SpringerBriefs in Business

Innovation Management in Knowledge Intensive Business Services in China

Bearbeitet von
Shunzhong Liu

1. Auflage 2012. Taschenbuch. VIII, 75 S. Paperback
ISBN 978 3 642 34675 0
Format (B x L): 15,5 x 23,5 cm
Gewicht: 143 g

Chapter 2
Innovative Characteristics of Knowledge Intensive Business Services

2.1 Theory of Service Innovation

2.1.1 The Characteristic of Service Innovation

The service concept represents the operational blueprint that communicates to customers and employees what they should expect to receive and to give (Fitzsimmons and Fitzsimmons 2001). The transformation of any service offering—what the customer receives—either incremental or radical, will require the transformation of some elements of the service concept (Stevens and Dimitriadis 2004). A study of the new modes of innovation in services (Gadrey et al. 1995) has shown that producing a service is to organize a solution to a problem (a treatment, an operation) which does not principally involve supplying a good. In producing a service, the producer is to place a bundle of capabilities and competences (human, technological and organizational) at the disposal of a client and to organize a solution, which may be given to varying degrees of precision (Gadrey et al. 1995). It suggests that apart from technological capabilities, human and organizational capabilities are also important for providing new services.

KIBS are characterized by their abilities to collect information and knowledge externally and to transform these in combination with internal knowledge into service outputs, which are often highly customized to particular user's requirements, so close customer relations often play a decisive role in the provision of these services (Tether and Hipp 2002). Hipp et al. (2000) suggest that knowledge intensive business service suppliers are likely to produce specialized service for specific clients. The customized services, such as consulting and advisory services, often based on more tacit forms of knowledge, services often emerge as a result of co-production between the actual service provider and its client (Den Hertog 2000). The close interaction between production and consumption is one of the innovative characteristics of KIBS, this interaction can be so close that the service cannot be provided without both the service user and provider taking part in its

S. Liu, *Innovation Management in Knowledge Intensive Business Services in China*, SpringerBriefs in Business, DOI: 10.1007/978-3-642-34676-7_2,

provision (Tether and Hipp 2002). A study of the characteristics of service (Tether and Hipp 2002) has shown that service firms tend to concentrate on quality and flexibility rather than on price (although some do compete on price), and that, particularly amongst knowledge intensive and technical service firms, this is reflected in the large proportion of income earned from providing services adapted to individual client's needs. It suggests that the most services provided by KIBS are none standardized services, and close interaction with customers is very important in the course of providing new services.

Cohen and Levinthal (1990) point out that a firm's absorptive capacity—its ability to assimilate new information—is closely related to its organizational routines, and the diversity (i.e., the level and distribution) of expertise within an organization. In addition to complementary knowledge and technical competencies, the quality of interaction depends on the practices, beliefs, values, routines and culture of the client organization. If the use of these knowledge intensive business services is to be encouraged then trust must be built up across the client organization (Windrum and Tomlinson 1999). The researches above suggest that the interface between the service provider and its clients must be re-designed in the process of service innovation.

Using software industry as example, Broch and Isaksen (2004) find that KIBS require close contact with clients in order to be innovative and build innovative capacity, and 50 % of the software firms work extensively at clients' offices, and most software firms have regular face-to-face meetings with their clients, and after a sale most software firms continue to collaborate with clients by phone, e-mail etc. This suggests that the contact with clients is very most important factor in the service innovation in KIBS. According to the degree of contact with customers, the contact manners can be classified into three categories as follows: working at clients' office for a long time, regular face-to-face meetings with clients and contacting with clients after providing service. Working at clients' office for a long time is the strongest contact manner; however, contacting with clients after providing service is the weakest one.

Once a kind of service innovation takes place, it may soon cause organizational change so technological innovation and organizational innovation should be undertaken together (Lee et al. 2003). Typically, there is a close relation between the technologies employed and the organizational form of the service, which also has implications for the process of service provision and the nature of the services provided, and hangs to any one of these frequently require or bring about change to the others (Tether and Hipp 2002). Knowledge intensive business service suppliers are lead users of information and communication technology (Miles and Boden 2000), integration of ICT into many knowledge intensive services has led to a new paradigm of service innovation.

