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The CIO as the Driving Force Behind IT Restructuring

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Information technology (IT) is becoming an increasingly important part of corporate activities. As the person principally responsible for corporate IT strategy, the chief information officer (CIO) has a crucial role to play in this process. By analyzing the level of attainment of a company's systems and systems department by means of an overall method of evaluating its information systems and using this as the basis for (1) promising both management and customers a certain standard of service, (2) setting about improving the situation, (3) evaluating the results, and (4) reporting these to management, the CIO's job is to put this accountability into practice.

The chief information officer should always be looking for ways to reform the six IT assets (business systems, system infrastructure, information, human resources, technology and relations) and the five IT processes (planning, building, procurement, operations and evaluation) that are the responsibility of the CIO by using a rational approach to management. In order to achieve this, the CIO also needs to radically restructure the way the IT function in the company is organized—if necessary, by outsourcing it.

I The Five Revolutions in Information Technology and the Role of the Chief Information Officer

Information technology is becoming an increasingly important part of corporate activity. The following three IT-induced business revolutions have already taken place:

(1) The Internet revolution: Many new markets and businesses have emerged that depend on a large-scale network of business partners and consumers.
(2) The revolution in business speed: Companies are increasingly finding it necessary to create speedy new IT-dependent business models in order to differentiate themselves from their competitors.
(3) The revolution in work styles: Organizational structures that use the fruits of information technology to produce large quantities of added value are becoming central to corporate activity.

In addition, in terms of the technology for building information systems, there have been revolutions in (4) the life cycles of technologies and products, and (5) software productivity.

As the person chiefly responsible for corporate IT strategy, the chief information officer has a crucial role to play in this process. Indeed, MITI's Industrial Structure Council has emphasized the importance of the CIO in devising and implementing IT strategy along with the need for a chief strategy officer (CSO).

In our view, the CIO should also perform the following three roles (Figure 1):

- As chief knowledge officer (CKO): Use information systems to make a company's knowledge available in a tangible form that is easily accessible by all employees, and to pursue business innovation.
- As chief technology officer (CTO): Properly understand the potential of IT and devise a suitable IT strategy.
- Chief asset officer (CAO): Use the company's tangible and intangible IT assets to achieve the best performance possible.

It may be unrealistic to expect one CIO to perform all of these functions. In Japanese companies, the most realistic approach is probably for a number of specialists covering all of these areas to work as a team under a leader.

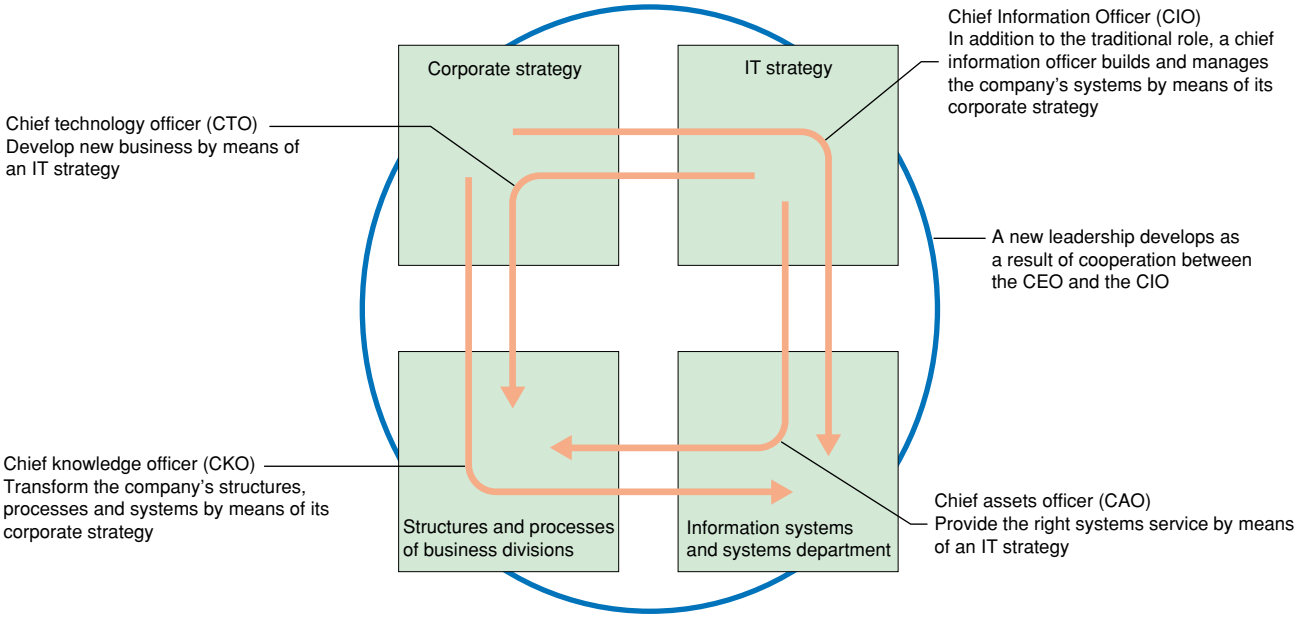
II Responsibilities of a CIO

In managing a company's information systems, the CIO has the following responsibilities towards those who use them:

