IS Outsourcing as Dynamic Phenomena: Case Studies of Quasi-outsourcing in Japan

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Abstract: A characteristic feature of the outsourcing of information systems (IS) in Japan is the use of quasi-outsourcing primarily by large-scale firms. In most such cases, an IS subsidiary is established by spinning off the firm's own information systems department. However, in recent years, there have been many firms which strengthen capital alliances between their IS subsidiary and external vendors, or completely sell it. On the other hand, there is growing diversification in the management of IS subsidiaries, such as firms forcing their IS subsidiaries to withdraw from external sales business, or going further and integrating the IS subsidiary back into the company again (i.e., backsourcing). This research employs case method in order to investigate the factors which have an effect on these IS subsidiary arrangements. To achieve that, we first review relevant early studies. Then we present case studies of two chemical manufacturing companies in Japan. And finally, we propose some theses based on the implications derived from the case studies.

Key-Words: Information Systems Outsourcing, Transaction Cost Economics, Resource-Based View, Case Study, Quasi-outsourcing, IS subsidiary, Interfirm Alliance

1 Introduction

Recently, a large number of firms outsource their information systems (IS). In general, IS outsourcing can be classified into two typical different patterns: conventional outsourcing and quasi-outsourcing [1] [2]. The former is based on a contract with an external vendor and so on. The later means to set up their own IS subsidiaries which is defined as "a firm that is partially owned by the parent, but independently managed" [3]. Quasi-outsourcing is an alternative to complete insourcing and complete outsourcing [1], and is often adopted in the large-scale firms in Japan. However, the diversification of the arrangement of IS subsidiary is widely seen. For instance, there have been many firms which strengthen or keeping capital alliances between their IS subsidiary and external vendors, or completely sell it and dissolve the partnership. On the other hand, some firms forcing their IS subsidiaries to withdraw from external sales business, i.e., sales outside the parent company's group, or going further and internalizing the IS subsidiary back into the company again (backsourcing) [4].

This paper is organized as follows. In Section 2, we briefly review some previous arguments of IS outsourcing. After reviewing relevant literature on IS outsourcing, we present case studies of two chemical manufacturing firms in Japan both adopting the pattern of quasi-outsourcing in Section 3. In Section 4, we discuss the implications derived from the case studies, and develop some important propositions. Finally, in Section 5 we conclude by a summary of this paper and mention our future work.

2 Theoretical Perspectives on IS Outsourcing

2.1 Transaction-Based Arguments

Transaction cost economics (TCE) posits that organizations insource when the costs of using the market are higher than internal governance costs [5] [6]. It builds upon three principal attributes of transactions: asset specificity, uncertainty, and frequency [7].

Asset specificity for IS outsourcing has two aspects; for business of a client company supported by the developed information systems and for technologies which external vendors utilize. If the business that a client company outsources is unusual, external vendors have to be familiar with the business
so that the asset specificity will occur on mainly human resources. If technology used by external vendors is specific, it will be hard to use the information systems for other purposes on the client company. Investment to these unusual assets causes a "fundamental transformation" [7]. Therefore, the transaction costs would increase.

Hence, if it is necessary to reduce the risk of opportunism resulted in asset specificity and to restrict the increase of transaction costs, quasi-outsourcing would be selected. This is because a client company can wield an influence on its IS subsidiaries depending on its investment ratio under the operation of quasi-outsourcing.

2.2 Resource-Based Arguments
The resource based view (RBV) based on the original work of Penrose [8] posits that organizations insource when a resource or capability is strategic so as to enable them to sustain competitive advantage [9][10]. It builds upon four properties of a strategic resource: economic value, rareness, imperfect imitability, and non-substitutability [9].

Thus understanding of managerial resources as an advantage for the company is called a core competence in general today. Prahalad and Hamel defined the core competence as "a combination of technologies and production skills which is based on the company's infinite product lines" [11][12]. However, this is understood more broadly today and is interpreted as their own sources and abilities, which are hard to be imitated and implemented by other companies, as a source of the company's sustainable competitive advantage.