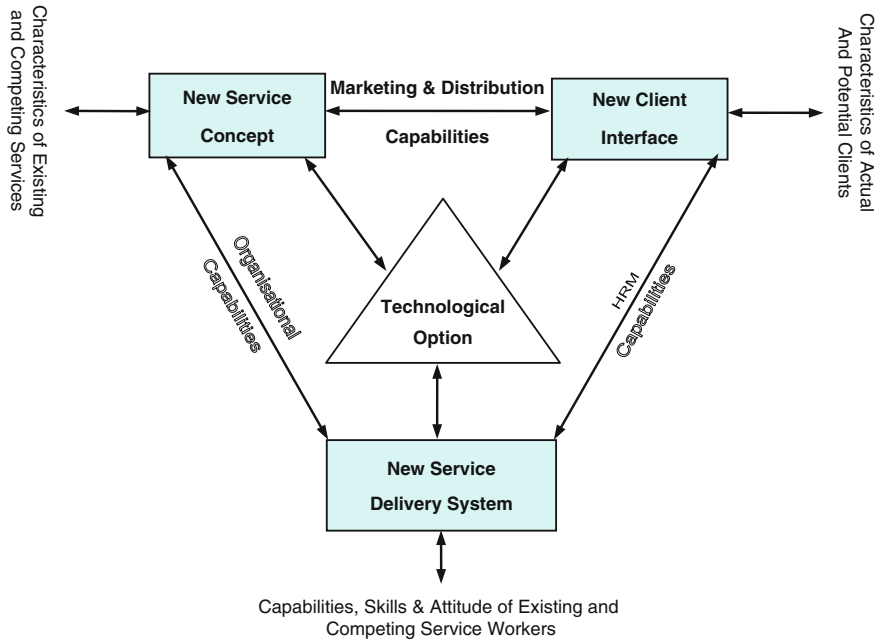

Fig. 2.1 A four-dimensional model of service innovation[1]

2.1.2 Model of Service Innovation

In order to discuss, map and analyze the diversity of innovations in greater details and in a structured way, Den Hertog (2000) introduce a four-dimensional model of service innovation as shown in Fig. 2.1. Beside technology innovation, the model points to the significance of such non-technological factors in innovation such as new service concepts, client interfaces and service delivery system.

According to the model of service innovation, any of the service innovation involves some combination of the dimensions as follows.

Dimension 1: The Service Concept: Although not all service innovations have a strong novel conceptual element, many service innovation involve more intangible characteristics, such as new ideas of how to organize a solution to a problem. Conceptual innovations are much more likely to be found in service firms than in pure manufacturing firms.

Dimension 2: The Client Interface: The client interface innovation is the design of the interface between the service provider and the clients, these interfaces are the focus of a good deal of service innovations. In business services in particular, clients are regularly part and parcel of the production of the service product. The interactions

[1] Den Hertog 2000

between the service provider and the clients can be a source of innovation. According to the high degree of co-innovation in new service development, the client interface innovation includes service providing manner innovation and service incepting manner innovation.

Dimension 3: The Service Delivery System: The service delivery system innovation refers to the internal organizational arrangements that have to be managed to allow service workers to perform their job properly, to develop and offer innovative services. It is closely related to the question of how to empower and facilitate employee, therefore, they can perform their jobs and deliver service products adequately.

Dimension 4: Technological Options: Service innovation is possible without technological innovation, but there is a wide range of relationships between technology innovation and non-technological innovation in practice. Technology mainly plays a role as a facilitating or enabling factor, something much closer to supply-push, technology-driven innovation. Although IT is certainly not the only relevant technology in service innovation, it is often perceived as the great enabler of service innovation.

In practice, it may be the combination of the four dimensions that ultimately characters each particular service innovation. Because any service innovation involves some combination of the above-mentioned dimensions of service innovation, which leads us to our two hypotheses as follows.

H1: the T-KIBS and P-KIBS have the same characteristics in the four service innovation dimensions.

H2: the importance of four service innovation dimensions is the same in the service innovation of KIBS.

