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BEYOND THE SCIENCE AND ENGINEERING DICHOTOMY: TECHNICAL PROFESSIONALS' IDENTITIES AND ITS IMPLICATIONS ON EXPLORATION AND EXPLOITATION EFFORTS IN THE R&D CONTEXT

Abstract

Intellectual human capital is one of the fundamental pillars of technology-intensive R&D organizations. These firms rely heavily on their technical professionals to develop new technologies that will keep them competitive. Engineers and scientists are attracted to these organizations for diverse reasons such as opportunities to work on interesting projects, autonomy, and access to expert networks and technological resources.

Past work has focused on the motivation of engineers and scientists in relation to innovation outcomes. Although these efforts have helped understand the importance of this unique workforce in organizational performance, most of this stream of research is based on outdated assumptions about scientists and engineers that do not reflect the reality of work today. The mismatch between the technical professional's orientations and their manager's expectations causes issues for R&D administrators when managing them, especially in strategic organizational units where the division of labor is not clearly defined. For example, in technology development units where technical professionals work together exploring and exploiting new technology and where there is no explicit separation between the work of scientists and engineers, incentive strategies based on affiliation have unclear consequences on employees' motivation.

A recent empirical study by the authors explored the differences between technical professionals' orientations at a NASA business unit and found diverse sets of motives to describe them. The identities they discovered go beyond the science and engineering dichotomy and describe potential incentives for the different kinds of professionals found within a set of scientists and engineers in an R&D unit. In this paper, the authors test those propositions at an aggregate and more generalizable level with a survey, which was distributed to multiple professionals in several R&D organizations. The authors statistically confirmed the motivation sources for the various orientations and found that different mixes of identities lead to different strains of the organizations. By understanding how the distribution of technical professionals affect organizational exploration and exploitation efforts, managers can have more accurate expectations of what their organizations can do and design strategies to reach desired performance levels. Theoretical and practical implications for human resource planning and R&D management will be discussed.