How to make IE/OM relevant today?
-Panel Discussion between CIIE, KIIE, and JIMA-

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Ohmori

Welcome, everybody. This is the panel for the CIIE, KIIE and JIMA. I am Shunichi Ohmori, and I am the head of the International Committee at JIMA. The title of this session is about how to make IE/OM more relevant today. I'm here with great leaders today to talk about some of the trends going on in each country. We have Dr. Kenji Funaki from JIMA, we have Dr. Morris Fan from CIIE, and we have Dr. Sungbum Jun from KIIE. Here is the timetable.

First, I will talk a little bit about the background and motivation of this panel. Then I will ask each panelist to introduce themselves and tell you in a couple of minutes about things happening in each country. After that, we are going to move on to the moderated panel discussion, and we will discuss some of the shared issues that we are facing today. And finally, we would like to finish this session with some summary and closing remarks.

So, I'll say a little bit about the motivation of this panel. I would say it's an exciting time right now. There are a lot of changes happening right now, and probably more changes than at any time in the past. At this JIMA conference, I have seen presentations and, thanks to researchers' great work, I have seen some problems are new, and some techniques are also really new. But despite these new challenges and new opportunities, the persistent concern remains — is the IE/OM community achieving and leveraging its potential? Are we truly contributing at the level that industry or society requires? These concerns come from, for example, the fact that now e

verybody talks about AI and data science, but not about IE or OM at the industry le vel. Also, especially in the Japanese context, the number of industrial engineering–r elated departments has been decreasing, and we are gradually losing our DNA and also our soul of industrial engineering.
So, one way to answer this question is to learn from each other.
Although we are located close to each other, we see slightly different worlds and fr om different perspectives, which might end up with different research trends. So, w hat is happening in each country?

Another topic we would like to explore in this panel is about the collaboration amon g our organizations. We have successfully exchanged participants among the organ izations. How can we take our collaboration to the next level?

In summary, the goal of the panel might include the following:

- to get to know each other better, especially about the social and industrial pr esence of IE/OM in each country;
- to introduce emerging topics and applied areas in Japan, Korea, and Taiwan;
- and to explore collaboration opportunities to leverage our shared potential a nd to see future cooperation in research and education.

So, let's start with Dr. Funaki and hear about the situation in Japan.

Funaki

Good afternoon, everyone. My name is Kenichi Funaki from JIMA. I want to talk bri efly about the environment in Japan and also about the expectations for industrial e ngineering and operations management research.

Let me very briefly introduce myself. In add ition to being the president of JIMA, I'm wor king at Hitachi on innovation-related topics, especially investment in startups. I also sup port startups and sometimes venture buildi ng inside Hitachi. So let me briefly share the challenges in Japan that we are facing.

One of the biggest difficulties we are facing now is the shortage of labor, shortage of natural resources, and shortage of energy. Everything is in shortage. If you look at the employment situation in 2040, 11 million workers will be short. Even within the next five years, 3 million people will be needed in the labor market, but Japan cannot supply enough employees. And in 10 years, the number will reach 11 million. So this is a very huge problem. And in addition to such a shortage of resources, we have to respond to various risks — from climate change to geopolitical issues and international trade. We have to cope with how to mitigate the impact of these risks, and also how to control or manage the risks. If you look at the statistics, there is an index showing the uncertainty of the world. It is called the Global Economic Policy Uncertainty index — that is an official index. I actually didn't know that before. But if you look at this index, in the last five years, the uncertainty has increased by four or five times. And also, we see a variety of diversification: diversity of employees, diversity of demand, diversity of customers.

So we have to think seriously about how to manage such a big diversity. But what is difficult about these issues is that none of them can be controlled by a single company. We cannot control the shortage of labor. We cannot control geopolitical risk. We cannot control such kinds of diversification.

So companies have to cope with these problems, but they cannot be solved by conventional, simple solutions. However, we are fortunate, because we are having a lot of evolution of enablers, including advanced technologies like AI, big data science, bioengineering, and energy transformation. And if you see the available resources, we see a lot of data generated in society and in industry. We can leverage such new resources. Also, if we look at the money flow, the variety of investment options has increased in Japan, especially. So how to leverage these various new enablers is another challenge and also another opportunity for industrial engineering or operations management to expand our value and our research.

This is a brief introduction of what is going on in Japan.

Ohmori

So let's move on to Dr. Morris Fan from CIIE.

