New Product Introductions
1. Short Life Cycle Products: The case of ObMe
2. Generalizations
3. Product Introductions and Pricing for Strategic Customers
ObMe*

- High-end fashion ski-wear design and merchandising
- Headquarter in Aspen, Colorado
- Sells ski-wear to department stores and ski-shops
- It has a global supply chain extending over US, China, Hong Kong, Japan, Germany, Korea, etc.
- ObSp is Hong Kong based and is a joint venture between ObMe and a Hong Kong partner

*: OM possibly from “ober meier”, which may mean a “high rank town official”.
Company Background

- Established in ??? to provide functional ski-wear: parkas, vests, ski suits, shells, sweaters
- Innovative: Introduced ????-down vests in 1950s and ski brakes in ????
- $32.8 M sales, 45% of children’s market, ??% of adult market
- A high price and low volume per style company
Company Background

- Established in 1947 to provide functional ski-wear: parkas, vests, ski suits, shells, sweaters
- Innovative: Introduced goose-down vests in 1950s and ski brakes in 1980s
- $32.8 M sales, 45% of children’s market, 11% of adult market
- A high price and low volume per style company
Products

- 4 Genders: Men, Women, Juniors (boy, girl), Preschoolers
- ~6 Products: Parkas, sweaters, pants, turtlenecks, vests, suits, stretch pants for skiing only
- ~4 Styles: Gail, Isis, Entice are for women parkas
  - Currently: ATC (NYC style), ALT 3 (Tibetan style), Ridgeline (Sophisticated performance), Timeless (Classic style), Nouveau (Haute new fashion)
- ~4 Colors. Jackets seem to have more colors than pants.
- ~8 Sizes. Women clothing has more size combinations than men clothing.
- A total of about 3000 (=4x6x4x4x8) product combinations.
- Why so many products?
Products

- Any trend in Exhibit 3?
  - Average number of sizes per style-color combination
    » No more settling for a larger or a smaller size
    » Are we becoming fatter and thinner at the same time?
Market Segmentation for Men

- Fred, conservative
- Rex, high-tech – New materials used
  - Light water repellent clothes
- Biege, functionality
  - Zips, Pockets
- Klausie, stylish
  - Fashionable: Fur lapels

- Why is segmentation important?
Market segmentation

Price

$100

$50

Willing to pay $\geq 100$

Willing to pay $\geq 50$
Short-life cycle products

- Short-life cycle products are designed for consumption over a single selling season (<1 year)
- Is a Campbell soup short-life cycle product?
- Fact: Only 5% of Campbell’s current product portfolio is introduced within the last year.
- Fact: Campbell’s profit margin is about 5%.
- Columbia produces ski parkas and sells at about $150 while Obermeyer sells at $350.
- What is Obermeyer’s profit margin?
  a) <5%  b) 5-20%  c) 20-35%  d) 35-50%
- What is the challenge of producing a short-life cycle product?
Challenges with short-life cycle products

◆ High demand uncertainty
  – Limited/non-existing data for forecasting
◆ The impact of uncertainty is exacerbated by
  – Long production lead times; Why?
  – A wide range of products; Why?
◆ Minimum production quantities; Why?
  – How many units to produce for each product?
    » Costly to produce products that do not sell
      ◆ Unsold products consume capacity that could have been used to produce products that are stocked out.
    » Costly not to produce products that do sell
  – ObMe’s contribution to margin is much higher than Campbell’s.
  – ObMe’s probability of selling a product is much less than Campbell’s.
◆ Let us call short-life cycle products as innovative.
◆ The others as functional.
  – Is a cup of coffee a functional product?
  – Does Starbucks sell functional or innovative products?
Functional vs. Innovative products

Efficient SC
- Functional products: Low cost
  - Bicycle
  - Coffee
- Innovative products: P&G’s 24 types of toothpaste
  - Customized design
  - Innovative brewing

Responsive SC
- Functional products: Declining markets with overcapacity
- Innovative products: Starbucks coffee
  - National bicycle
  - Fast delivery
Order Cycle for 04-05 season: Answer the questions in bold?

