User Experience Grading via Kano Categories

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Purpose

How do you validate a product’s user experience?

- Functional and unit level validation testing is good at finding defects
- Usability is much more subjective

Develop a method to evaluate the user experience *before* the product is ready for user feedback
Agenda

Kano model
Product planning
Applying the process
Assessing user experience
Lessons learned
Kano Model

History:

• Developed by Noriaki Kano in 1984
• Classifies customer reactions to features into five categories
  • Differentiators
  • Desired
  • Must Have
  • Indifferent
  • Reverse

The case study focuses on the first three categories
Kano Model

**Description:**
Classifies product attributes based on how they are perceived by customers and their effect on customer satisfaction.
Kano Model Categories

**Must Have:** Components that customers expect to be available for the product being designed.
Kano Model Categories

**Desired:** Related to performance and quality. The more of this the better.
Fuel Economy and Environmental Comparisons

Gasoline Vehicle

26 MPG
- 22 city
- 32 highway

3.8 gallons used every 100 miles

Annual Fuel Cost
$1,617

How This Vehicle Compares
Among all vehicles and within SUVs

Worst 10 MPGe
26 SUVs

Best 103 MPGe

Environment

Greenhouse Gases
350 (CO₂ g/mile, tailpipe only)
347

Other Air Pollutants
1

Your actual mileage and costs will vary with fuel cost, driving conditions, and how you drive and maintain your vehicle. Cost estimates are based on 15,000 miles per year at $2.80 per gallon. MPGequivalent: 33.7 kW-hrs = 1 gallon gasoline energy.

Visit www.fueleconomy.gov to calculate estimates personalized for your driving, and to download the Fuel Economy Guide (also available at dealers).
Kano Model Categories

**Differentiator:**
Uniquely differentiates a product from other similar products.
Product Planning

1. Understand the target demographic
   – User studies, market research, questionnaires...
   – Context is important!
1. How satisfied would you be if this product had this attribute?
   - Dissatisfied
   - Neutral
   - Satisfied
   - Don’t Care

2. How satisfied would you be if this product didn’t have this attribute?
   - Dissatisfied
   - Neutral
   - Satisfied
   - Don’t Care
Product Planning

1. Understand the target demographic
   – User studies, market research, questionnaires...
   – Context is important!

2. Classify usages and features into Kano categories
   – Enhances prioritization
<table>
<thead>
<tr>
<th>Category</th>
<th>Status if present</th>
<th>Status if not present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Must Have</td>
<td>Neutral</td>
<td>Dissatisfied</td>
</tr>
<tr>
<td>Desired</td>
<td>Satisfied</td>
<td>Dissatisfied</td>
</tr>
<tr>
<td>Differentiator</td>
<td>Satisfied</td>
<td>Neutral</td>
</tr>
<tr>
<td>Indifferent</td>
<td>Don’t Care</td>
<td>Don’t Care</td>
</tr>
<tr>
<td>Reverse</td>
<td>Dissatisfied</td>
<td>Satisfied</td>
</tr>
</tbody>
</table>
Product Planning

1. Understand the target demographic
   - User studies, market research, questionnaires...
   - Context is important!

2. Classify product usages, features, requirements into Kano categories
   - Enhances prioritization

3. Scoping the product
   - Decide which usages the product needs to enable to achieve target users’ goals
A product that attempts to do too much won’t do anything well
Applying the process

1. Establish well defined links between usages, features, requirements
   – Based on how each relate to each other
Applying the process

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2. Group like features together
   – Leverage development effort
   – Well defined threshold requirements
Applying the process

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3. Validate against competition
   – Categorize competition’s features
   – Perform competitive analysis
Assessing user experience

• Usages, features, and requirements are assessed using a point scale
  – Functional attributes assessed using binary scale
  – Non-functional attributes assessed with larger scale
Assessing user experience

<table>
<thead>
<tr>
<th>Assessment Result</th>
<th>Point Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Implemented</td>
<td>0.0 points</td>
</tr>
<tr>
<td>Partially Implemented</td>
<td>0.5 point</td>
</tr>
<tr>
<td>Fully Implemented</td>
<td>1.0 point</td>
</tr>
<tr>
<td>Implemented Beyond Minimum Requirement</td>
<td>1.25 points</td>
</tr>
</tbody>
</table>
Assessing user experience

- Sprint based assessments allow for dynamic allocation of resources during product development
  - Track progress to completion
  - Assess progress of Must Have, Desired and Differentiator attributes
Assessing user experience

• User experience validation can happen before product is functional
  – Grading how well usages, features, and requirements have been implemented
Case Study

- Applied process during development of next generation graphics control panel
Case Study
What Intel is really aiming its integrated graphics core towards is HD video. It now supports dual-stream HD decode... Intel has also been working to improve the user interface of the graphics control panel. What we saw looked much improved over the existing Intel control panels... videophiles now have more control over key parameters than they did previously.
Case Study

- Applied process during development of next generation graphics control panel

Benefits
- Early issue detection
- Improved requirements management
- Reduced development team overhead

Lessons Learned
- Start process early
- Feature and usage focus
Acknowledgements

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- Scott Boss who initially tolerated and eventually accepted the crazy way I was validating his software project
Optional list of topics covered in backup

BACKUP