Morris Fan

It is my honor to be here. In particular, I would like to pay my personal tribute to D r. Funaki and Dr. Kainuma. We have quite a close relationship and we should keep continuing it.

I will talk about some AI, since, unlike in Japan, Taiwan is quite small, and we need to fast forward the pace in order to catch up with the trend. We would like to bring AI into our daily life and into the work environment. Let me give you a quick recap. Since the 1950s, there has been the microprocessor, so we have computers. Then we moved to the 1980s: automation and robotics. So from industrialization 2.0 we had the assembly line, and then we moved to Industry 3.0 with automation. Then we had ERP, we had microprocessors. Later, around 2010, we moved to the Intern et of Things; this is when the data-enabling technology became available. That is w hy we can do big data. So this is where we are now: artificial intelligence.

Back in Industry 1.0 and 2.0, the human was in the loop. The assembly line, the hu man, and the worker were in the ecosystem. How about Industry 3.0, automation? And what about Industry 4.0? Where is our ecosystem in terms of artificial intellige nce? Artificial intelligence is not merely a tool. We would like to embed it into our c orporations.

I summerized the current AI method in the IE discipline, particularly in terms of ge nerative AI. I will not elaborate on each one, but you can see that production sched uling is really highly complex. How can we deal with that? We can use reinforceme nt learning. We used SPC charting, right? There is a central line, an upper control li mit, and a lower control limit. Now we can take a picture, take an image, and direc tly look at the picture to identify where the defective item is. Then we can use the ViT, the Vision Transformer, to do the diagnostic and provide the correct reaction.

In inventory control, we used the built mo del. Now we have a multimodality languag e model. Then there is maintenance planni ng and supply chain. This is one of the mo st popular topics in Japan. For scenario ge neration we can use GenAI to collect data f rom industry, from within the industry and from research institutes, then consolidate i

t and provide some suggestions and recommendations. How can we do the replenis hment in inventory management? Human factors, I think, will be one of the most i mportant points.

This is something we have already done in Taiwan. The data is collected in real tim e, starting from the semiconductor fabrication, then at the tool level, the machine, then the shop floor, and the MES and the ERP. However, now the question is: how can we apply artificial intelligence to use the collected data at the strategic level? T his is a triangle: at the upper level there is the enterprise, then we move to the sup ply chain, and then to the economy of a nation.

There are only three things. We use machine learning operations, so we need to mi grate into the multimodality, large-language modality. There are three major functi onalities I would like to mention, particularly from the IE/OM perspective: version c ontrol, caching, and the last one, model monitoring. This is like lifecycle manageme nt for a product. Now we just use this kind of idea to monitor the lifecycle of the LL M. Particularly in Taiwan, there is the smile curve. Taiwan is really good at manufac turing. How about design? This is what Taiwan lacks most. So we need to curve up from the bottom of the value.

So this is the first one, AI operation normalization. We try to put artificial intelligenc e into the daily core operation. It is like a test in place to validate whether it is feasi ble. At first, it has nothing to do with manufacturing, it is only for the operational pr ocedure, and then it can make the individual overall intelligent.

The second phase is more related to manufacturing, so it is called AI production no rmalization. We incorporate more of the 5M: raw material, machine, process, and workforce. So there is a single-sense AI type established from the previous layer, a nd it becomes thousands of reliably deployed AI applications. First of all, we have p roductization in manufacturing AI.

The last one is more difficult. How can we use AI directly to convey our message to the market? At the top layer, AI-driven means innovation. This is the entire lifecycl e, including design, development, and market, and we need to understand the voic e of the customer. This is the layer we would like to look at, particularly from the p erspective of CIIE.

In addition to manufacturing only, we would like to embed the artificial intelligence procedure. Let me say that I think domain should be the very top priority for every

one here. Without domain, AI cannot be possible. So you can see that the strategic /governance layer is related to AI operational normalization, then down to the physical layer, this is manufacturing, the production normalization. And finally we have the commercial layer: how can we understand the need from our market? This is called AI productionalization.

I think now most large language models are general purpose and answer most of the questions for the public. However, what about industry? Actually, this is what we call the domain large language model for the enterprise. The AI interaction has to be stored in a personalized and prioritized way. So for each person, for each company, we need to put a prioritized layer, like a digital wallet for the company or for the person. There is an interaction. This is the middle way between our language model and the individual person.

