



統計エキスパート人材育成コンソーシアム
Consortium for training experts in statistical sciences

Self-inspection Report

February 2023

Core Institution - Institute of
Statistical Mathematics

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Self-inspection Report - Abstract

This self-inspection is intended so that the Consortium can self-inspect the progress and effectiveness of initiatives in the early project stage and improve the quality of its activities.

[Evaluation from participating institutions]

For the evaluation of the Consortium activities by the participating institutions (25 institutions), 13 institutions (52%) responded that “the activities exceeded initial expectations.” When restricting to institutions that participated in the first-term training (nine institutions), eight institutions (89%) responded as such, and many institutions highly regarded the current state of the Consortium activities.

[Evaluation from trainees]

The trainees (12 individuals) in the program for training statistics professors were evaluated with the question, “Would you recommend other young researchers to participate in this training?” Eight people (67%) responded that they would “recommend” or “recommend rather than not recommend,” indicating that many trainees highly regarded this training.

[Self-inspection results]

Inspection area 1: Consortium operation

The core institutions appropriately manage the Consortium by establishing the Center for Training Professors in Statistics and the execution of secretariat functions for the General Assembly, Steering Committee, and workshops.

Additionally, the training program meets the training needs of statistics professors at participating institutions, with 12 young researchers participating in the first-term training.

Furthermore, participating institutions have expanded from 21 universities at the time of establishment to 25 universities, and Consortium activities have spread to many universities.

Participating institutions have requested simplifying consignment expense distribution work, such as the enhancement of administrative manuals, early conclusion of consignment contracts, and the omission of the affixing of signature seals.

Inspection area 2: First-term training management and operation

All mentors should always consider the trainees and support them so they can focus on training through the “Achievement Level Management Working Group” by the professors in charge at the core and participating institutions.

Additionally, the senior professor system comprises experienced professors with various specialties and sufficient staff to achieve the training purposes.

Furthermore, the equipment and facilities are maintained and properly managed to fully achieve the training objectives.

However, few people use the training facility due to the COVID-19 pandemic, and future utilization needs to be considered. Moreover, mentors can provide limited support to trainees, and it is necessary to assume and understand the circumstances, such as the environment at the affiliated institution, when accepting trainees.

Inspection area 3: Human resource development in first-term training

The human resource to be developed in the Training Department is clarified, and useful training, such as the repeated experience of mock lectures, is devised and implemented.

Additionally, internationally acclaimed textbooks and courses with advanced content are used in training courses that consider the career development and international success of the trainees.

Furthermore, the young researchers recommended to participate are objectively evaluated for their ability and motivation based on fair examinations by the Consortium Selection Committee. The evaluation and completion criteria for the training course are clearly defined, and objectively and rigorously implemented.

If recommended young researchers fully understand the purpose of the training at the application stage, this would lead to a smoother selection process. Additionally, it would be good to determine how the abilities of a professor cultivated in the mock lectures were utilized in the actual lectures at the participating institutions.

Inspection area 4: Initiatives of participating institutions

All participating institutions have implemented or considered initiatives to build a system for training experts in statistical sciences. There are also initiatives for encouraging young researchers to participate in training.

Many participating institutions have created an environment for the trainees to focus on training.

There is also room for participating institutions to develop an environment in which it is easy for trainees to participate. Additionally, core institutions must encourage young researchers to participate in training programs and ensure the quality and quantity of mentors.

[Direction of future responses]

- Revise the administrative manual to simplify the administrative work related to the consignment expense distribution procedure, such as omitting signature seals, and simultaneously coordinate with the participating institutions to conclude the consignment contract soon.

Establish a place within the core institutions where extensive examination can be conducted to foster Experts in Statistical Sciences further after training completion in collaboration with participating institutions.

- Always consider circumstances, such as the environment of the trainee, and take measures if there is a significant burden on trainee at the participating institution by advising the core institutions.

Increase opportunities for face-to-face instruction and effectively use the equipment and facilities of the core institutions. Hold briefings on access to high-performance computers from participating institutions, and consider ways to increase the utilization rate.

- Even after training completion, keep in touch with trainees and participating institutions and confirm training effectiveness. Improve the Consortium website and hold training seminars for young researchers and participating institutions.

