

## Chapter 22

# Research Profiles: Prolegomena to a New Perspective on Innovation Management

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### **ABSTRACT**

*Despite the increasing importance of the management of research for innovation, the range of differences among types of research, as well as projects and programs, is not adequately captured in current theories of either project or organizational innovation. This chapter offers preliminary discussions for a new perspective about alternative styles of management for different types of research, whether basic, applied, product development, manufacturing, quality control or marketing. Based on these discussions, the chapter proposes a framework for a new perspective of innovation management, called Research Profiles, which is derived from a literature review and extensive field research. This new perspective delineates four research profiles on the basis of two dimensions of research objectives and two dimensions of research tasks. In matching the research objectives and tasks, we identify inherent dilemmas that managers must address and this developing perspective suggests some appropriate research management approaches.*

## INTRODUCTION

Despite the central importance of scientific and technological research, including product development, for national competitiveness and security, at present there is not an adequate theory about the appropriate managerial styles needed to address alternative kinds of research objectives at the research project, program or inter-organizational level. Organizational innovation theory stemming from Burns and Stalker (1961) typically focuses on the entire organization and, we would suggest, one organizational model (the organic organization), rather than recognizing the existence of different kinds of research work. More critically, the organic model does not include either the concept of complexity (Brown & Eisenhardt, 1995; Hage, 1999) or external networks of expertise, which are precisely the ones that are increasingly important in the growth of knowledge network communities (Mohrman, Galbraith, & Monge, 2004; Shinn, 2002), and the spread of inter-organizational relationships (Alter & Hage, 1993; Hagedoorn & Duysters, 2002; Powell, 1998; Powell, Koput, & Smith-Doerr, 1996; Van De Ven & Polley, 1992). Indeed, in the organizational innovation literature there is only one study that examines the structure and performance of research laboratories and it does not include external relationships of any kind (Hull, 1988).

Although we are beginning to see an increasing number of studies of research labs (Brown, 1997; Joly & Mangematin, 1996; Jordan, Streit, & Matiassek, 2003; Menke, 1997), inter-organizational alliances (Gomes-Casseres, 1996) and a few studies of research consortia (Browning, Beyer, and Shelter, 1995), the fact remains that none of these studies have connected the measurement of scientific and technological research objectives, to the nature of the research tasks and their appropriate managerial styles. The research literatures cited above stand largely in isolation, often ignoring other kinds of research work. Specifically, the level of the project is overlooked, which is a smaller unit

than the organization, the whole organization, and inter-organizational networks of various kinds. Indeed, what makes a proposed theory of management styles necessary is the considerable range in the ways scientific and technology research is organized. While many small research projects funded by the National Science Foundation (NSF) and the National Institutes of Health (NIH), such as those found in academia, tend to be the standard structure, a considerable amount of research is conducted in large-scale organizations and programs, such as mission agencies like the National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA), as well as large scale inter-organizational research programs such as the Human Genome Project. For the same reason, the new and growing literature on projects (Brown and Eisenstadt, 1995) overlooks what might be called "Big Science" as represented in the research conducted at the large national and international laboratories such as Argonne in the US and CERN in Switzerland.

Further, as Clarke (2002) has discussed in comprehensive detail, the management of a large number of researchers is very different from the typical management issues involved in contemporary firms or public bureaucracies. Among other differences are the oft-cited assertions that researchers are more motivated by intellectual curiosity than monetary compensation, the longer and more uncertain time horizons for successful objectives, and, perhaps most importantly, work that is seldom standardized and difficult to evaluate.

While a theory about the diversity of research management styles would necessarily differ from more general theories of organizations, the logic in the construction of our perspective is basically the same. First, one must specify particular kinds of research objectives and identify the potential trade-offs. Then one must also distinguish different kinds of research work and tasks. Finally, the management styles appropriate for the linking of

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