What Are You Complaining About?:
A Study of Online Reviews of Mobile Applications

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Context, Goal & Motivation

Why do online reviews matter?
Problem and Motivation

- More than 60% of online customers consult reviews before buying a product.
- The number of customer reviews a product receives has grown exponentially.
- It becomes more difficult to find critical reviews and recurring issues or trends reported across all reviews of a product.
- Mobile applications are not an exception!
Related Work

- Summarizing online reviews (Hu, 2004; Jindal, 2008)

- Extracting design and usability information from reviews (Iacob, 2013; Hedegaard, 2013)

- Impact of online reviews on product sales (Bounie, 2002; Chevalier, 2006; Dellarocas, 2004) and customer behaviour (Jindal, 2010),
Study Design

How we looked at reviews?
Data Collection

- Google App store
- 6 most popular categories
  - Personalization
  - Tools
  - Books and references
  - Education
  - Productivity
  - Health and fitness
Data Extraction

- For each app:
  - Rating, number of ratings, price, size, number of installs, last update, current version, reviews
- For each review:
  - Date, rating, device, version of the app, title, text
- 169 apps & 3279 reviews
  - 4.27 avg. rating
  - 326.83 avg. number of ratings/app
  - £1.92 avg. price
Data Analysis

Classes of codes:
- Positive feedback
  - Overall
  - Size
  - Speed
  - GUI
  - Functionality
  - Customization
  - Portability
  - Device
  - Organization
  - Animations
  - Stability
  - Smoothness
  - Memory
  - Feels safe
  - Versatile
  - Must have
  - Options
- Negative feedback
  - Uninstall
  - Worth the price
  - Not worth the price
  - Ask for refund
  - Switch from free to paid
  - Switch from paid to free
  - Switch to other app
  - Buy to support
  - Willing to buy other apps
- Comparative feedback
  - Version for new device
  - Revert changes
  - More options
  - Missing gui feat
  - Missing logic feat
  - More updates
  - More features
  - Diff preference for existing gui feat
  - Diff preference for existing logic feat
- Price feedback
- Requirements
  - Major bug
  - Medium bug
  - Minor bug
  - App incomp with device
  - App incomp with operating system
  - Fix suggestion
  - Battery loss
- Reporting
  - Easy/diff to use
  - Easy/diff to learn
  - Hard to setup
  - Easy/diff to understand
  - Used over more devices
  - Uncertain about functionality
  - Recommend it
  - Invasive
  - User friendly
  - Unusable
  - Unreliable
  - Lack of docs
  - Intuitive
  - No other option
  - Diff transition
- Usability
- Customer support
  - Poor support
  - No support
  - Good support
  - Poor developer support
  - No dev support
- Versioning
  - Outdated
  - App improve with updates
  - Update downgraded the app
  - Update downgraded specific feat
  - Downgrade to older version
  - Long time user

Refined codes:
- Positive
- Negative

Review:
- "Works good"
- "prefer over swype"
- "Wish it had a smiley face button"
- "Issues with typing a single letter, doesn't automatically space"

"Works good prefer over swype. Wish it had a smiley face button and issues with typing a single letter, doesn't automatically space."
Results

What have we learned?
Lesson 1:
Positive feedback, requirements, and bugs

- Users tend to provide positive feedback.
- Reviews are used for expressing requirements and bugs.
Lesson 2:
Reviews often report connected issues

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<th>positive customization</th>
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Lesson 3:
Apps rated lower get more feedback

- 2.13 R-tuples/app in (0.3] stars
- 1.91 R-tuples/app in (3, 4] stars
- 1.94 R-tuples/app in (4, 5] stars
Lesson 4: Inexpensive apps are seldom considered worth their price
Implications

- App developers
  - better understanding of the issues users report

- App maintainers
  - Specific feedback from users
  - Summaries of the feedback provided