

## A Straightforward Approach for Determining the Weights of Decision Makers Based on Angle Cosine and Projection Method

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**Abstract :** Group decision making with multiple attribute has attracted intensive concern in the decision analysis area. This paper assumes that the contributions of all the decision makers (DMs) are not equal to the decision process based on different knowledge and experience in group setting. The aim of this paper is to develop a novel approach to determine weights of DMs in the group decision making problems. In this paper, the weights of DMs are determined in the group decision environment via angle cosine and projection method. First of all, the average decision of all individual decisions is defined as the ideal decision. After that, we define the weight of each decision maker (DM) by aggregating the angle cosine and projection between individual decision and ideal decision with associated direction indicator  $\mu$ . By using the weights of DMs, all individual decisions are aggregated into a collective decision. Further, the preference order of alternatives is ranked in accordance with the overall row value of collective decision. Finally, an example in a chemical company is provided to illustrate the developed approach.

**Keywords :** angel cosine, ideal decision, projection method, weights of decision makers

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