

**Solutions Services
to Promote Business Innovation
in the Manufacturing Industry**

NRI Production-Goods Core Team

Nomura Research Institute

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Solutions services (i.e., comprehensive outsourcing of business processes) have started to expand. As a matter of fact, companies offering solutions services such as logistics solutions services provided by ALPS Logistics have started to emerge. The key to the solutions service business is the ability to identify the challenges confronting a customer and to design appropriate solutions. This ability essentially comes down to a wealth of experience and "user know-how" that has been accumulated in a wide variety of fields. As company scale can work as a positive factor, major manufacturing groups with diversified work processes have a high potential to provide competitive solutions services in the broader market. "Market testing" and "pilot project" can be methodologies to re-evaluate the competitiveness of a company's own business operations. These evaluations often reveal a company's hidden and valuable user know-how in non-core business operations (we call this "peripheral competence"). Moreover, designing solution services enables them to analyze the resources within their own company and the group companies. It also guides them to seek opportunities of selling such solution services and/or outsourcing some operations to adopt solution offered by other companies. In other words, large manufacturers can develop new businesses by selling in-group work processes and/or improve cost competitiveness by outsourcing some operations. Furthermore, the combination of these strategies can serve as indices in making selections and concentrating efforts in core operations in the course of group management.

I Solutions Services: The New Business Opportunities for Manufacturing Industry

Nomura Research Institute, Ltd. (NRI) has long been advocating solutions services as “a new type of business that offers the functions needed by a customer through combining engineering, finance and operations in order to acquire added value from such functions.” (See “Foreign Capital Participation in Reconstructing Business Models,” *Knowledge Creation and Integration*, August 1999 and “Arbitrage-Type Business Models: An Innovative Strategy for Large Companies,” *Knowledge Creation and Integration*, May 2000.)

Indeed, the solutions service business is recently becoming more important under the environment described below. In addition to the long-term economic recession, it becomes increasingly difficult to differentiate one’s own company from competing firms in terms of products and technologies, moreover the profitability of each company within any major manufacturing group has started to slide. In an attempt to overcome this severe management difficulty, many companies at the very least are pursuing either “restructuring their cost structures” or “acquiring new revenue sources.”

Specifically, the former approach is addressed through cost reductions by utilizing solutions services in many cases. For the latter, there are many companies that develop solutions services utilize existing in-company

resources as the foundation for developing new business. In other words, each company within a major manufacturing group can use a single solutions service as a means of restructuring cost structure, while at the same time, as a means of creating a new source of revenues by offering such service to other companies.

This Janus-like approach stems directly from the characteristics of the solutions service business, where the key to success is the ability to identify the challenges facing a customer and to design appropriate solutions. These skills essentially depend on the know-how that has been accumulated in a wide variety of fields. From this viewpoint, major manufacturing groups that contain diversified work processes within themselves have a strong potential to establish highly competitive solutions services.

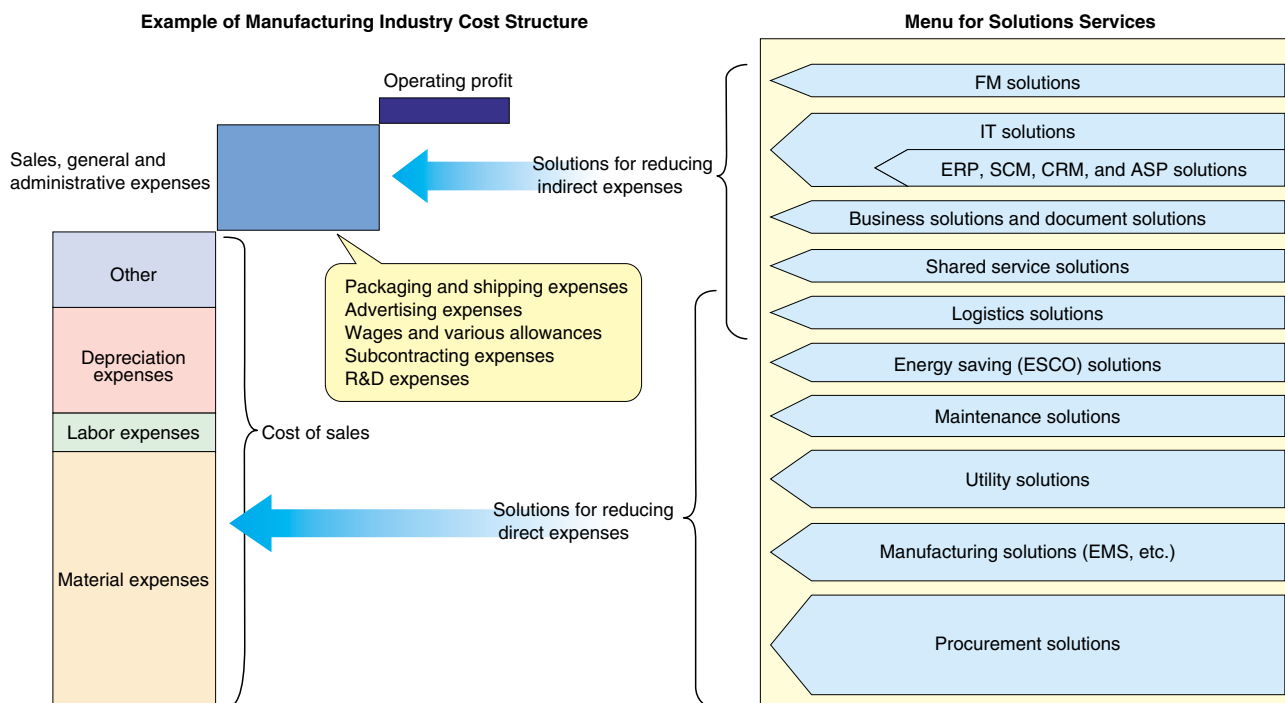
II Progress in Providing Solutions Services

A company can reduce operating costs by outsourcing certain business process in the form of solutions services that a solution provider supplies all necessary equipments and human resources as well as financing.

