

Choice of Independent R&D and Open Innovation
: Empirical Analysis Based on Questionnaire Data for Firms

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We empirically examine the difference between firms adopting independent R&D and those actively introducing external research outcomes, in order to explain the relationship between independent R&D and introduction from the outside.

Recently, it is believed that trend in R&D has changed from independent R&D to introducing outsources. Such R&D strategy is also said to be “Open Innovation”. In theory, we can think that small and medium enterprises apt to introduce outsources because firms need not large-scale facility for R&D under open innovation. On the other hand, big firms also might apt to introduce outsources because it is one of efficient management strategies to respond to upgrading or complexities of products and globalization. In fact, how do firms carry out research and development? Also, what determinates those R&D patterns? It is not necessary that we have explained universal facts about those questions based on evidence.

Therefore, we show R&D patterns based on questionnaire data for firms in Japan. We examine the relationship between the R&D in-house and the introduction of external research outcomes by a bivariate probit model.

Our data was obtained thorough internet monitor survey when we delegated original questionnaire to an investigation firm. Those surveyed were 20455 firms which consisted of firms in all country and all industries. We got responses from 10731 firms of them (response rate 52.5%).

We found that the relation between the R&D in-house and the introduction of external research outcomes is not substitute but complement. Also, larger firms tended to perform more R&D in-house as a whole. However, the percentage of firms performing them decreased until a certain level of employees, but increased beyond that level. We found that there is a non-linear relationship between firm size and the percentage of firms performing independent R&D.

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