<table>
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<th>Event</th>
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<tbody>
<tr>
<td>2/04</td>
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<td>What is placed?</td>
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<td>Retailer Orders received</td>
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<tr>
<td>4/06</td>
<td>Full Scale Production</td>
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</tbody>
</table>

Sales

Discounts, Sales in South America

Full Scale Production

Sales

Replenishment orders from retailers

utdallas.edu/~metin
## Order Cycle for 04-05 season

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</table>

**Full Scale Production**

**Sales Discounts, Sales in South America**
Order sizes and timing

- ObMe splits orders into two lots.
- The first order amounting to 10,000 units placed approximately 10 months before the selling season.
- The second order, another 10,000 units, placed right after Vegas show, 6 months before the selling season.
- See Exhibit 5 for the resolution of demand uncertainty.
  - What happens to demand variability as we get closer to the selling season?
- The Vegas show reveals 80% of the demand. Then ObMe can forecast the demand accurately.
Planning for Short Life Products

- Highly unpredictable demand, planning is very challenging

- Speculative production capacity employed before the observation of any demand, as opposed to reactive production capacity.
  - Where is Benetton’s speculative production capacity?

- Risk based production sequencing: Use speculative capacity for low risk products and postpone the production of high risk products.
  - Wait for the resolution of uncertainty in high risk products
  - Is low price product low risk product?
  - Is an accurately forecastable product low risk product?
Risk Based Production Sequencing

- Safe styles first, risky styles later on
- Contributors of risk:
  - Demand uncertainty
- Also account for wholesale price

- Profit Risk (increases/decreases?) with the price
- Profit Risk (increases/decreases?) with the uncertainty
Demand Probabilities Based on Forecasts

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<th>Style</th>
<th>Aver.</th>
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*To compensate for buying committee’s Inaccuracy last year.
How much to order?

◆ Is this a standard newsvendor problem?
  – Probabilistic demand
  – Stockout cost = %24 (of Wholesale price)
  – Discount cost = %8 (of Wholesale price)
  – For every type of parka.

◆ If not, how can this be made a newsvendor problem?
What if prices are equal?

- When all wholesale prices are equal, produce each item up to the same demand percentile (or equivalently the same number of standard deviations away from the mean).
- Because, then “last” parka produced in each style has the same probability of selling. Each style has the same marginal contribution to margin. This follows from capacitated newsvendor problem.
- Produce parkas until speculative capacity (10000 units) is fully utilized

\[ \mu_i - k\sigma_i \] is a \text{Normdist}(-k,0,1,1)\text{th percentile when demands are Normal}

What if prices are not equal?
Demand Probabilities Based on Forecasts

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Operational Constraints

- Can we really order 1076 units of Ani from China? Are there any restrictions that limit order sizes?

- With these restrictions does the risk of overproducing increase for all products or for some products?
Reduce Minimum Production Lot Size

Stockout-Markdown Costs as % of Sales

0 300 600 900 1200 = Minimum order quantity
Reducing Minimum Production Lot Sizes

- Cellular production system to cut down set up times
- Each Chinese line employs 40 workers, the same number is 10-12 in Hong Kong
- In spite of lower productivity of a worker in China (12 vs. 19 parkas per worker), a Chinese line produces more than twice the number of parkas produced in Hong Kong.
- Facilities stabilize production in about two weeks. This corresponds to a lot size of 1200 in China and 600 in Hong Kong.
- Increase Chinese workers flexibility to cut down the number of workers per line in China.
Increase Reactive Production Capacity

- How does stock out and markdown quantities vary with reactive production capacity?
- Why is there a diminishing rate of return in the value of reactive production capacity?
- Increase Reactive Capacity by
  - Over time during peak season
  - Subcontractor capacity
- Increase Total Capacity, what to do with extra capacity during off-season?
Increase Reactive Production Capacity

- **Decrease Lead Times**
  - Cut raw material lead times, currently 3 months
  - Stock raw materials
  - Redesign to use same zippers over different parkas, component commonality
  - Use aircraft for shipments

- **Early Market Information**
  - Industry fairs
  - Similar products
Questions

◆ Guangdong province is affected by SARS, what can ObMe do now?
◆ Avian flue, no more goose-down available from southeast Asia. Where to get down from?
◆ How to deal with strategic customers?
Strategic vs. Myopic Customers

- **Strategic customers:** Consideration of future option
  - Waiting for a better deal on their purchases
    » Easier to monitor prices: web sites, iPhone, consumer groups
    » Abundant information and speculation on the internet/media

- **Myopic customers:** No consideration of future option

Myopic
Impatient, Seeks instant gratification

Strategic

… activity in … the ventral striatum, tucked deep in the brain, and the medial prefrontal cortex (PFC) right behind the forehead … tracked people’s preferences. In someone who was offered a choice between $100 today or $100 next week, activity in these regions plunged when the next-week choice was considered, and fell even more as the payoff was postponed further and further into the future.

