent on each category
3. State	3. Total Spend	3. Days since last transaction	3. VMI	3. % spent on each sub category
4. DMA	4. Average Weekly Spend	4. Total transactions/Visits		4. Average number of items per transaction
5. Age	5. % points earned to points redeemed	5. Average weekly visits		5. Preferred item combo
6. Profession	6. Total No. of coupons redeemed	6. % discounted visits		
	7. Total amount (Discounts)	7. Top Day visit		
	8. Avg weekly coupon redeemed	8. Discount % Visits		
		9. Preferred Store		
		10. Multi Store Reg.		
		11. Average DD Card Redeem Amount		
		12. Average DD Card Redeem Frequency		
		13. Days since last recharge		
		14. Current card balance		
		15. Transaction Activity in weeks		

Customer Data Profiles

Clustering Algorithm

- ODM K-Means Clustering
- 10 Clusters
- Distance: Euclidean
- Split criterion: size or variance

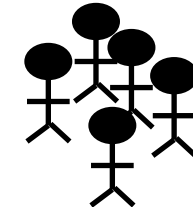


Regulars

- Average weekly visits 5
- 78.2% visits in morning
- Mostly coffee drinker, but 25% times food buyers

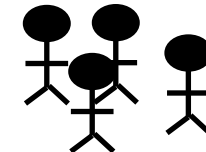
Coffee Regulars

- Average weekly visits 5.45
- Average coffee transactions 80.29%



High Spenders, Frequent visitors

- Avg weekly spend (\$35.12)
- Avg. weekly visits (7.44)
- Coffee and Food in basket (Avg items per transaction 2.4)



Loyalty Customer Churn Analysis

- Monitor the response and re-calibrate by updating training data or model parameters
- Calculate the metrics for model evaluation

- Model will calculate the churn score for existing customers
- Flag customers with high risk, low risk based on churn score

- Test the model on test data set, for which outcome is known
- Select threshold for model selection
- Confusion Matrix for the best Model

Identify Business Objective

Understand Data

- Define Churn & Active Customer
- Identify Churn Customer patterns
- Is the churn pattern localized or National?

Class	Active	Churn
Active	71.93%	28.07%
Churn	15.37%	84.63%

- Compute behavioral variables
- Create Customer record
- Data Exploration in R

Deploy Model

Prepare data

- Create Training data set
- Equal distribution of churning and usual customers

Test Model

Develop model

- Model to derive churn risk score.
- SVM
- Logistic regression
- Naïve Bayes



Other things we are working on

- ▶ Enrich customer profiles with modeling scores
- ▶ Customer Segments based on buying pattern – what they buy, when they buy?
- ▶ Identify customers who are more likely to respond to offers
- ▶ Personalized promotions for retention
- ▶ Customer Lifetime value
- ▶ Customer Sentiment Analysis