I will address the last one: co-research questions. We need to establish a solid background in order to build Industry 4.0 and also to consider AI as our ecosystem. So we would like to add this question: what do humans expect AI to accomplish for human beings? Not only for general purpose. And second, how can we measure behavioral performance, and how can we measure the degree of intelligence? That is what we call industry or human-centered AI. So these are some ideas I would like to show you. Thank you.

Sungbun Jun

Good afternoon everyone. My name is Sungbun Jun from Dongguk University. I am the dedicated speaker for today's topic. It is a great honor to be here as a speaker of the KIIE. Just before I start the presentation, I will briefly introduce myself. My name is, again, Sungbun Jun, and I got my PhD from Purdue University in the United States. Right now I am doing research on automotive innovation with KIIA members, one of the largest mobility companies in South Korea. And now I am serving several roles, like the Director of Education and the Director of International Academic Affairs of IIE. So that is why I am here.

Because my research topic is about scheduling, I will do my best to be just-in-time in the schedule of the presentation. Let me briefly introduce our industry structure. In South Korea, the manufacturing share takes 28 percent. That is significantly pas t Germany and Japan. That means we largely rely on the manufacturing industry, a nd that also means that the opportunity for industrial engineers and researchers of operations management is very big to collaborate with industries and with other re search institutes.

And then, as the president of CIIE already explained, if we go through from the firs t industrial revolution to the second one, right now we are in the intersection of flex ible manufacturing, from the perspective of South Korean manufacturing fields. We are now challenged because the product variance is higher, and also the production model is increasing as well. So it is quite challenging because previously we were g ood at making cost-effective products in some cases, like we did in the Kia world a nd Toyota did. On the other side, we are specialized in customizing things like a cra fted one. But in the middle of the area, we need to order as the flexible manufactur ing section. So I will briefly give some ideas on how we can order these things.

For example, in the same map, we have two different products. On one side we ha ve project-type shopping. So it has a high variance, low volume. We call that HML V. On the other side we have mass-production things. So in that case, we need to be cost-effective. So right now, to be a smarter company, we need to move on to t he new section, the dotted-line one. That is what I call a smart factory for best cust omization and best industrialization.

So right now I am going to give a brief overview of the three possible directions tha t we can address. The first direction—because I am a scheduling guy—is going to b e scheduling. The second direction is going to be logistics. That is really important because without the raw material and the parts, we cannot produce anything. And then the last one is what everybody is talking about, the AI thing, so right now I a m going to briefly explain, from the Korean perspective, how we can address those fields at the same time.

One good example of the HMGICS roles of IE/OM is Hyundai Motor Group Innovatio n Center in Singapore. HMGICS is designed as a highly flexible manufacturing envir onment, as you can see. A major difference between the previous traditional autom otive manufacturing and this one is that it does not have any sort of line in their fac

tory. It means that they can customize each customer with this cell-manufacturing process. And the major difference between the line production and the cell-based p roduction is that it does not have any sort of line. That means it does not have any sort of conveyor system that we can rely on to conduct logistics actions. So in here, we need to have a different transporter. Unlike the line production, we need to hav e a more flexible structure, and the industry requires us to meet their customers' d emands. So right now we are working on the way to innovate the transporters in fa ctories. That is what we call the AMR. Unlike the traditional automated guided vehic le that follows the predefined line or magnetic tape, in here it does not have any so rt of guidance. It means that it autonomously finds the way from A to B, so it has g reater flexibility. So we are now trying to use that to innovate our factory.

And from the machine learning side, it is really hard to contribute to these things a s IE and OM researchers. That is because we are in the middle of computer science and optimization. So when we talk about "we can conduct some AI research," then the guys from CS can say, "What can you do?" So our answer is that we need to se rve the specific goal as before in the industry, so we need to know what industry w ants. So here is the answer from the KIIE. I think that most machine learning mod els have a really big challenge called black-box models. When I conduct research pr ojects with Korean companies, they always talk about how this model made a decis ion, but it is really hard to explain because it has a very specialized structure to ma ke a decision and nobody knows how it does that.

