MTAT.03.183
Data Mining

Week 9: Business Intelligence Applications

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Outline

• What is BI?
• Classification of BI Applications
• BI Case Studies and Value Propositions
• Classwork…
What is Business Intelligence?

- Body of methods and tools to analyze business data for decision-making purposes with the aim of improving key processes and identify key market and competition trends
- In recent times, it refers specifically to methods using the following technology:
  - OLAP/DW and reporting tools
  - Data Mining & Machine Learning
  - Statistical Data Analysis
  - Data visualization
Steps of a BI Process

1. Problem analysis: Investigate the application domain, make business case for BI project
2. Data selection: create a target data set
3. Data cleaning and preprocessing
4. Data analysis and reduction
   - Find useful features, dimensionality/variable reduction
5. Choose data mining techniques
   - Classification, regression, clustering, etc.
6. Apply techniques and analyze (visualize) output
7. Use acquired information
The BI Process

Knowledge

Evaluation & Presentation

Data Mining

Selection & Transformation

Data Warehouse

Cleaning & Integration

Databases
BI Applications

- Sales & Marketing
  - Direct Marketing
  - Relationship Marketing
  - Salesforce Mngt.
- Customer Service
  - Web Usage Mining
- Production & Logistics
- Financials
  - Revenue Mngt.
  - Risk Analysis
BI Application Areas

• Direct marketing
  – Market campaign planning
  – Target and channel selection

• Relationship Marketing
  – Cross-selling and up-selling
  – Customer retention (avoiding churn)
  – Customer recovery

• Salesforce management
  – Sales territory design
  – Response functions

Linked to CRM
BI Application Areas (cont.)

• E-Commerce Website optimization
  – Clickstream analysis, user profiling
  – Internet ads placement
  – Recommendation (cf. cross-selling)

• Logistics and Supply Chain Management:
  – Demand forecasting
  – Production scheduling
  – Inventory management
  – Transportation optimization

Linked SRM & SCM systems
BI Application Areas (cont.)

- **Revenue management**
  - Market analysis (segmentation, trends, …)
  - Customer segmentation
  - Data envelopment analysis

- **Risk analysis**
  - Fraud prevention and detection
  - Customer profiling (e.g. credit risk analysis)
Case Studies & Value Propositions

- Customer acquisition and retention
  - [http://www.i-jaffa.net/downloads/norkom/case-studies.ppt](http://www.i-jaffa.net/downloads/norkom/case-studies.ppt)
- E-Commerce Recommender Systems (Netflix)
  - [http://digitalenterprise.org/cases/netflix.html](http://digitalenterprise.org/cases/netflix.html)
Classwork (in groups of 4)

- Skype wishes to launch a campaign for SkypeOut customer acquisition. The campaign will offer free SkypeOut minutes to users who don’t use SkypeOut or have zero SkypeOut credit.
- Discuss the following questions in groups:
  - What data can help Skype target this campaign?
  - What mining techniques could they use?
  - How would you structure an ROI calculation for investing into a BI solution for this campaign?
- Same question for customer churn avoidance
- Skype statistics:
  - [http://ckipe.com/borderless](http://ckipe.com/borderless)
  - [http://skypenumerology.blogspot.com/](http://skypenumerology.blogspot.com/)