From the viewpoint of the RBV, competitive advantage of organizations can only be achieved through a focus on core competencies, the management of organizations have chosen to concentrate on what an organization does better than anyone else while outsourcing the rest. And if it is needed to be controlled strategically again, insourcing the businesses which were outsourced in the past will be reconsidered.

2.3 Conventional Outsourcing vs. Quasi-Outsourcing
The rich number of studies of IS outsourcing was conducted in the past, having been approached from various points of view [13][14][15][16]. Especially, in the previous study on two patterns of IS outsourcing, some focused on factors of an influence on its selection. For instance, Barthelemy and Geyer classified the factors of an influence on the choice of either conventional outsourcing or quasi-outsourcing into internal and external factors [1]. They focused on testing some hypotheses which was built based on TCE, but they did not refer to the RBV arguments.

Other studies show that different effects and problems of IS outsourcing caused from the different patterns [2]. However, many studies found different effects of IS outsourcing between conventional outsourcing and quasi-outsourcing. For instance, on "using new technology", it is overall supported that conventional outsourcing has a higher effect than quasi-outsourcing. On the other hand, the issue is still under discussion whether the effects of "cost saving" and "improvement of planning and development of IS skill" of these two patterns of outsourcing are different or not.

The results of a recent survey by the Japan Users Association of Information Systems found that, among the requirements placed on IS subsidiaries and external vendors by user companies, a company's planning and proposal capability for "restructuring business process using IT" is valued more highly than "reduction of development/operation cost" in Japan [17]. In that sense, the fact that quasi-outsourcing provides greater familiarity with the parent company's work can be regarded as a significant advantage over conventional outsourcing. Empirical analysis by Hamaya has also shown that, in outsourcing to IS subsidiaries where there is a capital relationship, i.e., quasi-outsourcing, there is a tendency for the degree of review of business process at the parent company to increase significantly [18].

However, on quasi-outsourcing in recent years, a number of distinctive trends have appeared in management of IS subsidiaries. A diverse variety of cases have been observed, such as: (1) capital alliance with an external vendor (majority investment ratio or higher), (2) capital alliance with an external vendor (less than majority investment ratio), (3) complete sale of IS subsidiary to external vendor, (4) withdrawal from external sales, (5) Integration back into the parent company, and so on.

Why does a certain company push a wholly owned IS subsidiary in the direction of conventional outsourcing through capital alliances and assignation? Conversely, why does a certain company move back toward insourcing by forcing its IS subsidiary to withdraw from external sales business, or calling it back to the parent company? This research investigates the determinants that influence whether
firms adopting quasi-outsourcing are increasing, decreasing, or keeping their current outsourcing level.

3 Case Studies

3.1 Case One
Tokuyama Corp. is a second-tier general chemical manufacturer founded in 1918, and Tokuyama Information Service Corp. (hereafter, TJS) was established by spinning off its in-house information systems department in January 2003. Capitalization of TJS is about 20 million yen, and the company is wholly-owned by Tokuyama. Sales are approx. 1.7 billion yen, and the company has about 40 employees (all figures are for the fiscal year ended in March 2006).

As a shared service center (SSC), TJS has the role of providing IS services to the Tokuyama Group. After being spun off, the company has remained in charge of planning and proposing the information strategy of its parent company Tokuyama. It is entrusted with and manages all IS activities for the Tokuyama Group, from information infrastructure building and operation, to development of business/communication systems. Fig.1 describes the relationship between Tokuyama and TJS.

Fig.1: Relationship between Tokuyama and TJS
Source: Prepared by the author based on the interview

At present, Tokuyama has established an in-house Corporate Planning Division, headed by a Managing Director, and the Planning Group within that Division is in charge of management and information strategy for the entire Tokuyama Group. However, this is not a dedicated organization, and thus the TJS side, which is familiar with actual IS activities in the field, is expected to play a role in systems planning and information strategy as its contribution to management. Therefore, TJS is not involved in external sales business at present.

