Governance of Big Data and Analytics to Gain Value from Location Services in the Retail Sector

Richard J Self
Big Data Evangelist
Research Fellow, Big Data Laboratory
University of Derby
http://tinyurl.com/ppyg6t8
http://computing.derby.ac.uk
email: r.j.self@derby.ac.uk
Objective

To identify

- Big Data and Analytics Governance Imperatives
- Challenges of Location Services for Retail
- Gaining Value from Big Data Analytics and LBS for Retail
Context

- BDA project success rates are about 40%
- Analytics Governance can be problematic
- Location Services has variable accuracy
  - University of Derby research
  - Thinknear research
  - Governance Consequences?
- Gaining Value from LBS for Retail
  - Risk mitigation
Beware the Hype!
- A few highly successful projects
- Following the Standish Group “Chaos” curves of success, challenge and failure

Gaining insights from the data
- Spurious correlations in our data?
- Do our systems, processes and culture hinder insight generation? (Gary Klien, 2014)

Accuracy of data
Project Success Expectations

Standish Group
IT Project Success and Failure Rates

Sourced from Standish Group
See also Daniel Kahneman, 2011 for Planning Fallacy
The Planning Fallacy

- “Our project will beat the odds!”
  - Why?
  - Have we ever beaten the odds before?
  - What are we doing better than everyone else?

  (Daniel Kahneman, 2012)

- Be realistic
  - Large amounts of contingency (Standish group)

- Do not use “challenging” targets
  - They will fail or be challenged!
(Too much ?) Trust in Technology

- Using new predictive and cognitive systems
  - Humans become blinkered
  - Fail to notice problems
  - Get de-skilled

- Reliability of data
  - Data and systems often “gamed” → not reliable (N Carr, 2015)

- Sub-prime Mortgages, as example
  - All Watched over by Machines of Loving Grace (BBC, 2011)
Things that Hinder Insights

- Data, Systems and Processes to ensure compliance and accuracy
- Don’t rock the boat
  - Hide the anomalies
  - Too junior?
  - Too much experience?
  - Too little experience?

(Gary Klien, 2014)
Location Data Accuracy

- GPS is accurate to +/- 10 metres 95% of the time (averaged over 24 hours is the claim)
  - In perfect conditions!
  - Excellent GPS receiver
- Using smart devices?
  - See Thinknear data
  - See UoD data
Thinknear Location Score

Thinknear Location Score

Hyper Local <100m
Local 100m - 1,000m
Regional 1,000m - 10,000m
Multi-regional 10,000m - 100,000m
National > 100,000m
Triggers to LBS Research Project

Wandering while stationary

22km error

Night-time wandering

Start-up movement

4900m error from top of Mont-Royal
University of Derby LBS Accuracy

Different Models

Bar Chart Demonstrating The Error Difference In The Same Carpark Whilst Busy and Empty

Date: 10.03.15
01:31 pm to 01:43 pm

INDOOR

Positioning Error (m)
Governance Consequences

- Failure to gain expected value
- Reputational risk
- Personal Data implications (Europe)
Gaining Value

Questions for Risk Mitigation
Governance

- Use 12 Vs of Big Data as questions
  - Validate project
  - Evaluate nature of data

  [http://computing.derby.ac.uk/c/big-data-analytics-analytics-12-vs/](http://computing.derby.ac.uk/c/big-data-analytics-analytics-12-vs/)

- Use Standish Group insights as questions
  - Provide (large, 40+%%) contingency
  - Avoid the planning fallacy
LBS Accuracy

- Avoid “Start-up” problem
  - Take multiple readings
  - Test consistency over time

- Evaluate consequences and risks of
  - Levels of error?
  - Reputational damage?
Human Insight Generation

- Insights can occur randomly
  - Can they be fostered?
  - Can they be suppressed?

- Corporate culture
  - Active encouragement, action?
  - Filtered?
  - Pro-forma words, no action, management in control?

See Gary Klein, 2014, chaps 12 and 13
Summary

Questions, not Answers!

- Our trust in people?
- Our trust in technology?
- Veracity of data (12 Vs)?
Key “Must Read” Books

- **Seeing What Others Don’t**
  - Gary Klein
  - The Remarkable Ways We Gain Insights

- **The Glass Cage**
  - Nicholas Carr
  - Who Needs Humans Anyway?

- **Thinking, Fast and Slow**
  - Daniel Kahneman
  - Winner of the Nobel Prize

‘A lifetime’s worth of wisdom’
Steven D. Levitt, co-author of Freakonomics

The International Bestseller
Sources

- BBC, 2011, All Watched over by Machines of Loving Grace – Love and Power,
  https://vimeo.com/groups/96331/videos/80799353
- Daniel Kahneman, 2012, Thinking, Fast and Slow
- Gary Klien, 2014, Seeing What Others Don't - The Remarkable Ways We Gain Insights
- Standish Group, www.standishgroup.com