- To deploy the information system assets entrusted to the CIO by management in the way most likely to contribute to the company.
- To ensure that the system services provided to users (both internal and external) are of a high standard.
- To make the most of the abilities of the company's human resources that are involved in information systems and ensure that the benefits are shared.
- To develop synergistic relations with business partners and ensure that the added value generated is shared.
- To manage the company's information systems as part of the social infrastructure so that society will benefit from it.

At the same time, in-house service departments (including systems departments) are coming under increasing pressure from management to downsize in order to be more efficient. The CIO will therefore have to evaluate

Figure 1. Four Roles of a Chief Information Officer



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information systems from the following angles in order to decide whether they should be provided in house or outsourced—just as would be the case with other services:

- Whether they are one of the core competencies the company needs in order to maintain its identity.
- Whether in-house provision would be better than outsourcing.
- Whether in-house provision would be able to keep up with the speed of business.
- Whether the company's own staff (including those working at subsidiaries) would be able to keep up with the latest developments in IT (which is a rapidly developing field) and put that knowledge to good use.

If management is to make the right decisions about such matters, shareholders and others with a stake in the results must be kept properly informed about how the company's information systems are being managed—hence the need for accountability.

III The Balanced Scorecard Approach: An Overall Method of Evaluating Information Systems

One method of evaluating the overall performance of a company's various departments by using financial and other indicators is the balanced scorecard approach. It can also be used to evaluate systems departments. The following four indicators are used (Figure 2):

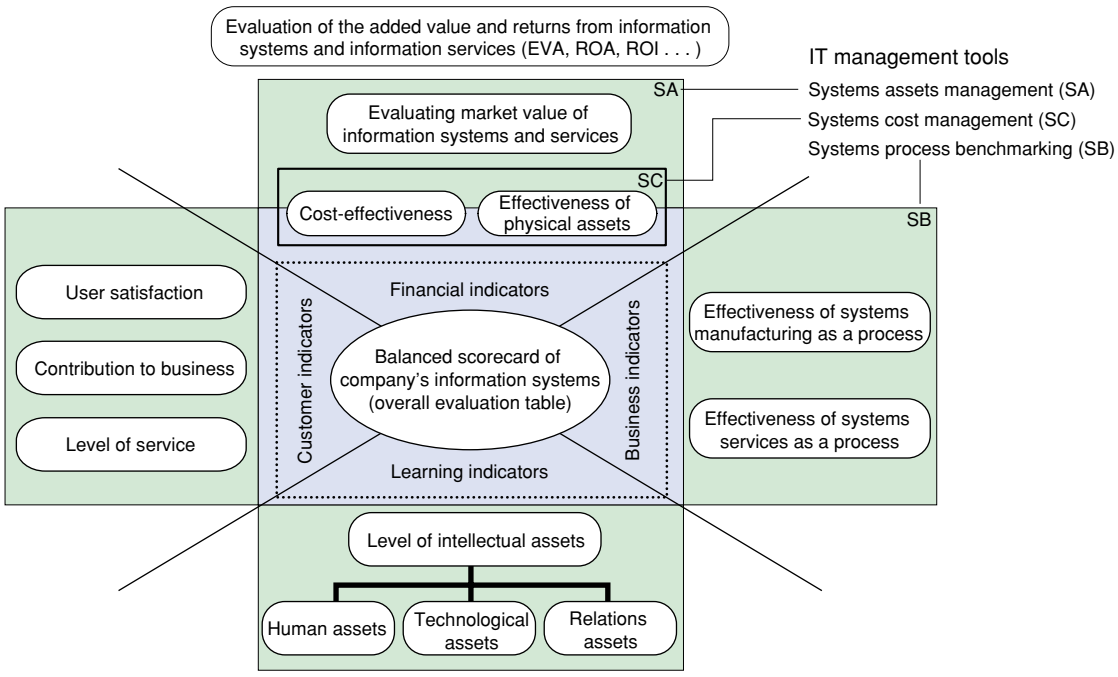
- Financial indicators: cost-effectiveness, effectiveness of physical assets, (and, if possible) value-added productivity, and asset growth.
- Customer indicators: customer satisfaction, contribution to customer business, and level of service.
- Business indicators: effectiveness of systems manufacturing and systems services.
- Learning indicators: level of intellectual assets.