The mission critical system of Tokuyama Group is a mainframe-based legacy system, developed in the PL/I language, which has been operating since 1991. The system is called IRIS, and it integrates various business systems such as production, purchasing and sales, and management systems such as personnel, accounting and budget control. The system is still operating today.

3.2 Case Two
Ube Industries, Ltd. is a major chemical manufacturer established in 1897, and it established the wholly-owned Ube Information Systems, Inc. (hereafter, UIS) in September 1983 by spinning off its in-house information systems department. Later, in March 2001, Osaka Gas Information System Research Institute Co., Ltd. (hereafter OGIS), an IS subsidiary of Osaka Gas Co., Ltd., made a majority investment in UIS. Capitalization of UIS is 100 million yen (OGIS: 51%, Ube Industries: 49%). Sales are approximately 5 billion yen, and the company has about 300 employees (all figures are for the fiscal year ended in March 2006).

At present, Ube Industries has established an in-house Corporate Planning & Administration Office, headed by a Director and Managing Executive Officer, and the information systems department in that Office is in charge of information strategy for the entire Ube Industries Group. The primary work of the approximately 30 person staff of the information systems department (including those belonging to subsidiaries) is information systems planning, and the staff is not involved directly in systems development and operations activities.

Differing from TJS, since spinning off from Ube Industries, UIS has developed into a profit center, and at present has achieved an external sales ratio of about 40%. At the same time, however, UIS has established a "UBE Solutions Group" with 3 departments, including a systems development department, and in practice, that Group plays the role of an exclusive team for the Ube Industries Group. This organization is comprised of about 100 staff who have extensive knowledge about business process at Ube Industries, and has been maintained even after the investment by OGIS (see Fig.2).
The mission critical system of Ube Industries was switched over in stages from a mainframe-based legacy system to an ERP package in a program of system rebuilding called the "RS21 Project" which started in 1999. The switchover process was completed in April 2003.

At Ube Industries, on the other hand, where the mission critical system has been switched to an ERP package, customization focusing on work content and processes specific to the company was partially done, but in the RS21 Project, efforts were made to restructure work in accordance with the standard specifications provided by the package. This sort of drop in asset specificity relating to IS activities is likely to decrease the opportunism which is a threat in their market transactions. Due to the above, we present the following propositions:

**Proposition 1a.** For companies which adopt quasi-outsourcing, lower of asset specificity relating to IS activities increases the incentive to shift to conventional outsourcing.

**Proposition 1b.** Switching mission critical systems to an ERP package, and/or efforts to standardize contracts via SLAs, reduce the asset specificity of IS activities.

4.2 Turning from IS Cost Centers into Profit Centers

Partly due to the relatively short time since it was founded, TJS's mission is taken to be contributing to management of the Tokuyama Group as a SSC, and does not go beyond the scope of a cost center. At UIS, on the other hand, the external sales rate has already reached 40%. Thus UIS is an equity method affiliate from the standpoint of Ube Industries, and is expected to contribute to profits as a profit center.

In the beginning, an IS subsidiary can expect a certain degree of orders from its parent and group companies, and thus has an aspect which is independent or spin off [1]. However, in order to make an IS subsidiary into a profit center, it must be able to achieve economies of scale by further expanding the scale of its business. To do that, IS subsidiaries need to make efforts such as strengthening their sales capabilities for external sales business, and improving their specialized knowledge and skills.

From the perspective of the RBV, if independent development of the resources and capabilities needed by a firm is difficult or costly, that can become a factor in choosing alliances with other firms [9]. In fact, UIS seized the opportunity to learn object-oriented technology through its capital alliance with OGIS.
whose strength lies in that area. Profit centers have incentives to reach a level of performance close to that of the best outside vendors. Hence, we propose the following proposition.

**Proposition 2a.** For companies which adopt quasi-outsourcing, progress of the IS subsidiary toward becoming a profit center increases the incentive to form alliances with external vendors.

