

Title	Difficulties of Global R&D Projects and Role of Bridge Managers [博士論文計画調査報告書]
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# Abstract

The globalization has brought so many challenges to the business. The competitiveness is increasing and having higher pressure in the markets. The new product development process, innovation, and research and development (R&D) are implemented in the industry in order to introduce new products or services to the markets. In addition, the organizations have access to the global market to acquire more benefits from a larger demand and access to global knowledge resources. However, conducting business in foreign countries is not an easy task. There are many problems and difficulties to overcome in a global context where people from different countries and different cultures are working in different time zones and using different languages. Previous researches discussed the global R&D structure and coordination mechanisms from the organization perspective. The global R&D project requires collaboration between project members for the success of the project even though the global context is a kind of diverse environment.

In the case of offshoring IT projects, there are bridge system engineers who are working as a coordinator to enhance the relationship between client and developer teams. The bridge system engineers have to work closely with the customers and developer teams. The working process of bridge system engineer can be separated into four main phases which are 1) Planning with client and offshore project 2) Breaking down requirements; design plan and transfer 3) Problems solving, review, fix, final quality assurance and deliver the product 4) After delivery: externalizing and sharing experience. The role of bridge system engineer is considered in three different aspects. The first one is the communication aspect. The offshoring projects consist of teams from different countries and speaking different languages. Bridge system engineers should have a language skill so that they can overcome language barrier by communicating between teams and providing additional documents which explain more detailed information. Second, the cultural aspect, there is a cultural gap between people from different background. Bridge system engineers overcome this gap by encouraging both sides to solve problems together. Lastly, the social capital and networks, this is a critical role of bridge system engineer. Bridge system engineers have a strong relationship with client teams and developer teams. They are not only working as a coordinator but also as an insider of the team. Similarly, in global R&D project, the R&D bridge managers are facilitating the projects, which have different cultures, time zones, and languages environment. This research aims to identify the difficulties that R&D bridge managers have in global R&D project. The causes, effects, and solutions to those difficulties are discussed in this research.

The R&D bridge managers have to develop and utilize some skills and knowledge in the project with a global context. This situation makes the work of R&D bridge manager as a challenging task. In addition, since the world is becoming more globalize so it is indispensable to investigate a proper way to approach global R&D project. The role of R&D bridge manager is important in this situation, especially, in R&D project because this kind of project requires a high level of collaboration among the project members. Particularly, the knowledge transfer for the research process and quality control in the development process. A better understanding of R&D bridge manager work could contribute to the knowledge about this important role and help us to enhance the global R&D management practice.

This research investigates the role of R&D bridge manager in global R&D project and explains the difficulties of facilitating the projects. In addition, this research also talks about the causes and effects of those difficulties so that the solutions to approach the difficulties can be initiated. The mechanism model of difficulties is a theoretical contribution from this research. Moreover, this research is considered as a first phase of the whole research project, which aims to

propose a competency development framework for R&D bridge manager. The difficulties found from this research will be used as data sources to identify crucial competency that the R&D bridge managers should have so that they can use for solving difficulties.

The intensive literature review was conducted at the beginning of this research to find out the current trend of global R&D research. There are about fifty literature from around 1970 to 2016 were selected to cover four main topics, which are research and development (R&D), cross-cultural management, knowledge transfer, and bridge system engineer and R&D bridge manager. According to the literature, we found that previous research discussed the foundation of setting up R&D site abroad such as the objectives, criteria, and processes. The structure and coordination pattern of R&D teams are also discussed in many studies. However, both of them (foundation and structure) are from the organizational perspective. This research also found that there are a few researches from individual level such as from the perspective of project members. More importantly, the research direction of R&D management research is moving forward and investigate more on the incoming challenges such as the new concept of innovation, the emerging markets and countries, and the globalization of knowledge resources.

The semi-structured interviews were conducted with seven experienced R&D bridge managers who have at least three years of experience in the IT industry. This data collection method provides an opportunity to explore the insight from the interview. The list of questions was prepared but did not strictly use them as we carried on the conversation so that the managers can reveal their insightful information. The interviews were audio recorded, transcribed, and coding for qualitative analysis. Even though we have a limited number of interviews, we can make some conclusions and provide insight to some extent. The working process of R&D bridge manager was explored in order to provide a better understanding of the activities that R&D bridge managers have to do throughout the project. We found that there are four important difficulties facing by R&D bridge managers. They are 1) the quality control, 2) the communication, 3) the R&D activity facilitation, and 4) the requirement and needs transfer. The quality control is a highlight as all managers mentioned and emphasized during the interview. We also found that the causes of difficulty in quality control are 1) the unclear specification of global R&D project and 2) the different outcome expectation of headquarters and R&D team. These difficulties have effects to the R&D project in several perspectives. For example, the outcome is not satisfied by headquarter or customers, the miscommunication during the project, and using inappropriate research approaches. Thus, R&D bridge managers have to apply their knowledge and skills to establish solutions to overcome difficulties such as using several product releases to check the outcome regularly, switching the role between different teams, initiating additional documents and visualization, and providing an education or training. Finally, the mechanism model of difficulties was developed. It consisted of the causes, difficulties, and effects in global R&D project. The R&D bridge managers can utilize this knowledge in practical when they facilitate the global R&D project. In addition, the difficulties and the mechanism model found from this research will be used to identify crucial competency of R&D bridge manager and we will propose the R&D bridge manager competency development framework in the future research.

**Keywords:** Global R&D project, R&D bridge manager, Bridge system engineer, Project management, Cross-cultural collaboration, Competency development framework