This balanced scorecard is used to evaluate a company's information systems. It enables the CIO to give a commitment to both management and customers that the systems department will achieve certain goals, implement improvements, evaluate results and keep them up to date. In other words, it ensures accountability.

IV The Management Cycle of Information Systems

When managing information systems, it is every bit as important to ensure that there is a PDCA (plan, do, check and action) management cycle as it is when managing any other operation or organization. The CIO has to ensure that the company has a PDCA not only for budgeting for the development and operation of information systems as well as for building and operating them within that budget, but also that targets are set (and met) to ensure that the company has adequate IT assets, that it is constantly trying to improve its IT processes (i.e., information system management processes), that its

Figure 2. Concept of an Overall Method of Evaluating Systems



- Continuous cycle of goal setting efforts to improve, and self-diagnosis
- Objective rating by an external agency at each level

→ Information disclosure and formation of consensus between management and users

Note: EVA: economic value-added; ROA: return on assets; ROI: return on investment.

information systems are made more cost-effective, and that there are proper controls on system risk.

At NRI we have identified four different types of methods for managing corporate systems:

(1) System asset management (SA): those aspects concerned with financial indicators (balance sheets) and learning indicators. Methods of managing and evaluating IT assets.
(2) System process benchmarking (SB): those aspects concerned with business indicators and customer indicators. Methods of managing and evaluating IT processes.
(3) System cost controls (SC): those aspects concerned with financial indicators (profit and loss accounts). Methods of managing and evaluating information system costs.
(4) Methods of managing information system risk.

The CIO uses these evaluations as a basis for reporting to management and obtains feedback on the extent to which the actual level of service differs from the expectations of management and user departments (customers). If the gap between reality and what management expects is big and internal improvement is unlikely to be enough to bridge that gap, the CIO will have to consider alternatives such as partnerships with other companies and outsourcing.

V The Main Aspects of Managing IT Assets

System asset management consists of methods for optimizing the three physical assets or "facilities" (business systems, system infrastructure, and information) used to provide system services and the three intellectual assets (human resources, technology, and relations) in terms of quality (Q), cost-effectiveness (C), and life cycles (L). The six aspects are as follows (Figure 3):

(1) Business system assets

The company's in-house systems need to be evaluated objectively in terms of market forces to see whether they are fulfilling their original purpose (of satisfying user needs) or have lost touch with the outside world. It also needs to be decided whether or not it would be better to stick to the existing system and continue to service it.

The CIO needs to judge the company's information systems objectively in terms of their market value (e.g., how much their services would be worth if they were made available to the public; how much it costs to produce these services; and how much it would cost to outsource them) in order to judge whether it would be appropriate and effective for the company to develop them in house.

(2) Systems infrastructure assets

The CIO will evaluate whether the company's systems infrastructure is state-of-the-art and cost-effective, and what its life cycle is.

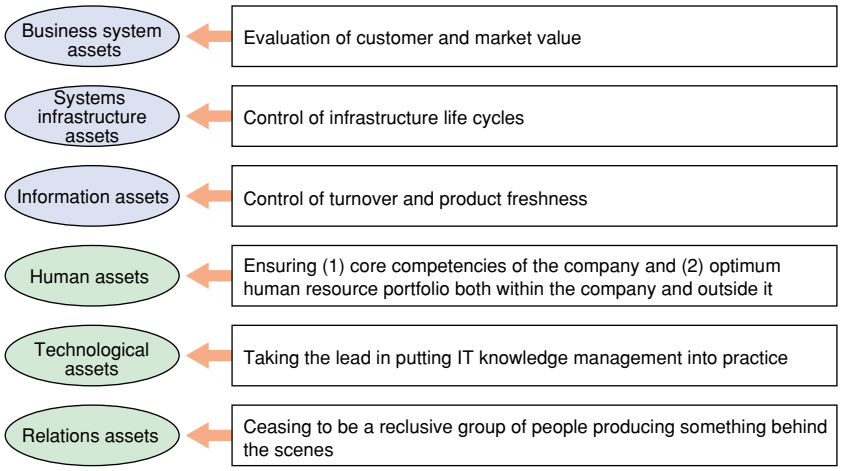
The following three points are important when it comes to managing a company's systems infrastructure assets:

- Can they be used to develop a business outside the company? (A company's systems infrastructure must be compatible with other systems, data and hardware—both inside the company and outside.)
- How modularized are they? Can the systems infrastructure as a whole be used over a long period by replacing individual modules when they become obsolete?
- As a result of technological innovation, systems products are becoming ever cheaper, ever more powerful and ever more energy-efficient. Can the performance of the company's systems infrastructure be maintained at a high level by using such products?

