Technotalk

Problem-solving Approach to Improving Competitiveness of Industry

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Along with the ongoing globalization of industrial activity in recent years, major changes are taking place in the services demanded by the solutions market. In supplying solution services, Hitachi places an emphasis on adopting a customer's perspective. By being quick to pick up on changes in the market, and utilizing its extensive business know-how and advanced information and control technology to work with customers to identify challenges, Hitachi helps customers maximize their corporate value through the supply of solution services in the form of innovative solutions tailored to the customer's business challenges and value chain.

CHANGING INDUSTRIAL ENVIRONMENT

Tsuzuki: Hitachi has supplied solutions to numerous customers in the industrial sector. This can be seen as the culmination of how we work alongside customers to confront and overcome challenges. Accordingly, we are seeking to strengthen our capabilities across the group, with our front office businesses being actively engaged in finding out from customers about the issues they face and providing this as feedback to the technology development divisions for use in the development of new products, systems, and services that can be delivered in the form of solutions. This is because, with economies becoming more globalized, it is becoming even more important to enhance competitiveness through innovations in value creation across all different industrial sectors. Initiatives at the national level that are aimed at enhancing industrial competitiveness and involve the public and private sectors working together are also starting to appear, driven by an awareness that advances in fields such as information and communication technology (ICT) and robotics in particular are bringing about fundamental changes in manufacturing. Major examples of these include the Industrie 4.0 project in Germany; the National Network for Manufacturing Innovation (NNMI) in the USA; the Engineering and Physical Sciences Research Council (EPSRC) in the UK; and the Funding Program for World-Leading Innovative R&D on Science and Technology (FIRST), Cross-ministerial Strategic Innovation Promotion Program (SIP), and the Impulsing Paradigm Change through Disruptive Technologies Program (ImPACT) in Japan.

Could you please tell me about the changes you have noticed while supplying solutions in your respective fields?

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Joined Hitachi, Ltd. in 1984. After roles that included Manager of the DB Design Group of the Software Business Division, Senior Vice President of Hitachi Data Systems Corporation, and General Manager of the Software Business Division, he took up his current appointment in 2013.
Mr. Abe is a member of the Information Processing Society of Japan (IPSJ).

Yoshiaki Kinoshita

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Joined Hitachi, Ltd. in 1982. After roles that included heading the Enterprise Server Division, Deputy Manager of the Management Strategy Office, and General Manager of the Hardware Monozukuri Division, he took up his current appointment in 2014.
Mr. Kinoshita is a director of the Research Organization for Information Science & Technology (RIST) and the Information Technology Security Center (ITSC).

Abe: At the Business and Engineering Solutions Division where we strive to envisage the issues as we interact with customers and devise solutions from a sales engineering perspective, I have become aware of changes in customers' value chains in recent times.

A need has arisen to present the challenges and solutions associated with changes in the value chain that result from manufacturing customers whose business was previously based on the production and sale of goods shifting to a service-based business model. Hitachi itself is going through this change and we have already embarked on measures aimed at becoming a service business.

Also, customers who operate globally are increasingly outsourcing some of their business processes to external specialists on an ongoing basis in order to enhance their ability to generate cash to compete in global markets. A trend is evident in which companies are seeking to improve operational efficiency in terms of overall optimization, with the scope of activities being outsourced having expanded to even include some aspects of the production process, such as information technology (IT) management, equipment management, procurement, logistics, and packaging.

The Industrie 4.0 project in Germany aims to cut manufacturing costs dramatically by using IT to make production facilities smarter while also creating new services that take goods as their starting point by linking the factory via communication networks to external value chain activities. National initiatives like this can be thought of as enabling a paradigm shift in the world's manufacturing industry.

The first step in supplying solutions under these circumstances is to be able to see the true objectives toward which changes are directed. What is needed is to eliminate "front-side" vagueness to make sense of what the goal actually is.

Kinoshita: The activities of the Information & Telecommunication Systems Company extend from the supply of highly reliable IT platforms to IT service solutions such as consulting and system integration. From this perspective, the question recently has been how IT can contribute to the customer's products or other aspects of their business through the consolidation and collation of information, including big data analytics. When IT is used to see what is happening in a business from a variety of perspectives, the quantity of information tends to increase significantly and the quality to vary more widely. How to make use of this information has a significant influence on corporate value. This calls for high-impact IT solutions that incorporate knowledge about how to make the most of big data, and that can help management identify goals.

