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Knowledge-intensive Business Services: Knowledge Capacity and Growth Pattern

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Abstract: Providing knowledge is the service way of Knowledge-Intensive Business Services (KIBS). Through knowledge sharing, knowledge shifting, developing and using the knowledge of enterprises deeply, KIBS have promoted the innovation activities of one's own and other enterprises, have taken on the important role in the whole innovation system. This study starts with analyzing KIBS' characteristics, development background, constructs the three-stage system of growth path, hopes to play a summarizing and guiding role for the growth of KIBS and wants to cause the concern of theoretical research about this kind of enterprises.

Key words: Knowledge-Intensive business services, establishment pattern, growth path

INTRODUCTION

Knowledge-Intensive Business Services (KIBS) such as computer services, R and D services, legal, accountancy and management services, architecture, engineering and technical services, advertising and market research-are the services that provide knowledge-intensive solutions to other organizations. When organizations require external sources of knowledge to deal with problem, KIBS may be their preferred. KIBS are not only prominent features of knowledge-based economy but also the organizations with most characteristics of the era of knowledge economy. Antonelli (1998), Strambach (2001), Muller (2001), Hertog (2000) studied the role of KIBS in technology change and innovation interactions. Miozzo and Grimshaw (2006) pointed KIBS should be studied as the organizational forms and national institutions.

There's no doubt about the contribution that KIBS make to the modern economy. However, it's a question that needs deep discussion about how on earth this kind of special service enterprises, just like KIBS, should form and develop, about how to promote their further growth in current time when knowledge is attracting much attention and about how to upgrade their knowledge level at the same time. Inspired by it, this study, based on the analysis of the development background, attempts to begin from the terms of the change of their service ways as well as their relations with the traditional knowledge source, constructs the models of the three stages of the growth path of KIBS and aspires to become an inspiring text that stimulates the research achievement in this field.

DEFINING KIBS

"KIBS" is a general name for a category of service enterprises that have similarity in the terms of the nature and way of the providing object, i.e., emphasizing the provided knowledge content in service. KIBS cover a wide range of service industries, such as accounting, management consulting, R and D, environment, relevant services on computer and information technology, advertising, etc. Muller and Zenker (2001) pointed out,"General definition does not reflect the diversity of KIBS' forms and activities".

The generally accepted definition is given by Miles *et al.* (1995) in a report for the Project named "The European Innovation Monitoring System". KIBS industries were defined as:

- Private companies or organizations
- Relying heavily on professional knowledge, i.e., knowledge or expertise related to a specific (technical) discipline or (technical) functional domain
- Supplying intermediate products and services that are knowledge based

Building on the foreign related research achievements, in accordance with the fact that the several definitions of KIBS place special emphasis on the three aspects of providing object, service target and service way, we conclude the following definition: "KIBS" is a kind of service enterprises that provide knowledge-based customized solutions to the problems of the customers-service target-who are all kinds of

organizations, which have high-level interaction with customers meanwhile jointly find out solutions to the problems customers face.

ANALYSIS ON THE DEVELOPMENT BACKGROUND OF KIBS

It can be seen from tracing the specific growth of KIBS, this category of services germinated before the industrial revolution and saw its initial growth during the period from industrial revolution to World War II, set its solid ground in 1980s and then stepped into a new development period since 1990s to now. KIBS developed gradually conformable to the demand of the growth of knowledge economy. The background of the appearance and development of KIBS, through specific analysis, mainly contains the following several aspects:

- **Elaborate division of work:** The basic cause to form KIBS is the more elaborate division of work caused by the increasing complexity in the output process. Complicated production technology, hyper-competition environment and the emergence of the new professional service enterprises all impel the enterprises to gradually strip certain links of value chain off their own core business and outsource them to the enterprises doing this kind of business better, this directly leads to the appearance of KIBS. And more outsourcing further spurs the growth of KIBS as well as the more elaborate division of work inside the industry.
- **Appearance of new technology:** A few new industries are derived from the development of the new technology. With the rapid economic development, a large number of new technologies come into being, resulting in the appearance of a part of KIBS meanwhile extremely broadening the service type and channel of the traditional KIBS. For example, information industry appears along with the rapid development of information technology. With the enterprises' increasing demand for information technology, a kind of new service enterprises based on the information technology appears. This kind of enterprises, mainly providing customers with services on computer hardware and software, network and communications as well as IT consulting, is well-known for rapid growth and high revenues, accounting for a high percentage in the revenues of KIBS. The semiconductor design and environment protection service also fall into this category
- **Increasing demand for basic service:** Enterprises' demand for basic service leads to the appearance of a part of new KIBS. For enterprises, with the rising development of science and technology, basic service relating to the technology sees an increasing importance and demand and related new services also appear subsequently, such as patent service and technology intermediary service, etc.

Increasing demand for knowledge: The fact that enterprises pay increasing attention to knowledge boosts the development of KIBS. Along with the fact that scientific and technological knowledge gradually become the important and even the only resources for production and service, enterprises, because of the intensifying market competition, scientific and technological progress as well as the possible benefits brought by innovation, begin to pay increasing attention to the intermediate input into this intangible assets so as to promote the product innovation and competitiveness. The increasing demand for the intermediate input into knowledge-intangible assets-is another important reason boosting the growth of KIBS

Related government policies: The intervention of related government policies directly results into the growth and expansion of certain KIBS. The intervention of government policies contains two forms. One is the policy intervention carried out in order to restrain and control the enterprise action, along with the economic development. By formulating related policies, the government requires that certain business of enterprises, including those with supervision responsibility, such as auditing and project assessment, must be completed by the third party. This boosts the development and expansion of certain KIBS. The other is that the new problems brought by economic development directly cause the government intervention, leading to the appearance of some KIBS. For example, in order to avoid the wanton destruction and unlimited exploitation of public resources, the government formulates relevant control regulations and environment protection standard, which is the most primitive motivation producing the demand for environment service.