However, in that sort of alliance, the threat of opportunism by the partner may become a problem. In particular, in an alliance with a specialized external vendor, there is a danger that the threat of opportunism will increase for reasons such as asymmetric information or conflicting goals. On that point, OGIS is an IS subsidiary whose sales to the Osaka Gas Group constitute about half of its total sales, and thus in the alliance between UIS and OGIS, there is a possibility that the threat of opportunism can be relatively reduced. Due to the above, we present the following proposition.

**Proposition 2b.** Alliances between subsidiaries within the group of user companies enables reduction of the threat of opportunism compared to alliances with specialized vendors.

### 4.3 Contribution of IS Activities to the Core Business

Tokuyama and Ube Industries have differences in their size and degree of diversification, but their primary core businesses are chemical products and precision chemistry, and their core resources and capabilities are research and product development, and manufacturing/applied technology in their domain. Therefore, unlike an information intensive industry, resources relating to IS activities, and the organizational capabilities to make use of those resources, do not themselves play a central role at either company.

However, as pointed out by Bharadwaj [15] as well as Hamaya [18], even if there is no advantage in terms of information systems themselves, they have an important role in supporting business processes such as production, sales and product development, and outsourcing IS activities may have a negative effect on competitiveness in the core businesses which are the company's strength. The RBV suggests that IS activities to support core businesses where the company has a competitive advantage should be insourced [9]. Therefore, in general, we can propose the following proposition.

**Proposition 3a.** For companies which adopt quasi-outsourcing, expansion of core businesses and increasing inseparability of IS activities increases the incentive for backsourcing.

However, if we limit ourselves to only the aforementioned two cases, it is difficult to specifically determine how much of an overall contribution IS activities make to the growth of core businesses. Instead, what we should look at is whether or not changes arise in the roles expected of IS activities, which although they are not core competencies themselves, are one of the function necessary for business.

For example, at Tokuyama, there is an understanding (revealed in speaking with Mr. M, the Planning Group Leader) that "In the current situation, where TJS is not involved in external sales business, there is room to reconsider the advantages of insourcing again, in order to ensure the close communication necessary for speedy system construction and business restructuring using IT."

At Ube Industries, on the other hand, after the spun off of UIS, there has been increasing immobilization of the staff of the in-house information systems department, and thus development of human resources has become an urgent issue. In general, IS activities require not only familiarity with the company's own work, ranging from information strategy planning, drafting of requests for proposals, proposal evaluation, and monitoring of contract conditions; it is also required technical knowledge and skills relating to information systems. To stably manage and control this sort of IS activities over the long term, Ube Industries has begun efforts to accumulate experience by temporarily assigning young employees to UIS. For the future, they are also looking at reverse assignment, where they receive human resources from UIS. Flexible response to changes in the volume of system development projects, and accumulation of knowledge and know-how relating to IS activities are recognized as being indispensable. Due to the above, we present the following proposition.

**Proposition 3b.** For companies which adopt quasi-outsourcing, expanding the role of IS activities as an infrastructure supporting core businesses increases the incentive to maintain and/or strengthen quasi-outsourcing.
5 Conclusion and Future Work

This paper has proposed propositions relating to factors affecting management/arrangement of IS subsidiaries, based on implications derived from case studies of two chemical manufacturers in Japan.

On recent phenomena, there are many cases that IS activities, assets and personnel which were outsourced in the past are insourced again, especially in finance and insurance industries in the U.S. Also in Japan, the role of IS subsidiaries is changing to work on new management issues such as internal control and information security and so on.

In the future, there will need to be further analysis, development of specific working hypotheses, and verification of those statistically using survey data. Thus, we will also need to pay attention to other factors assumed to affect IS outsourcing decision [19], especially management/arrangement of IS subsidiaries. For instance, these include finance-related effects due to capital policy (e.g. improvement of short-term financial performance through the sale of IS subsidiary stock etc.) and effects due to the institutional environment, such as corporate law, acts of protecting personal information, risk management [20], and so on.

References:


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