Data Science in Hospitality
Using Data to Drive Business Insights

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Agenda

1. What is Data Science?
2. Opportunities in Hospitality
3. Oracle’s approach to science innovation
4. Case Study: QSR Holdings
5. Where to from here?
What is Data Science?

- Computer Science
- Mathematics
- Artificial Intelligence
- Data Science
- Data Analysis
- Business Applications
- Business Expertise
Data Science Applications in Industries

- Finance
- Health Care
- Airline
- Retail
Why Data Science for F&B?

Use Data Science to increase customer spend, and revenue while lowering costs
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What can data science offer?

**DESCRIPTIVE**

*Extract Insights*

- Inventory
- Weather
- Customer demographics
- Traffic
- Day of Week
- Local football game
- Seasonality
- Spending trends

**PREDICTIVE**

*Predict Future*

- 10% increase in sales due to Local football game tomorrow
- 3% increase in burger sales from upcoming promotion, 1% decline in hot dog sales

**PRESCRIPTIVE**

*Recommend business decisions*

- AI driven Recommendations
  - Targeted Promotions
  - Optimized Inventory
  - Optimized Labor Scheduling
  - Menu Recommendations

What factors are significant?

How decisions impact my business?

What should I do?
Data Science Use Cases for Oracle Hospitality

360° view of the Customer

Targeted Promotions

Identify Strategic Opportunities

Intelligent Systems
Agenda

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Using Oracle Cloud to simplify….

Delivered dynamically to Hospitality Systems

On Demand

Speed to Value

Lower Costs

Continually Learning

Data Scientists

Hospitality Expertise

Database Experts

ELASTIC COMPUTE POWER

LARGE DATA VOLUMES MANAGEMENT

INTEGRATION

SYSTEM MANAGEMENT

LARGE DATA VOLUMES MANAGEMENT

INTEGRATION

SYSTEM MANAGEMENT
Why Oracle for Data Science?

- 150 people, including 30+ PHDs
- Various Departments:
  - Industry focus
  - Research & Development
  - In-database Data Mining
  - Collective Intellect
  - Oracle Machine Learning
- Proven experience delivering Science to drive Business Value

- Active joint research with leading Universities
- Cross-disciplinary team with advanced degrees
  - Operations Research - Physics
  - Machine Learning - Management Science
  - Mathematics
- Retail Data Science team expanding focus to Hospitality
Example – select relevant focus points

**Menu Recommendations**

- Up sell and Cross sell recommendations delivered to POS
- Strategic Recommendations on Menu Mix, Menu localization

**Inventory Optimization**

- Optimize parameters for Inventory Management
- Improve Service levels and in-stock rates while reducing inventory and wastage.
Spellbound Cabernet is highlighted as the top recommendation.

Greek Salad, Bacon Scallops are also recommended.

Top sellers default for each category.
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### Overview of QSRH

Largest independently owned QSR franchisor with 879 stores in Australia and New Zealand

<table>
<thead>
<tr>
<th>Number of stores</th>
<th>red rooster</th>
<th>oporto</th>
<th>chicken street</th>
</tr>
</thead>
<tbody>
<tr>
<td>365</td>
<td>145 (AUS)</td>
<td>9 (NZ)</td>
<td>60</td>
</tr>
</tbody>
</table>

### Positioning

<table>
<thead>
<tr>
<th>red rooster</th>
<th>Affordable, home-style and healthy chicken meals</th>
</tr>
</thead>
<tbody>
<tr>
<td>oporto</td>
<td>Contemporary and authentic Portuguese flame-grilled chicken and burgers</td>
</tr>
<tr>
<td>chicken street</td>
<td>Great tasting, indulgent food to keep customers fuelled up and on the go</td>
</tr>
</tbody>
</table>

### Primary target market

<table>
<thead>
<tr>
<th>red rooster</th>
<th>Modern Australian families seeking a healthy, convenient alternative to home cooked meals</th>
</tr>
</thead>
<tbody>
<tr>
<td>oporto</td>
<td>Millennials and Gen X seeking authentic and on-trend ethnic food experiences</td>
</tr>
<tr>
<td>chicken street</td>
<td>Young, hungry males (male Millennials and Gen Z)</td>
</tr>
</tbody>
</table>
#datascience
Data Science Case Study - Progress so far

