

## A MATCHING APPROACH FOR ONE-SHOT MULTI-ATTRIBUTE EXCHANGES WITH INCOMPLETE WEIGHT INFORMATION IN E-BROKERAGE

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**ABSTRACT.** *Electronic brokerages (E-brokerages) are Internet-based organizations that enable buyers and sellers to do business with each other. While E-brokerage has become a significant sector of E-commerce, theory and guidelines for matching the multi-attribute exchange in E-brokerage are sparse. This paper proposes a matching approach to optimize the trade matching in one-shot multi-attribute exchanges with incomplete weight information. Firstly, the new definition of matching degree from both buyers' and sellers' points of view in multi-attribute exchanges is presented. Secondly, based on the definition of matching degree and the representation of incomplete weight information, a bi-objective optimization model is built to maximize the matching degree and trading volume. Then, according to the characteristics of the model which belongs to a class of multi-objective mixed 0-1 integer quadratic programming models, the ideal point method is used to solve it. Finally, an example is employed to illustrate the application of the proposed matching approach.*

**Keywords:** Electronic brokerage (e-brokerage), Multi-attribute exchanges, Trade matching, Incomplete weight information

**1. Introduction.** The information revolution is dramatically reshaping the business model and pushing traditional commerce toward electronic commerce (E-commerce). More and more people are getting involved in business activities based on Internet (or electronic) markets. It not only promotes the rapid development of E-commerce, but also brings about new challenges for E-commerce [1,2].

For example, due to the vast amount of information on the Internet, it is not easy for a buyer or seller to locate and process relevant information, and to distinguish between useful and not useful material for a specific market transaction, even with the help of the search engines on the Web (such as Google, Yahoo, etc.). This has created the opportunity for new Internet intermediaries to enter the electronic marketplace [3]. These new Internet intermediaries are called *electronic brokerages (E-brokerages)*, also named *electronic intermediaries* [4] or *cybermediaries* [5]. With the use of information communication technology (ICT), E-brokerages can facilitate exchanges between buyers (consumers) and