Tacit Knowledge in Government-led R&D Project Selection

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Summary

This paper explains that tacit knowledge is a critical component for the success of government-led R&D project selection, where rapid and accurate decision making need to be made under lack of information circumstances. It also explores ways to fully exploit the tacit knowledge of experts participating in the Korean government’s R&D project selection process. Some of these include: (1) strategic attention from the top officials, (2) forming self-organizing teams, (3) establishing a horizontal and risk-taking culture, (4) encouraging a sense of responsibility in creating and sharing tacit knowledge, and (5) providing a seamless monitoring system and training.

Key words: government-led R&D project, project selection, tacit knowledge, Nonaka and Takeuchi's model

1. Introduction

The Korean government has recently decided to focus its R&D resources in the so-called “ten growth engines” areas. Focused investment on selected technologies, such as the digital TV and broadcasting, displays, intelligent robots, future automobiles, next generation semiconductors, and other technologies with a high probability of being a leader in the world market within ten years is expected to boost per capita income from the current, approximate $10,000 up to $20,000 within five years. The focused approach seems relevant from the perspective that the comparatively limited Korean economy cannot effectively compete against advanced countries in all of the sectors of science and technology.

The so-called “selection and focus” strategy requires, in large part, tacit and action-based knowledge. Since R&D is unique and uncertain in nature, decision makers have no sufficient explicit knowledge upon which to rely. As R&D is a “Solution-Chasing Problem” in which
problems can be identified only after the projects have been completed (Cole, 1989), it is almost impossible to predict its costs and benefits in advance (Meredith and Mantel, 2000). In addition, rapid changes in technology and the market do not allow decision makers enough time to collect concrete data. In this respect, Isenberg (1984) argued that tacit knowledge is a critical element for successful strategic decision making, like R&D.

This paper aims to explain how tacit knowledge may improve the quality of government-led R&D project selection. It also explores means to improve the R&D project selection process through tacit knowledge, thus reducing waste that could result from applying government-promotion policies. It concludes with the view that significant changes need to be applied to development, both individual and organizational, for the promotion of tacit knowledge.

2. Tacit nature of R&D Project Selection

Organizational environment is generally divided into two types: analyzable and unanalyzable (Daft and Weick, 1984; Aguilar, 1967). The analyzable environment allows organizations to gather hard and objective data about the environment, thus enabling them to formulate clear solutions based on rational analysis. On the other hand, when an environment changes rapidly and new patterns are emerging, lack of concrete and measurable data keeps decision makers from analyzing it. Managers in this environment rely more on soft data such as judgement, intuition, non-routine and informal data, personal contacts, hunches, and rumors. In addition, experimentation, testing, and learning-by-doing are among the active modes of behavior utilized in this type of environment (Tung, 1979; Duncan, 1972).

R&D project selection is one of the most difficult and turbulent environments to analyze. Effective project selection requires decision makers to consider various factors that include size and growth potential of the market; diffusion to science, engineering, and industry; relatedness to previous R&D; appropriateness of the R&D period; and suitability of R&D support capabilities (Lee and Om, 1996). However, as the speed of technological advance becomes phenomenal, complete data on these factors are not available. Thus, R&D project selection needs tools and techniques that enable decision makers to select a set of appropriate projects in a timely manner.

There has been a long history of attempts to improve the R&D project selection process. Schmidt and Freeland (1992) divided the attempts into two groups: the decision event approach and the decision process (or system) approach. The decision event approach uses economic models and decision theories to provide answers to specific selection problems. Among the