The Role of Paid and Earned Media in Building Entertainment Brands: Reminding, Informing, and Enhancing Enjoyment

Mitchell Lovett\textsuperscript{1} and Richard Staelin\textsuperscript{2}

\textsuperscript{1}Simon Business School, University of Rochester
University of Rochester

\textsuperscript{2}Fuqua School of Business
Duke University

Marketing In Israel 13
Engagement/earned media strategies now central to branding
National brands are making risky bets (Pepsi Refresh)
How effective is earned media?
<table>
<thead>
<tr>
<th>Motivation</th>
<th>Data</th>
<th>Descriptive Evidence</th>
<th>Model</th>
<th>Estimation and Results</th>
<th>Summary</th>
</tr>
</thead>
</table>

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- National brands are making risky bets (Pepsi Refresh)
- How effective is earned media?
Motivation

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- National brands are making risky bets (Pepsi Refresh)
- How effective is earned media?
How do paid and earned media influence behavior?

- Multiple potential influences
  - Persuasive and Informative (Ackerberg 2001)
  - Reminding/Recall/Consideration (Mitra and Lynch 1995)
  - Enhancing enjoyment (related to complementary goods)

- Each media may play these roles to different degrees
- Which roles dominate will shape equilibrium behaviors and outcomes (Dube’ et al 2005; Bagwell 2008)
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Which roles dominate will shape equilibrium behaviors and outcomes (Dube’ et al 2005; Bagwell 2008)
In context of entertainment brands, a new TV show

Research questions:

- How effective is earned vs. paid media (engagement vs. advertising)?
- What role does each media play in influencing viewing decisions?
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- How effective is earned vs. paid media (engagement vs. advertising)?
- What role does each media play in influencing viewing decisions?
Focus on roles and relative effect sizes

- Informative (Diminishing returns to new information/Bayesian learning model)
- Reminding (Memory influences consideration, not utility)
- Enhancing Enjoyment (Anticipated encounters add expected utility)

Model-free evidence on these roles

Structural model

- Incorporates these roles
- Counterfactual analyses evaluate relative effect sizes
Focus on roles and relative effect sizes

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Model-free evidence on these roles

Structural model

- Incorporates these roles
- Counterfactual analyses evaluate relative effect sizes
• Average advertising effects larger than social engagement
• Only experience plays a significant informing role
• Advertising exposures largely remind
• Social engagement/WOM reminds and enhances enjoyment
Plan for Rest of Talk

1. Data
2. Model-free Evidence
3. Structural Model
4. Estimation and Results
5. Summary
Study involves viewer response to new TV show launch

*Human Target* premiered on FOX in January 2010

Focus on choice to watch program (allowing delayed viewing)

**Figure:** Human Target
- P&G VocalPoint (Tremors) Panelists (non-representative)
- Follow 1720 individuals for 7 weeks about *Human Target*
- In preliminary survey, get deep information about individuals
- Drop-off of 31% between first regular survey and last
- Each week survey panelists self-report
  - Viewing, viewing timing, and half-hour prior viewing
  - Advertising exposures and social engagements
  - Liking of each viewed episode
  - Expected liking of upcoming episodes
  - Stated Change in expected liking due to ads and socializing
Example Individual Data Patterns
Figure: Nielsen Ratings and Viewing: Figure displays the stated viewing versus Nielsen ratings for the show, with stated viewing % scaled by 20 million viewers to match the scale with the total viewers.
**Figure**: Advertising, Socializing, and Expected Liking Time Series
1. Evidence on Persuading/Informing Role
2. Evidence on Reminding Role
3. Evidence on Enhancing Enjoyment Role
4. Regression on decision to watch at airtime
Are experiences \((Lik_{i,c})\) informative?