Frequent Product Introductions

- Frequent product introductions are common
  - Product life cycles of most electronics goods are well under one year
    » iPhone (1 year), iPad (~1 year), Digital Camera (6 months)
  - Fashion retailers usually replenish their stock with new designs at least once per season.
Single vs. Dual (Product) Rollover

Single Rollover: Old product is phased out from the market. 

Dual Rollover: Old product remains in the market together with the new product.
Single Rollover vs. Dual Rollover

◆ **Drawback of Single rollover:**
  – A loss in revenue from the leftover old product and a costly rollover

◆ **Drawbacks of Dual rollover:**
  – Cannibalization effect: Both products in the market.
    » To avoid this, constrain the prices of both products.
  – Postponement effect: the presence of old product gives strategic customers more incentive to delay purchase.
    » To avoid this, reduce the availability of the old product.
Rollover strategies:
- Managerial insights: Billington et al. (1998), Erhun et al. (2007)

Mechanisms to mitigate strategic waiting behavior in operations management:
- Su and Zhang (2008): quantity and price commitment
- Cachon and Swinney (2009): quick response
- Lai et al. (2010): posterior price matching
- .....
Main Research Questions

- Can a firm use single rollover to earn a higher profit through eliminating or reducing the two effects (cannibalization and postponement)?
- If yes, when can single rollover increase the firm’s profit and by how much? Characterization of this by portion of strategic customers and innovation.

Strategic decision: Single or dual rollover.
Tactical decisions: Quantity and price in two periods.
A monopolistic firm:
- Introduces two product versions in two periods
  - V1: Original version with innovation level 1. Introduced in period 1.
  - V2: Updated version with innovation level $1 + \theta$, $\theta \geq 0$. Introduced in period 2.
- Two periods
- $R_f$ belief of strategic customers’ reservation price.
  How much the strategic customer is willing to pay for V1 in period 1.
Customers

◆ High-end customers:
  – Random potential market size \( N \geq 0 \).
  – Strategic customers \( \phi \).
    They consider the option of waiting, holding a belief \( W_c \) of waiting surplus.
  – Myopic customers \( 1 - \phi \): buy as long as the surplus of buying now is nonnegative.
  – Valuation of
    » V1 in period 1: \( \nu \)
    » V1 in period 2: \( \beta \nu, \ 0 < \beta < 1 \)
    » V2 in period 2: \( \beta \nu (1 + \theta) \)
    \( \beta \): value depreciation due to the negative feeling of not being among the first adopter or the loss of utility in period 1.

◆ Low-end customers: Bargain hunters
  – Unlimited.
  – Buy only marked down product in period 2.
Sequence of Events

**Firm:** rollover strategy

**Firm:** price and stocking level of V1

**Firm:** price and stocking level of V2 and dispose of V1 at disposal value $\sigma$

**Dual:** price and stocking level of V2, marked-down price of the leftover V1

**Demand realized**

**Period 1**

- **Strategic:** buy now or wait
- **Myopic:** buy or not buy

**Period 2**

- **Period-1 non-buyers:** buy V2 or buy V1 (dual rollover) or nothing
- **Period-1 buyers:** buy V2 or nothing
- **Bargain hunters:** buy V1 at price $\delta$ (dual rollover) or nothing

**Excess inventory salvaged at zero value**
Firm’s Problem
with Strategic Customer’s Reservation Price

- Firm assumes an $R_f$, strategic customer’s reservation price.

- Period 1:
  Firm’s optimality: $(q_1(R_f), p_1(R_f)) \in \arg\max_{q_1, p_1} \mathbb{E}[\Pi^S(q_1, p_1)]$

- Period 2:
  Firm’s optimality: $(q_2(y), p_2(y)) \in \arg\max_{q_2, p_2} \Pi^S_2(q_2, p_2|y)$

  $y=(q_1, p_1, D_1, R_f)$

Firm can find optimal prices orders in both periods: $p_1, q_1, p_2(y), q_2(y)$. All are functions of $R_f$. 
Strategic Customer’s Problem with Strategic Customer’s Waiting Surplus

- Strategic customer assumes a $W_c$, waiting surplus.
- Period 1:
  \[ \chi = 1 \iff v - p_1 \geq W_c \]
  Strategic customer’s optimality:
- Period 2:
  Customers choose the version with the highest surplus.

