

# Research on Cross Boundary Product Innovation Based on Knowledge Sharing

Ying Xin

SHU-UTS Business School, Shanghai University, Shanghai 200444, China

jennyxin1982@163.com

**Abstract.** This article applies documentation research method; and analyzes the practical significance of cross boundary product innovation through probing into the concept of knowledge sharing, organizational cross boundary theory, product innovation, etc. and carries out the research on boundary of product innovation from the perspective of transaction cost theory; finally, puts forwards the knowledge sharing expression model of cross boundary product innovation as well as its embodied forms. It is opinioned of this article that cross boundary product innovation is in favor of boosting enterprise growth and knowledge learning.

**Keywords:** Product innovation, Cross boundary, Knowledge sharing.

## 1. Introduction

How to lower the cost of product innovation and improve the efficiency of production innovation by utilizing knowledge sharing of cross-organization boundary has been the pioneering issue of current researches on theories. At present, there are many researches relating to knowledge sharing, cross boundary theories and product innovation both at home and abroad.

Traditional economic theories usually assumed that the knowledge was acquired or shared for free. In this case, people did not have full understanding of knowledge sharing process, especially, its complexity; and it also prevented the knowledge sharing from exerting its importance well in practice<sup>[1]</sup>. Therefore, it is necessary for us to analyze the concept of knowledge sharing, its process as well ITS general characteristics first.

Chinese Scholar Zhang Xinguang<sup>[2]</sup> deemed that knowledge sharing could bring remarkable economic profit. On one hand, though communication and exchange among staff, knowledge was constantly diffused, absorbed and applied within enterprises, which thus kept the product cost, administrative cost and transaction cost in a unceasing drop while greatly cutting the margin production cost; on the other hand, the value of knowledge increased with the rising number of knowledge users. Through knowledge sharing, knowledge resources could be used by more and more staff within enterprises, and marginal revenue was therefore improved<sup>[3]</sup>.

Researches conducted by the above-mentioned scholars were mostly involved in the connotation of some aspects of knowledge sharing, and most of researches were confined to the knowledge sharing within organizations instead of the knowledge sharing of cross origination and cross boundary. It is considered by this article that the essence of cross boundary product innovation is the knowledge sharing of cross organizational boundary. The foregoing related research references lack the discussion from this aspect, and this article therefore carries out relevant studies.

## 2. Analysis of Cross boundary of Product Innovation

### 2.1 New Meaning of Cross Boundary Product Innovation

Organizational boundary is a borderline between organizations and the external environment, and plays a role of separating one organization from others. Not only does it exist objectively, but also it is a subjective awareness. Different enterprises, existing as independently operating organizations, have complete organizational structures, and possess prospective business strategies and objectives<sup>[4]</sup>. Therefore, during the process of their operation and administration, these enterprises would be more

concerned about their efficiency as well as the increasing improvement of efficiency, so as to ensure the realization of their strategic goals, which leads to each independent origination trying the best to maintain its respective organizational boundary in order to maximize their profit; when cooperating with other enterprises, the awareness of organizational boundary will be further intensified, in which condition the further cooperation, to some extent, will be baffled. Hence, it would be of practical significance for enterprises to cross or remove organizational boundaries among different enterprises in an effective way, to realize the effective penetration and amalgamation of organizational boundary, and to promote respective innovation capability by utilizing the advantages of others <sup>[5]</sup>.

Meanwhile, innovation, as an essential enterprise conduct, has various forms to express itself, and engages in all aspects of enterprise activities. In general, the purpose of product innovation is to modify or create products, and then to entertain the needs of customers or create new markets. With the global competition increasingly intensified, the technical problems confronted in the activity of product innovation become more complex, and the technological integration and clustering degree become stronger <sup>[6]</sup>. It would be more difficult for a single enterprise to achieve technical development on its own, even if large enterprises with strong technical forces might also be faced with a lack of technical resources.

This article deems that associated innovation of cross boundary products, by means of internalizing the external resources, the realization of resource sharing and complementation of advantages, will be helpful for enterprises to overcome technical difficulties, shorten the innovation time, and strengthen the competitiveness.

### **3. Knowledge Sharing Models of Cross Boundary Product Innovation**

#### **3.1. Knowledge Sharing Expression Model of Multi-boundary Product Innovation**

Knowledge of cross boundary product innovation has its own development process and life period. Cross boundary product innovation, in essence, is a kind of cooperation innovation and associated innovation. The life period of such knowledge includes such phrases as the knowledge coming into being, acquiring, refining, putting in a very important position, maintaining, and abandoning, etc. <sup>[7]</sup>. Knowledge sharing of cross boundary product innovation has 2 characteristics shown as below:

First, variety of knowledge forms: knowledge of cross boundary product innovation has various forms. There exists factual knowledge used to describe cross boundary product innovation, such as various engineering drawings, manuals, digammas, formula, etc.; also there exists some relevant knowledge to describe the process of cross boundary product innovation, such as rules, laws, theorems, experience, procedures, decision and evaluation methods and so on that are connected with the cross boundary product innovation<sup>[8]</sup>.

