LESSONS ON DRIVING DATA SCIENCE AND ANALYTICS TRANSFORMATION

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@chapob
Big Data

@chapostartupweekend.org/files/2014/05/Fotolia_41498462_M1.jpg
A new style of IT emerging

Every 60 seconds

- 98,000+ tweets
- 695,000 status updates
- 11 million instant messages
- 698,445 Google searches
- 168 million+ emails sent
- 1,820TB of data created
- 217 new mobile web users

Source: HP Transforming IT Blog, August 2013
<1% Amount of world’s data analyzed

Source: HP Transforming IT Blog, August 2013
LET'S SOLVE THIS PROBLEM BY USING THE BIG DATA NONE OF US HAVE THE SLIGHTEST IDEA WHAT TO DO WITH
Variety of Data Scientists

- Data Developer: Developer, Engineer
- Data Researcher: Researcher, Scientist, Statistician
- Data Creative: Jack of All Trades, Artist, Hacker
- Data Businessperson: Leader, Businessperson, Entrepreneur

Variety of Skills

- Business
  - Product Development
  - Business
- ML / Big Data
  - Unstructured Data
  - Structured Data
  - Machine Learning
  - Big and Distributed Data
- Math / OR
  - Optimization
  - Math
  - Graphical Models
  - Bayesian / Monte Carlo Statistics
  - Algorithms
  - Simulation
- Programming
  - Systems Administration
  - Back End Programming
  - Front End Programming
- Statistics
  - Visualization
  - Temporal Statistics
  - Surveys and Marketing
  - Spatial Statistics
  - Science
  - Data Manipulation
  - Classical Statistics

Source: Analyzing the Analyzers, 2013
## Key Questions Addressed by Analytics

<table>
<thead>
<tr>
<th>Information</th>
<th>Past</th>
<th>Present</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>What happened?</td>
<td>How and why did it happen?</td>
<td>What’s the next best action?</td>
<td>What’s the best/worst that can happen?</td>
</tr>
<tr>
<td>(Reporting)</td>
<td>(Modeling, experimental design)</td>
<td>(Recommendation)</td>
<td>(Prediction, optimization, simulation)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>What will happen?</td>
</tr>
<tr>
<td>(Extrapolation)</td>
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</tbody>
</table>
Applications of Data Science and Analytics

Making Better Decisions
Measure, Experiment, Analyze

Powering Product Experiences
Design, Build
“The value of an idea lies in the using of it.”

- Thomas Edison
2. Listening to data starts at the top. A data-driven culture is meaningless without the support of the CEO and executive team -- and their own willingness to challenge assumptions that they hold dear. A top-down approach is the only way to break the tyranny of the “HiPPOs” (Highest Paid Person’s Opinions).

Bezos tasked me with digging into Amazon’s data to unearth new ways to grow the business. My team responded with three new data-driven systems that delivered a
Data education will help drive data-informed decision making

- Problem solving with data
- Using statistics & analysis
- Writing SQL & using data at Airbnb
- Visualizing data
- Setting up, delivering & interpreting experiments

Data Education
- Single source of truth
- Access permissions
- Data documentation
- Data & tools request process

Data Informed Decisions
- Airpal
- Dataportal
- ERF
- Knowledge Repo
- Microsoft Excel
- Superset
- Tableau

Data Access

Data Tools
Start at the top but build from the masses
EXPANDING PARTNERSHIPS
CUSTOMER 360
KNOWING OUR CUSTOMERS BETTER THAN THEY KNOW THEMSELVES
Leverage partners along the way
UNDERSTAND WHAT DRIVES ENGAGEMENT

1 & DONE

MULTI-VISIT CUSTOMER

MULTI-VISIT + MULTI-CHANNEL CUSTOMER

MULTI-VISIT + MULTI-CHANNEL + MULTI-BRAND CUSTOMER

REVENUE GROWTH 5X 8X 10X

INCREASED REVENUE + ENGAGEMENT

UNDERSTAND WHAT DRIVES ENGAGEMENT

INCREASED REVENUE + ENGAGEMENT
UNDERSTAND THEIR HABITS

34 days
median time
between 1X→2X
ANALYZE THEIR PURCHASES

First Purchase Basket

Second Purchase Basket
TEST NEW COMBINATIONS
Keep it simple
(at least at the beginning)
DATA SCIENCE AND ANALYTICS ORGANIZATION
KEY FUNCTIONAL GROUPS (EXAMPLE)

Decision Support and Analytics
- **scope:** discover insights that deliver stakeholder outcomes / data-driven solutions
- **measures:** partnership strength / decisions made / outcomes achieved

Advanced Analytics and Data Science
- **scope:** understand complex relationships / models / foundational analytics and tools
- **measures:** usage / analytic quality / durability

Informatics and Governance
- **scope:** deliver data stewardship / analytics tools / instrumentation / visualization
- **measures:** data quality / speed to insight / scale

Embedded

Centralized
Embed data entrepreneurs to drive value
### Driving Details

<table>
<thead>
<tr>
<th></th>
<th>Christopher</th>
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</thead>
<tbody>
<tr>
<td>Hard Brakes</td>
<td>7.5</td>
<td>5.2</td>
<td>10.3</td>
</tr>
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#### Hard Brakes

**Tip 1:**

Be prepared

Take care of things like choosing a radio station and programming your GPS before you pull into traffic, so you can focus solely on driving.

**Tip 2:**

Travel in groups

Carpool when possible, whether you're going to work or to a family gathering.

@chapoo
At Disney Parks, a Bracelet Meant to Build Loyalty (and Sales)

by BROOKS BUNTING
Published: January 7, 2013

ORLANDO, Fla. — Imagine Walt Disney World with no entry turnstiles. Cash? Pass? Visitors would wear rubber bracelets encoded with credit card information, snapping up corn dogs and Mickey Mouse ears with a tap of the wrist. Smartphone alerts would signal when it is time to ride Space Mountain without standing in line.

Fantasyland? Hardly. It happens starting this spring.

Disney in the coming months plans to begin introducing a vacation management system called MyMagic— that will drastically change the way Disney World visitors — some 30 million people a year — do just about everything.

The initiative is part of a broader effort, estimated by analysts to cost between $800 million and $1 billion, to make visiting Disney parks less daunting and more amenable to modern consumer behavior. Disney is betting that happier guests will spend more money.

“If we can enhance the experience, more people will spend more money,” said a Disney manager. 

Related

Inside Disney’s New Fantasyland (December 23, 2012)

@chapot
Power new product experiences with data
1. Start at the top but build from the masses
2. Leverage partners along the way
3. Keep it simple (at least at the beginning)
4. Embed data entrepreneurs to drive value
5. Power new product experiences with data
THANK YOU