

Leveraging Open Innovation to Create Customer Value in Product Planning and R&D

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China and other emerging economies are on the rise and new technologies, such as IoT and AI, are transforming business models. The business environment today is becoming increasingly harsh and challenging for Fuji Electric. In-house technologies and resources have their limitations for continuously producing sales items that meet customer demand. How can we gain impetus for open innovation? Professor Kazuyuki Motohashi, a leading specialist in open innovation research from the University of Tokyo's Graduate School of Engineering, talks with Shiro Kondo, Fuji Electric's Corporate General Manager from the Corporate R&D Headquarters, about the approach to open innovation in customer value creation.

Business strategy first, before open innovation

Kondo: Manufacturers such as Fuji Electric have been performing R&D for a long time by following relatively clear modalities of competition for each product type. However, these modalities are becoming outdated due to the latest technological advances and environmental changes. For example, one of the power electronics products is a power converter, which stabilizes voltage and frequency, or converts direct current to alternate current. Fuji Electric offers a

wide range of power converters to deliver diverse modes of application that customers worldwide require. Power conversion efficiency is one of the main modalities of competition in power converters. We have already achieved 98.8% power conversion efficiency, and not all customers require the remaining 1.2%. In this sense, we find ourselves in, as you might say, a "good enough market" (where products with sufficient performance suffice). Accepting this reality, we are keenly aware that it is crucial to capture customer value in planning and R&D. We are therefore proactively considering exploring paths such as open innovation in order to create value.

You are an expert in the field of open innovation and have ample knowledge backed by research on various businesses. I hope you will share some of it with us today.

Motohashi: Thank you for having me here today.

Kondo: Fuji Electric will celebrate its centennial anniversary in 2023, which is in five years. Keeping this in sight, we have been reforming our business and R&D structures in order to achieve sales of one trillion yen by this milestone.

There are four business groups at Fuji Electric, namely, power electronics systems, power and new energy, electronic devices, and food and beverage distribution. Each of these business groups has its own product development department.

On the corporate side, the Corporate R&D Headquarters undertakes research into shared fundamental technology and advanced elemental technology, marketing technology, planning R&D, and managing intellectual property. There is also a team that promotes open innovation at the R&D headquarters.



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Motohashi: Some R&D projects may be undertaken both by one of the business groups’ development department and the Corporate R&D Headquarters. In such case, which side takes the lead? This is an important point for pursuing innovations.

Kondo: This is precisely where we’d like to hear your opinion. As I mentioned earlier, our current system is a result of reorganizing roles. The business groups undertake product development while the Corporate R&D Headquarters engages in technology marketing as well as the development of elemental and fundamental technologies. We think it necessary to enhance the overall optimization. In order to strengthen the company as a whole, we need to consider how and at which phases the sectors should work laterally with one another, from the viewpoints of better efficiency in R&D or creation of customer value and innovation.

Motohashi: As you mentioned earlier, the market is undergoing a significant change today. As technologies are advanced, customers demand not only good quality for products, but also better usability. Developing countries, meanwhile, are showing remarkable progress, and they present a great marketplace for developed countries. They are, at the same time, great business rivals. They do not seek the best of bests, but something that is “good enough.” As the emerging economies rapidly grow strong by producing good enough products at low cost, they are beginning to pose a threat to some Japanese businesses.

One of the recent buzzwords is “from *monozukuri* (manufacturing) to *kotozukuri* (value creation).” Here, the term *kotozukuri* refers to the creation of new value by integrating the objects of manufacturing and the associated services. Japanese businesses have competed for a long time through *monozukuri*, meaning producing high-quality products. However, amid increasingly harsh global competition, *kotozukuri* is becoming the path that cannot be avoided.

Having acknowledged that technology alone can no longer satisfy customer needs, however, it is still an important point that manufacturers try to differentiate their products technologically. Finding out how to adapt technology to the market. This perspective will remain necessary amid major market transformations in the future.

Open innovation is a very effective means in terms of *kotozukuri*. While operating within the framework of *monozukuri*, companies did well to promote their research and development using their own resources. However, this practice does not work so well in *kotozukuri* due to its speed and wide range of scope. This is what brought attention to open innovation, engaging in R&D involving external collaborations.

Open innovation is one means of innovation. This means that a corporation must first of all have its innovation strategy before considering open innova-

tion to determine whether it is a viable means of proceeding.

In developing innovation strategies, it is vital to understand how leading customers—ones who are at the forefront of their industries—consider their business five to ten years into the future. So, you must consider how to organize your point of contact with the customers. The organizational structure comes after this.