Second, hierarchy of knowledge sharing: knowledge sharing of cross boundary product innovation represents different knowledge of abstract levels in different innovation phases. For example, knowledge in the conceptual design phrase mainly refers to such knowledge as the acquired knowledge, innovative design methods, functional decomposition of products, definition of functions and technical theories and so on; knowledge in the phrase of technical design and detailed design mainly refers to the knowledge that is involved with design specification standard manual, design calculation, product molds, design experience, commercial parts standard parts, simulation (finite element analysis etc.), tests and users' feedbacks ,etc. <sup>[9]</sup>.

As far as the hierarchy of knowledge, knowledge of cross boundary product innovation can be divided into domain knowledge and meta-knowledge. The domain knowledge includes principle knowledge and heuristic knowledge of such domain objects. The principle knowledge is connected with the facts, definitions, experiments and operations of related objects <sup>[10]</sup>. The principle knowledge mostly gives explicit definitions and can be expressed by mathematical model. While the heuristic knowledge refers to the particular experience used to solve the complex and ill structural problems in the domain. The meta-knowledge is the knowledge about knowledge and it includes the scope of

domain knowledge, background, etc., as well as reasoning methods, plan of solving problems, knowledge structures and so on.

As we know, the nowadays external environment has turned changeable and unpredictable from its stable status; organizational boundary also starts to be blurry and penetrable, which would reinforce the opening of enterprises and cooperation with external organizations more and more, and achieve win-win strategy<sup>[11]</sup>.

It is considered by the article that product innovation system in knowledge based economy times is an open and dynamic subsystem. It differs from the general operation system since it possesses brilliant characteristics of knowledge sharing. Just as shown in figure 1, from the transverse axle, it can be considered as the final set (X-axle) of managerial procedure for product innovation centered by customers; from the longitudinal axle, it can be seen as the set (Y-axle) of the cross-organization boundary product innovation knowledge based on knowledge sharing (Z-axle).

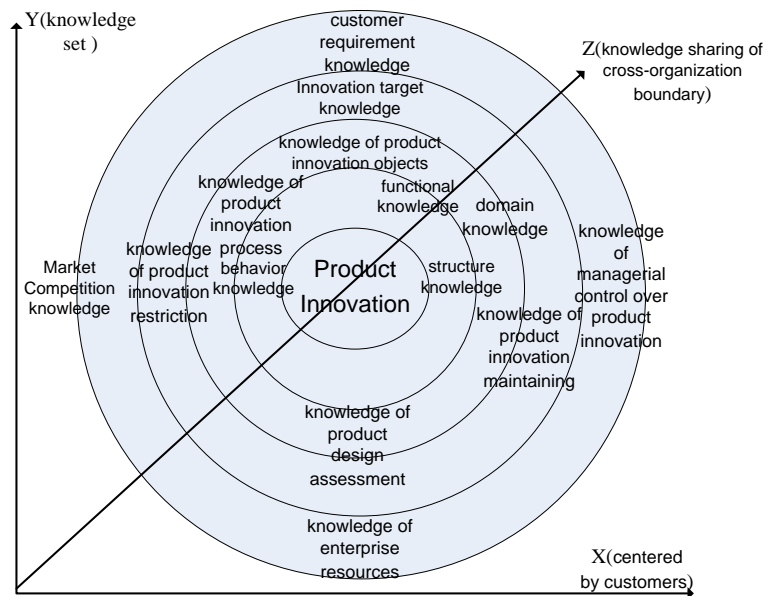


Figure 1 Embodiment of the Expression Model of Knowledge Sharing

**4. Conclusion**

This article figures that economic nature of structural models of cross boundary product innovation based on knowledge sharing is an effective solution for the conflict between economics of scale and diversity of demands; practice-makes-perfect feature of specialization production under division condition will evolve with the development of division. In this sense, enterprises can share the profit arising from the division network benefits that are brought by the structural models of cross boundary product innovation, and can promote enterprises’ development and knowledge learning. The pursuit of division benefits and economic nature of specialization production constitutes enterprises’ essential objective of future competition strategy. Certainly, some issues, such as how to improve the efficiency of knowledge transfer and spreading in process of cross boundary product innovation, etc, need further research.

**Acknowledgements**

This research is supported by Research Fund for Young University Teachers and Innovation Research Fund for Social Science in Shanghai University.

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