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*** 论文题目：** Evaluation and Prediction of Cell Phone Sales Based on Various Techniques

*** 论文摘要：** With the progress of our society as well as the technology, online shopping gradually becomes a trend increasingly preferred by young people. This work mainly speculates on the sales of cell phones as a representative, aiming to construct a model capable of analyzing which are the most crucial factors and traits promoting the success of certain types of cell phones. To begin with, we use Information Entropy to extract the most crucial factors: Comment Count, Good Comment Count and Search Count. We also employ Principal Component Analysis to complete the same goal. The top significant factors are Display Resolution, Recording Definition, RAM and ROM. Next, we apply the results above to Linear Regression and Analytic Hierarchy Process for the modeling, in pursuit of further detailed conclusion. The method of AHP yields straightforward graphs by using qualitative analysis, providing further insight to which specific traits contribute more to the success of the sales volume of that certain type of cell phone. Furthermore, we optimize all these models with three different methods and employing BP Neural network, Principal Component Regression and Bayes Distinction respectively for quantitative analysis, also concerning which specific traits are more crucial to the sales volume. For the last step of optimization, BOOST algorithm is applied to produce more reliable and stable results. Model's feasibility and sensitivity are finally tested using the data in the testing set, establishing the model's application value. In a word, the model constructed not only yields the ranking of individual variables' significance related to the phones' sales volume but also gives insight about which particular traits contribute more to sales volume. It also enables the manufactures to predict sales volume, given its related features, and they can be more informed of the customers' needs and thus maximizing their profits. The testing of the model proves its stability as well as reliability, making it accessible and valuable for the further application in real life. Besides the practical application, the mathematics methods applied to the model are also better than the previous researches, which yield inconclusive and vague results. Therefore, we believe that the optimized model proposed is a huge improvement both in application and methodology, which fills in the vacancy in a nowadays major economic domain and will yield significant social value. Key Words: Information Entropy, Principle Component Regression, Bayes Distinction, BP Neural Network Fitting, BOOST algorithm

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