Regress: 
\[ EL_{i,c} = \beta_{1,t} EL_{i,c-1} + \beta_{2,t} Lik_{i,c-1} + \epsilon_{i,t} \]

Result: \(\beta_{2,t}\) Significant and decrease over time
Are ads and social engagements/WOM informative?
Analysis: Plot portion stating expectations changed
Results: Not much movement (not significant)

Figure: Stated Changes in Expected Liking Over Time
Analysis: Reminding role would be an increase in viewing after controlling for stated preferences

Result: Appears to be a large reminding role for both cues
• Analysis: Enhancing enjoyment effects would shift viewing to be earlier, more so for heavy socializers than light

• Result: Heavy socializers watch earlier controlling for time delay tendency

![Enhancing Enjoyment Effects (Socializing)](image)
### Analysis: Regress on Airtime Viewing Decision

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
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<tr>
<td>Paid (Ad)</td>
<td>0.23 (0.01)**</td>
</tr>
<tr>
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<td>0.14 (0.02)**</td>
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<tr>
<td>R-squared</td>
<td>0.390</td>
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Entries are coefficients (s.e.) and significance indicators.  
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Regression Analysis of Viewing Effects

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1. Choice and consideration model (live and delayed viewing)
2. Memory model for probability of consideration
3. Learning model for informative effects about match-value
4. Anticipated social utility for enhancing enjoyment role
Model new program with episodes, \( c \)

Can watch an episode at original airing period, \( t \)

Or in subsequent \( J - 1 \) periods using time-shifting technologies (TST) such as a DVR or hulu
Individual $i$ receives cues, $C_{i,t,k}$, including $k =$ advertising exposures, social contacts, and viewing experiences.

- Cues are added to the information set, $I_{i,t} = \{I_{i,t-1}, C_{i,t}\}$
- Viewing decisions, $w_{i,t} \in \{\text{watch episode } c, \text{ another program, or not watch TV}\}$.
- To choose to view the focal program, it must be recalled, $r_{i,t}$
- Focus on the joint event (consideration/recall is unobserved)

$$
Pr(w_{i,t}, r_{i,t} | I_{i,t}) = Pr(w_{i,t} | r_{i,t}, I_{i,t}) Pr(r_{i,t}, I_{i,t})
$$

(1)
The baseline memory activation level influenced by cues (Sahni 2011; Anderson et al. 2004) is

\[ B_{i,t} = \delta B_{i,t-1} + \sum_{k=1}^{K} \phi_k 1(C_{i,t,k} = 1) \]

Recall incorporates context effects \( X_{A,i,t} \) (TV On or FOX On)

\[ A_{i,t} = B_{i,t} + \psi X_{A,i,t} \]

The probability of remembering to consider watching the focal program

\[ \Pr(r_{i,t} | l_{i,t}) = \frac{1}{1 + e^{-A_{i,t}}} \]
Expected utility from watching episode $c$ is

$$u_{c,i,t} = \tilde{\mu}_{i,t} + \tilde{u}_{i,t}^{soc} + \beta_1 1(TVOn_{i,t}) + \beta_2, i 1(TST_{i,t}) + \alpha_{c,t} + \varepsilon_{i,t}^*$$

(2)

where

- $\alpha_{c,t}$ is time effect for original airing period of episode
- $\tilde{\mu}_{i,t}$ is expected match-value of episode,
- $\tilde{u}_{i,t}^{soc}$ is expected social utility, and
- $1(TST_{i,t})$ is whether a time-delay period or not
 Consumers are uncertain about match-value, $\mu_i$, and have beliefs that are updated based on signals.

Signals are unbiased with cue-specific signal strength and signal errors $\epsilon_{i,t,k} \sim f_N(0, \sigma_{v,k}^2)$

$$v_{i,t,k} = \mu_i + \epsilon_{i,t,k}$$ (3)

Learning about the match-value proceeds according to standard Bayesian learning model

$$\bar{\mu}_{i,t} = \frac{\hat{\sigma}_{t-1,\mu_i}^2}{\hat{\sigma}_{t-1,\mu_i}^2} (\bar{\mu}_{i,t-1}) + \sum_{k=1}^{K} \frac{\hat{\sigma}_{t,\mu_i}^2}{\sigma_{v,k}^2} v_{i,t,k} 1(C_{i,t,k} = 1)$$ (4)

$$\hat{\sigma}_{t,\mu_i}^2 = \frac{1}{\hat{\sigma}_{t-1,\mu_i}^2} + \sum_{k=1}^{K} \frac{1(C_{i,t,k} = 1)}{\sigma_{v,k}^2}$$ (5)
Social engagement and enhancing enjoyment effects