Customers optimally decide on buy/or-not or version in both periods: $\chi, ...$
All are functions of $W_c$. 
Rational Expectation Equilibrium

\[ R_f = v - W_c \]

\[ W_c = w(q_1, p_1, \chi) \]

Customer optimality: \( \chi = 1 \iff v - p_1 \geq W_c \)
Strategic Customer’s Waiting Surplus

Waiting surplus rational expectation: $W_c = w(q_1, p_1, \chi)$

- To compute the waiting surplus, condition on $N$, the number of potential customers in the market.
- Then it is made up of two factors:
  - Probability that period-1 non-buyer can get $V_2$
    Based on rationing the available number of $V_2$ among the period-1 non-buyers.
  - Surplus from $V_2$
    This surplus is the difference between utility from $V_2$ and its price.
Single Rollover
Waiting Surplus for a Strategic Customer

- For $n$ potential customers in the market and $s$ sales in the first period, prices and quantities in the second period are known.
  - Number of V2 available: $q_2$.
  - Number of period-1 non-buyers: $n-s$.

\[
w(q_1, p_1, \chi, q_2, p_2, p'_1 = \infty \mid n) = \min \left\{ \frac{q_2}{n-s}, 1 \right\} \left[ \beta v(1 + \theta) - p_2 \right] \\
\text{Prob. of getting V2} \quad \text{Surplus from V2}
\]

- Average over $n$: 
  \[
  W_C = w(q_1, p_1, \chi) = \int w(q_1, p_1, \chi, q_2, p_2, p'_1 = \infty \mid n) f(n)dn
  \]
Dual Rollover
Waiting Surplus for a Strategic Customer

For $n$ potential customers in the market, sales in the first period are known. Non-buyers in the second period are known. Number of V2 available: $q_2$. Number of period-1 non-buyers: $n - s$.

Non-buyers prefer V2 to leftover V1.

$w(q_1, p_1, x, q_2, p_2, p'_1 | n) = \min \left\{ \frac{q_2}{n - s}, 1 \right\} \left[ \beta v (1 + \theta) - p_2 \right] + \left[ 1 - \min \left\{ \frac{q_2}{n - s}, 1 \right\} \right] \min \left\{ \frac{q_1 - s}{n - s - q_2}, 1 \right\}$

Prob. of Not getting V2 but getting V1

$\left[ \beta v - p'_1 \right]$ 

Ration randomly to compute probabilities: [Available/Demand].

Non-buyers prefer leftover V1 to V2.

$= w(q_1, p_1, x, q_2, p_2, p'_1 | n)$

Amount of V2 irrelevant
In dual rollover, introduce a new variable for the price of V1 in period 2.

The equilibrium is more challenging but structurally similar.

There are more decisions to solve for in dual rollover and more cases to consider especially under high innovation.

- For example, consider simple, balanced and sophisticated markets (in the increasing proportion of strategic customers).
- Mixed equilibrium if the firm prices low to sell to strategic customer. This is dominated by a high price strategy.
Dual rollover - Low and Medium Innovation

Proposition 1 (Low innovation) \( c/(\beta v) - 1 \leq \theta < (c-\delta)/(\beta v) \). Let LH denote \( p_1 = \delta, p_2 = \beta v(1 + \theta) \), and \( q_2 = (n - q_1)^+ \), with the corresponding profit \( \Pi_2^L = [\beta v(1 + \theta) - c](n - q_1)^+ + \delta(q_1 - s) \). Let HH denote \( p_1' = \beta v, p_2 = \beta v(1 + \theta) \), and \( q_2 = (n - q_1)^+ \), with the corresponding profit \( \Pi_2^H = [\beta v(1 + \theta) - c](n - q_1)^+ + \beta v[\min\{n, q_1\} - s] \). Then the firm should execute the following strategies:

<table>
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<tr>
<th>( p_1 = R_f )</th>
<th>( p_1 = v )</th>
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<td>( n &gt; q_1 )</td>
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<tr>
<td>( n \leq \frac{\delta}{\beta v \phi + \delta(1-\phi)} q_1 )</td>
<td>( n &gt; \frac{\delta}{\beta v \phi + \delta(1-\phi)} q_1 )</td>
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<td>LH</td>
<td>HH</td>
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\( w(q_1, R_f, 1) = (\beta v - \delta) F(q_1) \) \quad \( w(q_1, v, 0) = (\beta v - \delta) F \left( \frac{\delta}{\beta v \phi + \delta(1-\phi)} q_1 \right) \)

- Two pricing strategies are viable: LH and HH.

