Do we need to believe Data/Tangible or Emotional/Intuition?

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Introduction

• The reign of the datum : the new "black gold" of companies

• The modalities of decision-making are changing

• The decision-making results from a complex mechanism : Rational decision-making / Intuitive decision-making

• The power of emotion in decision-making process
Rational decision-making versus intuitive decision-making

**RATIONAL DECISION-MAKING**
- Based on a conscious and extensive cognitive process
- Based on abstract and explicit knowledge
- Sequential process based on causal relationships
- Does not take into account the emotion

**INTUITIVE DECISION-MAKING**
- Mainly based on non-conscious processes
- Based on past experience
- Holistic process that is based on free associations
- Essentially based on emotion

(Simon, 1987; Ericsson & Charness, 1994; Epstein, 1994; Nonaka, 1995; Shapiro & Spence, 1997; Janis, 1997; Burke & Miller, 1999; Lieberman, 2000; Hogart, 2001; Kahneman, 2003; Noordink & Ashkanasy, 2004; Sadler-Smith & Shefy, 2004; Sinclaire & Ashkanasy, 2005; Dane & Pratt, 2007)
What is emotion?

- An emotion is an affective state characterized by:
  - A physiological reaction (James, 1884; Janet, 1926)
  - A behavioral expression (Scherrer, 1986; Ekman, 1994; Rimé, Corsini & Herbette, 2002)
  - A subjective manifestation (Frijda, 1986; Lazarus, 1999; Scherer, Schorr & Johnstone, 2001)
- Our emotions reflect an appraisal of things that surround us
- They are positive or negative and produce attraction or rejection
Decision making and emotions

• The emotion: First factor of decision (Bechara & Damasio, 2000)

• A positive or negative emotional state influences the way people judge the outside world (Schwarz & Clore, 1983; Lerner & Keltner, 2000)

• People in a positive emotional state are more risk averse than those with a negative or neutral mood (Isen & Patrick, 1983)
Decision making and emotions

• A positive emotional state facilitates complex decision-making by reducing confusion and increasing the ability to assimilate information (Isen & Means, 1983; Estrada, Isen & Young, 1997)

• Mood affects the content of the decision-making (Forgas & George, 2001)
Impact of emotion over reason

- Activation of previous emotional experiences
- Situation
- Reasoning
- Mental images related to the situation
- Anticipation of future results
- Decision
- Options for action
Emotion and e-commerce

- Emotion-oriented e-commerce: A new and fascinating research to understanding the purchasing behaviour of online consumers (Leon & Nikov, 2010)
- For the online consumer, it's very important to feel emotions related to the act of buying and owning a product / service (Murray, 2013)
- The anticipation of emotions or feelings associated with the consumption of the product /service coming (Giraud & Bonnefont, 2000)
E-commerce and recommender system

<table>
<thead>
<tr>
<th>For consumer</th>
<th>For e-commerce website</th>
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<tbody>
<tr>
<td>Reduce time and complexity for search</td>
<td>Serve as an automated shopping guide.</td>
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<td>Clarify ambiguous and ineffable needs</td>
<td>Optimize the web server capacity</td>
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<tr>
<td>Identify unconscious needs</td>
<td>Increase the quantity of items sold</td>
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<td>Increase the diversity and variety of items sold.</td>
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<td>Maintain a high level of consumer fidelity.</td>
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<td>Optimize profitability</td>
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<td>Identify consumer preference</td>
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A brief description of recommendation methodologies

- **Statistics**
  - List the most popular item based on different pre-defined criteria
  - Various technics and criteria (ranking/rating) are applied

- **Item-based CF**
  - If consumer buys item X, and X have the attributes a1, a2 a3…, find an item Y whose attributes is most similar to X

- **Knowledge-based**
  - Predefine the constraints or cases
  - Consumer indicate her preference based on these conditions
  - System provide optimal solution

- **Demo-graphic**
  - If consumer has demographic features d1, d2…, she belongs to group X
  - Popular items of group X will be proposed to her

- **Community-based**
  - Identify the consumer’s friends
  - Identify their preference and choices to find the popular items
  - Propose these items to consumer

- **Content-based**
  - Consumer prefers items who have value v1, v2, v3…
  - Item A possess value v1, v2, v3…
  - Propose item A to her

- **User-based CF**
  - If both consumer X and Y bought / appreciate item A, B…, consumer X also bought / appreciate item C, propose C to consumer Y
Current recommendation methodologies

New Taxonomy Clarifies the Functionality of Methodologies

Generalization  
(popular for a group of people)

Personalization  
(appeal to a specific person)

Conscious  
(planned)

Unconscious  
(unplanned)

- Statistics
- Demographic
- Community-based
- Item-based correlation
- Knowledge-based
- Content-based
- User-based correlation
Recommender system in e-commerce websites

Hybrid strategy is widely adopted by e-commerce websites

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Amazon</th>
<th>Taobao</th>
<th>Ebay</th>
<th>Fnac</th>
<th>Decitre</th>
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<tr>
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<td><em>User based correlation</em></td>
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<tr>
<td><em>Statistics (ranking/rating)</em></td>
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<td><em>Demographic</em></td>
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<td><em>Knowledge-based</em></td>
<td>Y</td>
<td>Y</td>
<td>Unknown</td>
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<td><em>Community-based</em></td>
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*Notes: Y – Deployed; N – Not Deployed; Unknown – Information not available*
Are marketing chefs satisfied with their recommenders?

