MBA556: Business Analytics

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Course Information

Hype Cycle

- Expectations
  - Digital Business Technologies (IoT, Blockchain, Wearable, 3D Printing, Digital Workplace)
  - Artificial Intelligence (Smart) Technologies
  - New Design and Innovation Approaches
  - Cloud, Mobile, Social, Information Technologies

As of August 2016

Time

- Innovation Trigger
- Peak of Inflated Expectations
- Trough of Disillusionment
- Slope of Enlightenment
- Plateau of Productivity
### Skill: Data Mining / Data Warehouse Median Salary by Job

<table>
<thead>
<tr>
<th>Job</th>
<th>National Salary</th>
<th>$0</th>
<th>$50K</th>
<th>$100K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Analyst</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1162 salaries</td>
<td>$60,880</td>
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<tr>
<td>Data Scientist</td>
<td></td>
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<tr>
<td>329 salaries</td>
<td>$91,434</td>
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<tr>
<td>Senior Data Analyst</td>
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<tr>
<td>266 salaries</td>
<td>$79,414</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Business Intelligence (BI) Analyst</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>205 salaries</td>
<td>$68,955</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Scientist, IT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>153 salaries</td>
<td>$93,836</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Architect</td>
<td></td>
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<tr>
<td>141 salaries</td>
<td>$115,829</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Intelligence (BI) Developer</td>
<td></td>
<td></td>
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<tr>
<td>125 salaries</td>
<td>$79,057</td>
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</tbody>
</table>

*Country: United States | Currency: USD | Updated: 17 Dec 2016 | Individuals Reporting: 3,372*
Business Intelligence

Data Warehouse Environment
- Technical staff
  - Build the data warehouse
  - Organizing
  - Summarizing
  - Standardizing

Business Analytics Environment
- Business users
  - Access
  - Manipulation, results

Performance and Strategy
- Managers/executives
  - BPM strategies

Data Sources
- Future component: Intelligent systems

User interface
- Browser
- Portal
- Dashboard
Analyse is not analytics

![Diagram showing the three types of business analytics: Descriptive, Predictive, and Prescriptive.]

- **Descriptive**
  - What happened?
  - What is happening?
  - Enablers: Business reporting, Dashboards, Scorecards, Data warehousing
  - Outcomes: Well-defined business problems and opportunities

- **Predictive**
  - What will happen?
  - Why will it happen?
  - Enablers: Data mining, Text mining, Web/media mining, Forecasting
  - Outcomes: Accurate projections of future events and outcomes

- **Prescriptive**
  - What should I do?
  - Why should I do it?
  - Enablers: Optimization, Simulation, Decision modeling, Expert systems
  - Outcomes: Best possible business decisions and actions
RVC

Retail Value Chain
Critical needs at every touch point of the Retail Value Chain

**Vendors**
- Supply chain management
- Inventory cost optimization
- Inventory shortage and excess management
- Less unwanted costs

**Planning**
- Shelf-space optimization
- Location analysis
- Shelf and floor planning
- Promotions and markdown optimization

**Merchandizing**
- Targeted promotions
- Customized inventory
- Promotions and price optimization
- Customized shopping experience

**Buying**
- Trend analysis
- Category management
- Predicting trigger events for sales
- Better forecasts of demand

**Warehouse & Logistics**
- Deliver seamless customer experience
- Understand relative performance of channels
- Optimize marketing strategies

**Multichannel Operations**
- On-time product availability at low costs
- Order fulfillment and clubbing
- Reduced transportation costs

**Customers**
- Building retention and satisfaction
- Understanding the needs of the customer better
- Serving high LTV customers better
# Problems

<table>
<thead>
<tr>
<th>Analytic Application</th>
<th>Business Question</th>
<th>Business Value</th>
</tr>
</thead>
</table>
| Inventory Optimization | 1. Which products have high demand?  
2. Which products are slow moving or becoming obsolete? | 1. Forecast the consumption of fast-moving products and order them with sufficient inventory to avoid a stock-out scenario.  
2. Perform fast inventory turnover of slow-moving products by combining them with one in high demand. |
| Price Elasticity      | 1. How much net margin do I have on the product?  
2. How much discount can I give on this product? | 1. Markdown prices for each product can be optimized to reduce the margin dollar loss.  
2. Optimized price for the bundle of products is identified to save the margin dollar. |
| Market Basket Analysis | 1. What products should I combine to create a bundle offer?  
2. Should I combine products based on slow-moving and fast-moving characteristics?  
3. Should I create a bundle from the same category or different category line? | 1. The affinity analysis identifies the hidden correlations between the products, which can help in following values:  
a) Strategize the product bundle offering based on focus on inventory or margin.  
b) Increase cross-sell or up-sell by creating bundle from different categories or the same categories, respectively. |
# More Problems

<table>
<thead>
<tr>
<th>Shopper Insight</th>
<th>1. Which customer is buying what product at what location?</th>
<th>1. By customer segmentation, the business owner can create personalized offers resulting in better customer experience and retention of the customer.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Churn Analysis</td>
<td>1. Who are the customers who will not return?</td>
<td>1. Businesses can identify the customer and product relationships that are not working and show high churn. Thus can have better focus on product quality and reason for that churn.</td>
</tr>
<tr>
<td></td>
<td>2. How much business will I lose?</td>
<td>2. Based on the customer lifetime value (LTV), the business can do targeted marketing resulting in retention of the customer.</td>
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<tr>
<td></td>
<td>3. How can I retain them?</td>
<td></td>
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<td></td>
<td>4. What demography of customer is my loyal customer?</td>
<td></td>
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<tr>
<td>Channel Analysis</td>
<td>1. Which channel has lower customer acquisition cost?</td>
<td>1. Marketing budget can be optimized based on insight for better return on investment.</td>
</tr>
<tr>
<td></td>
<td>2. Which channel has better customer retention?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Which channel is more profitable?</td>
<td></td>
</tr>
<tr>
<td>New Store Analysis</td>
<td>1. What location should I open?</td>
<td>1. Best practices of other locations and channels can be used to get a jump start.</td>
</tr>
<tr>
<td></td>
<td>2. What and how much opening inventory should I keep?</td>
<td>2. Comparison with competitor data can help to create a differentiator/USP factor to attract the new customers.</td>
</tr>
</tbody>
</table>
# Problems

<table>
<thead>
<tr>
<th>Store Layout</th>
<th>1. How should I do store layout for better topline?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. How can I increase my in-store customer experience?</td>
</tr>
<tr>
<td>Video Analytics</td>
<td>1. Understand the association of products to decide store layout and better alignment with customer needs.</td>
</tr>
<tr>
<td></td>
<td>2. Workforce deployment can be planned for better customer interactivity and thus satisfying customer experience.</td>
</tr>
<tr>
<td></td>
<td>1. What demography is entering the store during the peak period of sales?</td>
</tr>
<tr>
<td></td>
<td>2. How can I identify a customer with high LTV at the store entrance so that a better personalized experience can be provided to this customer?</td>
</tr>
<tr>
<td></td>
<td>1. In-store promotions and events can be planned based on the demography of incoming traffic.</td>
</tr>
<tr>
<td></td>
<td>2. Targeted customer engagement and instant discount enhances the customer experience resulting in higher retention.</td>
</tr>
</tbody>
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