Designing a Cricket Team Selection Method Using Super-Efficient DEA and Semi Variance Approach

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Abstract : Team formation plays an instrumental role in the sports like cricket. Existing literature reveals that most of the works on player selection focus only on the players' efficiency and ignore the consistency. It motivates us to design an improved player selection method based on both player's efficiency and consistency. To measure the players' efficiency measurement, we employ a modified data envelopment analysis (DEA) technique namely 'super-efficient DEA model'. We design a modified consistency index based on semi variance approach. Here, we introduce a new parameter called 'fitness index' for consistency computation to assess a player's fitness level. Finally, we devise a single performance score using both efficiency score and consistency score with the help of a linear programming model. To test the robustness of our method, we perform a rigorous numerical analysis to determine the all-time best One Day International (ODI) Cricket XI. Next, we conduct extensive comparative studies regarding efficiency scores, consistency scores, selected team between the existing methods and the proposed method and explain the rationale behind the improvement.