Experience Design in Ubiquitous Retail

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Overview

- Motivation
  - MyGrocer: Ubiquitous FCMG retail project
  - New technical opportunities
- Lessons learnt and future work
  - Fieldwork and trials
  - Challenges ahead
  - What seems to be important
Motivation: Business Process

In today’s supply chains of FMCG, numerous inefficiencies exist in the collaboration with trading partners:

**Upstream**
- Supplier

- High inventory levels
- High returns
- Rush orders
- Unstable production plan
- Frequent changeovers
- High out of stocks
- High production and order cycle-times
- Lack of communication
  - Material needs
  - Order generation
- Long lead times
- Lack of visibility

**Downstream**
- Manufacturer

- Retailer

- POS

- High inventory levels
- Lack of communication
  - Promotion plans
  - Forecast
  - Order generation
- Low forecast accuracy
- Rush orders
- Lost sales due to high out of stock levels
- High promotion leftovers and obsoletes
- Low on-shelf availability
- Low service level to POS
- Replenishment not consumer based

*Source: Accenture*
Ubiquitous Retail

• Originally introduced by IBM (project Smart Pad)
• Many projects today: Metro’s *Supermarket of the Future*,
  Auto-iD’s centre *Electronic Product Code* network
  infrastructure, *Easy Order* developed by IBM for Safeway,
  Accenture’s *Shoppers Eye* and the *Smart Self* by Tesco
  and Gillete, Georgia Tech, Florida State
• Aim to enhance the consumer shopping experience
  – Maximize of *shopping efficiency*
  – Provision of a more *entertaining* shopping trip
- RF-ID tagged products
- Interactive Shelf Labels
- Virtual “Endless” Aisles
- Multi-channel Retailing
- Self Check-Out & Scanning Mechanisms
- Images from Metro’s *Store of The Future*
MyGROCER is a European Commission funded project under the Information Society Technologies (IST) Programme.

- Grocery Shopping and home supply replenishment
- Uses: RF-id, Automatic Product Identification & Wireless Networking Technologies
Shopping Cart

- An RF reader and a Tablet PC are attached on the shopping cart
- WLAN interconnectivity with the supermarket backend

**Benefits:**
- Reduced implementation cost
- Feasible implementation
- Low power consumption

**Disadvantages:**
- Requires high consumer involvement (self-scanning)
- Security concerns (checking mechanisms at exit should be implemented - automated re-scanning)
Promotions

- If a product has an attached promotion, the system displays the promotional message at the time the consumer scans the product.
- If a promotional rule is satisfied then the promotion is “activated.”
- Promotions are personalized based on profiles.
Promotions Management

Reductions From Promotions

My Shopping Cart Contents

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Amount</th>
<th>Quantity</th>
<th>Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWIN LEMON</td>
<td>750.0 ml</td>
<td>1</td>
<td>1.04 €</td>
</tr>
<tr>
<td>TIDE ZK POWDER</td>
<td>900.0 gr</td>
<td>2</td>
<td>1.32 €</td>
</tr>
<tr>
<td>FAIRY ULTRA</td>
<td>500.0 ml</td>
<td>1</td>
<td>1.4 €</td>
</tr>
<tr>
<td>ORGANICS BODY BOOSTING SHA...</td>
<td>400.0 ml</td>
<td>1</td>
<td>4.06 €</td>
</tr>
<tr>
<td>COCA COLA REGULAR</td>
<td>500.0 gr</td>
<td>1</td>
<td>0.59 €</td>
</tr>
<tr>
<td>LAYS SALTED</td>
<td>120.0 gr</td>
<td>1</td>
<td>1.17 €</td>
</tr>
</tbody>
</table>

My Shopping Cart Total

Initial Price: 10.9 €
Total: 9.5 €

Reductions: 1.4 €
Store Navigation

- Consumer can locate themselves on a map
- Can see location of products
- Navigation and location sensitivity are enabled through WLAN
Exploratory Evaluation

- Objectives
  - Receive early feedback on the design by real supermarket shoppers
- Time-Frame – May 2001
- Research Methodology
  - Qualitative – Focus Groups Analysis
- System functionality (paper mock-up – storyboards)
- Overall acceptance of conceptual scenario
  - “It comprises the shopping of the future”
  - “Helps to conduct shopping faster, easier, and at better value for money”
- Introduction of security and privacy concerns
  - The system was perceived to be too patronizing
  - Considerable concerns on use of personal information
**MyGROCER services appeared to be highly appreciated by the shoppers (average 4.6/5)**

- Elimination of queues (4.93/5) and continuous monitoring of the total shopping cart value (4.9) appear to be the most highly appreciated services

- Item price monitoring (4.72) and regular shopping list reminder (4.7) monitoring are second runners

- Greek shoppers are willing to adopt the system even in its prototype form

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**MyGROCER was considered by some shoppers simply as a new "gadget"**

- Concerns for elderly people

- Severe concerns for privacy implications and personal information sharing

- In small / medium supermarkets with no queues, MyGROCER might increase the total shopping time!
Technology Perspective

• **Technical issues**
  – Integration with backend systems
  – Context-awareness and adaptable software
  – Privacy, security and trust management mechanisms
  – RFID and WLAN limitations

• **Standardization**
  – Product description languages and classification protocols
  – Data exchange between partners

• **Product Packaging**
  – Security (tampering, destruction of tags)
  – Product environment & packaging issues (e.g. frozen products, aluminum packaging)
Business Perspective

• Real-time information provision regarding the products’ lifecycle within the retail outlet
  – Efficient forecasting of future demand
• Real-time information provision regarding the shopper’s shopping trip
  – Identification of shoppers emerging needs
• Personalized promotions management
  – Monitoring promotions effectiveness
• Possible decrease of out-of-shelf / out-of-stock conditions
• Possible decrease of theft in the store
Consumer Perspective

- **Privacy challenges**
  - Protection of privacy and personal information
    - Data management, ownership, accessibility and security challenges
    - Full information sharing among the value chain members
  - Necessity for increased trust levels (e.g. contractual obligations, enforcement)
  - Perceived value vs. letting go ones privacy

- **Social challenges**
  “The system offers a patronizing shopping experience leading towards a high-tech, fully standardized life-style which limits the experience of being human”

Changes family roles
Changes purpose of retailing (replenishment to lifestyle)
Future Directions

• Balance between technology, business and interaction
  – Balance perceived value and operational efficiency
• Technology implementation negotiates rather than defines agenda (infrastructure to professional to personal->consumer consent required)
• New business models (friction-free competition)
• Living with vs. using systems
  – Longer term research required
  – Personal
  – Revisiting some old themes: identity and trust
• Personalization and the law