Figure 1 shows an example of the various costs of general manufacturers and a typical solutions services menu that addresses each of these expense items.

As stated previously, major manufacturing groups are the most likely customers of the solutions services, at the same time, they also contain the potential ability

Figure 1. Menu of Solutions Services Enabling Cost Reductions



Notes: ASP = application service provider; CRM = customer relationship management; EMS = electronics manufacturing service; ERP = enterprise resource planning; ESCO = energy service company; FM = facility management; IT = information technology; SCM = supply chain management.

to provide solutions services themselves. Actually, there are not a few cases in which subsidiaries recognized as non-core function and spun off by manufacturers are expanding the solutions service business by enhancing such functions. The following section looks at cases in which major manufacturing groups have actually embarked on solutions services.

1 Equipment Solutions Services by Asahi Engineering Co., Ltd.

One noteworthy example involves the move by Asahi Kasei Corporation to spin off its engineering and maintenance divisions, which had been positioned as non-core functions, as part of a business structural reform to ensure the corporation's competitiveness. The divisions re-emerged as a subsidiary known as Asahi Engineering Co., Ltd.

Of course, the spin-off of an engineering division by a manufacturer hardly represents a novel event in the manufacturing industry. In this case, however, Asahi Kasei also spun off its maintenance division, enabling the start-up of a maintenance solutions service. Such operations are essentially an outsourcing business that accepts orders for overall equipment maintenance work, from determining the maintenance plans to implementing the on-site work.

Since the time Asahi Engineering started operating as a functional subsidiary of Asahi Kasei, it has developed a product and service menu that includes a planned maintenance support system and advanced equipment diagnostic services on the basis of the expertise and know-how it had accumulated in the process-based manufacturing industry (such as that of Asahi Kasei), and has steadily expanded its sales of such products and services to outside customers. This is mainly because the process-based manufacturing industry requires more advanced equipment diagnostic skills than those required in the batch-based (as represented by pharmaceuticals and food) and the assembly-based (such as automobiles and electric household appliances) industries.

2 Logistics Solutions Services by ALPS Logistics Co., Ltd.

ALPS Logistics Co., Ltd. is a logistic subsidiary of ALPS Electric Co., Ltd. Initially, the company focused on handling distribution orders by specializing in electronic components for ALPS Electric group companies. Drawing on its strengths in physical distribution know-how concerning electronic components (e.g., air-conditioning controls, electrostatic inventory monitoring devices, and handling methods during transportation and deliveries), ALPS Logistics was quick to embark on the sales of shared physical distribution service to other companies.

ALPS Logistics is now providing logistics solutions service to more than 70 percent of the approximately

1,800 companies (component manufacturers, OEM makers and trading firms) in Japan's electronics industry, with more than 50 percent of its revenues coming from companies outside the ALPS Electric group. As a result, the company is maintaining an extremely high profitability among physical distribution companies, chalking up an operating profit ratio of about 10 percent.

While physical distribution work in the manufacturing industry is generally considered a non-core operation, ALPS Logistics presents a typical example of developing a new and highly profitable business by utilizing the know-how accumulated within the group as its core strength.

3 OMRON's Shared Solutions Services

OMRON Corporation's CSB (Creative Services Business) company is providing outsourcing services that accept orders for various management and indirect operations—such as accounting and personnel affairs—from a wide range of businesses and companies. This operation was started with the evolution of shared services that promote the reduction of overall costs through consolidating common management and indirect work among group companies. It was based on an in-house operations reform designed to both “review business procedures and cut clerical costs by reducing the number of employees” and “create a business that accepts orders for clerical work from other companies.”

As a result, the number of employees engaged in overhead work was reduced from 800 to 300, and the clerical division that was formerly a cost center has become a profit center, and constitutes the core operations from which the outsourcing business evolved. Five hundred employees who were subject to restructuring are now engaged in the outsourcing business and support services through expanding the scope of the target operations which range from conducting work surveys to accepting orders for consulting and outsourcing.

4 IT Solutions Services by NS Solutions Corporation

Nippon Steel Corporation began searching for comprehensive approaches to new business operations as the shadows over the once booming steel industry began to darken in the years following its sales peak in 1980. At that time, some 2,000 system engineers and 1,200 electronic control engineers were working within Nippon Steel Corporation, whose huge mills were operated on an almost unattended basis. For example, the information and database system of the company's Kimitsu mill in Chiba prefecture was equivalent in complexity and processing capacity to that of the JR (Japan Railway Company) nationwide train ticket reservation system.

The various ways in which user know-how was utilized include financial systems and SCM (supply chain management) programs. In addition to such obvious similarities as the common elements in the underlying knowledge base, the options valuation method used for risk management in the financial field and the heat equation applied in steel mill control systems bear a striking resemblance. Moreover, the know-how that incorporates the intuition and experience accumulated as an IT (information technology) system user could be utilized for the financial system business as well.

At the same time, the ARMA (auto regressive moving average) algorithm that is used for demand forecasts (a core feature in SCM) is also employed to measure the temperature of molten steel and ingots in the steel manufacturing process. Accordingly, it was easy for system engineers in steel mills to understand the mechanisms behind demand projections for food and diapers.

Furthermore, NS Solutions has generated greater advantages within its own company by adopting systems designed for steel mills and SCM methodologies that have been enhanced through trial and error in other industries. This illustrates a good example of outside sales in which a company could derive the benefits of selling its own business operations twice (e.g., a profitable spin-off of business operations and the adoption of improved processes internally).