2.2 Method

2.2.1 Sample

Data for this study were gathered through enterprise questionnaire investigation. We followed a four-step procedure. Firstly, through an exhaustive search on internet, we got the initial sample of knowledge intensive business service firms in Wuhan, the People's Republic of China. Secondly, we listed all the office building where the sample firms located, and then classify these office buildings into five groups according to their location. Thirdly, we used a pretesting of the questionnaire for clarity and relevance through face-to-face interviews with manager in the six firms. Finally, each of the five investigators survey manager, who would like to finish the pre-tested questionnaires, of the knowledge intensive business service firms in one group of the office buildings through face-to-face interviews.

We have surveyed 102 firms in which firms with no more than five employees were not included. The number of respondents for T-KIBS and P-KIBS were 46 (45 %) and 56 (55 %) respectively.

2.2.2 Measures

According to the model of service innovation (Den Hertog 2000), variables measuring service innovation included concept innovation(1 = my company has provided service with new concept to customers; 0 = my company has not provided services with new concept to customers), providing interface innovation(1 = my company has provided service with new manners; 0 = my company has not provided service with new manners), incepting interface innovation(1 = clients have accepted service with new manners; 0 = clients have not accepted service with new manners), organizational innovation (1 = my company has changed organizational structure and personnel to improve the efficiency for providing service; 0 = my company has not changed organizational structure and personnel to improve the efficiency for providing service), IT technology innovation(1 = my company has innovated in IT technology to improve the efficiency for providing service; 0 = my company has not innovated in IT technology to improve the efficiency for providing service), and the other technology innovation (1 = my company has innovated in the other technology to improve the efficiency for providing service; 0 = my company has not innovated in the other technology to improve the efficiency for providing service).

We used a variable to measure the degree of service customization, and asked them to rank on a scale of 1 (fully standardized service) to 5 (fully customized service).

The survey also asked the firm what is the most important contacting manner that the firm contacts with clients. We used two-point scale to measure if the employees work at clients' office for a long time, or employees in KIBS has regular face-to-face meetings with clients, or contact with clients after providing service.

2.3 Analysis and Results

2.3.1 Descriptive Statistics

KIBS need close contact with clients in order to be innovative and build innovative capacity. The Fig. 2.2 reveals that 68 firms surveyed continue to collaborate with clients after providing services, 21 firms work extensively at clients' offices, and 13 firms have regular face-to-face meetings with their clients. KIBS very often negotiate new contracts or develop new solutions based on signals from clients, thus, many activities should take place before providing services.

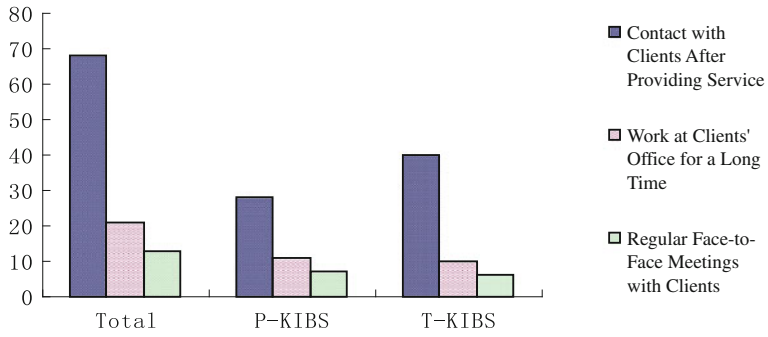

Fig. 2.2 The contacting manner of providing service in T-KIBS and P-KIBS

Though contact with clients after providing service is the weakest contact manner, it is the most important contact manner for KIBS in China. Working at clients' office for a long time and regular face-to-face meetings with clients are less important contact manner than contacting with clients after providing service, though they are stronger contact manner. It suggests that KIBS in China weakly contact with clients in providing service to clients.

We computed logical inclusive of two variables about service interface innovation (service providing manner and service incepting manner), and used this value to measure whether or not the firm has service interface innovation. As the same, we counted whether or not the firm has technology innovation. The number of firms which has provided each dimension of new services to customer is shown in the table below.

As shown in Table 2.1, the number of firms surveyed which have provided the service concept innovation is almost the same as that of organization innovation and technology innovation. Approximately 90 % of the firms surveyed have provided the three dimensions of service innovation above in recent 3 years. Only 74.51 % of the firms surveyed have provided interface innovation in recent 3 years. For the service interface innovation, 64.71 % of the firms surveyed have provided service with new manners, and 64.71 % of the firms surveyed have considered that the clients have accepted services with new manners. For technology innovation, 84.31 % of the firms surveyed have provided the IT technology innovation in recent 3 years, and only 50.98 % of the firms surveyed have provided the other technology innovation in recent 3 years. The data above suggest that the capacity of interface innovation of firms surveyed is lower than that of the other dimensions of service innovation, and also indicate that integration of IT into many knowledge intensive services has also led to a new paradigm of service innovation in China.

