
Abstract

Open innovation has been adopted by lots of companies from different industries and for various ranges of businesses. For different kind of business, the strategy for innovating may differ greatly, for example Internet service and automotive manufacturing. Former one requires more interactivities with customers while the later one may be driven more by engineering forces. Such factors have been defined as and classified into two categories, which are demand-pull and science-push factors. This research will discuss, how these two factors will possibly influence companies' innovation strategy will be discussed. But open innovation can be open in many ways, such as cross function, cross company and even cross industry. This research will focus specifically on the most complex type, cross industry open innovation, for the discussion of company's innovation strategy as well as the mechanism according to which decision making can be managed. For strategic decision-making, lots of principles should be taken into consideration, such as, pointed out by previous researchers, combinational choices to create reinforcement, achieving fit with firm's environment without sacrificing flexibility, and also implementing appropriate organizational support. Both internal and external environments will have significant impact on companies' strategic decision-making. Especially for cross industry innovation, external environment changing may result in internal structural adjustment, in order to innovate for certain newly emerged businesses. So, the purpose of this research is to discover the underlying mechanism of cross industry open innovation, and the view points will be focused on business architecture and cross industry collaboration.

By studying the mechanism, people can have more direct understanding of how companies could effectively launch their strategies for their products, businesses and collaborations. In order to study how a company can possibly set their strategies for business architecture and the corresponding strategies for cooperation, I will use telematics as case studies. Telematics is the services provided to in-vehicle customers, which is developed and maintained under the collaboration among automotive OEMs, TSPs (telematics service provider), telecom carriers and even Internet companies. From industry value chain's perspective, it is a typical kind of cross industry open innovation, which starts from advanced engineering in R&D stage and lasts through the whole product life cycle until after-services maintenance. According to the interviews to Daimler, Nissan, Fujitsu-Ten and China Unicom, also based on the survey that covers 1526 end customers, I conclusively derive two business architecture strategies for cross industry open innovation. The two strategies, which are integrated modular architecture strategy and customized modular architecture strategy, are classified according to the extent to which customers are directly involved in the business process. Only two categories may be a little bit too general for telematics, but it can be useful in describing most businesses, which appear across

industry boundaries and combine technical as well as managerial resources from different fields.

Based on business architecture strategies, I continue to discuss companies' strategy for collaboration with partners from different industries. Including both interviews and industry researches, four strategies are pointed out, which are independent strategy, comprehensive alliance strategy, commercial partner strategy and industrial standardization strategy. The four strategies can be viewed from two angles or dimensions, which are cross industry angle and customer integration angle. Each angle is viewed to have two degrees of openness, which are high and low. Independent strategy has low degree of openness on both cross industry angle and customer integration angle, such that company can remain dominating power and total control over the innovation activities. Comprehensive alliance strategy has high degree of openness on cross industry angle but low degree of openness on customer integration angle, which allows companies to collaborate more interactively. Since the collaboration covers both R&D and commercialization, and it normally exists among companies that have been cooperated for long in the value chain, they are collaborating in the more comprehensive and inseparable way, so I named it as comprehensive alliance strategy. The third one, commercial partner strategy has high degree of openness on both cross industry angle and customer integration angle. Since customers' involvement are heightened, the number of customer service interface for products and services increases from one to multiple. The collaborations among partners shift to be more centered on commercialization stage. Lastly, along with the maturing of the market, technology standards can be possibly formed. Companies from different industries may be possible to expand and maintain their businesses without opening too much internal resource. Consequently, industrial standardization strategy remains to have high degree of openness on customer integration angle but with low degree of openness on cross industry angle.

In reality, industry and market are keeping on changing, which cause degree of openness for each dimension varies along with the cross industry open innovation's evolution. Consequently, companies will or have to adjust their strategies in terms of shifting from one to another, which is called strategies' feature of dynamics. For the feature of dynamics, I find that the leader for strategy shift is not fixed. It changes due to the balancing between demand-pull factors. When science-push factors are more influential, the main innovating company has strong bargaining and dominating power, which would adopt independent strategy or leading the shift to comprehensive alliance strategy, such as automotive OEMs in this research. But the increasing importance of demand-pull factors will enhance supporting companies' influence to the value chain. Such as telecom carriers and Internet companies in this research, which lead the shift from comprehensive alliance strategy to commercial partner strategy, or even to industrial standardization strategy.

This research is carried out based on very detailed studies on the case of

telematics, especially to Germany, Japan and China. Though telematics is a typical example of cross industry open innovation that requires various kinds of resources, it may still be limited due to certain limitations, for example the difference between civil demand and industrial demand. Such limitation also provides a research opportunity, which is the number of players in the innovation network and the type of customer. Lastly in the paper, I briefly introduce two models, Multiple-to-One and One-to-One models for further researches. Additionally, in the implication part, I will also post a hypothetical analysis on how industries are crossing/fusing with each other based on cross industry technology fusion and demands, which can be helpful in making the strategies' feature of dynamics to be easier understandable and pointing future research opportunities.

Keywords: Cross Industry, Open Innovation, Customer Integration, Telematics, Business Architecture Strategy, Company Strategy, Strategy Shift