Abstract—A recommendation system is a method that provides suggestions of items that might users like. There are many domains that can be recommended, one of the most demanded domains by users today is food. In the era of big data, food choices from the large amount of data make it difficult for users to choose the right food for them. The collaborative filtering (CF) approach is considered capable of providing accurate and high quality item suggestions. One of the algorithms that can provide good performance results from the CF approach is Matrix Factorization (MF). This study aims to test a dataset that contains product ratings of food items using three MF algorithms, which are Singular Value Decomposition (SVD), SVD with Implicit Ratings (SVD++), and Non-Negative Matrix Factorization (NMF). Different latent factors are also used for the purpose of improving the performance of the proposed recommendation system algorithm. The dataset used is Amazon Fine Food Reviews. The study shows NMF and SVD++ as the best algorithm for generating user rating predictions for items. NMF has the smallest average prediction error as measured by MAE which is 0.7311. While SVD++ obtains the smallest prediction error value of 1.0607 as measured using RMSE. In addition to these results, the top-n evaluation also shows that the proposed algorithm performs quite well. The hit ratio value for each different n-item always increases proportionally to the number of recommended n-items. The highest hit ratio value is generated from the SVD++ algorithm of 0.0025 on n-item recommendations of 25 items. Overall it can be said that the proposed algorithm has good performance in providing item recommendations.

Keywords: Food Recommender System; Collaborative Filtering; Matrix Factorization; MAE; RMSE.