Table 2.1 The characteristic of service innovation

Dimension	Total		P-KIBS		T-KIBS	
	N	%	N	%	N	%
Concept innovation	92	90.2	42	91.3	50	89.29
Interface innovation	76	74.51	34	73.91	42	75
Providing manner	66	64.71	32	69.57	34	60.71
Incepting manner	66	64.71	28	60.87	38	67.86
Organization innovation	91	89.22	42	91.3	49	87.5
Technology innovation	94	92.16	44	95.65	50	89.29
IT	86	84.31	40	86.96	46	82.14
The others technology	52	50.98	25	54.35	27	48.21

Table 2.2 The degree of service customization

Categories	N	Mean	Std. deviation
P-KIBS	46	1.83	0.64
T-KIBS	56	1.79	0.62
Total	102	1.80	0.63
Mann–Whitney U = 1248, Z = −0.304, Asymp. Sig. (2-tailed) = 0.761			

2.3.2 Statistical Analysis

Using Mann–Whitney U test, we examined whether or not the means of the degree of service customization differ between P-KIBS and T-KIBS.

As shown in Table 2.2, the two-sided asymptotic significance of the Mann–Whitney U statistics is greater than 0.10, so it's safe to say that the differences are due to chance variation, which implies that there are no differences between P-KIBS and T-KIBS in the degree of service customization. The data in Table 2.2 also show that the services provided by KIBS in China appear a very high degree of standardization.

Using χ^2-test, we examined the association of these four service innovation dimensions (service concept innovation, service interface innovation, organizational innovation, and technology innovation) with respect to the categories of KIBS. The result is shown in Table 2.3.

As shown in Table 2.3, all the two-sided asymptotic significance of the Chi square statistics is greater than 0.10, so it's safe to say that the differences are due to chance variation, which implies that the results above support the hypothesis 1. The P-KIBS and T-KIBS have the same characteristic in the four service innovation dimensions in China.

Because all the variables for measuring service innovation are a two-point scale and the variables are measured on the same company, we use Cochran's Q-test to test hypothesis that the important of four service innovation dimensions is the same in service innovation in KIBS.

Table 2.3 Association of innovation dimensions with categories of KIBS

Dimension	Pearson chi square	df	Asymp. sig.
Concept innovation	0.116	1	0.733
Interface innovation	0.016	1	0.9
Organization innovation	0.38	1	0.538
Technology innovation	1.416	1	0.234

Table 2.4 Relationship of the four service innovation dimensions

	Total	Without concept innovation	Without interface innovation	Without organization innovation	Without technology innovation
N	102	102	102	102	102
Cochran's Q	102.000	18.600	0.583	16.222	13.771
df	3	2	2	2	2
Asymp. Sig.	0.000	0.000	0.747	0.000	0.001

As shown in Table 2.4, for the four dimensions of service innovation, the two-sided asymptotic significance of the Cochran's Q statistics is less than 0.05, it's safe to say that the differences are not due to chance variation, which implies that there are significant difference among the four dimension of service innovation. The result rejects the hypothesis 2 that the four service innovation dimensions are the same important in service innovation in KIBS. For the four dimensions of service except concept innovation, the two-sided asymptotic significance of the Cochran's Q statistics is less than 0.05, it's safe to say that the differences are not due to chance variation, which implies that there are significant difference among the interface innovation, organization innovation and technology innovation. For the four dimensions except organization innovation or technology innovation, the result is the same as that except concept innovation. However, for the four dimensions of service except interface innovation, the two-sided asymptotic significance of the Cochran's Q statistics is greater than 0.05, it's safe to say that the differences are due to chance variation, which implies that there are no significant difference among the concept innovation, organization innovation and technology innovation.

The result above suggests that the four service innovation dimensions have different role in the service innovation of KIBS in China, and that the four service innovation except interface innovation are the same important in service innovation in KIBS and the interface innovation are less important than that of the other three service innovation.