(3) Information assets

Information is a perishable product. No matter how much information a company can provide, no one will want to buy it if it is old and useless. The company needs to constantly test its hypothesis of what constitutes the best

Figure 3. Six Main Types of IT Asset Management



product line by using POS data (in this case, data for accessing information) to check the turnover and freshness of its information—just like any other product.

(4) Human assets

A company needs to have staff members with core skills who will be able to keep its systems operational. These staff will form the core of a group of specialists (its human portfolio) from both within the company and outside that will provide exactly the skills that it needs.

The systems department should not consist of specialists who cannot work anywhere else, be it either inside or outside the company. The company should also make full use of the best outside specialists.

(5) Technological assets

The systems department should take the initiative in putting IT knowledge management into practice. Many systems departments use technology and information systems that only a handful of specialists can understand and access. This kind of specialist knowledge needs to be put to use by the organization as a whole rather than just individuals.

(6) Relations assets

Systems departments should stop being obscure groups of people that simply manufacture data. They need to form networks of specialists from both within the company and outside and become organizations where everyone involved can cooperate openly.

VI The Main Aspects of IT Process Management

System process benchmarking is a method for improving the quality (Q), cost-effectiveness (C) and delivery times (D) of the business processes involved in managing information systems.

There are five main IT processes, the main aspects of which are as follows (Figure 4):

(1) Planning complete and component systems

As the focus of systems development shifts from rationalizing existing clerical procedures to creating new business opportunities, business requirements and systems requirements are changing ever more frequently and it is becoming increasingly difficult to predict investment returns.

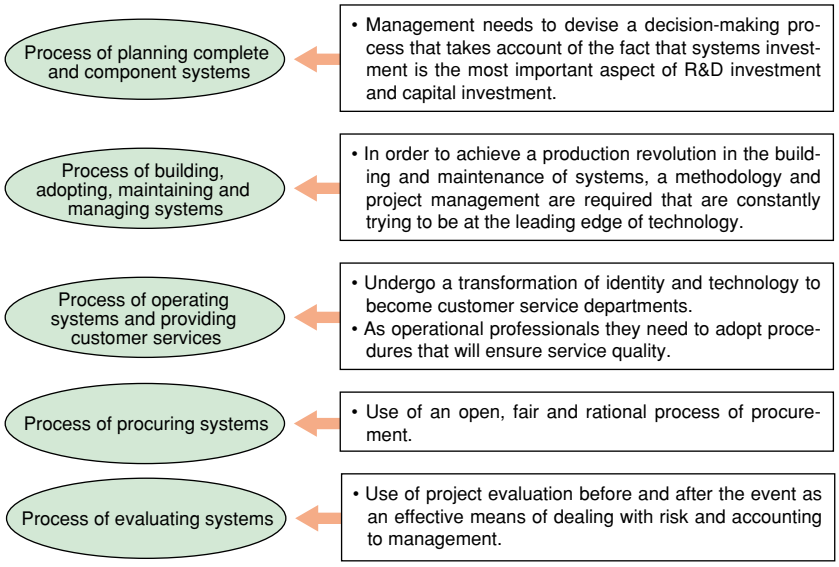
Systems investment needs to be seen as the most important aspect of a company's R&D investment and capital investment. Management needs to collaborate with its systems department and user departments in devising a rational decision-making process that will enable investment to be focused in particular areas based on an overall assessment of risk and return.

(2) Building, adopting, maintaining and managing systems

Actual IT processes need to be reviewed in the light of advances in the technologies for business systems and systems infrastructure.

- The technology for building business systems has shifted its focus from function design to data design and object orientation, and the advantages of each approach need to be distinguished when considering the characteristics of each information system.
- The technology for systems infrastructure has moved from mainframes to two-layer client-server systems, three-layer client-server systems, and Web-based, three-layer client-server systems. Here, too, the different technologies need to be distinguished when considering the characteristics of each information system.

Figure 4. Five Main Types of IT Process Management



• Systems also need to be built so that they can be used with package solutions such as enterprise resource planning (ERP).

Therefore in order to achieve a production revolution in the building, maintenance and management of systems, a methodology and project management are required that are constantly trying to be at the leading edge of technology.

(3) Systems operations and user services

As distributed network systems have come to dominate information systems, the focus of operational services has shifted from data centers to users and there has been a rapid increase in the scope of systems operations.

Systems operation departments need to give up their traditionally reclusive existence in data centers and undergo a transformation of identity and technology to become customer service departments. As operational professionals they also need to adopt procedures that will ensure the quality of such services.

(4) Systems procurement

As companies rely increasingly on each other for outside resources, systems procurement is becoming less and less an ancillary service of systems-building and more and more a process in its own right.

The request-for-proposal (RFP) form of open tender should be used more as an open, fair and rational process of procurement in a wide range of areas, including hardware introduction and systems-building.