There are three processes: exploration, development and monetization

Motohashi: The open innovation consists of three processes: exploration, development and monetization. Exploration is a process in which new technology is researched and bound into a new product concept. Development refers to the process of producing an actual product or service, where efficiency is important. Monetization points to the process of formulating a business model that yields economic value from the product. As these processes are significantly different from one another, it is always important to be clear about which of the processes is in question. Otherwise, talking about open innovation without distinguishing these processes will be confusing.

Kondo: At present, our efforts in open innovation are mostly focused on the development process, and we need to address ways to expand into exploration and monetization.

We have set up a team within the Corporate R&D Headquarters to promote technology marketing, with a special focus on the exploration process. They conduct research into the technology necessary for us to maintain our competitiveness based on probable

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 2013: General Manager of Instrumentation and Control Systems, Industrial Infrastructure Business Group, Fuji Electric Co., Ltd.
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future market trends.

One famous machine manufacturer, which you may also know about, works to deliver ICT solutions to customers as its strategy so as to reduce time and financial burden on the customer side. To realize this strategy, the company takes ICT technology that it lacks from external sources both in Japan and abroad. Meanwhile, it ensures within the company that its machines are fit for the market. This system would nicely incorporate the exploration phase.

Put Fuji Electric in this context—our customers are always faced with the challenge of reducing CO₂ emissions. In some cases, we are not entirely clear about what we should carry out ourselves and what we expect from external sources in order to provide solutions to that challenge. Given this as a context, will open innovation still be a viable option to create business opportunities?

Motohashi: As you say, this company has a clear strategy to expand its business through services catering to the needs of the construction industry, which is the client. With a clear strategy in place, it can explore the market through open innovation.

Conversely, open innovation would not work very well without having a clear strategy. For example, take energy as a field. Should the market to focus on be in Japan or abroad? What will be the future trends in the energy mix, such as thermal, renewable, and nuclear power generations? It is a good exercise to prepare several scenarios of future prospects. In this exercise, you should consider whether you will choose to get involved with the energy industry as a whole, like the machine manufacturer did, or rather focus on just one part of it. Then, this becomes your strategy.

Kondo: That means, what we need to do is to correctly understand our strategy from the viewpoint of how our strengths are seen from outside. We need an appeal to be chosen as a partner when engaging in

open innovation.

Motohashi: Industry-academia collaboration is also a mode of exploration in open innovation. However, it is not always easy in terms of efficiency to turn the cutting-edge technology that these universities propose into marketable products. The point of entry should be as close to the exit point as possible. If this were a startup company, the exit point would be much closer as such businesses tend to align themselves with the marketplace. In this sense, corporate venture capital (CVC) also offers itself as a path for exploration.

Kondo: As far as CVC is concerned, we are willing to collaborate with companies on a business basis if it generates synergy in terms of business or technology. However, we are not absolutely sure that the concept is congenial in Japan in terms of the mentality and speed.

Motohashi: That is a big question. In recent years, China has been giving rise to numerous startup companies. Some data indicate that their investment almost equals the venture capital investment in the United States for 2015. That is 50 times the figure for Japan. I conduct research on VC and venture businesses in Shenzhen from the Sun Yat-sen University in Guangzhou. I find that they make investment decisions very quickly, far speedier than our counterparts in Japan.

Kondo: There was a time when Fuji Electric had laboratories in China and the United States, aiming to accelerate localization. It is important that local needs are properly understood in the local context, be it research or product development. There are also differences in how customer collaboration is employed in performing the development processes. The idea was to have a function, in order to address these aspects, for the development of a commodity or modification to suit local practices. We no longer have these independent laboratories as we have fully established produc-





tion and engineering bases. Thus, we are coming to the point where it is necessary to consider, once again, how to bolster the exploration function.

Nevertheless, given the internal and external situations, it may be worth considering reinstating those laboratories outside Japan. The big issue is what functions these laboratories should have.

Motohashi: I think that localization depends on the market. For example, foreign affiliate companies, including those from Japan, would not be able to engage with State Grid Corporation of China independently for national security reasons. It would be necessary to participate in a joint project with Tsinghua University, which is involved in national projects. In this case, direct involvement from the Japan side is not possible, and therefore an independent local base is needed.

If you aim to collaborate with foreign startup companies that possess their own technology, small local bases would suffice. China is advanced in image recognition technology, and the United States and Europe similarly have their strong suits. In this case, it is a good idea to have local bases in respective areas, and have dedicated staff members travel between them globally, reporting to the Japan headquarters by teleconference once a week, for example. Ultimately, these bases could also function as information radars, catching and transmitting information on local suppliers, joint research projects at local universities, and so on.

