**CONCLUSION**

This paper proposes a method for modeling tree-structured user preferences with uncertainty and develops a new recommendation approach, which can recommend tree-structured items. The fuzzy tree-structured user preference modeling method integrates both the user’s extensionally and intentionally expressed preferences. During the construction process of the user’s fuzzy preference tree and the matching process between the fuzzy preference tree and item trees, a comprehensive tree matching method for identifying the corresponding parts of two tree structured data is presented, which comprehensively considers tree structures, node attributes, and node weights. Two experiments on an Australian business dataset and the MovieLens dataset, respectively, are conducted to evaluate the performance of the proposed recommendation approach. Both results show that our approach makes accurate recommendations and demonstrates that the fuzzy tree-structured user preference profile reflects user preferences effectively. The experiment on the Australian business data set shows that it is well-suited to the business application environment. The proposed recommendation approach is implemented in business partner recommender system software.

At the current research stage, the inputs of the recommendation approach require tree-structured data and cannot deal with data in a network structure or a matrix. In addition, this approach requires that the tree-structured data must satisfy the requirement that the semantic meanings of the parent–child relations in different tree-structured data must be the same. However, this approach provides a new solution for improving recommender systems in general and it can therefore be used in e-Government, e-Business, e-learning, and so on when the data are described in a tree structure.

In the future, we will consider the features and characteristics of groups of similar businesses and will develop methods for identifying business groups and make group recommendations.