5 ERP Solutions Services by Hitachi Zosen Information Systems Co., Ltd.

Hitachi Zosen Information Systems integrated ERP (enterprise resource planning) systems for its parent company (Hitachi Zosen Corporation), and developed the necessary templates for introducing ERP in other industries such as construction work and engineering. There had been no cases in which ERP had been successfully adopted by such industries in the past because of the difficulties of customizing the process to accommodate the myriad of variables.

On the basis of this template and its own experience in introducing ERP within Hitachi Zosen, Hitachi Zosen Information Systems has been able to expand ERP sales to other companies in various industries. And by jointly introducing the system with Hitachi Zosen, it has been possible to fully understand the work processes in order-receiving industries and facilitate the successful customization of ERP systems.

III Revaluation of Group's User Know-How and Company Scale

One of the features of Japan's manufacturing groups is an abundance of user know-how accumulated in daily

operations and the large scale of enterprises that include group companies.

1 User Know-How as the Key to Solutions Service Business

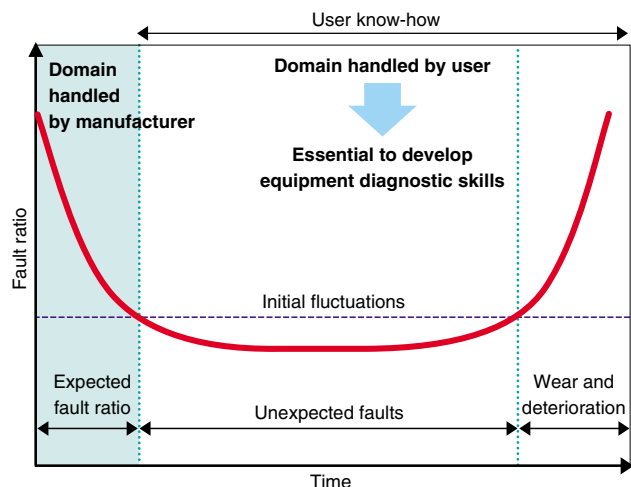
User know-how, the key to the solutions service business, represents the skills that have been accumulated as a result of designing and implementing daily operations as a user. As seen in the previous examples, there are not a few cases in which this know-how is amassed by non-core functions and/or a company's non-core operations.

In order to illustrate the image of user know-how in greater detail, let's consider again the equipment diagnostic skills that constitute the key to the maintenance solutions service mentioned above. These diagnostic skills include the ability to identify the deterioration of equipment by collecting and analyzing equipment operating data and by making best use of the five human senses, and to establish the required maintenance measures at the required timing.

The scope of the work carried out by equipment manufacturers and engineering companies covers the minimization of initial fluctuations that occur at the introductory stage of equipment, as indicated in the bathtub curve shown in Figure 2. However, a maintenance solutions service that positions minimizing maintenance costs over the entire lifecycle as added value needs to identify the timing for wear and deterioration that occurs at a latter stage in the lifecycle, and must deal with the need for even delaying wear and deterioration timing to some extent.

Equipment manufacturers only assume the functions of dispatching supervisors at the time of legal inspections once the equipment is delivered to the user and the initial fluctuations of the equipment are stabilized. While this may sometimes include functions to supply service components, they rarely observe the actual operating status of the equipment they have supplied.

Figure 2. Bathtub Curve and User Know-How



Accordingly, they are unable to marshal the skills to identify equipment wear and deterioration.

In order to accrue such skills, it is necessary to operate and inspect the equipment every day. Asahi Engineering was able to acquire these diagnostic skills in the course of implementing these operations in the business offered to the parent company, and could achieve success by extensively utilizing these skills in sales to outside companies.

2 Company Scale as the Basis for Initiating Solutions Service Businesses

Adding the factor of company scale to user know-how could accelerate the start-up of solutions service businesses and significantly contribute to improve profitability. In other words, when some operations are started as a solutions service, the new company can turn to already existing customers within its own company group for the relevant service. This fact clearly functions as a strength of the company.

In recent years, there has been a trend towards valuing pure management as an art that does not need accompanying assets. This means the focus is not on owning assets and minimizing human resources as much as possible, but on concentrating on management. In the case of a solutions service business, however, there are cases in which owning assets conversely works as an advantage.

For example, there are bottling firms that offer solutions services in the beverage industry. They are contracted to carry out the production and packaging process by companies that own the brand name and production rights to a type of soft drink, capitalizing on their know-how in an attempt to realize low costs and clean manufacturing. While the brand owner is pursuing pure management without an asset base, bottling firms maintain competitiveness by having access to a state-of-the-art bottling factory. In some cases, a successful bottling company can purchase the factory of a brand owner with a less than satisfactory operating rate and consider expanding the business by utilizing surplus capacity through accepting bottling contracts from other companies.

3 Revaluation of User Know-How and Company Scale

The evaluation of company resources in the development of a solutions service business sometimes results in mistaken conclusions because of ambiguity in distinguishing between strengths and weaknesses. There are many companies that accept the concept that “strong functions = core functions” almost as an axiom. On the other side of the coin, they all too often take the view that “non-core functions = weak functions.”

Essentially, however, strong functions mean those that can maintain their predominance even if they are

sold off to other industries or other businesses—a criterion that does not necessarily match core functions. Conversely, there are many cases in which great treasures can also be found hidden in non-core functions.

Hence, any decisions that are made for outsourcing non-core functions by following a hard-and-fast rule may result in nipping a potentially valuable source of revenue in the bud. In contemplating any redesign of business operations (whether for in-house improvements or outside implementation), there is the need to promote the evaluation of resources by including a consideration of whether or not the relevant functions can demonstrate their strength when sold off—rather than whether or not the relevant work is part of the company’s core functions.

