MASTER'S PROJECT (Fall 2012)

TOPIC: ***A Dempster-Shafer Theory Based Cost-Effectiveness Analysis Model for E-Commerce***

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DATE & TIME: Wednesday, December 12, 2012, 11:00AM

LOCATION: Dion 305

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ABSTRACT

Due to the inherent nature of e-commerce, such as the uncertainty of merchandises' quality and effectiveness, customers usually have to take certain level of risks while shopping online. To help resolve such uncertainty, 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 project, we propose a cost-effectiveness analysis model that takes the reliability of each review into consideration. We divide all available reviews of a product into two groups, namely those that are in favor of the product and those that are not. We calculate the belief values of each group by combining the review results and the number of reviews of the group as independent evidence using the Dempster-Shafer (D-S) theory. Then the two groups' belief values can be combined again as independent evidence to calculate the effectiveness of the product, which can be used to further derive its cost-effectiveness value by considering the product's cost. 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 product for purchasing. Finally, we applied our analysis model to sample data collected from Amazon web sites for a chosen product category, and our experimental results show that our approach can be very effective in assisting customers to evaluate various products, and make purchasing decisions on the cost-effective ones.