Evaluating Answer Quality across Knowledge Domains: Using Textual and Non-textual Features in Social Q&A

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Research Purpose & Question

Purpose of the Study
- To develop a model with which evaluate and predict answer quality in social Q&A.
- To apply the model to identifying and comparing useful quality features in high-quality answers across different knowledge domains (topics).

Research Question
- What are the textual and non-textual features of social Q&A that can be useful when assessing quality of answers?
- How do the features of high quality answers in social Q&A vary across different knowledge domains, especially in science, technology, art, and recreation?

Method

Study Sites and Dataset
- Four social Q&A sites hosted by Stack Exchange: Mathematics (Science), Ask Ubuntu (Technology), Photography (Art), and Arqade (Recreation)
- The top 1,000 answers with the highest scores from each site have been extracted using an API.

Quality Features Calculation and Factor Analysis
- 24 quality features in 5 feature groups have been calculated for the top 1,000 answers from each site.
- Exploratory factor analysis (EFA) was conducted to identify and compare the features in the five groups (factors) among the four sites using SPSS.

Results & Discussion

Results
- High-quality answers in different knowledge domains are associated with a variety of quality features.
- The review and user features are the most useful indicators of high-quality answers regardless of the knowledge domains.
- The predicting powers of textual features (lengths, structures, and writing styles) vary across different knowledge domains.

Implementations
- Build classifiers to select high-quality answers.
- Customize the reward systems that contain the most useful quality features for a particular domain.

Quality Features of High-quality Answers across Knowledge Domains

<table>
<thead>
<tr>
<th>Groups</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>Counts of words (l-wc) and sentences (l-sc)</td>
</tr>
<tr>
<td>Writing Style</td>
<td>Counts of auxiliary verbs (t_avc), “to-be” verb (t_bvc), pronoun (t_pc), conjunction (t_cc), interrogative pronoun (t_ipc), subordinating conjunction (t_scc), preposition (t_prp), nominalization (t_no), and passive voice sentence (t_pvc)</td>
</tr>
<tr>
<td>Structure</td>
<td>Counts of paragraphs (s_pc), images (s_ic), external links (s_elc), internal links (to other questions/answers in the site) (s_ilc)</td>
</tr>
<tr>
<td>User</td>
<td>Counts of user points (u_point), merit badges (u_mbc), questions posted by a user (u_qc), answers posted by a user (u_ac), comments posted by a user (u_cc), suggested edits (u_ec) made by a user</td>
</tr>
<tr>
<td>Review</td>
<td>Counts of revision (r_rc), and comments an answer received (r_cc), answer age/day (r_aage)</td>
</tr>
</tbody>
</table>

Most powerful indicators