Data Driven Business Models
Berkeley Method of Entrepreneurship

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Some Background at UC Berkeley
Since 2000: Engineering Advisory Boards input to Dean:
“Add leadership, breadth, innovation skills, combine multiple disciplines.

2005: Innovate, Lead, Productize in a global economy

2008-11: Fung Institute for Engineering Leadership

2011: Engineering Leadership for Silicon Valley Firms Firms: Google, VMware, NetApp, Cisco, Yahoo!, Samsung and other.

2012: SkyDeck Accelerator
Quick Outline

- Understanding Data-driven Business Models
- Key elements of every data driven business applications
- Strategic value to firms
- Related issues: lean models and entrepreneurship
- Besides algorithms, psychology and mindset are also necessary
Case: How Target Figured Out A Teen Girl Was Pregnant Before Her Father Did - Kashmir Hill, Forbes

• Father to Target Customer Service: “My daughter got this in the mail!” he said. “She’s still in high school, and you’re sending her coupons for baby clothes and cribs? Are you trying to encourage her to get pregnant?”

• Later:

• Father on phone: On the phone, though, the father was somewhat abashed. “I had a talk with my daughter,” he said. “It turns out there’s been some activities in my house I haven’t been completely aware of. She’s due in August. I owe you an apology.”

Case: Target Measurement Process

• Target assigns every customer a Guest ID number:
  – Tied to credit card, name, or email address, and any demographic information (bought or collected)
  – Bucket that stores a history of everything they’ve bought

• Assignment: Find the unique moments in consumers’ lives when their shopping habits become particularly flexible. (Alan Andreasen UCLA Study)

• Target assigns: “pregnancy prediction score,” with an estimate of the due date, so that coupons can be timed to the right stage of pregnancy.
Case: How Does Target Know- Kashmir Hill, Forbes

Hypothesis-based model formation:

• Noticed: that women on the baby registry were buying larger quantities of unscented lotion around the beginning of their second trimester.

• First 20 weeks: supplements like calcium, magnesium and zinc. Also, soap and cotton balls.

• Example signal of close to delivery: suddenly buying lots of scent-free soap, extra-big bags of cotton balls, hand sanitizers and washcloths, it

• Pole found about 25 products, when analyzed together, allowed him to assign each shopper a “pregnancy prediction” score.

• Take a fictional Target shopper named Jenny Ward, 23, Atlanta:
  – In March bought cocoa-butter lotion, a purse large enough to double as a diaper bag, zinc and magnesium supplements and a bright blue rug.
  – There’s, say, an 87 percent chance that she’s pregnant and that her delivery date is sometime in late August.

Target Case as a Data Driven Business Model

• Value: Know customers life change events.

• Key Algorithm: Scoring and regression

• Decision/process: targeted coupons at the right time.

• Goal: Increase wallet share from existing customers
Target as a Measurement Process: Continuous Learning Model

1. Current state, model, system
   - Interpret, decide implement (will affect current state)
   - Does not need to take a long time
   - It's a process, not a one time measure

2. What decision do you want to affect, what business case for measurement, (know why to avoid bias)


4. Filter by value of information and risk orientation (another bias)

5. Data collection, samples, Bayes’, correlations, machine learning, etc

6. What decision do you want to affect, what business case for measurement, (know why to avoid bias)

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Target as a Measurement Process: Continuous Learning Model

Current State: Guest ID + Shopper Info

1. Set new coupon strategy, observe results

2. Decision: targeted coupons during pregnancy
   - Business case: life change events

3. Estimation based on baby registry
   - Hypothesis: product signals

4. Value of Perfect Information, reward biased

5. Correlation testing.
   - Assign Pregnancy Score

6. TARGET Business Model
Top 8 Business Models Using Data

1. Knowing your customer, leading to better targeting and relationship. E.g. Target, Disney, Netflix
2. Information based better services. E.g. UPS, FedEx
3. Data driven reliability. E.g. GE, BMW, Siemens
5. Improving the customer journey/experience. E.g. Harrah’s
6. Risk Management, regulation, and compliance
7. Efficiency or Better Performance per dollar cost. General IT, SAP, etc
8. Functional Applications: HR/Hiring, Operations etc.. Eg Walmart

Any Application:
Data Driven Model

- Value: ?
- Key Algorithm: ?
- Decision/process: ?
- Goal: ?

