

**MASTER'S THESIS (SPRING 2013)**

**TOPIC:** *A Formal Cost-Effectiveness Analysis Model for Product Evaluation Using Classified Online Product Reviews*

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**LOCATION:** Dion 303

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**ABSTRACT**

To help resolve uncertainty of online merchandises' quality and effectiveness, e-commerce websites typically provide product review ranking services to help customers to make purchasing decisions. Such services can be very useful; however, they are not always reliable if the ranking results are simply based on averaging the review stars given by different reviewers without considering their reliability. In this thesis, we first introduce an initial cost-effectiveness analysis model for product evaluation in e-commerce. The model takes the reliability of each review into consideration, and combines four pieces of evidence, namely positive reviews, the number of positive reviews, negative reviews, and the number of negative reviews, using the Dempster-Shafer (D-S) theory. To improve our initial analysis model, we refine the evidence based on product features. We parse the review comments of each product and classify the opinion orientations for each recognized product feature as either positive or negative. Then we consider the classified opinion orientations for each product feature as independent evidence and calculate the belief values of a product by combining them using the D-S theory. Based on the belief values of the product, we can calculate its effectiveness, and further derive its cost-effectiveness value by considering its minimal price. By ranking various products sold by different vendors based on their cost-effectiveness values, our approach can greatly help customers to make decisions on selecting the most cost-effective products for online purchasing.