Judging from the experience acquired by the NRI Production-Goods Core Team through discussions with a number of manufacturing groups, business operations that are replete with acquired user know-how are generally seen as simply too quotidian for these companies, and are not considered something that a company may want to boast about. Furthermore, they tend not to think that such operations can be sold to other companies as a solutions service.

Business operations that can be competitive in the market when sold to outside companies generally have the characteristics indicated in Table 1, and the sources of such competitiveness can be broadly classified into “economies of experience” and “economies of scale.”

Regarding the economies of experience, knowledge and user know-how that is difficult to formalize until they actually implement it can be a strength. As is clear with the experience of NS Solutions, there are surprisingly many cases in which such knowledge and know-how can be applied to other types of business.

And the economies of scale tell us that existing customers in a their own group for the relevant service and a certain company scale function as a strength.

IV Potential of Solutions Service Businesses

1 Solutions Service Businesses Meriting Attention

The NRI Production-Goods Core Team gives particular attention to the seven solutions service businesses presented in Table 2 as operations that manufacturers can market to other companies by capitalizing on their user know-how. Any of the seven businesses has an extremely large potential market, ranging from about ¥1.7 trillion to about ¥50 trillion. As we believe there is a high possibility that these businesses will actually emerge in the future, we conducted questionnaire surveys in July 2002 focused on listed manufacturers to ascertain whether such solutions services have been introduced

Table 1. Characteristics of Marketable Operations by Capitalizing on a Company’s User Know-How

Features of Operations		Source of Competitiveness
Economies of Experience	Operations for which cost reductions are possible by utilizing the know-how knowledge base	<ul style="list-style-type: none"> • Existence of extensive database on suppliers and subcontractors (including informal suppliers) • Know-how on procurement and negotiations with suppliers and subcontractors
	Operations for which diagnoses and decisions difficult to formalize are required	<ul style="list-style-type: none"> • Know-how on equipment diagnoses, energy saving diagnoses, physical distribution diagnoses, and work flow improvement diagnoses
	Operations whose lifecycle costs largely change depending on the quality of cost management	<ul style="list-style-type: none"> • Identifying equipment lifecycle costs • Knowledge on optimal equipment maintenance intervals
	Operations whose lifecycle costs largely change depending on the quality of risk management	<ul style="list-style-type: none"> • Identifying the frequency of trouble incidence in the relevant operations and the degree of seriousness
	Operations whose lifecycle costs largely change depending on the quality of resource allocation	<ul style="list-style-type: none"> • Know-how on inventory management • Know-how on labor management
	Operations that take time in developing personnel and acquiring qualifications	<ul style="list-style-type: none"> • Maintenance skills for rotating machines. • Existence of legal qualifications (energy supervisor, etc.)
Economies of Scale	Operations for which volume discounts are possible	<ul style="list-style-type: none"> • Procurement of fuel and expendables
	Operations for which cost reductions are possible through improving the operating rate (personnel and equipment)	<ul style="list-style-type: none"> • Customer outreach service by personnel already assigned to own company operations • Meeting the production fluctuations of a customer, which is made possible by having a number of customers (in terms of personnel and equipment)
	Operations for which cost reductions are possible by sharing best practices	<ul style="list-style-type: none"> • Sharing the best practices among the sites, which is made possible by having a number of customers

and what improvements have been brought about following their introduction.

The surveys revealed a high incidence of introducing logistics solutions and manufacturing solutions (see Figure 3). Surveys that queried intentions to introduce such services in the future showed high percentages for shared service solutions and logistics solutions. More companies opted for contracting with outside vendors than with affiliated companies. This would suggest that high expectations are placed on outside professional solutions service vendors.

2 Needs of User Companies for Solutions Services

Among the advantages for introducing solutions services, reducing total costs naturally comes first. Close behind this, respondents also highly valued the ability to shift overhead to variable expenses, the improved maneuverability in terms of production volume and the need for highly professional technology (Figure 4).

With respect to utility solutions, many opinions voiced during the interviews that NRI conducted with user companies in the summer of 2002 pointed out that too much effort was needed to develop and continuously maintain qualified chief electrical engineers and energy supervisors within their factories. Partly for this reason, many users selected vendors that offer EPC (engineering, procurement, construction), leasing, O&M (operations and maintenance), fuel procurement and the dis-

patch of chief electrical engineers as a package for power generators in introducing cogeneration systems.

V Revaluating a Company’s Own Business Operations through Designing a Pilot Project

1 Core Competence and Peripheral Competence

The utilization of user know-how and company scale as a new differentiation axis is coming into greater focus. In response to this new trend, cases are starting to emerge in which, as noted above, non-core operations can be positioned as the core of a new business, in addition to using core competence as a source of its competitiveness. The strength inherent in these non-core operations is what we have called “peripheral competence.”

The competitive strategies vary in accordance with combinations of the presence or absence of strength in core business operations (core competence) and strength in non-core operations (peripheral competence), as indicated in Table 3. The five cases mentioned above can be categorized as a diversification approach capitalizing on peripheral competence in addition to core competence.