What we can do is just guess how it works. So when I explain it to them, because t hey do not have any domain knowledge, they do not understand. And even though we take a lot of time to develop high-end and state-of-the-art models with my rese archers and myself, they do not use them. That is because they have no idea how i t works. That is what I call a black-box model, and we are now working to overcom e that kind of issue. So right now, including myself, many researchers from Korea a re trying to delete that kind of black-box issue from industry projects. One solution is to use interpretable models instead of the black-box model. So right now we are improving the interpretable models. One example is the decision tree. Unlike the bl ack-box models like the neural network, the decision tree can provide the detailed overview of how this model made the decision. For example, if age is greater than 25, and if the gender is male, then it could be like 26%. So as you can see, if it is s

tructured like that, we can guess or we can exactly understand how this model ma de the decision. So our mission is the online explainable AI—many researchers are already familiar with this term—but our vision is going from explainable AI to interp retable AI that people can understand like this figure.
And right now we are moving on to actionable AI, which means that it is very robu st to threats from the outside. What I mean is that many companies have a securit y issue when they are using large language models, because recently Samsung pro hibited the use of OpenAI's LLM; that is because some software engineers shared t heir code there, so intentionally or unintentionally the open end used them to train their model. So it may have some security issue. So our mission is also there. We n eed to make some secure model that also can be known as actionable AI as a futur e researcher of IE and OM. So this is the end of my presentation. Thank you.

Ohmori

Okay, thank you very much for the great presentations. I see some similarities in t he spirit of all of the presentations. Next, we would like to move on to the panel ses sion. We have prepared four questions related to the challenges that we share toda y. So the first question we would like to ask is: "What are the emerging research to pics in each country?"
I think we have already mentioned a lot about this, but if you want to add somethi ng, please share. I think Dr. Funaki has some slides on this, so I will switch the slid e.

Funaki

Thank you very much. Well, everyone was talking about AI. Definitely AI is one of t he important tools and weapons in order to advance our research, but intentionally I changed the word from "topics" to "fields," because AI has a huge impact and can potentially change the research fields. That is, business creation and service. Of co urse, manufacturing, the process of handling goods and processing material, is ver y, very important. That will be the core value of the manufacturing industry. But at the same time, if we look at AI's impact, I insist that business creation and services are getting more important. So let me show the smile curve. In the past, a lot of s

mile curves were about the supply chain. The upstream and downstream, that is, a bove the materials and key components, is very, very valuable. And also, on the do wnside, the service as well is very valuable. But by having AI, the smile curve is ch anging significantly. If you look at the organization of the operation, the manageme nt decision, the top management is getting more important. Because the managem ent decision makes the field of the business. And at the same time, the downstrea m, the execution in the field, touching the goods, facing the customer, that is getti ng more important. But the middle, if we look at the hierarchy of the organization, the middle manager can be replaced by AI. So, seriously, in Hitachi, recently no mi ddle manager is necessary anymore, because AI can do it. Only the top manager a nd the field executors are very, very important. And also, if you look at the value c hain from R&D, product planning, to the sales and delivery, again, the upstream, R &D and the product planning or creation, is very, very important. And also the sale speople facing the customer, and our maintenance workers who provide value to th e customers, those executors are very, very important. Again, the middle process i s getting less valuable. So, having this smile curve, I insist that business creation a nd service delivery are very, very important.

But at the same time, IE and OM researchers have quite a big challenge. If you loo k at business creation, actually the way to create business is rapidly changing. In th e past, customers knew everything. So the makers and suppliers just listened to th e customer's voice, that's it. So according to the customers' needs, we researched and developed the products and just produced the product to meet the customers' needs. That was the whole process. But recently, even the customer doesn't know what they need or what they will need in the future. So we have to collaborate with the customer to identify the right problems or the right demand, and then co-devel op the products. And through the experiment or evaluation together with customer s, we can make the valuable product. That is the current situation. Many people sa y co-creation approach.

Then now we are entering into the anticipation-based era, where we have to forese e what the future customer wants. And we try to challenge with some anticipation or our presumption of what will be the future needs, together with the customer. S ome customers may be advanced customers. So, firstly, we collaborate with advan ced customers to test the new concept of products. And then once it is proven to b

e a good product for the advanced customers, then we just scale it up to the other following customers. This cycle is a new way of business creation right now. So the requirements for the management system: the management system has to have a n ability to anticipate the future challenge, and then deliver the future product that leverages the advanced technology.

Taiwan companies are doing very well. TSMC has been doing a lot of anticipation-b ased product development cycles. But, fortunately, in the semiconductor business t here is a clear roadmap. So they just chase the roadmap. But they proactively inve st in the next-generation product, and then deliver it to the customer as an advanc ed product. Then the advanced customer can enjoy TSMC's advanced product, the n the other customers follow. This cycle has generated huge money because TSMC can enjoy the first-mover advantage and get big money. Then the money they got from the advanced customers, they can put that money into the next-generation in vestment. This cycle is very powerful. As an evidence, TSMC is taking the lead in th e development of advanced technology. If we look at the product portfolio, many p ortions came from the advanced products.