As a manufacturer, Hitachi is also working on improvements at production workplaces, achieving efficiency gains and optimization through the sophisticated use of IT to coordinate different sites with each other from a global perspective. Examples include work on establishing practices for improving our own management and operations by analyzing large amounts of big data, including operational information from equipment and other plant systems collected using sensing technology.

I believe that presenting Hitachi's in-house experience with establishing such practices can help resolve customer issues.

COMBINING COMPREHENSIVE CAPABILITIES OF HITACHI TO SUPPLY SOLUTIONS

Tsuzuki: Certainly, the Infrastructure Systems Company has many customers who want to use

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systems and other technologies that we have developed for our own use. Examples include technology that uses tablet computers at the workplace to provide a clear view of work progress by displaying images created using four-dimensional computer-aided design (CAD) (which adds a time dimension to the three spatial dimensions) to shorten delivery times while still maintaining high quality at the site when bringing together resources from inside and outside the company to build factories or equipment.

On the other hand, when it comes to supplying solutions that look to the true objectives and other challenges at which changes are directed, I believe it involves finding solutions that suit the customer's business sector and value chain. In this regard, what things are most important to you?

Abe: The first is to identify changes in the markets in which customers operate at an early stage. To achieve this, it is important to place a high value on interaction with customers in order to share information about the nature of their business, such as the challenges they routinely face, and also to keep up with the latest developments among customers' customers, partner companies, and others.

Hitachi operates in a wide range of businesses, with a large number of customers and partner companies. I believe one of our strengths is that we can draw on knowledge from across different sectors to keep up with the markets in which customers operate from a variety of perspectives.

Transforming manufacturing into a service business requires a different sort of value chain management than has been used in the past. This requires company-wide reforms that go beyond individual factories, sales offices, and other operations. Along with setting a large number of key performance indicators (KPIs) that are optimal in company-wide terms, what is required is to work through the plan, do, check, and act (PDCA) cycle by utilizing IT to provide a more timely overview of the global supply chain as well as inventory management and quality management.

For solutions that support this company-wide reform, what is important I believe is to package these as services, including specific methods such as the four-dimensional CAD technology, and to prioritize how they are combined, without losing sight of the customer's ultimate objectives and goals.

Kinoshita: We have already discussed the Industrie 4.0 project, and Hitachi already designs control systems for its plants based on the autonomous decentralized concept. Nowadays, we are moving into the era of "symbiotic autonomous decentralized" systems that provide optimal solutions including the exchange of data, handling coordination not only within our own plants but also with those of customers and the partners who supply us with parts. In simple terms, we are establishing the capability to minimize inventory, delivery times, and so on by having production systems and machines communicate with each other on an autonomous basis.

Hitachi has also been engaged in an active program of strategic investments aimed at expanding its businesses in leading-edge IT, as epitomized by cloud computing and big data analytics. We have established extensive global infrastructure for our consulting business, strengthened our storage solutions business, developed Hitachi Advanced Data Binder*1 (a high-speed data access platform), and set up a big data laboratory in North America.

I believe that presenting these leading-edge initiatives to customers in a timely manner will also strengthen Hitachi.

Abe: That's right. The deployment of smart logistics in China has attracted attention from customers. Part of the Hitachi Smart Transformation Project for restructuring the Hitachi Group, this involves establishing and operating a service for transporting goods without waste in both the outbound and inbound directions by combining the "milk run" (in which a single vehicle visits a number of suppliers to pick up goods) of Hitachi Transport System, Ltd. with the global procurement service of Hitachi High-Technologies Corporation and the TWX-21*2 business media service built by our Information & Telecommunication Systems Company. We have had requests from customers for the service to also transport their parts and materials in China, which is recognized as somewhere that suffers from poor logistics efficiency.

This can be seen as an example of the high-level integration of services derived from the diverse forms of knowledge possessed by Hitachi for dealing with an issue that could not be resolved by individual measures, and that is distinctive of Hitachi.