Aso Cement Co., Ltd. (a privately held company) changed its firm name to ASO Corporation on July 1, 2001 and spun off its cement-related business into a

Table 2. Seven Solution Services Meriting Attention

Solutions Service	Outline	Source of Competitiveness		Potential Domestic Market Scale
		Economies of Experience	Economies of Scale	
Procurement Solutions	Centered on eMarketplace that handles ordering transactions, and in which buyers, suppliers, commerce service providers (financial institutions, physical distribution companies) and related parties are linked to support cost reductions in purchasing indirect goods, parts and components.	<ul style="list-style-type: none"> • Extensive supplier database • Know-how in placing orders and negotiating with suppliers 	<ul style="list-style-type: none"> • Volume discounts • Sharing best practices 	About ¥50 trillion
Manufacturing Solutions	Centered on the production of goods, whereby functions such as design, trial production, shipping, repairs and customer support are provided on a comprehensive basis on behalf of manufacturers.	<ul style="list-style-type: none"> • Inventory management know-how • Labor management know-how • Extensive subcontractor database • Know-how in placing orders and negotiating with subcontractors 	<ul style="list-style-type: none"> • Volume discounts • Improving operating rate (personnel and equipment) • Sharing best practices 	About ¥4 trillion ¹
Utility Solutions	Accepting contracts for all functions covering the entire utility equipment lifecycle at factories from procurement to maintenance, operations, and management in order to offer users the reduced total costs for utilities.	<ul style="list-style-type: none"> • Equipment diagnosis know-how • Labor management know-how • Extensive subcontractor database • Know-how in placing orders and negotiating with subcontractors 	<ul style="list-style-type: none"> • Volume discounts • Improving operating rate (personnel and equipment) • Sharing best practices 	About ¥20 ~ 25 trillion
Energy Saving (ESCO Solutions)	Offering cost advantages to users by implementing energy savings measures for buildings and factories. In some cases, a comprehensive service is provided in which energy savings investment is covered within the range of energy cost reductions.	<ul style="list-style-type: none"> • Energy savings diagnostics know-how • Extensive subcontractor database • Know-how in placing orders and negotiating with subcontractors • Cost and risk management know-how over lifecycle 	<ul style="list-style-type: none"> • Improving operating rate (personnel and equipment) • Sharing best practices 	About ¥2.5 trillion
Logistics Solutions	Offering physical distribution operations to client companies (establishing facilities such as distribution centers, O&M, transportation and delivery, etc.) on a comprehensive basis.	<ul style="list-style-type: none"> • Physical distribution diagnostics know-how • Inventory management know-how • Labor management know-how • Extensive subcontractor database • Know-how in placing orders and negotiating with subcontractors 	<ul style="list-style-type: none"> • Improving operating rate (personnel and equipment) • Sharing best practices 	About ¥8 trillion
Shared Service Solutions	Providing such functions as wage calculations, accounting, and welfare from among head-office functions such as personnel affairs, accounting and general affairs. B2E solutions service that offers a portal site for employees through ASPs falls under this category.	<ul style="list-style-type: none"> • Workflow improvement diagnostics know-how • Labor management know-how • Know-how in placing orders and negotiating with subcontractors 	<ul style="list-style-type: none"> • Volume discounts • Improving operating rate (personnel and equipment) • Sharing best practices 	About ¥6 trillion
ERP, CRM, SCM and ASP Solutions	Providing service via the Internet by installing servers for highly general-purpose business packages such as ERP, CRM and SCM in data centers (ASP centers).	<ul style="list-style-type: none"> • Workflow improvement diagnostics know-how • Inventory management know-how 	<ul style="list-style-type: none"> • Improving operating rate (personnel and equipment) • Sharing best practices 	About ¥1.7 trillion ²

Notes: (1) Market size data involve only EMS focused on electronic equipment; (2) size for ERP, CRM and SCM package solutions market, including portion offered through ASPs; (3) B2E = business to employees; O&M = operations and maintenance.

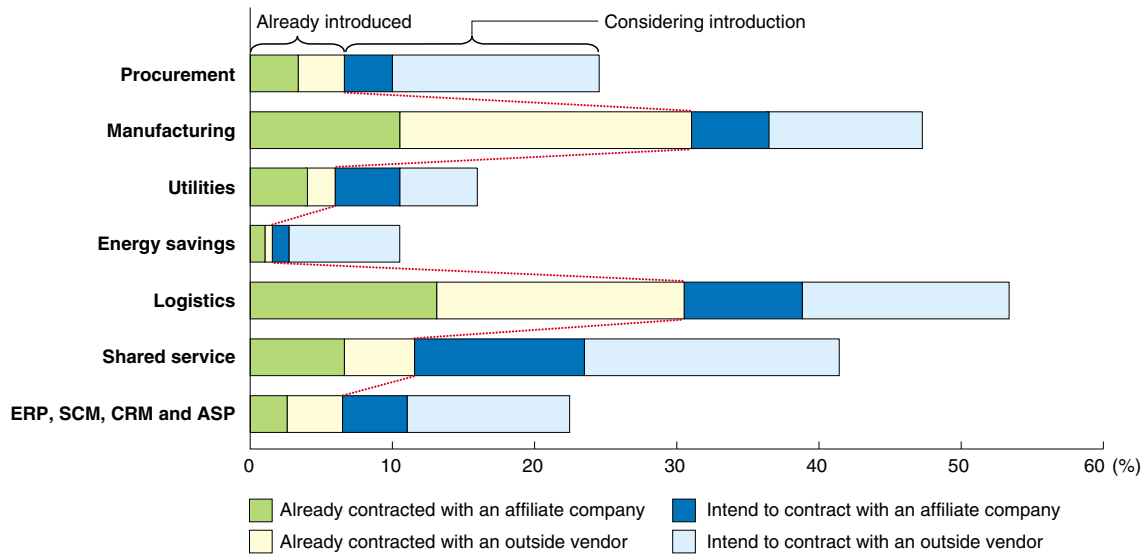
separate company on August 1, 2001. This reflects the company's intentions to reinforce its structure for developing new businesses in sectors such as medicine, welfare, and the environment. This case is considered to represent an approach that falls into the new business development category.

