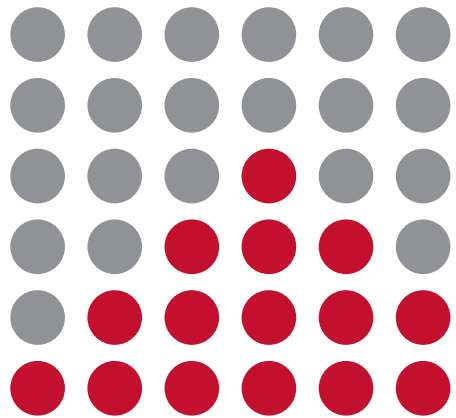


Streaming, Sharing, Stealing:
Big Data and the Future of
Entertainment

Michael D. Smith
Hollywood IT Society
Fall Conference

Carnegie Mellon University



IDEA

**Initiative for Digital
Entertainment Analytics**

Does piracy harm sales?

Does piracy hurt creative output?

Do Long Tail markets change consumer preferences?

Does HBO cannibalize DVD sales?

What is the right price for online movie sales?

How valuable is targeted promotion online?

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Does Piracy Harm Sales?

Peer-Reviewed Academic Journals Articles

No	Yes

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No (3)	Yes
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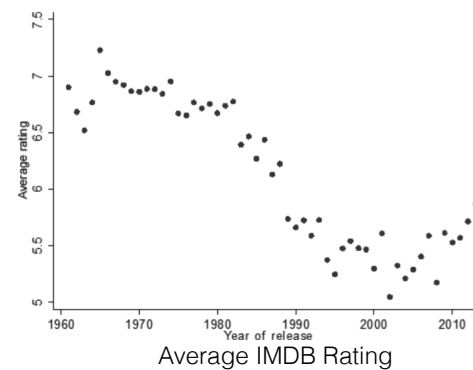
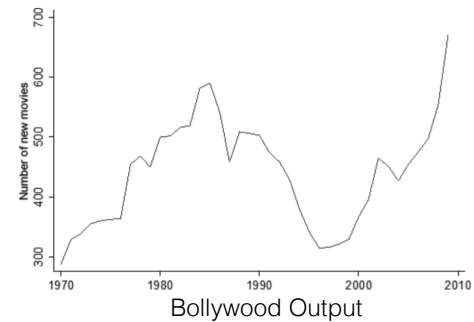
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Does Piracy Hurt Innovation?

- *Telang and Waldfogel* examine output in Bollywood after introduction of VCR in mid-1980s
- Significant drop in industry revenue, industry output, and quality (IMDB ratings)



Anti-Piracy Options

Supply-Side

Demand-Side

Government/
Mandated

Industry/
Voluntary

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CREATIVE
CONTENT UK

Anti-Piracy Options

Supply-Side

Demand-Side

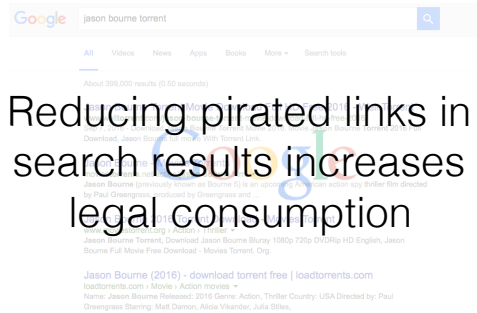
Government/
Mandated

Megaupload shutdown
increased digital sales 8-10%
UK Blocking increased paid
legal streaming by 12%

HADOPI Graduated
Response Law
increased legal music
sales by 22-25%

Industry/
Voluntary

Reducing pirated links in
search results increases
legal consumption

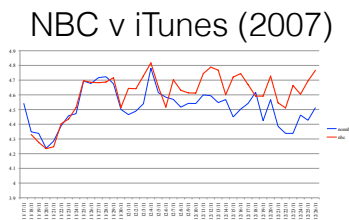


In progress...
stay tuned

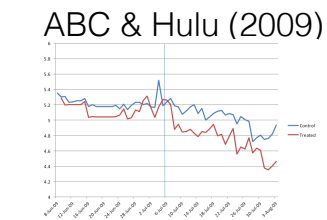
CREATIVE
CONTENT UK

Pro-Legal (Product)

- Distributing products in digital channels reduces (digital) piracy...