(5) Systems evaluation

Traditionally, this process has not been explicitly managed. The vague approach to systems evaluation that was used—be it to evaluate the systems department as a whole or particular systems projects—made it difficult for management to know exactly how information systems were being used and caused considerable dissatisfaction among user departments. As a result, systems departments lacked an incentive to innovate.

Systems evaluation should comprise the following three aspects:

• Evaluate—from a management perspective—how information systems contribute to the company.
• Evaluate—from the viewpoint of user departments—how effective information systems are.
• Evaluate—from the perspective of the systems department itself or the objective viewpoint of an auditor—such things as the quality and efficiency of the company's systems development process.

If there is a risk that an evaluation may lack objectivity or depth because it is a self-evaluation, one solution is to use an external evaluator.

VII New Role for Systems Departments

As systems departments will have an increasingly important role to play as providers of IT services to user departments within the same company as well as to user companies within the same group, those systems specialists that cannot keep up with advances in technological innovation will fall by the wayside.

Furthermore, in the area of IT management, systems departments are playing an increasingly important role not only in building information systems and providing information services, but also in disseminating information and knowledge assets throughout the company, developing new businesses by means of IT, and changing the way the company does business.

Whereas systems departments used to comprise three different functions—systems planning, systems development and systems operations—these functions are likely to develop in the following new directions. (See Figure 5.)

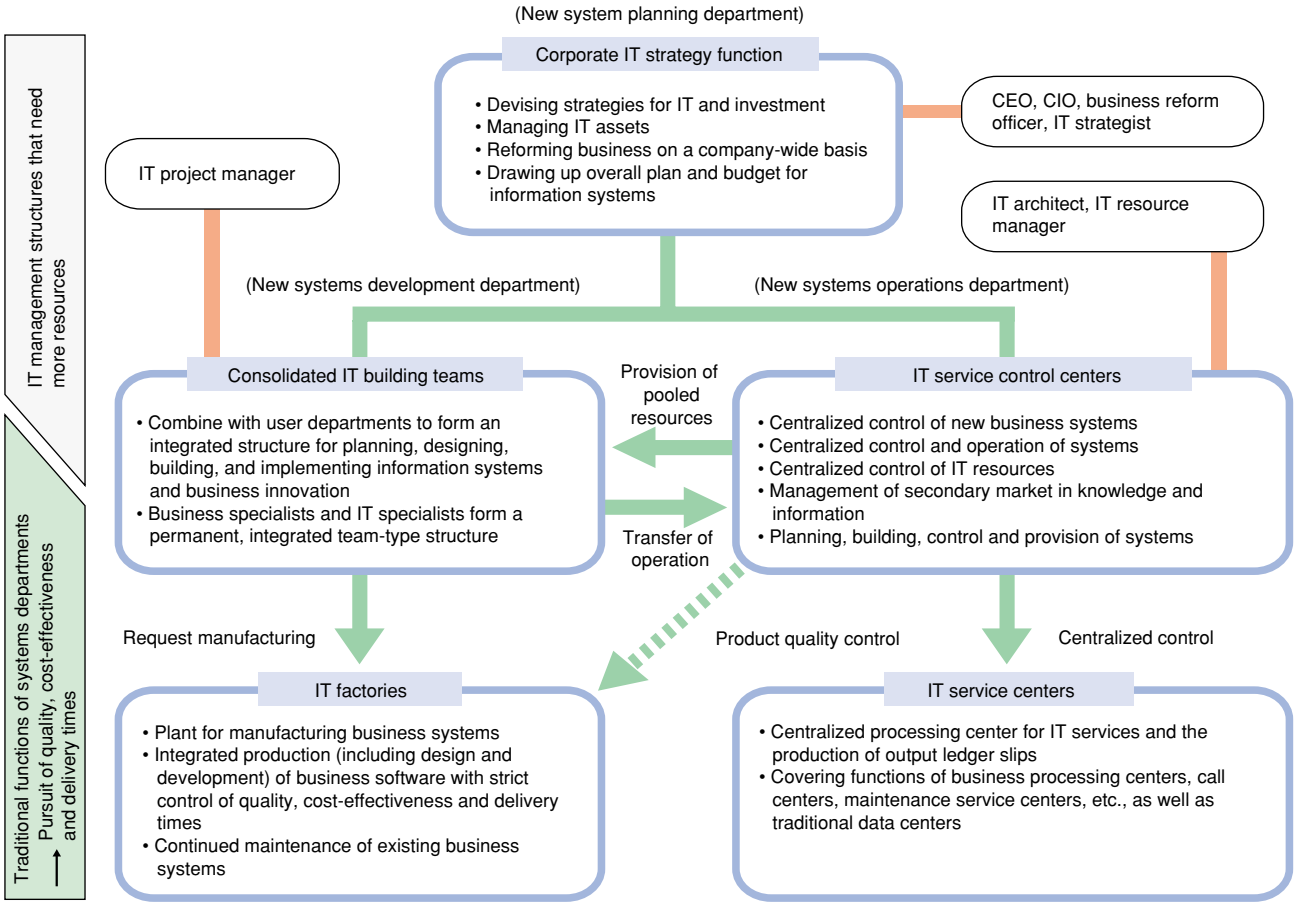
The role of systems planning will expand to devising an IT strategy that will form an integral part of corporate strategy and in accordance with which IT will be managed. It will also be responsible for carrying out business innovation throughout the company and play a key part in the corporate function within the group.