2 Techniques for Revaluating a Company's Own Business Operations

(1) Market testing

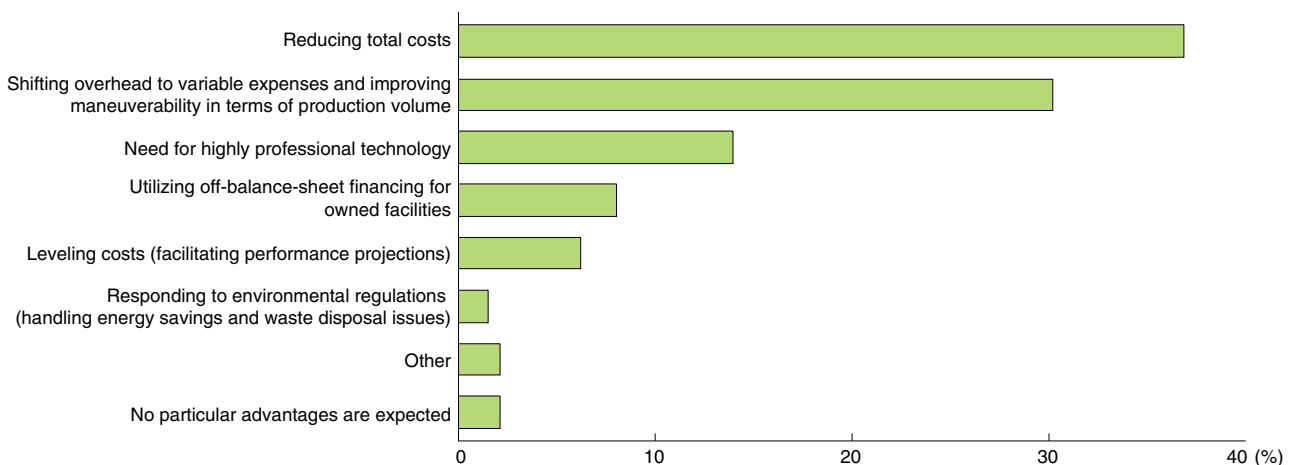
The question of whether or not a company's own business operations can be marketed to outsiders can be

Figure 3. Status of Solutions Service Introductions



Note: Results of questionnaires surveying 1,500 companies (mainly listed companies) in the manufacturing sector (response ratio = 12.3%). Source: "Surveys on Outsourcing Needs in the Manufacturing Industry" (July 2002) by Nomura Research Institute.

Figure 4. Advantages in Introducing Solutions Services



Note: Results of questionnaires surveying 1,500 companies (mainly listed companies) in the manufacturing sector (response ratio = 12.3%). Source: "Surveys on Outsourcing Needs in the Manufacturing Industry" (July 2002) by Nomura Research Institute.

Table 3. Competitive Strategies Centered on Core and/or Peripheral Competence

	Core Functions/ Operations	Non-Core Functions/ Operations	Source of Competitiveness	Competitive Strategies
Diversification Approach	Strong	Strong	Core competence + peripheral competence	Promoting business diversification centered on core competence and also by utilizing peripheral competence
Balanced Approach	Strong	Strong	Core competence	Promoting business development centered on core competence
Core Concentration Approach	Strong	Weak	Core competence	Strengthening competitiveness in terms of costs by outsourcing non-core functions
New Business Development Approach	Weak	Strong	Peripheral competence	Evolving new solutions business spheres by making the best use of peripheral competence
Business Reorganization Approach	Weak	Weak	Seeking competitiveness outside own company	If adequate capital available, acquiring core competence through acquisitions; if well-known brands are involved, selling off the business, etc.

evaluated by the “market testing” method, which compares a company’s own costs with a vendor’s costs. The answer to the question can be determined through the process indicated in Figure 5.

Market testing is a method that has been used up to now to introduce new information systems. Recently, however, some companies have started to apply this method to already operating information systems, factories and plants and utility equipment to determine whether operations should be internally or externally implemented.

(2) Pilot projects

The solutions service business is different from the outright sales model used for sales of equipment and machines or EPC, as it is a model that involves a long-term service contract. Therefore, the actual costs cannot be determined unless the service is rendered for a certain length of time. In some cases, cost comparisons based solely on simple cost estimates may be insufficient for this type of business.

Solutions service vendors often guarantee the upper limit of the costs involved. In many cases, however, whether or not cost advantages can be generated will be determined only when solutions services are actually provided. Accordingly, leading user companies in Japan are trying to verify cost reduction by introducing solutions services to a single division or a single factory in the form of a pilot project. According to the results of interviews conducted by NRI, for example, there are cases in which market testing and pilot projects have actually been implemented as described in Table 4 to determine the effectiveness of utility solutions services.

In the manufacturing solutions area, Sony EMCS Corporation Kisarazu TEC (Chiba prefecture), a production subsidiary of Sony Corporation, is carrying out a pilot project. Nearly 1,000 contractor employees work at the plant on two different production lines for an iden-

tical product item. One production line is contracted to an outside company, while the other line is assigned to regular employees of the plant. The objective of this project is to observe and determine the productivity difference between the two production lines.

VI Business Innovation through Design of Solutions Services

Revaluating a company’s own business operations through the design of solutions services will lead to resolving the following problems that are facing companies in manufacturing groups.

1 Optimization of Group Management by Selection and Concentration

As the focus of the equities markets is shifted to consolidation following the introduction of a consolidated return system, we have moved into an era that requires full-scale consolidated business management, which pursues a whole group’s corporate value by proactively changing the structure of the group itself. Under these circumstances, it will become possible for a business group to optimize group management by selling operations that have a competitive edge to outside companies, and by outsourcing operations that lack a competitive advantage (selection and concentration) through a self-revaluation of the group’s own business operations.

