Contents



## 1. To Do

- Add more details around information product and why this breaks things
- Add more details around why people thought that there was a "new economy" pre information rules
- Specifically add more information on the underlying motivation for differences.
- Add more details around "why data is not oil". This was a big conversation in class.

## 2. How to complete an Industry Analysis

(1) Define the industry.
  - NOT company. INDUSTRY.
  - What are the bounds of the industry?
  - What companies exist in it?

(2) Understand a customer's willingness to pay
  - What effects it? (substitutes, complements)
  - May not be well defined – or there maybe multiple segments each with their own willingness to pay (e.g. power tools vs. ties for father's day)

(3) Carefully analyze each force individually.
  - For each force identify the major players and their relationships
  - Work to quantify the relative effects of those players on those forces
  - Attempt to distinguish how much that factor effects the industry

## 3. Most importantly for you

- *Product Sense*
- What is "Product Sense" and why do you care?
- Can mean a bunch of different things – none of which really matter.
- What matters is that it is a commonly used phrase to differentiate data-focused job candidates.
- In my nearly 15 years of data science experience.. product sense is almost always used to ding candidates
- Specifically used when candidates don't understand the forces that are at play for the company.
- Examples:
  (1) Proposing a feature which doesn't make sense
    - Facebook: I'd like to propose creating an easier way to delete my account.
  (2) Proposing a model which isn't useful:
    - Spotify: If you had access to all of our data, what would you be interested in doing?
    - I'd look at all the album colors to run a model on the most common album cover color.

## 4. Criticism of the Factors

- What is an industry? What is a company and how does a company fit in?
  - How do you handle companies that have multiple lines of business that overlap?
  - For example: in our TNC example from before, what effect does Uber Eats Play?
- Execution still matters:
  - Boeing vs. Airbus
  - Uber (culture issues)
- Not all forces are equal and this does not provide a quantitive method of measuring them.
  - How do we evaluate (relatively simple) factors like the power of suppliers and buyers? "High", "Medium" and "Low" seems rather unscientific.
- (To some) the model understates some significant background issues (government, international rules, etc.)
- Static snapshot and predictions based on snapshots
  - This "model" doesn't present us with a way toward long term profitability

  - Only allows us to analyze "what exists" right now.

## 5. Back to the timeline

- Porter's original article came out in 1979
- While there were legit criticisms (see above), there was nothing really undermining its dominance for nearly two decades.
- In my opinion and experience, the first major cracks in the Porter hegemony occurred during the first dot-com era in the late 90's early 2000's.

## 6. The Information Rules Era

- In 1999 two economists published an incredibly influential business strategy book called *Information Rules*
- The authors were Carl Shapiro and Hal Varian
- Carl Shapiro
  - Professor of Business Strategy (research area: micro-economics) at UC Berkeley
  - Incredibly mathematically technical
- Hal Varian
  - Chief Economist at Google
  - Emeritus Professor at UC-Berkeley
  - Also in the area of micro-economics
  - Also very mathematically technical
- AKA These are very smart people who do hard math – doesn't seem to be similar to Porter's Analysis!

### 6.1. **What was happening.**

- Dot-Com 1.0
- Napster
- Google starting to take-off
- A lot of confusion around "why" a company is valuable.
- Specifically why does "google" have value? Why does Yahoo? Why are they so profitable?
- Porter's forces seem "quaint" in this regards.
- People keep yelling about a "new economy"

6.2. **Fundamental Argument.**

- The same business strategies that existed before are still useful and valuable, *however* and this is a HUGE *however* how we think about them, their relative value and how to act on those strategies has changed fundamentally.
- We do NOT need a set of "New Economics" or "New Strategies" – we just have to better understand the old ones.
- As technical micro economists they were well versed in a lot of ways that "information" can be used to be competative.
- As an example:
  - A small hardware store in 1980 kept inventory (maybe even with a computer)
  - Home depot, OTOH, can use information to do real-time purchasing and then also predict future demand to better negotiate long-term contracts.
- They also introduced (in a mass market sense) the notion of an "Information Good"
- *Information Good*
  - Information is expensive to produce, but incredibly easy to reproduce (Music, writing, computer programs, computer models)
  - Economically we characterize this as "high fixed costs" and "low marginal costs"
  - Information goods tend to involve a lot more consumer choice on systems. E.g. the software that you use represents tons and tons of different software systems while your choice when buying kitchen stuff is much thinner (I have a stove and some pots).
  - For many information goods: capacity is endless and the actual marginal cost is zero!
- Given this, how should we price a good?
- Should be priced according NOT to its cost, but to its value.
- Example: Spotify
- Example: Encyclopedias
- Given the above, there are some economic concepts that have much more value in business strategy:
  (1) Differentiation of products and prices:
    - Given how easy it is to copy / reproduce it becomes that much more important to be able differentiate your product and tie that in with your pricing strategy.
  (2) Rights Management
    - How do you maximize your Intellectual Property to Manage its value (as opposed to just protecting it?)

