

Lessons in BI from Wal-Mart

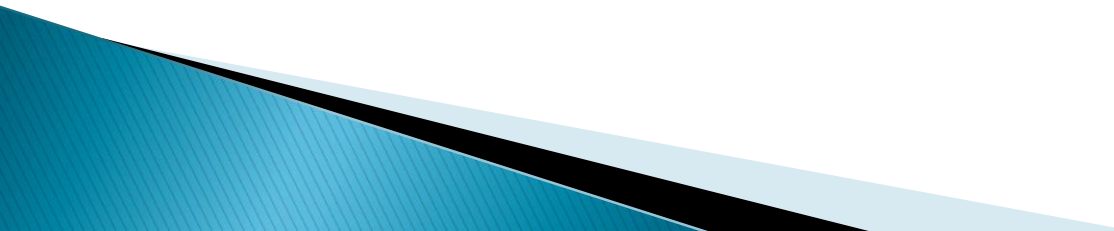
Ramki

7 Sep 11

More facts about Wal-Mart

- ▶ Wal-Mart responsible for 12% of productivity gains in entire US economy– McKinsey study
- ▶ Annual inventory turnover: 8.5
 - Sells entire inventory every 6 weeks!

Data mining in Wal-Mart

- ▶ 583 Terrabytes of sales/inventory data
 - ▶ Built on parallel 1000 processor system
 - ▶ Refreshes data on sales hourly , adding a billion rows of data daily.
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What data do they mine?

When customer pays they capture:

- ▶ what's selling
- ▶ what day of the week/ time
- ▶ What price
- ▶ Other products in basket
- ▶ Combinations like age preferences, ethnic background and demographic -to get 'affinity sales'
 - Know how many 2.4 ounce tubes of tooth-paste sold yesterday and what was sold with them!

Relationships– not so known!

- ▶ By analysing sales before and after hurricanes Wal-Mart knows what sells!
- ▶ Obvious ones:
 - Batteries
 - Bottled water
- ▶ Not so obvious ones based on data mining:
 - Pop-Tarts
 - Beer!
 - Beer the top performer in hurricanes!
- ▶ Trucks automatically supply these items when hurricanes are predicted by weather experts

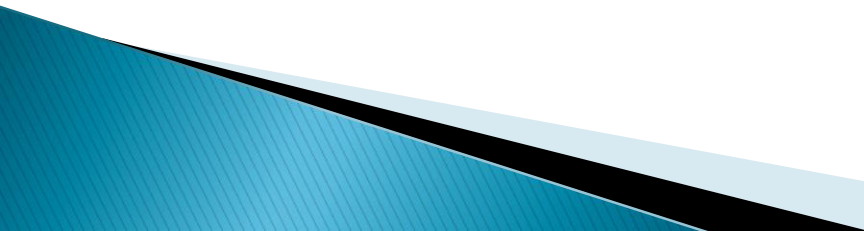
Relationships–funny!

- ▶ Data analysis showed on Friday afternoons, Young American males who bought
 - Diapers
- ▶ Also bought
 - Beer!
- ▶ Beer was moved near diapers to increase sales of both!
 - The article says this may not be true but folk–lore; still drives home a point!

Relationships– you can't explain!

- ▶ By analysing what sells together,
 - Wal-Mart found relationship between
 - Facial tissues and
 - Orange Juice!
 - They are positioned together now!

Continuous monitoring

- ▶ Bentonville IT staff tapped into data of sales on the morning after Thanks giving
 - ▶ Sales of computer holiday special was far below expectation
 - ▶ Marketing staff contacted store and found computers and monitors were not displayed together
 - ▶ Customers did not see what they were getting for the price stated
 - ▶ Calls to re-arrange displays went to all stores
 - ▶ Sales increased spontaneously!
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Benefit to vendors

- ▶ 17000 vendors can dip into Wal-Mart data!
- ▶ Last year vendors queries: 21 million!
- ▶ P&G Gillette developed promotions based on data and increased sales by 19%
- ▶ All data available:
 - Daily sales
 - Shipments
 - Inventory
 - Returns
 - Pos
 - Invoices
 - Claims
 - Forecasts
- ◻ Also custom built for vendors
- ▶ Such data exclusive- not shared with A.C.Nielson!

Benefit to manufacturers

- ▶ 5000 manufacturers
- ▶ Tied thru Retail link program
 - Pepsi, Disney or Mattel– whoever
 - Tap into Wal-Mart data to see
 - Sale in individual areas
 - Which products are selling (replenish)
 - Which are laggards (pull out)

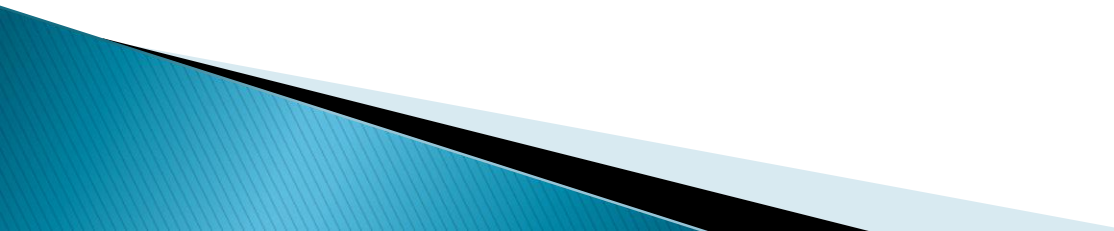
Benefit to Wal-Mart

- ▶ Even how many cashiers to be employed at what time.
- ▶ To avoid tractor -trailer traffic jams in store parking lots, deliveries are choreographed to arrive at intervals of 10 minutes apart!
- ▶ Vendors to replenish stocks as they deplete
 - Levi's replenishes stocks every two days!

RFID tagging

- ▶ Boosts sales for P&G 20% ensuring inventory is in right shelf at right time!
- ▶ Wal-Mart will monitor temperature of chilled goods at fixed time intervals all across supply chain, to check whether they were kept at the right temperature!

Combining data

- ▶ Loyalty cards like Sam's club give:
 - Demographic data
 - ▶ POS give data on:
 - Where, when and what is sold
 - ▶ Combine and lo and behold!
 - ▶ You get gold!
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The future

- ▶ Simulation of business with inductive model to maximise sales before the event
 - Eg.: Run Easter simulation in Dec itself to forecast with pin point accuracy!
- ▶ Other things in store
 - Use of wireless
 - Voice recognition

Sources

- ▶ Data asset in action : Technology and the rise of Wal-Mart/Flat world knowledge.pdf
- ▶ The Parable of the beer and diapers–The Register, UK
- ▶ Swot analysis of WalMart–the world's largest company–Rapid-business-intelligence.com
- ▶ Data Data everywhere– Information week–Techweb.com
- ▶ Walmart cuts energy costs 40% with Teredata BI–computerweekly.com
- ▶ Geographic BI at Walmart–Directions magazine