Moreover, the implementation of selection and concentration by manufacturing groups will lead to the reorganization of the entire industry. In such industries as food and beverage production, semiconductors, and electric appliances where solutions services (manufacturing solutions, utility solutions, logistics solutions, etc.)

Figure 5. Market Testing (Opting for Internal Operations or Outsourcing)

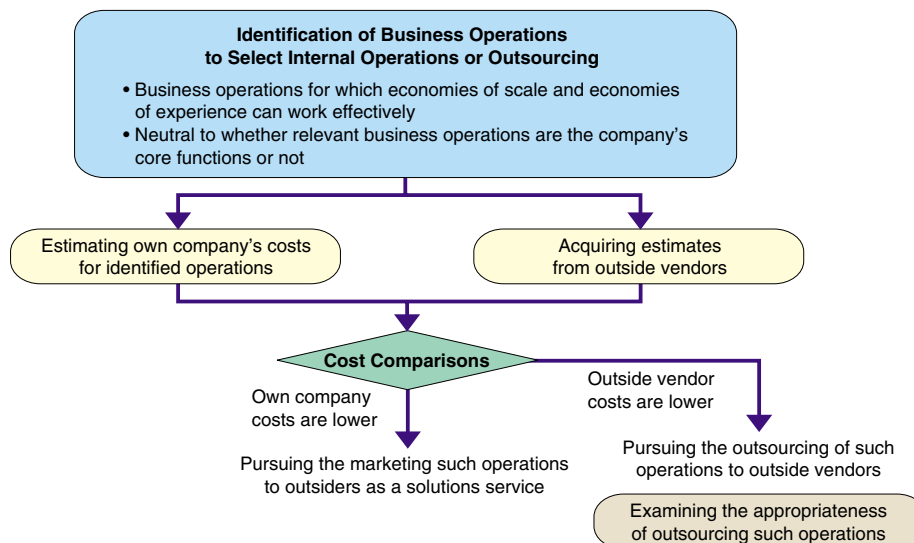


Table 4. Cases of Market Testing and Pilot Projects in Utility Solutions Services

User	Technique	Description
Semiconductor Factory	Market Testing	In response to the increased demand of deionized water, the company compared its own estimates of water distillation costs with those submitted by a vendor of deionized water supplied via taps. The company chose the latter.
Beverage Factory	Pilot Project	A factory located in Kyushu extensively outsourced its maintenance operations for parts of its production lines to a maintenance company. At present, the factory is examining the benefits of cost reductions under this maintenance system.
Automobile Factory	Pilot Project	A company is implementing a pilot project for utility equipments maintenance in some factories in Japan. Tasks are outsourced to a third-party maintenance company to examine the appropriateness of outsourcing such operations. If this project proves attractive results, the company intends to expand the operations subject to outsourcing. As the company considers raising the operating rate of utility equipment as a major issue, expectations are placed on improved performance through outsourcing.

Source: Compiled from interviews with the companies in question.

have been relatively widely introduced, separate players are handling respective functions, such as brand ownership, manufacturing (packers, foundries, etc., through contracted production), electronics manufacturing services (EMS), utilities and physical distribution, although each industry has a different name for each function. A similar reorganization is starting to take place in the pharmaceuticals industry through the adoption of the amended Drugs, Cosmetics and Medical Instruments Act.

Since the economies of scale can work effectively for activities such as manufacturing, utilities and physical distribution as noted above, vendors who successfully develop solutions service businesses for these operations and acquire many brand-owner clients are becoming able to enhance cost effectiveness and achieve a degree of bargaining power over brand owners.

2 Cost Structure Reforms

It is desirable to implement a reform of the cost structure by introducing solutions services into operations that lack strength as determined through the revaluation of business operations. Discussions with a number of companies by the NRI Production-Goods Core Team revealed that the criterion for selecting outsourcing for a company's business operations is whether the outsourcing measures will be able to reduce operating costs by 10 percent to 20 percent below the current level. Actually, vendors who provide solutions services such as logistics solutions or utility solutions often promise to realize somewhat more than a 10-percent reduction in total costs on the condition of securing a long-term contract, and fulfill that promise in many cases.

The advantages of introducing solutions services are not limited to a reduction in total costs. Since the burden of providing the necessary facilities and personal is shifted to the solutions service vendors, equipment investment can be eliminated, which contributes to the leveling of costs. In addition, if a metered rate system is adopted (in the case of logistics solutions service, the rate system is linked to the volume of shipments han-

dled), depreciation and personnel costs—which are categorized so far as overhead costs—will be included in variable costs. These effects will improve the soundness of financial conditions.

3 Creation of New Solutions Service Businesses

If the self-revaluation of business operations within the group concludes that some business fields are competitive, the group can enhance its group-wide competitiveness by marketing the services represented by such fields to outside companies as a solutions service vendor.

The viewpoints in extracting the marketable know-how to outside companies are detailed in Figure 6. The key point is to determine whether or not a company has the user know-how and/or the business scale that can be utilized by examining each function and operation. Based on the results of such examinations, a company can confirm whether its own group has the marketable know-how.

In pursuing its discussions on these issues with a large number of companies not only in the manufacturing but also other industries, the NRI Production-Goods Core Team gives particular attention to the possibility of selling such user know-how as listed in Table 5 to companies outside the particular business group. A large portion of the industries listed in the table falls under the heavy industry category, and this means the possibility of accumulating a variety of user know-how is high because of their diversified operational processes.