<table>
<thead>
<tr>
<th>Data Model/ Source</th>
<th>Internally Collected</th>
<th>Externally Collected</th>
<th>Purchased</th>
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<tbody>
<tr>
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Top Business Models for Using Data

Usage Models

1. Knowing your customer, leading to better targeting and relationship. E.g. Target, Disney
2. Information based better services. E.g. UPS, FedEx
3. Data driven reliability. E.g. GE and Siemens
5. Improving the customer journey/ experience. E.g. Harrahs
6. Risk Management, regulation, and compliance
7. Efficiency or Better Performance per dollar cost
8. Functional Applications: HR/Hiring, Operations etc.

Value to Business Customers

- Efficiency (save money)
- Wallet Share (top customers spend more time and money with you)
- Brand alignment (it reinforces how people think positively about the company)

More Value

Ideation for Data Driven Concepts in Cycle
Induction, building, story-telling, verification, and adaptation

Take Feedback

Refine Hypothesis (think and learn)
- Which Customer
- What Data if collected or aggregated would help

Develop:
- Value Proposition
- Business Model:

Demonstrate and Pitch To Customer Target
(Collect Stakeholders)

Make/Adjust Demo or Pitch (or backtest)
Inside vs Outside Perspective

<table>
<thead>
<tr>
<th>Inside Firm Perspective</th>
<th>Outside of Firm</th>
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<tbody>
<tr>
<td>(Data Intrapreneurship)</td>
<td>(Entrepreneurship)</td>
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<tr>
<td>• Start sample project</td>
<td>• What is the business model</td>
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<td>• Get executive sponsor</td>
<td>(Consulting, data as a service, investment fund, etc.)</td>
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<tr>
<td>• Choose Metrics</td>
<td>• Customer and validation of value proposition</td>
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<td>• Include suppliers and partners</td>
<td>• Product/Service/Competition</td>
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<tr>
<td>• Realize</td>
<td>• Promotion</td>
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<td></td>
<td>• Branding</td>
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The Berkeley Method of Entrepreneurship

A holistic approach to entrepreneurship education
The Berkeley Method: A holistic approach to entrepreneurship content

Level 1: Strategies, Tactics, and Judgment
Teaching effectiveness of strategy, tactics & execution
- e.g. opportunity recognition, pivots, MVP, raising funds, tools, frameworks, …

Level 2: Mindset, Culture, and Social Psychology
Psychology of being an entrepreneur
- e.g. trusting, risk assessment, communication, overcoming social barriers, rejection therapy, fail training...

Level 3: Infrastructure and Supporting Environment
Safe and effective environment
- e.g. diverse networks, ability to connect, facilities, services, clarity of rules of engagement, and mentors...

Cultural Behaviors for Entrepreneurs

1. Agree that you will get help from others, and pay it forward.

2. Friend or Foe: If you can’t tell: Learn to trust others without expecting anything in return.

3. Realize something new by induction, and then learn to communicate the story with a new language.

4. Entrepreneurs believe they can change the world.

5. Make deals that seek fairness (in positive sum transactions), not advantage (in zero sum transactions).

6. Its necessary to be Wrong sometimes. Plan to Experiment. Plan to Fail. (Fail Fast)
Analyze, Adapt and repeat. The smarter you think you are, the harder this is going to be.

7. Diversify your networks. Connect to people you would not normally, then go and listen. Open Up. And connect them to others.

8. Be a role model for other entrepreneurs and innovators.

If everyone in your community acts like this, you will have a vibrant entrepreneurial culture.
The CET Curriculum Journey

CET Courses
- Tech Entrepreneurship
- Global Ventures
- Challenge Labs
- Product Management
- Tech Leadership

Experiential Learning / Venture Acceleration
- Venture Lab
- Sky-Deck

Successful Alumni and New Ventures

Ecosystem Development and Virtual CET
Powerful Networks: students, mentors, entrepreneurs, customers, and investors

Creating an Innovative Culture

Inductive Learning
- Industry and Social Challenges
- Testing with Real World Goals

Learn While Doing + Cases Studies
- Cultural Rules for Entrepreneurs
- Games + Exercises

Diversity = Value
- Students interact directly with problems
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