Removing content from iTunes causes an 11% increase in piracy (Danaher et al. 2010)



Adding content to Hulu causes an 18% decrease in piracy (Danaher et al. 2015)

Studio X & iTunes (2012)



Releasing (catalog movies) on iTunes causes 6.5% decrease in piracy (Smith et al. 2015)

- ...without cannibalizing physical sales

Pro-Legal (Place)

- Design **international release windows** with piracy in mind
 - Each 10-day delay between domestic and international DVD release → 2-3% lower sales (Smith and Telang 2014)
- Design **product release windows** with piracy in mind
 - Releasing digital movies on iTunes 10 days before DVD/BD
 - 2x digital sales, no change in DVD/BD sales (Danaher, Smith, and Telang 2015)

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Is technology changing

market power in the

entertainment industry?

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>80%



warner | music | group

>85%



Penguin
Random
House

>50%

Major Technological Shifts

- User-Generated Content
- Long Tail Markets
- Digital Piracy
- Powerful Online Distributors
- Big Data

Established Business Model

- Market Characteristics:
 - High fixed cost of production,
 - Low marginal cost of reproduction/distribution,
 - Scarce channel capacity,
 - Possible to control user access to content (via copyright)
- Business Model:
 - Sell individual products to consumers with different values
 - Use release windows/versions targeted to market segments
- Sources of Market Power:
 - Control *scarce* financial/technical resources to produce content
 - Control *scarce* channels necessary to distribute content
 - Control artificial *scarcity* in how consumers access content

Established Business Model

- Market Characteristics:
 - Low to high fixed cost of production,
 - Zero marginal cost of reproduction/distribution,
 - “Unlimited” channel capacity,
 - Difficult to control user access to content (via copyright)
- Business Model:
 - Sell individual products to consumers with different values
 - Use release windows/versions targeted to market segments
- Sources of Market Power:
 - Control scarce financial/technical resources to produce content
 - Control scarce channels necessary to distribute content
 - Control artificial scarcity in how consumers access content

Established Business Model

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 - Low to high fixed cost of production,
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 - “Unlimited” channel capacity,
 - Difficult to control user access to content (via copyright)
- Business Model:
 - Sell individual products to consumers with different values
 - Use release windows/versions targeted to market segments
- Sources of Market Power:
 - UGC → • Control scarce financial/technical resources to produce content
 - Long Tail → • Control scarce channels necessary to distribute content
 - Piracy → • Control artificial scarcity in how consumers access content

On-Demand Bundled Model

- Market Characteristics:
 - Low to high fixed cost of production,
 - Zero marginal cost of reproduction/distribution,
 - “Unlimited” channel capacity,
 - Difficult to control user access to content (via copyright)
- Business Model:
 - Sell content in massive on-demand subscription bundle
 - Target content based on individual consumer preferences
- Sources of Market Power:
 - Platform scale (larger bundles more profitable than smaller)
 - Data scale (improved recommendations)

How can leaders respond?

- Leverage deep catalogs

How can leaders respond?

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- Studio/Network specific OTT sites...

How can leaders respond?

- Leverage deep catalogs
- Studio/Network specific OTT sites...
- Independent platform, willing to allow studios to access customer data

Organize around data analytics

- Example: Harrah's Entertainment
 - Each property operates as independent "fiefdom"
 - (Historically) little data about customers
 - Gut feel management, distributed marketing

Structural Change

- Gary Loveman, COO
- Centralize data ownership within company
- Centralize analytics function
- Make senior level analytics hires (“propeller heads”)

Cultural Change

“We run everything at Harrah’s with control groups. It’s like, ‘You don’t harass women, you don’t steal, and you’ve got to have a control group.’ This is one of the things that you can lose your job for at Harrah’s—not running a control group.”

Gary Loveman, Harrah’s

Data Experimentation

Which offer is more profitable:

- Free room, 2 steak dinners, \$30 in free chips (\$125 value)
- \$60 in chips

Coda

- When Gary Loveman stepped down in 2013, his loyalty program had 45 million members and was valued at \$1 billion to the company.

Advantages of centralizing data function

- Data are most useful when linked
- Increases effectiveness of analytics talent
- Makes it easier to retain talent
- Increases objectivity in analysis

Recommendations

- Centralize data as “C-level” function (e.g., Gary Loveman)
- Change reporting structure (all analytics functions report to single point)
- Change culture (“you don’t harass women, you don’t steal, and you’ve got to have a control group...”)

Thank You

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