But in other industries, other than semiconductor, this model is quite different beca use there is no roadmap in general. So each company has to find the potential hidd en roadmap or make a future insight or prediction for the future. Then, getting the advanced customer and then scaling up with the following customers, these cycles must be developed by ourselves. In order to make it, generally speaking, a future-i nsights-based business creation approach will be needed. From today to the future, we have to design the vision. And then through the backcasting and deduction appr oach, identify what we have to prepare for the future. It is very, very difficult, but i n order to realize this cycle like TSMC, each industry has to take this future insight support. That is the business creation thing.

On the other hand, service delivery is another important area. Japan's economy is driven by service businesses. This pie chart depicts the number of enterprises regis tered in Japan. Manufacturing—many Japanese believe manufacturing is the core of Japan. But if you look at the number of enterprises, more than three fourths are se rvice-centric companies or enterprises. So why don't we contribute to this industry? But if we look at the GDP, only 50% came from the service industry. That means th e service business is inefficient, less productive compared to the manufacturing sec

tor. So this shows a broad opportunity for us to contribute to the service business u sing industrial engineering and operations management research or technology. Bu t if you look at ourselves, this is the investigation about the last five years' papers t hat appeared in the journal of JIMA. Still, we are focusing on manufacturing, logisti cs-related supply chain topics, and not so many on service. In the other portions, s ome are related to services, but I think there is a lot of opportunity to dig into the p otential research topics in the service business.
So, what is the emerging or expected field? I think business creation and service de livery are definitely important research fields.

Ohmori

Okay, so let's move on to Dr. Morris Fan. Do you have anything about this topic?

Dr. Morris Fan

Okay, I will make it much easier. I will only make a very short note. Why is TSMC s o successful? We learned from Japan. There is only one word: we earned the trust from our customers. That's it. When customers give us an order, we do it much bet ter than they expect. That's it. And we repeat the cycle like Dr. Funaki mentioned.
Second, I also 100% agree with Dr. Funaki and Dr. Jun.
The domain will be the building block of IE/OM. So, in some cases or some depart ments in Japan that are going to change the department name, rename it, I really f eel like saying, "Don't change it." And what is digital transformation? I am doing di gital transformation in the SNE in Taiwan. How can we do that? Why should we do that? To make it cost-effective? To do the safeguarding, to reduce human error, to make it more efficient, right? So what is it? Sometimes people from the enterprise also ask me: what is digital transformation? It is to make the digital way part of yo ur daily working environment, that's it. So you can do a very small pilot and scale u p. This is the first thing I would like to mention.
Then I would also like to reply to Dr. Funaki about the differentiation between the s ervice sector and the manufacturing company. So what is the tool? I would like to differentiate the tool, the platform, and the ecosystem. Back in the 1980s, we had t ools: ERP and MRP. That was the tool to solve manufacturing problems, right? The

n we migrated to platforms, like we have eBay, we have Uber Eats. They created n ew business models, right? And how about ecosystem? An ecosystem is going to g enerate, evolve new entities, and learn the AI by itself. So it is going to evolve by it self. This is something I would like to mention.
And then, also related to Professor Jun: sometimes we would like to do the interpre tability of AI, particularly in the neural network. There are some fundamental equat ions and big technologies. We can take advantage of that and embed them into the neural network. And generally it can be expressed by the IE/OM domain without pr oblems. We are doing that in Taiwan. So this is some suggestion.

Ohmori

Thank you very much. Let's move on to Prof. Jun.

Dr. Sungbun Jun

From my side, I already analyzed the keywords from the abstracts of our previous conference into three major keywords. The first one is LLM, as you can expect. So everybody is talking about LLM and its applicability in our traditional offices, like the service and manufacturing industries. The second one was optimization, that's wha t we stand for. And the third one is systems, that's why our department is called in dustrial and systems engineering. So from the broader perspective, we are now wo rking on how to optimize the systems that we are interested in. This is a brief sum mary of the research topics in Korea.

Ohmori

So, next question is: "Is the value of IE/OM truly recognized by industry, and how c an we elevate its presence and impact?"