2.4 Discussion

The purpose of this study is to analyze characteristics of service innovation of KIBS in China. The research results specifically indicate that the services provided by Chinese KIBS stand on a very high degree of standardization and KIBS weakly

contact clients during service innovation, the P-KIBS and T-KIBS have the same characteristics in the four service innovation dimensions, and the capacity of interface innovation is weaker than that of the other three service innovation for Chinese KIBS.

According to Antonelli (1999), KIBS firms perform two important functions in economic system: firstly, as containers of proprietary 'quasi-generic' knowledge, extracted by means of repeated interactions with customers and scientific community; secondly, as an interface between that knowledge and the tactic knowledge buried in routines of firms. The knowledge intensive service suppliers which provide specialized services are more likely to undertake innovations than to standardized service providers, so the specialized suppliers tend more to suit specific users than standardized suppliers (lee et al. 2003). Because high degree of customization in the output of KIBS, innovation activities of which are relatively more oriented towards product innovation, while new service can not be provide without the service user and provider taking part in its provision (Tether and Hipp 2002). Larsen (2000) distinguishes three types of knowledge that user firms gain from KIS suppliers: core, operational, and peripheral knowledge. In providing core knowledge, the interaction between supplier and user is stronger than that of in providing operational and peripheral knowledge. As the results shown, the most service clients gotten are standardized and the contact of provider and user are weak in providing service.

In order to improve innovation capacity of KIBS in China, firms should pay attention to the contacting manners and the degree of standardization in providing the knowledge intensive services to client, some things should be carried out for KIBS. Firstly, the employee of service supplier should work at clients' office for a long time and have regular face-to-face meetings with clients in order to have better interactions with users and understanding of users' features and requirements. So the customized services which build users' features and requirements into their services to benefit the customers can be produced and provided to client. Secondly, in contacting with client, the firm should have better understand the structure and characteristic of clients' organization, and design the interface between the service provider and its clients to make the way, through which the service provider interacts with the client to suit the service provided, thus the customized service can be more easily delivered to client. Finally, the firms should use stronger contact manner in providing service to understand client's needs better. Through the close interaction with client, the KIBS can develop its competencies to provide core knowledge to clients.

References

Antonelli C (1999) The microdynamics of technological change. Routledge, London

Broch M, Isaksen A (2004) Knowledge intensive service activities and innovation in the Norwegian software industry, STEP REPORT, 03

Cohen WM, Levinthal DA (1990) Absorptive capacity: a new perspective on learning and innovation. Adm Sci Q 35(1):128–152

Den Hertog P (2000) Knowledge-intensive business services as co-producers of innovation. Int J Innov Manag 4(4):491–528

Fitzsimmons JA, Fitzsimmons MJ (2001) Service management, 3rd edn. McGraw-Hill, New York

Gadrey J, Gallouj F, Weinstein O (1995) New modes of innovation. How services benefit industry. Int J Serv Ind Manag 6(3):4–16

Hertog P (2000) Knowledge-intensive business services as co-producers of innovation. Int J Innov Manag 4(4):495

Hipp C, Tether B, Miles I (2000) The incidence and effects of innovation in services: evidence from Germany. Int J Innov Manag 4(4):417–454

Larsen JN (2000) Supplier-user Interaction in Knowledge? intensive Business Services: Types of Expertise and Modes of Organization. In: Miles I, Boden M (eds) Services and the Knowledge-Based Economy. Routledge, London and New York, pp 146–154

Lee K, Shim S, Jeong B, Hwang J (2003) Knowledge intensive service activities (KISA) in Korea's Innovation System, OECD Report, 2

Miles I, Boden M (2000) Introduction: are services special? In: Miles I, Boden M (eds) Services and the knowledge based economy. Continuum, London

Stevens E, Dimitriadis S (2004) New service development through the lens of organisational learning: evidence from longitudinal case studies. J Bus Res 57(10):1074–1084

Tether BS, Hipp C (2002) Knowledge intensive, technical and other services: patterns of competitiveness and innovation compared. Technol Anal Strateg Manag 14(2):163–182

Windrum P, Tomlinson M (1999) Knowledge intensive services and international competitiveness: a four country comparison. Technol Anal Strateg Manag 11(3):391–408