STATUS DIFFERENTIATION AND R&D TEAM INNOVATION: U.S. PHARMACEUTICAL PATENTS, 1975-99 (SUMMARY)

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SUMMARY


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Principal Topic

Scholars have noted the central role of teams as a key driver of innovation, but a core question that remains is how these innovation teams should be designed. Although organizations may set up R&D teams in a similar formal structure, different social structures may result in variability in performance. This research investigates the effect of status differentiation on R&D team innovation. More specifically, it examines a central, yet relatively unresolved issue: Is a hierarchical team or an egalitarian team more innovative? Prior theory and research point to both a hierarchical as well as egalitarian design positively influencing innovation, and we attempt to answer this question and reconcile these competing hypotheses with a sample of actual R&D teams from the U.S. pharmaceutical industry.

Method

We utilized a complete dataset of U.S. patents (1975-99). Since co-inventors are usually team members who make significant contributions, they are taken as a proxy of a R&D team. We use previous productivity (i.e., the number of patents before the current patent is granted) and coefficient of variation to measure status differentiation. Since group behavior in a highly hierarchical group may differ from a moderately hierarchical group, this paper uses 25, 50, and 75 percentile of the coefficient of variation to classify hierarchical groups into four categories. There are two types of egalitarian groups – (1) neither of the group members had any patents before; and (2) each group member had the same number of previous patents.

Patent citations have been widely used to measure the value of innovation. The dependent variable is the number of citations received by a patent, and a zero-inflated negative binomial regression is applied for analyzing the over-dispersed count data.

Results and Implications

We find that a hierarchical team performs better than an egalitarian one only if the hierarchical level is suitably high. However, if the hierarchical level is low, then an egalitarian team in which none of the team members had any previous productivity performs better. For organizations (e.g., pharmaceutical firms) facing the pressing need to continually innovate, this research suggests that it is ideal to form highly hierarchical R&D teams, with a less desirable option being an egalitarian team in which no member had prior patents.

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