Customer Churn Management

Overview of Current State-of-the-Art

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Recap Previous Discussion

- NRB/HEC-ULg to collaborate on **Churn Management**

- Specifically
  - Leveraging on customers’ behavior to improve churn management (prediction)
Aims of this Presentation/Agenda

• Introduction: Customer Churn Management

• Extant techniques for Customer Churn Management; Weaknesses

• Proposed contribution/offer
Introduction: Customer Churn Management
Customer Churn Management

• 2 components to Customer Churn Management (CCM)
  1. Identification of customers intending to switch to competitor
  2. Proactively targeting them with incentives to induce them to stay

• Component 2 more challenging to implement
  o Ideally: incentives aligned with customers preferences
  o Preferences embedded within behavior
  o Expressed via various means, incl. language/texts
  o Hard to acquire, unlike other customer information (e.g. demographics) → positioning our contribution/offer
CCM (cont)

• Customer Churn
  o Significant problem in many industries
  o Markets with certain degree of maturity/saturation
  o New customers acquired by cannibalizing from competitors

• Companies’ focus, marketing efforts shifts
  o **Customer acquisition ➔ Customer retention**
  o Customer acquisition cost >> Customer retention cost
  o Estimates: acquisition 5-10 times costlier than retention

• Customer Churn most prevalent in
  o News, publishing
  o Financial, insurance services
  o Electric utilities, Internet, mobile providers
  o Automotive (vehicle warranty)
  o *(Companies ➔ staff turnover)*
CCM Performance

• Not all customers worth retaining
  o Low CLV (Customer Lifetime Value)
  o Not all customers will churn
  o Limited resources

• CCM performance
  o Ability to identify churners among top percentile of customers with highest churning risk

• Lift measure at threshold, 0<T<1
  o Ratio number of churners among T customers with highest risk to number of churners in random, size T, sample
  o E.g. lift of 3 at T=0.01
    ▪ Taking 1% of customers with highest churning risk
    ▪ 3 times more churners compared to
    ▪ Equally sized random customer sample
Factors Affecting Churn

1. Customer Satisfaction
   - Customers’ overall evaluation of performance
   - Backward-looking (performance to date)

2. Relationship Commitment
   - Desire to maintain relationship; loyal even if low satisfaction
   - 2 types: calculative vs. affective
     - Calculative: rational, economic-based dependence (due to lack of alternatives or switching cost)
     - Affective: developed through reciprocity, personal involvement
     - Forward-looking (future commitment)

3. Trigger
   - Factors that change relationship basis
   - 2 types: situational vs. reactional
     - Situational: Changes in customers’ life
     - Reactional: Perceived service deterioration
Typology of Churn

• 3 main classes of churn of different value

1. Uncontrollable
   o Beyond company’s control, e.g. address change, death
   o Misleading brand loyalty metric → defection not due to service quality

2. Involuntary
   o Customers revoked/service withdrawn, e.g. defaulting on payment
   o Not much value to company

3. Voluntary
   o Customers conscious decision to churn
   o Tech-based reasons (latest products/services from competitors)
   o Economic-based reasons (better prices from competitors)
   o Quality (poor coverage, bad call-center experience)
   o Within company’s control (vs. Uncontrollable)
   o Most valuable to company
Extant Customer Churn Management Techniques & Weaknesses
Extant CCM Techniques

- Several CCM techniques exist
- Underlying assumption
  - Churners exhibit changes in uncommon behavior
  - E.g. changes in calling patterns
- Behavior formalized in terms of “structured data”
  - Purchase amounts
  - Product categories
  - Number, duration of calls
  - Demographics (age, sex, revenue)
  - Subscription renewal before expiry
  - Subscription duration
- CCM (prediction)
  - Data mining (decision trees, neural networks, association rules)
  - Regression-based methods (logistic regression)
Extant CCM Techniques - Weaknesses

• Suffer from 2 main weaknesses

1. Models’ predictions limited to “who”, “when”
   o Customers’ likelihood of churning, time of churning
   o Modeling information (e.g. demographics) partial reflection of behavior
   o Unable to infer churn reason/root-cause → “why”
   o More valuable to companies

2. Exclusively focus on individual customers
   o Ignore social networks within which customers operate

• Possible Reasons
   o No in-house expertise for more sophisticated data modeling, analysis
   o No ready-to-use frameworks, applications
Proposed Contribution/Offer
Proposed Approach – Churn Root Cause

• Need for model to predict root-cause of churn (“why”)

• Requires comprehensive understanding of customer behavior
  o Wishes, wants, needs, preferences
  o Sentiment (opinions, attitudes) towards products, services

• Expressed, conveyed via linguistic devices
  o I would like to also have CNN (wish)
  o I want to have the German version, now! (want)
  o I have to change my subscription plan (need)
  o I like the old version better (preference)
  o I like this show, I love this show (same emotional valence, but different intensity)
Proposed Approach – Churn Root Cause (cont)

• Automatic identification from language/text: Challenging
  o Wishes, wants, needs, preferences implicitly expressed
  o Quantifying emotions valence and intensity (love vs. like)

• Requires novel algorithms/techniques in
  o Natural Language Processing (NLP)
  o Machine Learning (ML)

• Information sources
  o Facebook comments, tweets, messages in forums, call center emails

• Other useful sources
  o Number of comments, likes, shares on Facebook
  o Number of replies, re-tweets, favorited on Twitter
Proposed Approach – Social Network Analysis

• Global view of customers, within ecosystem
  o Social contagion (viral spread) phenomenon in social networks
  o Churned customer could influence social connections to churn

• Social Network Analysis algorithms
  1. Model social networks of customers
     ▪ Social network as weighted directed graph (Neo4J graphDB)
     ▪ Members = nodes
     ▪ Weighted edges = strength of member relationships
  2. Identify network leaders/most influential member
     ▪ Centrality measures, e.g. eigenvector, PageRank
  3. Model information flow among members
     ▪ Modeling the flow, decaying diffusion process
     ▪ Processing, understanding flow contents, “why are you still with this company” vs. “How are you”
Proposed Approach - Personalized Recommendations

• Extracted information
  o Wishes, wants, needs, preferences
  o Likes, retweets, shares, replies,…
  o Social connections

• Incorporate in existing CCM models
  o Make personalized product recommendations
  o Reduce churn
Proposed Framework

Customer John Doe

Winsum fietsclub member
Cycling fans as connections
→ Cycling fan

Dissatisfied, angry customer
→ Potential Churner

Propose free VIP lodge admissions for Liège-Bastogne-Liège finish
Clustering – Fundamental, Initial Step

• Important to cluster/segment customers prior to analysis
  o Avoid too general results
  o Difficult to target specific customer groups
  o Important for incentives, recommendations

• Traditional clustering dimensions
  o Descriptive statistics derived from demographic, usage data
  o E.g. mean age, revenue, usage pattern

  o More innovative clustering dimensions
    o RFM (Recency, Frequency, Monetary)
    o Strength of social network connections→cliques
THANK YOU
• Other notes:
  Need to consider other events/information to enhance churn models:
- Competitors’ offering
- Disruptions
- Sequence of events (e.g. someone getting married or having children \(\rightarrow\) recommend services to partners or offsprings, e.g. telephone)
Future steps and To do:
- Next meeting (in 2-3 weeks time) to evaluate different configurations/organization of a collaboration in the context of a chair
- Prepare “templates” with different chair collaboration configuration (Sandra)
- Doodle to plan next meeting (Ashwin)