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The Use of Nodes Attributes in Social Network Analysis with an Application to an International Trade Network

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Abstract

The social network analysis (SNA) studies the interactions among actors in a network formed through some relationship (friendship, cooperation, trade, among others.). The SNA is constantly approached from a binary point of view, i.e., it is only observed if a link between two actors is present or not regardless of the strength of this link. It is known that different information can be obtained in weighted and unweighted networks and that the information extracted from weighted networks is more accurate and detailed. Another rarely discussed approach in the SNA is related to the individual attributes of the actors (nodes), because such analysis is usually focused on the topological structure of networks. Features of the nodes are not incorporated in the SNA what implies that there is some loss or misperception of information in those analyze. This paper aims at exploring more precisely the complexities of a social network, initially developing a method that inserts the individual attributes in the topological structure of the network and then analyzing the network in four different ways: unweighted, edge-weighted and two methods for using both edge-weights and nodes' attributes. The international trade network was chosen in the application of this approach, where the nodes represent the countries, the links represent the cash flow in the trade transactions and countries' GDP were chosen as nodes' attributes. As a result, it is possible to observe which countries are most connected in the world econ-

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