Cancellation of control and protection: Service industry is an industry that is much influenced by the policy and law, which is particularly outstanding for KIBS. In many countries, complicated laws and regulations restrict some industries, such as banking and remote communications. Even the United States, where has the most relaxed control on service industry, only quit the direct intervention on remote communications, banking and public utilities since 1970s. The development of global wireless communication industry just happened after the

cancellation of the relevant control and the cancellation of this control boosts the vigorous growth of the technology and service of wireless communications. The Chinese government is also actively exploring the market operation of service industry, encouraging public facilities service, which is originally managed by the government, such as wastewater treatment etc.

GROWTH PATH OF KIBS

Through the follow-up analysis on the development course of KIBS, this study finds that KIBS, while they originally appear, acted as a simple supporting and intermediary role and independently provided services for the customers. With the expansion of business, they gradually evolved into the role of being the source and integrator for the knowledge and innovation of customers and this role as source makes KIBS become the third knowledge source in addition to the public and private knowledge bases. This statement regarding KIBS as a new knowledge source and coordinator created the three-stage system about the growth path of KIBS.

In the system, public knowledge base mainly refers to the higher educational institutions, such as the traditional universities, research and technical organizations, opened patent and some intermediary organizations providing service for public governments; Private knowledge base is those research institutions owned by the enterprises themselves. These two traditional knowledge sources have less communication from each other and take respective functions in the social economy system. Public knowledge base mainly plays a role of promoting scientific development and education progress, meanwhile private knowledge base is responsible for the R and D and innovation in the enterprises.

The three-stage system of the growth path mainly defines the development stages of this kind of enterprises from two aspects-interactions between the knowledge bases as well as the ways KIBS provide services.

In the system, stage I is the initial stage of KIBS, known as “embryonic stage”, in which only limited interaction is seen between public and private knowledge base, the innovation process is mainly to form the new knowledge. In this stage, conforming to the demand for knowledge felt by various organizations, the earliest KIBS appear, which are not yet able to form a complete enterprise category and are not an independent knowledge source and whose major function is to act as an intermediary role and to provide customers with knowledge from public and private knowledge bases. The relevant government policies, in this stage, mainly focus on supporting the increase of R and D and knowledge base. At this moment, the various services that KIBS provide for the customers are separate and needed to be organized and coordinated by customers themselves according to their demand. Some inter-departmental KIBS and professional KIBS also exist at this time, but the job of combining the services and solutions is not completed by these KIBS, what they play is only a simple intermediary role—bringing the customers with knowledge from public and private knowledge bases.

In accordance with the growth and operating mode of KIBS, the second stage is called “growth and cooperation stage”, in which KIBS have already developed into a complete enterprise category and become a new and independent knowledge source. In this stage, the interaction between public and private knowledge bases enjoys a significant increase; the number of the intermediary knowledge institutions and enterprises sees a continuous rise; the innovation process emphasizes the formation and the dissemination of knowledge; KIBS have already become a separate category of knowledge generators/diffusers and the network views begin to form. KIBS, through providing direct services and indirect drive, play the role of boosting, transmitting, creating and integrating knowledge resources. The direct role that KIBS play, on the one side, is a new knowledge source, which is similar to public knowledge institutions and R and D departments of the enterprises, such as the traditional research institutions and higher educational departments; on the other side, it is an indirect driving force as well as the assistant and integrator of the innovation.

For this reason, in this stage, KIBS, acting as the knowledge producer as well as the bridge linking knowledge producers and knowledge users, play an important role in promoting the knowledge dissemination and the innovation ability of the enterprises. Also in this stage, some large-sized inter-industry KIBS appear, which often provide multi-faceted and coordinated services and some relatively small KIBS form the network, meanwhile there also exists a few small-sized KIBS that independently provide service for the customers. This small-sized KIBS network possibly includes a service provider that plays a leading role and takes the responsibility to integrate the services and other members in the network also can independently provide the customers with services. In this stage, not only the network of KIBS acts as a whole, but also the KIBS forming the network and some independently-run KIBS likely become the sub-contractors of a large-sized inter-departmental KIBS.

The third stage is a stage where network tendency is outstanding in the terms of structure while

professionalism is prominent in the terms of service, so it is addressed as "stage of network and professionalism". In this stage, the barriers between public and private knowledge bases are broken while a considerable overlap begin to appear, meanwhile; KIBS, acting as an independent knowledge source, also have much cross cooperation with the traditional knowledge source; the boundaries between the traditional knowledge institutions and KIBS are being broken and three knowledge sources are enjoying mutual cooperation and integration in the innovation system. Public and private organizations are developing knowledge management system and actively seeking for the assistance of KIBS. Intensive cooperation contributed by KIBS experts from various fields, relatively relaxed operation mode for the professionals and high staff mobility between different organizations, all of these are in accord with the current trend that many experts from research institutions and higher educational departments begin to enter the KIBS fields.

In this stage, service system mainly includes two levels: service providers as well as KIBS that professionally concentrate on integrating business, or the large-sized inter-departmental KIBS that can coordinate various services. KIBS responsible for integrating business will coordinate and integrate the services that come from small-sized KIBS network and individual KIBS within the network, independently-run KIBS outside the network as well as the large-sized inter-departmental KIBS. Meanwhile, in addition to the fact that a large amount of interaction exists between KIBS and the traditional knowledge bases, there are various forms of cooperative relations that are all likely to exist between KIBS as well as between large- and small-sized KIBS and their respective networks.

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