Effectiveness criteria are not yet well defined or applied

Lack of measurement metrics system
“We measure the click-through and order conversion rate (of the recommended item) … but it seems not enough to find out where are the problems.”

Lack of New criteria other than relevance
“We improve algorithm and architecture... we think that user experience and trust is also important … but we don’t know how to measure them”

Good relevance but low click-through
“It’s good that quite a lot of consumers buy the items we recommended, but many of them didn’t click the recommendation link as we expected…”

Good click-through but poor conversion
“Our click-through rate is amazing, but the order conversion rate is far from satisfaction... many people quit the page just a few seconds after…”

A performing recommender with pure chance
“We thought our recommender was great, but when we ran an A/B test, the control group (recommender based on pure chance) had the similar performance!”

Effectiveness of multi-recommender system
“We put different kinds of recommenders across the shopping process, but it seems that our customers are very focused on what they plan to buy…”
What are the challenges for marketers and researchers?

Can marketer have a paradigm to manage e-commerce recommender system and maximize its output?

How to evaluate an e-commerce recommender?

In a multi recommender system, how to maximize total output?

How do in-house recommenders fight against 3rd party recommenders?

In face of cross-platform e-commerce system, what kind of recommendation strategy should ecommerce marketers employ to maximize effectiveness of the RS?
Research focus of recommender effectiveness

Example of Netflix recommender system

Source: Netflix Tech Blog (http://techblog.netflix.com/2013/03/system-architectures-for.html)
## Recommender system and emotion

<table>
<thead>
<tr>
<th>Decision</th>
<th>Description</th>
<th>Critical Factors Related to Recommender</th>
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<tbody>
<tr>
<td>Click</td>
<td>Click on the recommended item</td>
<td>• Attractiveness of the item (conscious, unconscious needs)</td>
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<td>• The type of information presented</td>
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<td>• The place where recommendation is presented</td>
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<td>• The layout/design of the recommendation interface</td>
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<td>• The consumer’s state of mind</td>
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<td></td>
<td>• Consumer’s trust in the recommender system</td>
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<td>Browse</td>
<td>Browse the item page in detail</td>
<td>• Waiting time for the page to be fully loaded to the browser</td>
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<td>Wish list</td>
<td>Keep the item into wish list</td>
<td>• Attractiveness of the item (conscious, unconscious needs)</td>
</tr>
<tr>
<td>Order / Remove</td>
<td>Put the item into the shopping cart</td>
<td>• The consumer’s state of mind</td>
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<td>• Attractiveness of the item (conscious, unconscious needs)</td>
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<td>• Other consumer’s reviews</td>
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<td>• Cost of the item</td>
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<td>• Comparison with other recommendations (same category)</td>
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<tr>
<td>Purchase / Cancel</td>
<td>Pay for the item</td>
<td>• Attractiveness of the item (conscious, unconscious needs)</td>
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<td>Retrieve</td>
<td>Retrieve the item recommended</td>
<td>• Cost of the item / delivery</td>
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<td>• Ease of payment</td>
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<td>• Comparison with other recommendations (same category)</td>
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Fundamental of the problem: consumer behaviour

Consumer behavior model with e-commerce recommender
Possibility to capture behavioural data from e-commerce…

Consumer behavioral data from server (example)

<table>
<thead>
<tr>
<th>User ID</th>
<th>Reco Posted (1)</th>
<th>Reco Clicked (2)</th>
<th>Reco Page Viewed (3)</th>
<th>Reco Ordered (4)</th>
<th>Reco Purchased (5)</th>
<th>Reco Items Removed (7)</th>
<th>Reco Page Closed (8)</th>
<th>Reco Value (€)</th>
<th>Basket Value (€)</th>
<th>Basket Item (units)</th>
<th>First registration date</th>
<th>Total Items purchased (units)</th>
<th>Total Purchase expenditure (€)</th>
<th>Total Payments (€)</th>
<th>Total Visits (€)</th>
<th>X1 CLK</th>
<th>X2 RTV</th>
<th>X3 AWD</th>
<th>X4 PUR</th>
<th>X5 GLS</th>
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... and analyse the effectiveness of recommenders

Improvement areas are identified

Metrics to determine the consumer trust in the recommender system
... and analyse the effectiveness of recommenders

Improvement areas are identified

Tools to determine the effectiveness of different factors contributing to the recommender
... and analyse the effectiveness of recommenders

Improvement areas are identified

Performance of the same e-commerce recommender when placed in different places of the website
The contribution of Search'XPR™
Conclusion

• Emotions make up a substantial part of our decision-making process

• Everyone has the choice to be guided by his intuition and his emotions

• Emotional intelligence is essential to validate the relevance of emotional signals

So, trust your emotions while leaving the control to your cortex
QUESTIONS & ANSWERS