- Location Attribute Analysis
  - Identifying which restaurant attributes drive sales
    - Traffic, Store Type, Store Size, Menu Mix, Recently Refurbished, Price Zones
- Opportunity Analysis
- Day Part Analysis
- Initial recommendations
Key Findings:
- Key Location attributes impacting sales: Store Type, Traffic
- Underperforming restaurants have significantly lower contributions from Sides per Check compared to top selling similar restaurants
- Observed difference in menu item preferences by time of day

Projected Benefits:
- Projected increase in same store sales from improved cross sells of Sides for ALL Restaurants by 3-5%
  ● 1 menu recommendation
<table>
<thead>
<tr>
<th>Store Type</th>
<th># of locations</th>
<th>% Contribution of group to Total Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free Standing (w or w/o DT)</td>
<td>91</td>
<td>30%</td>
</tr>
</tbody>
</table>

Data Science Case Study – Analysis Sample

**Total Sales**

- Sales per Location
- Locations

Graph showing total sales across various locations.
Underperforming restaurants have significantly lower Sides per Check sales
### Cross Sell Opportunity Analysis: 1 Item Transactions

#### 43% of total transactions

<table>
<thead>
<tr>
<th></th>
<th>Transaction Count</th>
<th>Sales Amount (2016)</th>
<th>Avg. Ticket Value</th>
<th>Cross sell groups</th>
<th>Avg. Ticket Value (Based on Two Item Txns)</th>
<th>Price Difference</th>
<th>% Difference in ATV from 2 item transactions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regular</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chicken meal</td>
<td>498,874</td>
<td>$5,971,597</td>
<td>$11.97</td>
<td>Side, Snack, Drink, Dessert</td>
<td>$15.83</td>
<td>$3.86</td>
<td>32%</td>
</tr>
<tr>
<td>Side</td>
<td>827,807</td>
<td>$3,686,280</td>
<td>$4.45</td>
<td>Side, Snack, Drink, Dessert</td>
<td>$7.75</td>
<td>$3.30</td>
<td>74%</td>
</tr>
<tr>
<td>Breadlines</td>
<td>269,265</td>
<td>$1,973,439</td>
<td>$7.33</td>
<td>Side, Snack, Drink, Dessert</td>
<td>$10.94</td>
<td>$3.61</td>
<td>49%</td>
</tr>
<tr>
<td>Drinks</td>
<td>271,855</td>
<td>$988,942</td>
<td>$3.64</td>
<td>Drink, Dessert</td>
<td>$7.05</td>
<td>$3.42</td>
<td>94%</td>
</tr>
<tr>
<td><strong>Combo</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breadlines</td>
<td>2,229,596</td>
<td>$23,202,403</td>
<td>$10.41</td>
<td>Side, Snack, Drink, Dessert</td>
<td>$13.29</td>
<td>$2.88</td>
<td>28%</td>
</tr>
<tr>
<td>Chicken meal</td>
<td>1,255,244</td>
<td>$17,721,738</td>
<td>$14.12</td>
<td>Side, Snack, Drink, Dessert</td>
<td>$17.41</td>
<td>$3.30</td>
<td>23%</td>
</tr>
<tr>
<td>Mega Box</td>
<td>139,568</td>
<td>$1,443,913</td>
<td>$10.35</td>
<td>Side, Snack, Drink, Dessert</td>
<td>$15.00</td>
<td>$4.66</td>
<td>45%</td>
</tr>
<tr>
<td>Kids</td>
<td>145,021</td>
<td>$906,239</td>
<td>$6.25</td>
<td>Side, Snack, Drink, Dessert</td>
<td>$10.33</td>
<td>$4.08</td>
<td>65%</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>5,637,230</td>
<td>$55,894,551</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

30-50% difference in ATV in 1 item transaction with only Main Items compared to 2 item transactions with similar Main item and a side/snack/dessert or drink – presents significant cross sell opportunity.
Cross Selling Chips: Revenue Potential

Target Transactions with < 3 items per transactions
Cross Sell Rules for non-Combo Items