Kinoshita: There is another example in which Hitachi Construction Machinery Co., Ltd. has achieved significant results. Maintenance services are important for construction machinery, with higher utilization

*1 Utilizes the results of "Development of the Fastest Database Engine for the Era of Very Large Database and Experiment and Evaluation of Strategic Social Services Enabled by the Database Engine" (Principal Investigator: Prof. Masaru Kitsuregawa, The University of Tokyo/Director General, National Institute of Informatics), which was supported by the Japanese Cabinet Office's FIRST Program (Funding Program for World-Leading Innovative R&D on Science and Technology).

*2 TWX-21 is a trademark of Hitachi, Ltd.

meaning more value for customers. For more than 10 years, Hitachi Construction Machinery has been operating the Global e-Service, which it developed to use sensor data for realtime monitoring of the operation of machines that it has sold to optimize the procurement of the required maintenance parts. Since 2012, Global e-Service has been available as a cloud service on TWX-21. In addition to the life cycle management of equipment, it offers a broad range of other useful services that include use at sales offices for things like inventory management and tracking the status of deliveries. As Hitachi Construction Machinery operates throughout the world, other features include multilingual support and reliable service operation and maintenance.

MAXIMIZING CORPORATE VALUE OF CUSTOMERS THROUGH CO-CREATION

Tsuzuki: From what we have been saying, it seems that the approach to business whereby we determine the customer's requirements and then take responsibility for building and delivering the product is a thing of the past. This reinforces the impression that we now live in an era in which we seek to create value jointly by creating a forum in which Hitachi and the customer can exchange information and consult on issues.

Kinoshita: In the case of IT system development, whereas in the past it was assumed that we would perform the design, including the hardware, the style now increasingly includes using an open cloud to combine systems together with the use of existing IT assets. For ourselves, what we supply to customers is not so much IT systems as corporate value itself, which is created together with customers through the functions of those IT systems.

Abe: Our job does not end with the delivery of a product or other system. The products that underpin industry and other parts of society remain in use for a decade or more, and the markets in which customers operate can change considerably during that time. What matters is being able to remain in touch with customers after delivery so that we can offer them after-sales services and provide ongoing suggestions tailored to changes in their circumstances, and I believe that our ability to this at Hitachi is part of the value we provide.

Kinoshita: In the case of IT platforms, while difficulties can arise when it comes to being able to assess things that change over time, such as the customer's values and the state of their business, and to design the scale, we supply the highly reliable Hitachi Cloud platform and our flexibility encompasses both short-term and long-term scale out (provision of additional resources). It is also important to establish practices that enable dynamic changes to things like the system design and specifications, including for the customer's on-premises systems. As greater use is made of the cloud, we are moving more and more into a software-defined world that virtualizes server, storage, and network IT resources. Nowadays, differentiation depends more on applications than on hardware, and we are steadfastly seeking to catch up with these changes.

Abe: In this time of rapid change, solving the business challenges that customers face requires in-depth analysis and understanding of the current situation from their perspective. First of all, this requires a process that involves obtaining a global overview of the customer's business value chain and sharing information about issues at each phase. It is important to adopt an approach whereby the value in the customer's business is created jointly by combining the technologies and solution services from Hitachi, its partner companies, and others to strengthen capabilities, categorizing the various elements required for the solution in terms of equipment, IT, energy, and logistics.

Kinoshita: IT has created value by linking various different things together, and facilities such as manufacturing execution systems (MESs) that perform optimization by linking core business systems to manufacturing plants in realtime are rapidly growing in importance in the industrial sector and elsewhere. By drawing on experience and technical capabilities gained through our work on IT system implementation, we will help customers solve problems by collecting and analyzing information and by using it in business decision making to achieve company-wide optimization.

Tsuzuki: What you have been saying reconfirms for me that there are many things that only Hitachi can achieve. It is fair to say that the key to industrial solutions lies in the "symbiotic autonomous decentralized" concept of solving problems by seeking to achieve overall optimization. This involves the sharing of information about customer issues while keeping up with changes in the market, and is achieved through the combining and linking of a variety of individual services, systems, and data so that they can interoperate while also functioning autonomously. We will continue striving to utilize Hitachi's extensive business experience to help achieve innovation and growth in customers' businesses.