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An fMRI Exploration of Information Processing in Electronic Networks of Practice

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Abstract

Online forums sponsored by electronic networks of practice have become an important source of information for individuals seeking solutions to problems online. However, not all information available in a forum is helpful or accurate, requiring knowledge seekers to evaluate and filter the solutions they encounter. Most forums offer contextual cues to help knowledge seekers make evaluation decisions, yet little is understood about the cognitive processes and neural mechanisms that underlie how information on these forums is filtered and evaluated. This paper draws on literature in cognitive neuroscience and NeuroIS to develop exploratory research questions about the role of both content and contextual cues in forum filtering tasks, the comparative and interactive effects of different types of contextual cues, and the neural functions associated with filtering processes. These questions are explored using an fMRI experimental study that captured forum information filtering behaviors and measured the neural correlates involved in evaluating both solution content and contextual cues. Results show that both content and contextual cues influence final filtering decisions, with community-based cues factoring more heavily than expert-based cues. Moreover, we observe distinct neural activation patterns when forum knowledge seekers encounter certain cue combinations.   Based on our observations, we derive a theoretical model comprising testable research propositions about both behavioral and neural facets of forum information filtering.

Keywords: fMRI, electronic network of practice, information filtering, online forum, programming experiment