<table>
<thead>
<tr>
<th>If</th>
<th>Then Cross Sell:</th>
<th># of Txns with IF but no Then or similar items</th>
<th>price_THEN</th>
<th>Assumed Conversion rate</th>
<th>Revenue opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole Chicken 524,644</td>
<td>Chips - Family 461,099</td>
<td>334,243</td>
<td>6.99</td>
<td>10%-20%</td>
<td>$233,635 - $467,272</td>
</tr>
<tr>
<td>Rooster Roll 247,624</td>
<td>Chips - Large 1,067,387</td>
<td>198,630</td>
<td>4.99</td>
<td>10%-20%</td>
<td>$99,116-$198,233</td>
</tr>
<tr>
<td>12 X CHEESY NUGGETS $5 359,467</td>
<td>Chips – Large 1,067,387</td>
<td>299,901</td>
<td>4.99</td>
<td>10%-20%</td>
<td>$149,651-$299,301</td>
</tr>
<tr>
<td>Flayva 151,841</td>
<td>Chips - Large 1,067,387</td>
<td>131,600</td>
<td>4.99</td>
<td>10%-20%</td>
<td>$65,668-$131,337</td>
</tr>
<tr>
<td><strong>TOTAL (6 Months)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>$548,071-$1,096,142</strong></td>
</tr>
<tr>
<td><strong>Total Annual</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>$1,096,142-$2,192,285</strong></td>
</tr>
</tbody>
</table>

Note: Since the estimate is focused on transactions that have not bought Chips or similar items (any size Chips), conversion rate can be assumed to be higher
Cross **Selling Gravy**: Revenue Potential

Target Transactions with < 3 items per transactions  
Cross Sell Rules for non-Combo Items

<table>
<thead>
<tr>
<th>If</th>
<th>Then</th>
<th># of Txns with IF but no Then or similar items</th>
<th>price_THEN</th>
<th>Assumed Conversion rate</th>
<th>Revenue opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chips – Family 461,099</td>
<td>Gravy – Large 46,588</td>
<td>395,708</td>
<td>4.59</td>
<td>10%-20%</td>
<td>$181,630-$363,260</td>
</tr>
<tr>
<td>Chips – Large 833,306</td>
<td>$1 gravy 167,634</td>
<td>771,181</td>
<td>1</td>
<td>10%-20%</td>
<td>$77,118-$154,236</td>
</tr>
<tr>
<td>Chips – Regular 541,038</td>
<td>$1 gravy 167,634</td>
<td>516,969</td>
<td>1</td>
<td>10%-20%</td>
<td>$51,697-$103,394</td>
</tr>
<tr>
<td>Classic Quarter 463,070</td>
<td>$1 gravy 561,042</td>
<td>462,870</td>
<td>1</td>
<td>10%-20%</td>
<td>$46,287-$92,574</td>
</tr>
<tr>
<td>12 X CHEESY NUGGETS 359,467</td>
<td>$1 gravy 561,042</td>
<td>357,505</td>
<td>1</td>
<td>10%-20%</td>
<td>$35,751-$71,501</td>
</tr>
<tr>
<td>Classic Half 174,333</td>
<td>$1 gravy 561,042</td>
<td>170,398</td>
<td>1</td>
<td>10%-20%</td>
<td>$17,040-$34,080</td>
</tr>
<tr>
<td><strong>TOTAL (6 Months)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>$409,522-$819,045</strong></td>
</tr>
<tr>
<td><strong>Total Annual</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>$819,045-$1,638,089</strong></td>
</tr>
</tbody>
</table>

Note: Since the estimate is focused on transactions that have not bought Chips or similar items (any size Chips), conversion rate can be assumed to be higher. Estimate does not include cross sell opportunity for combo items.
Cross Selling Sides

- Projected uplift in sales for restaurants performing below average to similar restaurants from improved Sides Sales: 3-5% increase in revenue
  - Assume underperforming restaurants see an uplift to match up to 50-100% of the average total sales of similar store (Same store type and store traffic)

- Brilliant opportunity for uplift in sales with a focus on customers with 3 or less items in the basket
Suggestion Area: Ribbon of 5 buttons that can be placed on any screen in any position.

Data science rules applied, suggested items have replaced default items when rules provide a suggestion. Suggested items are highlighted.
Phase 1: Using real time data to intuitively drive sales growth via SMART suggestive Sell at the Point Of Sale

Phase 2: Consolidated Suggestive Sell Staff Scoreboard which drives competition between restaurants via a leaderboard.

Phase 3: Deep diving on data to unlock sales growth and business insights:

- New Product Development (menu gaps, condiments)
- Cannibalization data (promotional products, time of day marketing, cross brand impacts)
- Menu Board Display Configuration sweat spots
- Margin Optimization
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<th>Discovery Phase</th>
<th>Value Delivery Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Data analyzed for insights and opportunities in specific target areas</td>
<td>• Data Science recommendations delivered via Service offering</td>
</tr>
<tr>
<td>• 60-90 day assessments</td>
<td>• Upon successful completion of data assessment phase</td>
</tr>
</tbody>
</table>

Core team focused on delivering **innovation** with **speed** and **agility**
Interested in Discovery Program?