Improve the third-term training participation recommendation guidelines, such as enhancing the explanation of “aspirations for training.”

- Collect, share, and provide various information that contributes to constructing the system for training experts in statistical sciences.

The core institutions appropriately manage the participation status for each participating institution and simultaneously increase the number of mentors in preparation for future crowding and the number of trainees.

Introduction

The Consortium for Training Experts in Statistical Sciences was established on August 31, 2021. The Institute of Statistical Mathematics was at its core, and the participation and cooperation of universities nationwide to promote the Ministry of Education, Culture, Sports, Science and Technology (MEXT) public recruitment project, “Project for Training Experts in Statistical Sciences.”

The Consortium aims to build a virtuous cycle system for human resource development. They will train at least 30 university statistics professors over the five-year project period and approximately 500 experts in statistical sciences in each institution to which these university statistics professors belong.

Therefore, at the core institution of the Institute of Statistical Mathematics, a two-year program for training statistics professors will be implemented over three terms. Participating institutions and universities will build a system for training experts in statistical sciences within their institutions.

In FY2022, one year after the project started, the Consortium inspected the progress and effectiveness of initiatives in the early project stage. It will improve the quality of Consortium activities, such as the second-term program for training statistics professors, scheduled to start in FY2023, and future Consortium management.

An interim evaluation by the Ministry of Education, Culture, Sports, Science and Technology is scheduled to be conducted in FY2023, the third and intermediate year after the start of the project.

1. Self-inspection purpose and method

(1) Purpose

Self-inspection is intended to improve the quality of Consortium activities by self-inspection of the Consortium for Training Experts in Statistical Sciences activity status centered on the initial project period (July 2021 to September 2022). They will also be reflected on the future initiatives, such as the second-term program for training statistics professors (April 2023) and consortium management. This will contribute to examining measures for the smooth and effective achievement of the objectives of the Consortium.

(2) Basic concepts

- (1) Lead to improvements that contribute to the quality of Consortium activities
- (2) Ensure objectivity by ensuring the participation of external experts such as the Japanese Federation of Statistical Science Associations
- (3) Implement based on evidence, such as the use of objective indices, while considering work efficiency
- (4) Incorporate the perspective of the “indicators” described in the MEXT project adoption notice
- (5) Share inspection results with the entire Consortium, and members should work together to make improvements

(3) Implementation method

- (1) Implementation period: October 2022-February 2023

- (2) Implementation system

In the Consortium, a “Self-Inspection Advisory Board” consisting of external experts (three), such as members of the Japanese Federation of Statistical Science Associations (six statistical science associations), was established and inspected in cooperation with the Consortium Steering Committee. The administrative affairs of the Advisory Board were handled by the core institution (Supervisory Department, Center for Training Professors in Statistics, Institute of Statistical Mathematics).

- (3) Implementation method

- A. Setting inspection items

The core institution (Institute of Statistical Mathematics) submitted a draft of self-inspection items based on the MEXT public recruitment guidelines, project adoption notice and initiatives described in the Consortium application form. They set the items based on the guidance of the Advisory Board.

B. Implementation of self-inspection

The core institution (Institute of Statistical Mathematics) self-inspected each inspection item and created a draft of the self-inspection report.

A questionnaire survey was conducted for all Consortium participating institutions and trainees in the first-term training to determine opinions and requests regarding Consortium management and activities, such as the program for training statistics professors.

C. Creation of self-inspection report

The core institution (Institute of Statistical Mathematics) created a self-inspection report based on the guidance of the Advisory Board (January 2023) and the opinions of the Consortium Steering Committee.

(4) Publication and reflection of the self-inspection results

Information on self-inspection, the self-inspection report and a summary of the Advisory Board will be published on the Consortium website. The self-inspection results will reflect in future Consortium activities, such as Consortium management and the second-term program for training statistics professors.

(5) Schedule

2022 Oct: Draft inspection items created, first Self-Inspection Advisory Board held
Nov: Questionnaire survey of Consortium participating institutions and trainees conducted
Dec: Self-inspections conducted at Supervisory Department and Training Department, inspection results and issues organized
2023 Jan: Draft self-inspection report created
The second Self-Inspection Advisory Board and Consortium Steering Committee held
Feb: Self-inspection report determined and published on Consortium website

(6) List of inspection items

Inspection area 1: Consortium operation

Inspection item 1-1: Do the core institutions build a system to appropriately manage the Consortium?