Systems development, on the other hand, will branch into two distinct formats: (1) "consolidated IT building teams," consisting of staff from both the systems department and its various user departments, to enable the company to carry out projects aimed at integrating business and information systems at any time; and (2) "IT factories," serving as systems-building centers.

Systems operations will also branch into two functions: (1) "IT service control centers" in overall charge of IT resources and, under their control, (2) "IT service centers" with operational responsibility for everyday services. These IT factories and IT service centers will face tough competition from outside providers of similar services when it comes to quality, cost-effectiveness and delivery times.

The IT strategy corporate function, the consolidated IT building teams, and the IT service control centers will be core competencies, determining the company's success or failure. The core staff in each of these areas should therefore be employed and trained within the company itself. Whether that should be the parent company or its IT subsidiary will depend on which is in a better position to employ, train and look after such specialists. These three core competencies are also areas that would benefit from the expertise of outside specialists such as IT strategists, IT project managers and IT architects.

Figure 5. Functional Breakdown of New IT Management Structures



VIII Options for Organizing IT Management

There are two options for organizing IT management: either within a group of companies or outside the group. In the first case, there is a further choice between having the function within the company's own systems department and an IT subsidiary. If a subsidiary is chosen, there is a further choice between one that provides a service exclusively to group companies and one that also provides a service to outside customers. On the other hand, if it is decided to use an outside company, there is a choice between outsourcing particular services, such as information systems-building and operations and total outsourcing—i.e., having all information system services (ranging from building to maintenance and operations) provided by an outside company. Selecting from among these various options ultimately depends on what can provide the best service in terms of quality, cost-effectiveness, delivery times, and life cycles.

The decision whether to keep the IT function within the company's own systems department or transfer it to an IT subsidiary will depend on the answers to the following questions:

- Which can provide a higher standard of quality, cost-effectiveness, delivery times, and life cycles to user companies?
- Which can be more competitive in terms of these criteria as an independent information service company?

Some functions, such as information systems-building and operational services, would appear better suited to a subsidiary. However, the argument is not always clear-cut.

When it comes to quality, it might appear better to leave functions such as business design and systems infrastructure design with the parent company. In terms of improving the technological expertise of the subsidiary, however, it would seem preferable to locate these functions there.

Another example is trying to maintain cost-effectiveness and reduce delivery times. A decision has to be made whether the parent company should manage the systems-building project and use staff from its subsidiary to carry out the work, or give the subsidiary responsibility for all aspects of the project. As far as encouraging the subsidiary to stand on its own feet, easing the burden on the parent company's management, and avoiding duplication of functions within the group are concerned, it would be better to give the subsidiary responsibility for all as-

pects of the project. However, any decision will ultimately depend on what the subsidiary is actually capable of.

As to whether the IT management function should be located within the group or outside it, the determining factor should be which option will produce a higher standard in terms of quality, cost-effectiveness, delivery times, and life cycles. For example, if any of the following appear to be the case, it would be a good idea to use outside expertise:

(1) The necessary quality and level of technology cannot be consistently achieved within the group (a quality consideration).
(2) It is less cost-effective to provide the service within the group (a cost-effectiveness consideration).
(3) The company's own information systems cannot keep pace with the rate at which its business is growing (a delivery time consideration).
(4) The company's fixed assets are likely to become obsolete (a life cycle consideration).

IX Need for Management of IT Subsidiary to Be Decisive

Many IT subsidiaries fall between two stools in that they are capable neither of providing group customers with a satisfactory service in terms of quality, cost-effectiveness, delivery times, and life cycles nor of competing on their own outside the group. As companies are increasingly being managed at group level, any group member with a high cost base will find itself under increasing pressure from group customers to reduce costs, while any group member with low profitability will find its very existence within the group threatened.

One approach would be to consolidate all systems assets both within and outside the group (business systems, systems infrastructure, information, human resources, technology and relations) in one organization and to try to establish it as an independent information service company. This would be an opportunity to try (1) to achieve those things that were not achieved when the organization was split up (and an IT subsidiary was formed), (2) to consolidate all the group's IT staff in one new company, and (3) to restructure the spin-off as a company that non-group companies will view as a desirable business partner.

