

The psychology of success in data science contest design

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In today's data-driven world, holding data science competitions is a popular way to address real-world problems. Companies leverage these competitions to crowdsource solutions and strategically attract potential employees. Recent research from the University of Waterloo highlights the importance of motivating participants in these competitions through the appropriate contest structure and incentives to achieve success.

Dr. Keehyung Kim, a professor of emerging technologies from the School of Accounting and Finance, has endeavored to understand what makes a data science [competition](#) truly motivating. "In our study, we investigate the common design structures used in data science

competitions and examine how a contest organizer can maximize the effort level exerted by contestants," says Kim.

"We want to know if the contest structure matters, and more specifically, if the contest should include one or two stages." His research stands out as one of the few studies examining a crucial aspect frequently ignored in the design of data science contests: the psychological and behavioral dynamics of participants.

The paper, "Designing contests for data science competitions: Number of stages and the prize structures" was [published](#) on September 8, 2023, in *Production and Operations Management*.

In his study, Kim uses principles rooted in [behavioral economics](#) to investigate one- and two-stage contest design scenarios. Behavioral economics explores how psychological factors impact decision-making. Surprisingly, Kim's findings reveal that contestants exert significantly more effort in both stages of a two-stage contest compared to a one-stage contest.

"Our study uses a behavioral model that provides the psychological explanation behind these new findings," explains Kim. "Contestants exhibit a psychological aversion to being eliminated early. Having a second stage makes the separation of 'winning' and 'losing' more salient compared to the one-stage contest." Thus, to avoid falling behind, contestants in a two-stage contest are more likely to exert a high level of effort in the first stage.

Kim also determined that allocating most of the [prize money](#) to the winner of a two-stage contest is more effective in motivating contestants. In contrast, the prize allocation in a one-stage contest does not significantly affect the level of a contestant's effort. These findings indicate that [financial incentives](#) alone may not be sufficient to motivate

contestants and that [psychological factors](#) must be considered in contest design.

This study offers immediate implications that contest organizers can implement in data science contest design. "Organizers should adopt a multi-stage contest whenever possible to encourage maximum effort," says Kim. "Next, contest organizers can underscore 'winning' and 'losing' more prominently, such as announcing the contest results publicly." All in all, it is crucial that organizers factor in nonmonetary factors like psychological motivations to maximize contestant behavior, decision-making, and results.

This research examines an important aspect that every [contest](#) organizer faces when they design an open competition and offers a fresh perspective on how the design of contests can inspire excellence and innovation.

More information: Jialu Liu et al, Designing contests for data science competitions: Number of stages and the prize structures, *Production and Operations Management* (2023). [DOI: 10.1111/poms.14061](https://doi.org/10.1111/poms.14061)

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