Proposition 4 With \( c/(\beta v) - 1 \leq \theta < (c-\delta)/(\beta v) \) and dual rollover, there exists a unique subgame REE. In addition, there exists a \( \phi^{L,D} \) such that if \( \phi \leq \phi^{L,D} \), then the firm sets the high price \( p_1^* = v \); otherwise, the firm sets the low price \( p_1^* = R_f \).

- In period 1,
  - if majority of customers are myopic, set high price \( v \),
  - otherwise, set low price \( R_f \).
- In period 2,
  - if the market is small set low price for leftover \( V_1 \) and high price for \( V_2 \),
  - otherwise, set higher price leftover \( V_1 \) and high price for \( V_2 \).

Results are analogous in medium innovation.
Theorem 1. With $c/(\beta v) - 1 \leq \theta < (c - \delta)/(\beta v)$ (resp., $(c - \delta)/\beta v \leq \theta < c/\beta v$), we have the following.

i) If $c + \alpha[\beta v(1 + \theta) - c] \geq v$, then single rollover and dual rollover give the same profit. In addition, under both rollover strategies, the firm does not introduce V1 and offers only V2.

ii) If $c + \alpha[\beta v(1 + \theta) - c] < v$, then there exists a threshold $\Delta^L$ (resp., $\Delta^M$) $\geq 0$ such that

ii.a) for $\delta - \sigma \leq \Delta^L$ (resp., $\delta - \sigma \leq \Delta^M$), there exists a $\phi^L$ (resp., $\phi^M$) such that single rollover is optimal iff $\phi \geq \phi^L$ (resp., $\phi \geq \phi^M$);

ii.b) for $\delta - \sigma > \Delta^L$ (resp., $\delta - \sigma > \Delta^M$), dual rollover is optimal.

◆ Condition $\alpha[\beta v(1+\theta)-c] \geq v-c$ implies that maximum unit profit $\alpha[\beta v(1+\theta)-c]$ of selling V2 only is at least the unit profit of selling V1 only. Furthermore, sales cannibalize under low and medium innovation, so sell either V1 or V2. Under $\alpha[\beta v(1+\theta)-c] \geq v-c$, skip V1 and sell only V2.

◆ If the disposal value $\sigma$ in the single rollover is not too small with respect to bargain hunter price $\delta$ in dual rollover, single rollover is optimal with plenty of strategic customers.
Low and Medium Innovation

Low Innovation

- Dual rollover: waiting customers derive a positive surplus by purchasing deeply marked-down V1
- Single rollover: completely eliminates waiting incentive (reduce the postponement effect to zero)
  - Remove the leftover V1 from the market

Medium Innovation

- Dual rollover: waiting customers may derive a positive surplus from deeply marked-down V1 or less aggressively priced V2
- Single rollover: Again completely eliminates waiting incentive
  - Remove the leftover V1 from the market
  - Without the cannibalization from V1, V2 can be priced high to leave waiting customers zero surplus
Proposition 9 (High innovation $\theta \geq c/\beta v$) Let LL denote $p_1^* = \delta$, $p_2 = \beta v \theta$ and $q_2 = n$, with the corresponding profit $\Pi_2^D = (\beta v \theta - c)n + (q_1 - s)\delta$. Let LM denote $p_1^* = \delta$, $p_2 = \beta v \theta + \delta$, and $q_2 = n - s$, with the corresponding profit $\Pi_2^D = [\beta v \theta + \delta - c](n - s) + \delta(q_1 - s)$. Let HH denote $p_1^* = \beta v$, $p_2 = \beta v(1 + \theta)$, and $q_2 = n - s$, with the corresponding profit $\Pi_2^D = [\beta v(1 + \theta) - c](n - s)$. Then the firm should execute the following strategies, where $A = \frac{\beta v(1+\theta)-c}{\beta v}$, $B = \frac{\delta}{\beta v - [\beta v(1+\theta)-\delta-c](1-\phi)}$ and $C = \frac{\delta}{\delta+(\beta v-2\delta)\phi}$:

<table>
<thead>
<tr>
<th>$p_1 = R_1$</th>
<th>$p_1 = v$</th>
</tr>
</thead>
<tbody>
<tr>
<td>all $\phi$s</td>
<td>$\phi \leq \frac{\beta v \theta - c}{\beta v(1+\theta)-c}$</td>
</tr>
<tr>
<td>$n \leq A_q$</td>
<td>$n &gt; A_q$</td>
</tr>
<tr>
<td>LL</td>
<td>HH</td>
</tr>
<tr>
<td>$w(q_1, R_1, 1) = \beta v F(A_q)$</td>
<td>$w(q_1, v, 0) = \beta v F(A_q)$</td>
</tr>
</tbody>
</table>

- Three pricing strategies are viable: LL, LM, HH.
- There is a unique subgame REE (Rational Expectation Equilibrium). In the equilibrium, the firm sets the price of V1 in period 1 low if majority of customers are strategic.
Theorem 2  With $\theta \geq c/(\beta v)$, we have the following.

i) If there is a subgame REE under single rollover, then we have the following.
   i.a) If a $\phi^H$ does not exist, then dual rollover is always better than single rollover.
   i.b) If a $\phi^H$ exists, then single rollover is optimal iff $\phi \geq \phi^H$.

ii) If there is a zero-order-mixed subgame REE under single rollover, then dual rollover is always better than single rollover.

- Single rollover is better if sufficient majority of customers are strategic. But sufficient majority threshold may not exist in which case dual rollover is better.
- Whether dual or single rollover is better, there always is a unique pure REE.
High Innovation

- Dual rollover: waiting customers may get a positive surplus from V1 or V2; V2 is innovative and there is room to price it so that it is always preferred.
- Single rollover: reduces although not completely eliminates waiting incentive
  - Two facts:
    » Cannot strengthen the firm’s pricing power for V2 because the cannibalization is already low; same pricing strategy for V2 under both rollovers
    » Preferred V2 is also available
  - Rationale:
    » commitment to single rollover
      => lower revenue from leftover V1
      => a lower stocking level and lower expected sale of V1 in period 1
      => less saturated market and more incentive to price V2 high
      => lower possibility to get a positive surplus by waiting
      => lower waiting incentive
Numerical Example:
Relative Value of Single Rollover

Figure 2: Value of Single Rollover \((\mathbf{E}[\Pi^S] - \mathbf{E}[\Pi^D])/\mathbf{E}[\Pi^D]\) v.s. Proportion of Strategic Customers \(\phi\). Left to Right: (a) Low Innovation \(\theta = 0.2\); (b) Medium Innovation \(\theta = 0.6\); (c) High Innovation \(\theta = 0.9\)
Managerial Insights

◆ The lower the innovation, the more valuable single rollover.
◆ As the number of strategic customers increases, single rollover becomes more attractive.
◆ With low or medium innovation, a firm following dual rollover should be ready to switch to single rollover, especially when the disposal value of the leftover old version under single rollover and the proportion of strategic customers are not very low.
  – Such a firm should search for a high value disposal option
◆ With high innovation, a firm can still increase its profit by adopting single rollover when the proportion of strategic customers is high and the disposal value of the leftover old version under single rollover is low.
  – Such a firm does not benefit from a high value disposal option
Summary

New Product Introductions
1. Short Life Cycle Products: The case of ObMe
2. Generalizations
3. Product Introductions and Pricing for Strategic Customers
Single rollover vs. Dual rollover

◆ Ways to dispose phased out old product under single rollover:
  – Fire sales
  – Dismantling products for spare parts
  – Recycling material for future use
  – Write-offs
  – Overseas markets
  – Discount stores or websites
  – Donation for charitable tax deduction
Performance of Single Rollover

- Innovation cases: low, medium and high
- In all innovation cases, a firm can increase its profit by adopting single rollover under certain conditions, especially when the proportion of strategic customers is not too low.
- Low & medium innovation: unit disposal revenue from the leftover V1 and the proportion of strategic customers are not very low
- High innovation: the proportion of strategic customers is high