- Focus on incremental utility from watching episode $c$ at time $t$
- Consumers have propensity to socialize $\bar{q}_i$ per half week.
- Consumer anticipates expected social utility gained from watching the episode at this time

$$\bar{u}_{i,t}^{soc} = \omega * (\text{time to next episode}_{i,t}) * \bar{q}_i$$  \hspace{1cm} (6)
Choice probabilities given recall, e.g.,

$$\Pr (w_{i,,t} = c | r_{i,t} = 1, l_{i,t}) = \frac{e^{u_{i,c,t}}}{1 + e^{u_{i,c,t}} + e^{u_{P,it}}}$$  \hspace{1cm} (7)$$

Integrate out the recall event, $r_{i,t}$, since it is unobserved
Likelihood includes

- logit choice probabilities of self-reported viewing
- probability of expected liking and experienced liking (measured with error)
- probability of stated change in expected liking (ordered logit)

Observed and unobserved heterogeneity in initial beliefs, true match-value, and time-shifting preferences and observed heterogeneity in baseline memory

Estimate with simulated maximum likelihood
Informing Effects:

- Most learning parameters by standard arguments (mean, variance of belief, and all but one signal variance)
- Add relationship between cues and stated expectations/experiences
- Variance of experience ($\sigma^2_x$) identified by variation in the experienced liking measure. True mean estimate ($\mu_i$) also gains precision.

Reminding Effects:

- Viewing explained by cues after controlling for stated expectations/experiences
- Exclusion restrictions (Initial viewing, FOX On)

Enhancing Enjoyment:

- Timing of viewing by socializing frequency (discrete groups)
Signal variances indicate experiences are informative, but ads and socializing are not.

Reminding effects imply that all three remind, but ads and experiences are stronger.

Socializing increases viewing through anticipated utility (enhancing enjoyment role).

Observed heterogeneity is significant and as expected:

- Those with aided awareness have higher initial memory.
- Those with more category experience have lower initial belief variance.
- Those with higher stated likelihood of watching premier have higher initial belief and overall mean.
### Table: Counterfactual Scenarios

Baseline is calculated using the existing empirical distribution to simulate 100,000 individuals and the elasticities are calculated using a two point method.

<table>
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<tr>
<th>Scenario</th>
<th>Baseline Scenario</th>
<th>Elasticity at MLE</th>
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<tr>
<td>1. ↑Ads freq, with reminding</td>
<td>Existing Levels</td>
<td>0.088</td>
</tr>
<tr>
<td>2. ↑Ads freq, only informing</td>
<td>Only Informing</td>
<td>0.000</td>
</tr>
<tr>
<td>3. ↑Social freq, all effects</td>
<td>Existing Levels</td>
<td>0.022</td>
</tr>
<tr>
<td>4. ↑Social freq, no reminding</td>
<td>No Reminding</td>
<td>0.009</td>
</tr>
<tr>
<td>5. ↑Social freq, only informing</td>
<td>Only Informing</td>
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- Increase heavy socializers by 10% gives share increase of 1.8%
- Equivalent increase in ad exposures gives increase of 1.8%
Evaluated the role of paid and earned media in building a new entertainment brand

- In this context, traditional advertising has a much larger impact (over 4x) than social engagement.
- Advertising operates primarily through reminding
- Social engagement operates equally through enhancing enjoyment and reminding
- Only experiences inform in this context
- Increasing proportion of high social engagers appears to be a powerful strategy for building entertainment brands.

Introduced way of integrating new data to estimate multiple roles of advertising and social engagement

Integrated time-shifting into a model of viewing choices