Another approach would be to downsize the company's own information service operations so that only the most essential services are still provided in house while all other services are provided by other companies. Unfortunately, these would appear to be the only two options currently available.

In the case of the first option—that of consolidating all systems assets in one organization and trying to establish it as an independent information service company—the new company would aim at offering a high level of service in terms of quality, cost-effectiveness, delivery times, and life cycles so as to be capable of competing with other information service companies. And it would have to do so with the knowledge that it would not be able to fall back on support from within the group if it failed to meet this objective.

In the case of the second option, where ultimately most of the company's IT functions may have to be outsourced, the company may decide to retain only the following limited IT capabilities:

- Those system maintenance staff that outside companies cannot take on.
- The staff needed to deal with any emergency that might occur.
- The staff needed to undertake the minimum number of regular group development projects.

X Qualities Desired in an Outsourcing Supplier

The needs of companies outsourcing information systems are changing. (See Figure 6.) At one time, the main reasons for outsourcing were (1) to reduce the total cost of information systems by using outside resources as part of a company's overall efforts to cut costs and use its assets more efficiently, and (2) to convert fixed costs to variable costs. Later, outsourcing was regarded as a means by which companies could focus their resources on core areas by using outside companies to provide the expertise and skills needed in non-core areas. More recently, outsourcing has come to be regarded as a strategy for creating new value and achieving a business speed that would not otherwise be possible.

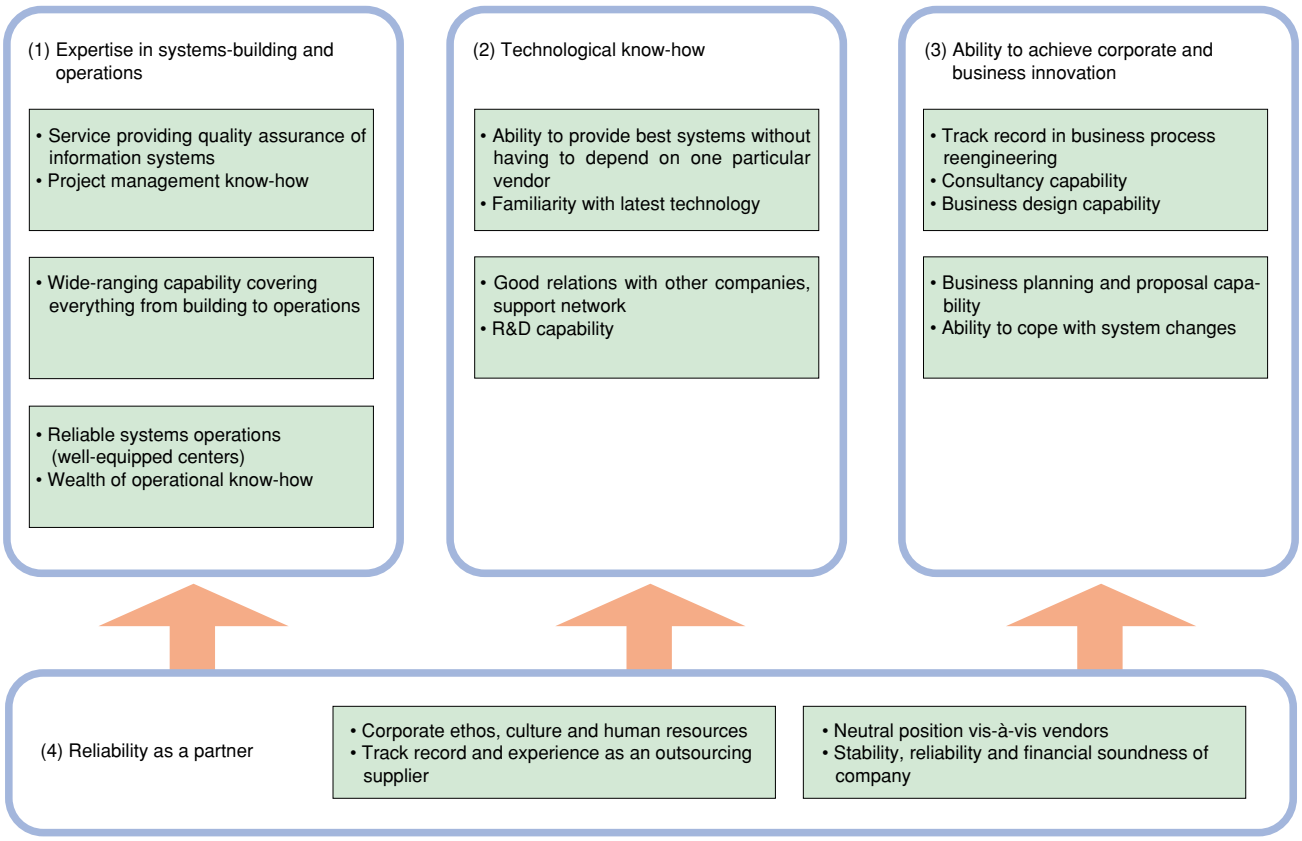
Different aims will require different types of outsourcing companies—i.e., outsourcing suppliers. An important short-term consideration for a company looking to slash its systems costs and restructure its human and other assets involved in information systems is whether any outsourcing supplier is willing to take on that company's existing hardware and staff.

