A Theory of Social Coupons

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Background

- Internet has given rise to new business models
- Two key functions underlie many of them

1. Enabling “Discovery”
   - Discovering products, services, businesses, people
Background

• But enabling discovery alone may not be enough

• There can also be a need to provide some form of “assurance”
Background

• Internet has given rise to new business models
• Two key functions underlie many of them

1. Enabling “Discovery”
   – Discovering products, services, businesses or even people

2. Providing “Assurance”
   – Internet makes it possible for consumers to learn from others (= “social learning”)
   – E.g. Online reviews, Blog posts, Facebook likes…

This Paper: The role of assurance… from the perspective of the Internet website… in the context of daily deal industry
U.S. Daily Deal Market Forecast

Source: BIA/Kelsey 2012
What Are Daily Deals?

• Online discount promotions

• Offered by small and local merchants in a given city
  – E.g., Restaurants, Spa, Gym …

• Through a daily deal website
  – E.g., Groupon, LivingSocial, Baligam …
70-Minute Swedish Massage

Soothing Touch Massage

Sold by LivingSocial

The Details

Aerial spraying might have helped to keep mobs of mosquitoes at bay, but it didn't do anything for your stress levels. Escape the epic battle between man and nature to an environment perfectly tailored for you at Soothing Touch Massage: Pay $30 (regularly $60) for a 70-minute Swedish massage.

Licensed massage therapist Donna Morrison has the tools to attack anything pestering you at this soothing center on Roberts Street near Main Street in Crowley. Sink into harmonious bliss as she uses her vast experience and sincere concern for clients to provide a unique head-to-toe Swedish massage, addressing any problem areas or specific needs so you can enjoy the fullest benefits of total relief and relaxation. Appointments are available Monday through Saturday to indulge in a breath of fresh, tranquil air and send your pesky aches and pains running for cover.

What You Need to Know
• Creates awareness about merchant among potential customers
• Offers significant discount to entice consumers
Consumer buys the deal from the website…

… and redeems it at the merchant that offered the deal

Merchant shares deal revenues with website (30 – 50%)
70-Minute Swedish Massage

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What You Need to Know

• Number of deals sold is reported in real time

... Enables consumers learn how others are responding to the deal before deciding whether to buy
As customers, we like the [deal] counter because it indicates how popular deals are…

This change [to report approximate sales] is meant to continue to reflect deal popularity while making it clearly impossible to predict our sales.

We were considering removing the deal counter which displayed the number of purchases on our daily deal website…

When we A/B tested the counter, we found that it had a significant and positive impact on purchases.
But Not All Such Websites Report Deal Sales

Social Coupon Platform

- Groupon
- Amazon Local
- LivingSocial
- trappsnap
- kgb deals

Report Deal Sales

Regular Deal Platform

- Google offers
- AP DailyDeals.com
- Valpak
- TIPPR Dealsaver

Do Not Report Deal Sales

Why are some daily deal websites social coupon platforms…
While others are not?
Model Overview

Merchant

<table>
<thead>
<tr>
<th>M</th>
</tr>
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<tbody>
<tr>
<td>• Quality known to M</td>
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Daily Deal Platform

<table>
<thead>
<tr>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Does not know M’s quality</td>
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Existing Customers

• Familiar with M
• Higher quality merchant has more existing customers

Potential Customers

• Subscribers of P
• Are aware of M only if it offers a daily deal
• Are uncertain about M’s quality

Should P be a social coupon platform or a regular deal platform?
Merchant’s Quality

\[ \text{Merchant} \]

\[ \begin{align*}
\theta & \quad \text{High Quality (Hi-Q)} \\
1 - \theta & \quad \text{Low Quality (Lo-Q)}
\end{align*} \]

\[ q = 1 \]

\[ q = 0 \]
Potential Customers

Merchant

\[ M \]

\[ \theta \]

\[ 1 - \theta \]

High Quality (Hi-Q)

\[ q = 1 \]

Low Quality (Lo-Q)

\[ q = 0 \]

Potential Customers

Quality-Indifferent

\[ \eta \]

\[ U_t = U_0 - p \]

Base Utility

Quality-Seeking

\[ 1 - \eta \]

\[ U_t = U_0 \cdot q - p \]

Segment Size

\[ n \cdot \alpha \]

Base demand in this pdt category

Relative size of potential customers
Existing Customers

Merchant

\[ \theta \]

\[ 1 - \theta \]