VII Learning to Utilize the “Third Eye”

As described above, it is possible to find effective measures to solve the issues that now face major manufacturing groups by a self-revaluation of a company's own business operations through designing a solutions service business. However, a large number of the managers

Figure 6. Typical Value Chain in Manufacturing Industry and Viewpoints in Extracting Marketable User Know-How

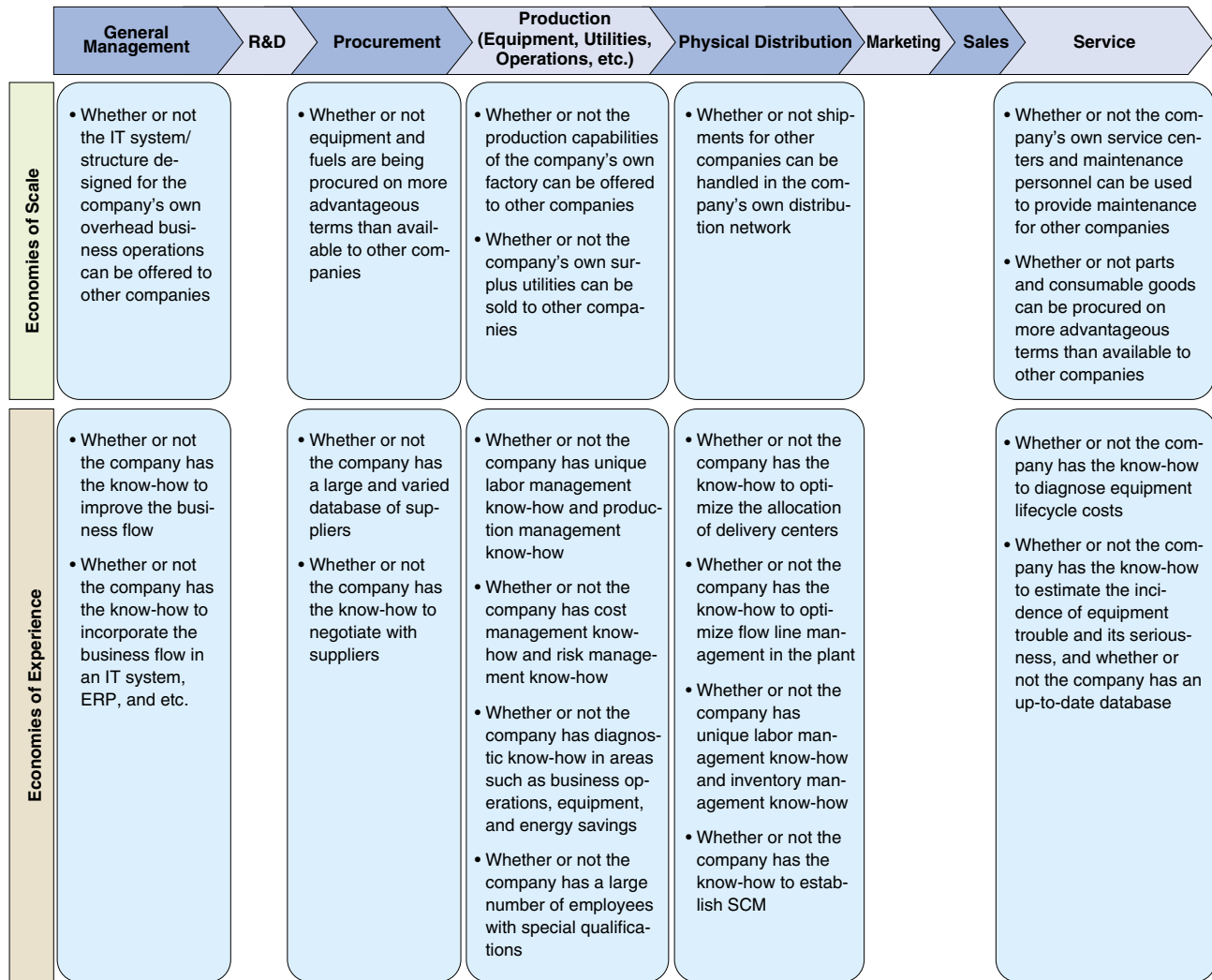


Table 5. Examining the Market Potential of Accumulated Know-How

Type of Business	Know-How
Steel	<ul style="list-style-type: none"> Know-how in reverse engineering of equipment Engineering know-how that utilizes secondhand equipment
General manufacturing	<ul style="list-style-type: none"> Procurement know-how (direct materials, indirect materials and fuels) Information system development and operations know-how for specified types of businesses Labor management know-how (plants, utilities) Productivity improvement know-how (plants) Streamlining know-how for head offices and staff departments
Communications	<ul style="list-style-type: none"> Direct mail forwarding know-how for fee collection, etc.
Railway transportation	<ul style="list-style-type: none"> Diesel engine maintenance know-how and structure Power generation, transmission and distribution know-how Know-how in structuring and operating communications networks
Shipping/transportation	<ul style="list-style-type: none"> Know-how in operating power generators

of major manufacturing groups who took on the challenge of reevaluating their own businesses for themselves expressed reservations about the success of the exercise. The typical problems they cited were as follows:

- Cannot objectively evaluate their own daily operations by themselves.

- Cannot discern the strength (peripheral competence), if any, of non-core operations as they are positioned low within the company.
- Cannot utilize the most competent employees, as they are usually busy doing their regular work.

Based on the consulting experience of the NRI Production-Goods Core Team, it is clear that strong

leaders are essential in carry out objective revaluations of their own company's business operations. Highlighting leadership roles is also essential in allowing managers to provide direction within their organizations and to gain cooperation from other employees. And it is extremely important for a company to use a consulting firm as a third eye in order to not only conduct an objective evaluation, but also to shine a powerful spotlight on the leaders involved.

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