(3) Lock-in
  - Information products are much more bound to other things, how do you manage lock-in?

(4) Positive Feedback
  - Network Externalities are ubiquitous in information industry. How do you create a positive virtuous cycle?

(5) Standard and Alliances
  - Once again, information products tend to be bound up in other things, so how do you manage standards?

- We aren't going to go over every one of these in detail.

## 7. Differential Pricing

- A large part of their analysis is that differential pricing (sometimes called price-discrimination) is a much more powerful tool for business strategy than it was previously.
- If the cost of a good is relatively small than pricing to capture as much of the rents as possible is the best profit maximization system.
- Price discrimination tends to be difficult for a few reasons:
  (1) How do we know a customer's willingness to pay?
  (2) How do we prevent external arbitrage?
  (3) How do we prevent cannibalization: where one of our prices undercuts another package?
- Specifically, lets say that we are MeowMeet and we are going to start charging. Specifically, just like every other app we are going to sell booster which allow users who pay to connect more quickly.
- Boosters to us are free. What price should we set them? According to a customer's willing ness to pay.
- If we sell them at $1 per and $2 per, everyone is going to do the first package.
- While lots of industries have tried to this before it was hard:
  - Mail-order catalogs
  - Airlines based on when you buy your tickets and who you buy them through.
- With the internet this is sooo much easier. How can we find a customer's willingness to pay?
  - AB-testing
- How can we discriminate users?
  - Tracking systems are free (google analytics)
  - Just being "simple" will probably pay dividends (android vs. ios)

- We can also provide a "menu" (or sometimes called a "version") which allows customers to reveal their preferences through their choice.
- Since the marginal cost of stuff goes to zero we can create menus which require customers to reveal their preferences.
- Meow-meet example:
  (1) $10 gets you 10 boosters and a 1 booster a month for the next 6 months.
  (2) $20 gets your 20 boosters, but no free boosters.
  (3) $5 gets you 2 boosters, but 2 boosters for the next year.
- Example: Mathematica:
  - Professional Edition vs. Student Edition
  - Student Edition was the Professional Edition with the floating-point coprocessor disabled.
  - The company spent money to create a lower end product (had to develop a second floating point library)
- There are tons of different considerations when doing versioning:
  - How to discriminate?
  - How many versions?
  - Do you use bundling?
  - What do you use to version?
    Speed of operation?
    Built-in limitations (can't save)?
    Team size?
    Tech Support?

## 8. Summary

- Information Rules presents a return toward a more microeconomics version of business strategy than Porter.
- Could be considered a swing more toward "Execution" as a principal factor.
- The key feature for all of you is that this vision is incredibly data-heavy. Unlike the porter world, the strategies shown in information rules are designed to take advantage of modern data technologies and decision-making.

## 9. Back to Timeline

- Reminder: Why are we here? (data as how it effects companies / jobs /etc.)
- Information rules leads us right to our next stage – which is the stage of "data is the new oil"

- The natural next step from information rules is that by having more data (on your customers, competitors, etc.) you'll be able to make better decisions.
- This was a very prevalent idea.
- The thought was that having rich data sources that you owned could be a sustainable profit center "like owning an oil derrick", such as in Figure 1.

FIGURE 1. Economist Cover


- This was probably the main way of thinking about data until around 2017 (note that the cover is after this).
- When looking at the current crop of companies (FAANG), there is an easy jump to data being the critical driver of profitability (flywheel):
  - **Facebook / Meta:** More data = better targeting / personalization = more money being spent on ads
  - **Google / Alphabet:** More data = better targeting / personalization = more money being spent on ads
  - **Netflix:** More data = better recommendations, better content = more customers

  - **Amazon:** Personalization / Targeting = more sales
  - **Apple:** Apple is (now) considered more of a hardware company, but at the time they had a larger presence in the data space. There were a number of acquisitions and product features that were abandoned/de-prioritized (iAds, app store personalization, etc.)

## 10. Data isn't oil

- During the 2010's VC's were investing heavily in data companies, running on the assumption that if you were collecting data that you'd be able to leverage it to generate profit.
- However, this didn't turn out to be the case – outside of advertising.
- The big problem with this analysis is that it presumes that data has *transferability*
- What if I had all of Amazon's data – what could I do with it?
- Conversation question: If you had a magic hard drive with Amazon's Data what would you do with it?