These days, companies often adopt a policy of strategic outsourcing, whereby a partnership with an outsourcing supplier can almost overnight enable their systems departments to acquire new IT skills and undertake systems-building projects of a scale and scope that previously would have been inconceivable. In such cases, the outsourcing supplier has to be able not only to build systems, but also to use IT to achieve business innovations and create new business models.

When choosing an outsourcing supplier as a partner with which to build its systems and achieve business innovations, a company must make sure that the outsourcing supplier satisfies the following criteria.

First, it will obviously have to have the expertise needed to build and operate information systems. In particular, Japanese companies lacking experience in project

Figure 6. Qualities Desired in an Outsourcing Supplier



management should think twice about opting for a non-Japanese outsourcing supplier, as these tend to try to limit their responsibility by means of the outsourcing contract.

Companies should also make sure that the outsourcing supplier is not only familiar with the latest hardware and software technology, but is able to choose the most suitable combination of open products to meet the customer's system specifications without relying too much on one particular vendor.

Furthermore, outsourcing suppliers should ideally be able to offer a consultancy service for business innovation. It would be risky to ask an outsourcing supplier to design and build systems when it did not have the know-how to (1) carry out a thorough analysis of how information systems can be used to change a company's business and (2) design the necessary systems.

An outsourcing supplier must also be trustworthy enough to be a business partner. Outsourcing is rather like marriage in the sense that for every company there should be an outsourcing supplier to match. Companies should therefore bear the following points in mind when choosing an outsourcing supplier:

- Will it be possible to have an equal relationship with the outsourcing supplier?
- Will the two corporate cultures be compatible?
- Is the outsourcing supplier well established and likely to be around for a long time?
- Is the outsourcing supplier independent—especially of any particular vendor?

XI Outsourcing as an Offensive Strategy

As well as having a major impact on a company's future, outsourcing also has a major impact on the staff involved. It is therefore only to be expected that any proposals for outsourcing will have both supporters and opponents within the company. Any company that tries to base a decision on whether to outsource on a bottom-up consensus will find it very difficult to reach any decision as each employee stands to be affected in different ways. The decision-making process should therefore be divided into several stages. Once the CEO has made a decision, the agreement of other key persons should be sought, and work on the project should advance slowly but surely.

However, no matter how carefully any decision on outsourcing is made, the systems department will be wondering whether it can really entrust the work to the outsourcing supplier. Similarly, user departments will be wondering whether the new arrangements will be less flexible and less convenient than the existing ones, while management will be wondering whether the costs in terms of human and financial resources will be justified and whether the company will be able to deal with any unforeseen circumstances.

Unless a precise action plan is produced to address these concerns when the concept is being planned and an outsourcing supplier chosen, and a consensus reached within the company, there is a risk that these concerns

could reemerge when an implementation plan is drawn up and work actually starts, which could bring the outsourcing project to a standstill.

The role of the CIO with regard to outsourcing is an extremely delicate one. On the one hand, as a member of the management team the CIO will have to (1) assess objectively the extent to which the company's information systems are able to deliver what management expects and (2) procure resources from the most cost-effective source—whether it be within the company or outside it. On the other hand, as the head of the systems department the CIO will also tend to act conservatively to avoid surrendering any authority and to protect the jobs of systems department staffers.

This is where it is important for the CIO to take a fresh look at outsourcing and to view it as an offensive strategy.

Recently outsourcing has come to be seen very much in a positive light as a means of raising the level of information technology in a company almost overnight by optimizing the synergies that exist both within the company and outside it. At the same time, however, it is difficult for any CIO not to continue to consider outsourcing in a negative light as a restructuring tool for rationalizing the company's systems assets when all other means have failed.

Even if outsourcing is to be used mainly as a means of rationalizing a company's systems assets, the company still needs to improve its ability to use information systems as a business tool. It is the job of the CIO to take the initiative in adopting this strategic approach.

CIOs also need to remember that they are responsible for their company's IT assets. They have been put in charge of them by the CEO and must ensure that the service user departments receive the required standard in terms of quality, cost-effectiveness, delivery times, and life cycles. If simply operating the company's existing assets is not enough to provide the performance expected and the use of outside resources promises to achieve this, it is the CIO who should suggest the use of outsourcing as an offensive strategy before being asked to do so by management.

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