High Quality (Hi-Q)

\[ q = 1 \]

Low Quality (Lo-Q)

\[ q = 0 \]

Segment Size = \( n \cdot (1 + \gamma) \)

Segment Size = \( n \cdot (1 - \gamma) \)

Utility = \( U_0 + \Delta - p \)

Uncertainty in Market Size: \( n \sim U[0, N] \)
Customer Buying Decisions

Regular Deal Platform

T = 1

T = 2
Customer Buying Decisions

Social Coupon Platform

$T = 1$

Wait

Buy
Not Buy

$T = 2$

Sold

Buy
Not Buy
Firm Decisions

P decides platform type

P offers M a contract
Fixed Fee: F
Revenue Share: k

M accepts

Deal is offered, Customers make buying decisions

M sets deal price \( p \), regular price \( r \)

M rejects

Deal is not offered, Customers make buying decisions

M sets regular price \( r \)
Roadmap / Summary of Results

• An assurance mechanism is necessary in this market setting
  – Hi-Q merchant cannot signal quality through price
  – P cannot screen out Lo-Q merchant

• Social coupon can provide this through social learning…
  …but it can suppress demand even for the Hi-Q merchant

• Hi-Q merchant may pre-empt social learning about quality

• More profitable to be a regular deal platform if Hi-Q merchant does not leverage social learning
Illustrative Example

<table>
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<tr>
<th>Segment</th>
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</table>
| Existing Customers | $3                | $10 if $q = 1
                     |                   | $5 if $q = 0       |
| Potential Customers (Quality Seeking) | $1*5 – 12 | $2 if $q = 1, $0 if $q = 0, and $\theta = \frac{1}{2}$ |

* - Expected reservation price ($2 if $q = 1$, $0 if $q = 0$, and $\theta = \frac{1}{2}$)

- Merchant must offer discount to attract potential customers
- Offering a discount is more “costly” for Hi-Q merchant
  - Opportunity cost of discounting to existing customers is higher for Hi-Q merchant since it has more of them

If Hi-Q merchant offers a deal then so must Lo-Q merchant

$\Rightarrow P$ cannot “screen out” the Lo-Q merchant with its contract
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- Merchant must offer discount to attract potential customers
- **Offering a discount is more “costly” for Hi-Q merchant**
  - Opportunity cost of discounting to existing customers is higher for Hi-Q merchant since it has more of them

Hi-Q merchant cannot offer deeper discount than Lo-Q merchant

$\implies$ Hi-Q merchant cannot signal its quality through price
Can A Social Coupon Help?

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Regular Deal Platform

- **$T = 1$**
  - Buy
  - $p = 2$
  - Not Buy

- **$T = 2$**
Can A Social Coupon Help?

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Social Coupon Platform

- **$T = 1$**
  - $p = 2$
  - **Buy** if $q = 1$
  - **Wait**

- **$T = 2$**
  - **Buy** if $q = 1$
  - 5 Sold if $q = 0$
  - **Not Buy**

A social coupon “stimulates” demand
Can A Social Coupon Help?

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Social Coupon Platform

\( T = 1 \)
- Buy

\( p = 2 \)
- Wait

\( T = 2 \)
- 10 Sold if \( q = 1 \)
- 5 Sold if \( q = 0 \)

Buy

Not Buy
Can A Social Coupon Help?

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Social Coupon Platform

- **Uncertain market size**
  - **T = 1**
    - \( p = 2 \)
    - Buy
  - **T = 2**
    - \( U[0,10] \) Sold if \( q = 1 \)
    - \( U[0,5] \) Sold if \( q = 0 \)
    - Buy if > 5
    - Not Buy if \( \leq 5 \)

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Can A Social Coupon Help?

• Deal sales provides a (noisy) signal of merchant’s quality
  – Enables a form of social learning

• Quality-seeking customers buy if deal is sufficiently “popular”
  – Higher deal sales is indicative of higher quality

• Social coupon stimulates demand
  – Quality-seeking customers buy even if they would not have bought a regular deal
Can A Social Coupon Hurt?

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Regular Deal Platform

\(T = 1\)  \(\rightarrow\) Buy  \(T = 2\)  \(\rightarrow\) Buy

\(p = 1\)  \(\rightarrow\) Buy

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Can A Social Coupon Hurt?

