Unexplored Hypotheses on Potency-Magnitude Relations of eWOM Messages with Intensified Comparative Expressions

Kazunori Fujimoto, Kinki University, Osaka, Japan

ABSTRACT

Electronic word-of-mouth (eWOM) is an important information source that influences consumer product evaluations. The author previously developed a computational model that predicts the potency-magnitude relations of eWOM messages involving subjective rank expressions, which refer to linguistic representations related to the attitude-levels of the benefits of product attributes. This paper extends the typology of message expressions and mathematically investigates potency-magnitude relations with a focus on intensified comparative expressions that involve the “degree” of the differences among two or more objects. The investigations were performed first under the premise of a strict assumption called an interval assumption, and the results were verified under the premise of a conservative assumption called a surjection assumption. These assumptions were introduced to determine the cognitive relationship between attitude-levels and their difference-levels. The investigations include the development of a Q-magnitude Relation Map (Q-Map) that illustrates how the relations change based on the values of two evaluation parameters: evaluation target size and evaluation scale size. Based on the observations of the Q-Maps, five unexplored hypotheses on the potency-magnitude relations were developed with respect to intensified comparative expressions.

Keywords: Attitude Change, Cognitive Modeling, Difference Measurement, Electronic Word-of-Mouth (eWOM), Message Modeling, Opinion Mining and Sentiment Analysis, Q-Magnitude Relation Map (Q-Map), Social Media

1. INTRODUCTION

In recent years, there has been a focus on electronic word-of-mouth (eWOM) as the information source that influences consumer product evaluations (Chen & Xie, 2008; Lee & Lee, 2009; Park & Kim, 2008). eWOM messages refer to statements that are posted electronically in social media such as bulletin boards on the Web. The content includes other consumers’ product evaluations...
and recommendations based on their own experiences and preferences. What kinds of eWOM messages have large potency on changing positively or positive reinforcing the product evaluations made by the consumer who reads the messages? If we can predict the potency on an individual basis, then it will be possible to create an intelligent agent to selectively provide effective statements to individual consumers from among the huge volumes of diverse eWOM messages on the Web. These kinds of intelligent agents would increase opportunities to use eWOM messages and could be expected to promote interactions between consumers via the Web.

One main issue underlying the current research is what kinds of human cognitive mechanisms contribute to utilize such vast amount of messages, in which the areas of cognitive informatics (Wang et al., 2011) and web intelligence (Zhong et al., 2008) are also involved. Granular computing researches, which are spreading in these two areas, showed one important approach to the issue by focusing on the fact that humans use many levels of granularity in daily problem solving (Yao, 2010). In contrast, the author looks into the cognitive mechanisms for attitude changes through messages rather than those for problem solving. The basic idea is that messages without an impact on attitude changes can be ignored even if they contain deeply concerned information because they do not change the message receiver’s attitude.

Fujimoto (2010) previously proposed cognitive hypotheses that account for the potency differences in two types - comparison and degree - of eWOM messages involving subjective rank expressions, which refer to the linguistic representations related to the attitude-levels of the benefits of product attributes. To apply the cognitive hypotheses to various types of messages obtained using techniques from opinion mining and sentiment analysis (Liu, 2011; Pang & Lee, 2008), a computational model, called an inference space model, was developed. The inference space model enables us to evaluate eWOM messages numerically and to predict the potency-magnitude relations between two messages by comparing their numerical values, which are called inference quantum values.

Investigations with the inference space model showed that potency-magnitude relations depend critically not only on the message receivers’ expertise about the products but also on their evaluation parameters: evaluation target size and evaluation scale size, which respectively denote how many targets are considered and how fine a scale is used for the evaluation (Fujimoto, 2012a). The structures of the dependencies on the evaluation parameters were illustrated using Q-magnitude Relation Map (Q-Map) and Priority Message-Class Map (P-Map); Q-Map showed the magnitude-relations of the inference quanta, while P-Map showed the expected message-classes with the largest potency (Fujimoto, 2012a).

This paper extends the typology of eWOM messages and revises Q-Maps by focusing on the intensified comparative expressions, which involve the “degree” of the differences among two or more objects. For example, messages such as “A is slightly better than B” and “A is much superior to B” involve such expressions because they not only compare A with B but also specify the degree of the difference with “slightly” and “much.” Intensified comparative expressions also include expressions that repeat the same lexical item, e.g., “more, more, more than.” Since such expressions are often seen in the content on social media, findings with respect to them are expected to improve the performance of eWOM message filtering agents.

The following are the contributions of this paper:

1. Modeled eWOM messages involving intensified comparative expressions as intensified comparison type messages (Section 3);
20 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the product's webpage:

www.igi-global.com/article/unexplored-hypotheses-on-potency-magnitude-relations-of-ewom-messages-with-intensified-comparative-expressions/101316?camid=4v1

This title is available in InfoSci-Journals, InfoSci-Journal Disciplines Computer Science, Security, and Information Technology. Recommend this product to your librarian:

www.igi-global.com/e-resources/library-recommendation/?id=2

Related Content

Cancer Gene Expression Data Analysis Using Rough Based Symmetrical Clustering
www.igi-global.com/chapter/cancer-gene-expression-data-analysis/72513?camid=4v1a

The Formal Design Models of a Universal Array (UA) and its Implementation
Yingxu Wang, Jason Huang and Jingsheng Lei (2011). International Journal of Software Science and Computational Intelligence (pp. 69-89).
www.igi-global.com/article/formal-design-models-universal-array/60750?camid=4v1a

An Alternative Backward Fuzzy Rule Interpolation Method
www.igi-global.com/article/an-alternative-backward-fuzzy-rule-interpolation-method/133258?camid=4v1a
Intelligent Techniques in Recommender Systems and Contextual Advertising: Novel Approaches and Case Studies
www.igi-global.com/chapter/intelligent-techniques-recommender-systems-contextual/71908?camid=4v1a