

An Ordinal Game Theory Approach to the Analysis and Selection of Partners in Public – Private Partnership Projects

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Resource provided by [Diana Serikbay](#)

4 May 2022 – Almaty, Kazakhstan – Access to a new resource has been added to the PM World Library (PMWL) related to Public-Private Partnership projects. The new resource titled “**An Ordinal Game Theory Approach to the Analysis and Selection of Partners in Public – Private Partnership Projects**” in a paper by Jamal Ouenniche, Aristotelis Boukouras & Mohammad Rajabi published in the *Journal of Optimization Theory and Applications* in November 2015.

In this paper, the authors analyze private sector proposals and partner selection strategies using game theory. They assume that each private sector player submits one proposal to the public sector representative as part of the bidding process. The authors model PPP as a static non-cooperative order game with complete information between players from the private sector, where the strategies of the players are based on their proposals. The outcome of the game, in turn, depends on the preferences of the public sector players.

The public player has 3 offer options, which they need to accept based on their preferred strategy. The authors conducted two analyzes based on the chosen strategies. A rating of proposals from a private party and a rating of strategies were compiled. After carrying out such an analysis, the authors come to the identification of game theory and finding a non-cooperative equilibrium. The situation and analysis are based on real and not full information.

The authors concluded that game theory is efficient in handling the number of players and the decisions they make. Also, game theory helps to determine a single rating of participants' proposals, and can be used in the analysis of contractual terms and relations between players. Equally important, the theory automates the analysis, which in turn will increase the efficiency of trading and save time.

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For PMWL Post

Ouenniche, J., Boukouras, A. & Rajabi, M. (2016). **An Ordinal Game Theory Approach to the Analysis and Selection of Partners in Public–Private Partnership Projects.** *Journal of Optimization Theory and Applications*, volume 169, pages 314–343. Online at <https://doi.org/10.1007/s10957-015-0844-3> (Serikbay)

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