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Social Coupon Platform

- **T = 1**
  - $p = 1$
  - Buy
  - $T = 2$
  - $U[0,10]$ Sold if $q = 1$
  - $U[0,5]$ Sold if $q = 0$

- **T = 2**
  - $p = 0$
  - Wait
  - $T = 3$
  - $U[0,10]$ Sold if $q = 1$
  - $U[0,5]$ Sold if $q = 0$

A social coupon “suppresses” demand
Can A Social Coupon Hurt?

• Social coupon can also suppress demand…
  – Quality-seeking customers may not buy even if they would have bought a regular deal
  – Waiting is useful to make a more informed buying decision

• This is true even for the Hi-Q merchant !!!
  – With some probability, deal sales will be low even for Hi-Q merchant

⇒ Hi-Q merchant will have to offer a deeper discount (than $1) to discourage quality-seeking customers from waiting

But why will the Hi-Q merchant NOT induce customers to learn about its quality (through deal sales) ?
Trade-off for the Hi-Q Merchant

A) “High” deal price that induces social learning about quality
   — BUT will not always succeed in attracting quality-seeking customers (since deal sales is a “noisy” signal of quality)

B) “Low” deal price that pre-empts social learning
   — Will always attract quality-seeking customers

- Inducing social learning about quality is not always attractive for the Hi-Q merchant
  — It is attractive only when average merchant quality ($\theta$) is low
Recap...

- Daily deals facilitate discovery, but an assurance mechanism may be necessary
  - Price cannot signal quality, P cannot screen out Lo-Q merchant

- Social coupon can provide assurance through social learning
  - Customers always benefit from social learning
  - Social coupon can stimulate demand, but also suppress demand

- Hi-Q merchant may pre-empt social learning about quality
  - Deal sales is an imperfect signal of quality

⇒ Reporting deal sales can counterproductive for P
Platform Strategy

Hi-Q Merchant Induces Social Learning

Social Coupon Stimulates Demand...

... A “Lot”

Social Coupon Platform

Lo-Q Merchant Generates Much More Surplus

Hi-Q Merchant Pre-empts Social Learning

Social Coupon Suppresses Demand

... A “Little”

Regular Deal Platform

Lo-Q Platform
Platform Strategy

Social Coupon Websites
- Groupon
- Amazon Local
- livingsocial
- trapiswap
- kgbdeals

Regular Deal Websites
- Google offers
- AP DailyDeals.com
- Valpak
- TIPPR dealsaver™

Report Deal Sales
Do Not Report Deal Sales

Why are some daily deal websites social coupon websites... while others are not?
Other Results

• Should daily deals be made available to existing customers?

• Why do some platforms provide merchants an upfront subsidy?

• Should a platform always use revenue-sharing?

• Is a social coupon platform more / less relevant when potential customers have prior information about merchant quality?
Can Platform Screen Out Low-Q Merchant?

• *Screening Contract*: Only Hi-Q merchant will accept P’s contract and offer a deal

• 😞 must believe that only Hi-Q merchant offers a deal and always buy (if deal price ≤ $2)

• But if Lo-Q merchant accepts P’s contract and offers the same deal, its profit gain will be higher
  – Since it has fewer existing customers

⇒ P cannot screen out the Lo-Q merchant with its contract
Can Hi-Q Merchant Signal Quality Through Price

- Suppose Hi-Q merchant prices lower than Lo-Q merchant
  Hi-Q Merchant: $0.5  \quad \text{Lo-Q Merchant: } $1.0

- 😞 must believe \( 0.5 \rightarrow q = 1, \quad 1 \rightarrow q = 0 \)

- If Hi-Q / Lo-Q merchant charges $0.5: both 😊 😞 buy

- If Hi-Q / Lo-Q merchant charges $1: only 😊 buy

- Only difference in profits between Hi-Q and Lo-Q merchant is in their profits from existing customers

If Hi-Q merchant prefers to set lower price in spite of having more existing customers… then so too must the Lo-Q merchant
Perspective of Daily Deal Websites

Groupon’s Mission Statement

\[ T \)o become the world’s commerce operating system… by connecting buyers and sellers through price and discovery \]

Small Business Surveys

- 60 - 80% of deal users are new to the business
- Most effective online marketing tool to attract new customers
- “Bringing in New Customers” is most frequently cited benefit in case studies on Groupon’s website (37% of 971 case studies)