

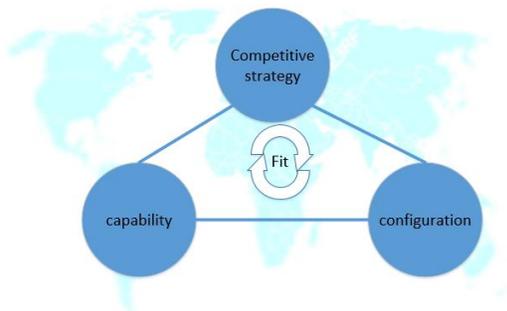
Interaction between international manufacturing networks and international R&D networks

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It has been recognized that in today's world of global competition and high-speed product development, the linkages and interactions between R&D (Research and Development) and manufacturing is more vital to successful business than ever before.

Manufacturing and R&D are two important functions in companies; R&D is responsible for design products while manufacturing aims at producing these products. For today's large companies that operate globally, manufacturing and R&D activities do not happen only in the home country and they are dispersed worldwide instead. This means manufacturing and R&D sites form networks respectively, resulting in international manufacturing networks and international R&D networks. How to manage international manufacturing and R&D networks is important to the success of large companies which own manufacturing and R&D.

Bartlett and Ghoshal (1998) classify the worldwide corporations into three typical types: multinational companies, global companies and international companies, and each type competes on a competitive strategy and manages its operations accordingly. This study implies that international manufacturing networks and international R&D networks can have different configurations and interactions under different competitive strategies. A three-layer integrated framework is created to investigate these relationships. The three layers consist of competitive strategy layer, capability layer and configuration layer.



First, competitive strategy determines in which aspects a company can differ from its competitors and provides objectives for different functions. Second, companies' internal resources and capabilities determine what they can do and are the basis for the strategy. Then, configuration decides how to form and structure international manufacturing and R&D networks and these

networks should be well designed to support the network capabilities under each strategy. And these three layers are not isolated from each other, and it requires fit between these three layers to achieve superior networks performance. This three-layer integrated framework can provide a holistic perspective on international manufacturing and R&D networks.

Research and development can be treated separately when discussing the interactions between international R&D networks and international manufacturing networks. Compared with research centers which is responsible for discovering and creating basic technology that can be applied to products and processes, development centers have closer interactions with manufacturing since development centers should work with manufacturing sites to develop and adapt products and processes.