Dr. Funaki

I want to share the serious situation of IE/OM in Japan. This is the trend of the IE/ OM community from the practitioner side to the academic side. As you can easily s ee, the number of people who are engaged in IE/OM, even in the industry and eve

n in academia, is decreasing year by year. Some people say this is because of the p opulation decrease. This is the decrease in university students. That is actually tru e, but the actual decrease rate of the working-age population is about 7.2% minus year by year recently. But if we look at the IE community, the ratio of the decrease is a lot more. But I want to insist on the importance of IE/OM. Without IE/OM in in dustry, there will be serious problems. The other trend, AI and data science, is ver y, very important. Even the managers at companies know AI and data science. So once a problem happens, managers ask the AI experts or data scientists to solve th e problem. But in that way, that is a completely analytics-oriented approach. And t hen they can solve only the solvable problems by the tools. AI can solve the proble ms which can be solved by AI. That is not the total solution, not the optimized solut ion in the sense of management. So when we have IE/OM, the right-hand-side mo del should be realized. We can research or design the to-be model and compare it with the as-is model, and then we can identify the right problem, and then, in orde r to solve such a right problem, we can identify the right tool. And then once AI is n eeded, we can use AI; once data science is needed, we can use data science. So thi s kind of comprehensive solution should be delivered by the IE/OM researchers and practitioners. That is a combination of analytics and synthetics. That is what we ha ve to do.

Dr. Sungbun Jun

In order to promote the recognition of IE/OM to the researchers as well as to the g eneral public, we made two different strategies to address that. For the academic si de, we have three different journals by changing the level. So we have the Korean Journal of Industrial Engineers to share ideas among domestic researchers. For the second one, in English, we have Industrial Engineering and Management Systems. I am the editor in the manufacturing field. And we are trying to promote the knowl edge of what we have done to the leaders internationally. And the last one is going to be the more casual one. Every single month we publish the Industrial Engineer magazine. The purpose of that is to explain what industrial engineering is when the y measure, when they consider industrial engineering in the future. So it is in color, it includes the IE jobs and the occupational opportunities. And also we already publi shed two different types of books. They are targeting the general public about what

we have done. We are trying to optimize the system, so that is what we published to increase the general public's understanding. This is for my number two question.

Dr. Morris Fan

There are three strategic layers. The first layer is operational realization of AI. The second layer is more like a physical layer, called production realization of AI. The la st one is called the commercial layer, directly connected to the market. So we will d o the product realization AI. So there is a kind of echo to the idea from our preside nt about synthesis. In the very beginning of the AI economy, it might not be perfec t, so we can use that if we can, and we keep on doing something like that. Thank y ou.

Ohmori

Thank you. So let me combine question number three, "What are joint collaboratio n ideas between the three organizations?" and question number four, "What is the future vision to attract young scholars and emerging industry?"

Dr. Funaki

It is clear that between these three societies or regions, we should share the knowl edge and experience. So one of my proposals or ideas is: why don't we establish a kind of public assets, public goods for IE/OM research, which can include case studi es, data, models, where the researchers can use them in the experiment.

Dr. Morris Fan

JIMA, KIIE and CIIE, we need to work together. Why? We are so close to each othe r, why not? This is the first one. Even though we speak different languages, langua ge will not be the barrier between us. Second, we share some similar culture toget her. And then we can make the impact in addition to some influence on the Wester n society. We need to do something on our own. And then we can have a worksho p together like this one. We can share, like Dr. Funaki mentioned, the case studies,

and we can invite more people from industry. Then they propose their outcome, an d if they encounter some difficulty, we can help them all together.

Dr. Sungbun Jun

I just want to briefly talk about the building block. One idea is that the collaboration between undergraduate students is very important for fostering the participation of future IE engineers. We already have the organization called FIELD, the Future Ind ustry Engineering Leaders, so we have already hosted several academic events. So if we co-host that kind of event among undergraduate students, it is going to be a r eally big chance to get together. As the president of CIIE said, it is in the middle of so many challenges to keep our own role as industrial engineers. So right now we a re trying to make an introductory course for many undergraduate students to unde rstand what we have done and what we need to do. That is why I am the director of education as well. And also, to promote the collaboration not only between dome stic companies but also international companies. We have working groups inside ou r KIIE. So it is really hard to say something without the domain. Between the doma ins, we can collaborate in detail. So this is my suggestion as well.

Ohmori

That was great. Thank you so much. Certa inly, the importance of IE or OM is growin g, and we would like to see the collaborati on across the organizations. And we also t hink it is a very important part of the com munity. And it is very important that we n eed to grow together. So thank you very much for the great participation.