Two roles for enterprises in the ecosystem

Kondo: What would you say about the monetization phase?

Motohashi: One of the important concepts in monetization is “ecosystem.” This is a concept that Harvard

Business School professor Marco Iansiti advanced. It refers to an aggregate organism of businesses that complement each other concerning one instance of innovation. In this business ecosystem, there are two roles: keystones and niche players.

For example, the Android OS of Google LLC is a keystone. It is not there simply for the company’s profits, but as an attractive platform for many niche players to make profits. In this way, it grows the ecosystem itself.

Whether to aim to be a keystone or make profits as a niche player is a major decision to make as a business.

Kondo: There is also competition among different ecosystems.

Motohashi: That’s right. Fuji Electric must have been benchmarking competitors so far, but the future is to consider them in terms of ecosystems. Which competitor supplies to which ecosystem? There may be some companies that are involved in several ecosystems.

Kondo: For Fuji Electric to survive in the 21st-century market, we should aim to establish ourselves as an indispensable player for the ecosystems that keystones will build upon considering the world’s major trends.

When we created the IoT Strategy Department two years ago, we set the objective of not becoming a platform provider, but being a provider of applications compatible with any platform. In order to be able to offer solutions that correctly address customer needs, we focus our efforts on bolstering our applications and the technology that supports value creation for them.

Motohashi: I think that niche players offer tremendous value. Data is a determinant factor for services, and it is generated in a niche area. The platform provider does not possess all the data.

Moreover, the B to B environment today has developed a great number of platforms. Therefore, it is an

excellent strategy to aim for universal compatibility in case one of them outplays the others.

It may become necessary to be selective about the company's own core technology. In such a case, the most important point is that customers' intended directions to proceed in are understood appropriately. It is also important to have confidence in the company's competence so that, if necessary, it could make alternative suggestions to the customers.

Competent personnel in open innovation

Motohashi: Line managers are normally fully occupied in their regular responsibilities. Ideally speaking, therefore, open innovation should be pursued from one level up, such as a CTO for open innovation.

Kondo: There seems to be a trend of establishing a division within a company, dedicated to open innovation.

Personnel selection for such a division must be vital. In your opinion, is there ideal competence for this role? At Fuji Electric, we formed a team of individuals who came from diverse technical backgrounds, such as devices, power electronics, system engineering and overseas business.

Motohashi: I have, for a long time, been a project leader at the 21st Century Public Policy Institute under the Japan Business Federation. As part of our research into open innovation, I have conducted surveys on business enterprises on several occasions. There, many companies report that they lack personnel for open innovation. Several reasons come to my mind, but the major one could be that sales personnel in Japanese companies tend not to have connections outside their business domain. By comparison, researchers often know someone outside their specialized areas as they take part in academic conferences. In this sense, I think that researchers are rather competent in the role of engaging in open innovation. Other than this, there should be a few persons competent in managing the operation as a whole. The CTO office of the machine manufacturer that we talked about earlier is staffed with fewer than ten members. No large organization is necessary for this purpose.

Kondo: How should we evaluate the effectiveness and outcomes of open innovation? We find it difficult to establish key performance indices (KPIs) as some research projects take a long time before commercialization.

Motohashi: An example may be useful from the initiative taken at a certain company. They made it mandatory that R&D project proposals include a compari-



son of cases using internal and external resources. With this exercise repeated regularly, the overall R&D management will become accustomed to cases of open innovation as regular features. By integrating these cases into a budgeting system, KPIs will take form by necessity.

Kondo: We currently estimate possible investments for the research projects conducted by universities, supposing that we carried them out internally. We can simply extend it to budgeting.

This conversation has made clearer the challenges in open innovation. Essentially, the key is to have innovation strategies of Fuji Electric, paving way to the future of the company's businesses. We would like to proceed them by giving consideration to these accounts, together with the role distribution and the organizational structure.

Motohashi: Devising strategies requires rich and deep insight, not only into the trends at immediate competitors, but also clients, their competition at clients, or information about suppliers. It is an idea to leverage information obtained from consultants or think tanks, or even agents specializing in match-making for open innovation. This is also a point which requires an open attitude.

Kondo: I see. It reminds me once again that we should convey the strengths of Fuji Electric appropriately to outside communities while it is equally important to take in external information.

It has been a very informative time and I've deepened my understanding about open innovation. Thank you very much for your invaluable observations and opinions.



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