Asymmetric multidimensional scaling of relationships among managers

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Abstract

Data on relationships among 21 managers (one president, four vice-presidents each of whom heads a department, and 16 supervisors from four departments) of a small firm (Krackhardt, 1987) were subjected to two-mode three-way asymmetric multidimensional scaling (MDS). Each manager filled out a questionnaire on help or advice in terms of who goes to whom for help or advice at work (with regard to all managers, including the respondent himself). A 21×21 matrix of the relationships as judged by each respondent (0: does not go or 1: goes) is derived. From each matrix, a matrix of geodesic distances among the 21 managers was calculated. The set of 21 matrices of geodesic distances constitutes two-mode three-way asymmetric proximities, because the individual matrices are not necessarily symmetric (Okada, Inoue, & Imaizumi, 2002). In the present study, the analysis was done by using a two-mode three-way asymmetric MDS that allows different orientations of dimensions for symmetric and asymmetric relationships (Okada & Imaizumi, 2002), while in Okada, Inoue, and Imaizumi (2002) symmetric and asymmetric relationships were represented by the same set of dimensions. The obtained configuration of managers showed the hierarchical structure of the managers in the firm. The dimensions for symmetric relationships represent differences among departments, and the dimensions for asymmetric relationships represent differences between supervisors and vice-presidents (president) and differences within the supervisors or within the vice-presidents (president).

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