Inspection item 1-2: Are Consortium activities useful for fostering experts in statistical sciences in the participating institutions?

Inspection item 1-3: Are the initiatives of the cooperating institutions useful for the Consortium activities?

Inspection item 1-4: Are the Consortium activities spreading to more universities?

Inspection area 2: First-term training management and operation

Inspection item 2-1: Do the core institutions provide support so the trainees can focus on training?

Inspection item 2-2: Is there a system for senior professors that can sufficiently achieve the purpose of the training?

Inspection item 2-3: Are the equipment and facilities maintained and managed so that the training can be fully achieved?

Inspection item 2-4: Is there a smooth division of roles and cooperation between the core and participating institutions?

Inspection area 3: Human resource development in first-term training

Inspection item 3-1: Is there a clear human resource vision to be fostered, and is the training content suitable?

Inspection item 3-2: Is the training course organized considering the career development of the trainees and international success?

Inspection item 3-3: Is the policy for selecting the trainees defined clearly, and is the ability and motivation objectively evaluated?

Inspection item 3-4: Are course evaluation and completion criteria clearly defined and implemented objectively and strictly?

Inspection area 4: Initiatives of participating institutions

Inspection item 4-1: Do participating institutions advance initiatives for building a system for training experts in statistical sciences?

Inspection item 4-2: Do the participating institutions have young researchers valuable for training experts in statistical sciences participating in the training?

Inspection item 4-3: Do the participating institutions develop an environment that

allows the trainees to focus on training?

2. Consortium activity results

(1) Consortium operation

- For a smooth operation of the Consortium, a “General Assembly” consisting of all members and the “Steering Committee” consisting of five members each from the core and participating institutions (10 members) were established as the operating organization of the Consortium.

The General Assembly, held once in a fiscal year (August 2021, May 2022), deliberated on basic matters related to the project and operation, such as Consortium bylaws and project promotion policies.

The Steering Committee met five times in FY2021 and four times by January FY2022. It deliberated on important matters related to project implementation, such as the project plan for each fiscal year and the admission of new members.

- The Training Experts in Statistical Sciences (TESS) Steering Committee, which consists of the Director-General, Vice Director-General, and relevant faculty and staff members of the Institute of Statistical Mathematics, was established as a core institution management entity for Consortium activities.

The TESS Steering Committee met 33 times in FY2021 and 14 times by January FY2022 and discussed practical matters related to business operations, such as personnel affairs, facilities, and budget execution.

- As the secretariat for the Consortium, the Center for Training Professors in Statistics was established as a new research facility in the Institute of Statistical Mathematics (January 2022).

This Center comprises the “Supervisory Department,” overseeing the Consortium management and promoting the overall project. The “Training Department” oversees the planning and implementation of the program for training statistics professors; there are ten full-time specially appointed professors, other faculty members and staff (as of January 2023).

Additionally, the Institute of Statistical Mathematics Satellite was established at Shiga University as a training base in the west (June 2022).

Additionally, at participating institutions, a professor in charge of projects supervising the activities of the Consortium and a professor managing the training for each trainee was assigned.

- As part of the Consortium activities, the “Workshop for Building a System for Training Experts in Statistical Sciences” was held once in the fiscal year (February 2022 and August 2022) with the active cooperation of participating institutions.

Lectures on graduate-level statistical education by leading figures in statistical education from overseas were held. We collected and analyzed information on the system, curriculum, and training to foster experts in statistical sciences, mainly in the United Kingdom. This information was shared on the Consortium website.

- To raise public awareness and disseminate the Consortium activities, the research results of all trainees at the Japanese Federation of Statistical Science Associations meeting (September 6, 2022) were presented. In addition, lectures on this project were presented at the Japan Inter-University Consortium for Mathematics, Data Science and AI Education and the Research Organization of Information and Systems Symposium.
- Through these initiatives, the number of participating institutions, which was 21 in 2021 when the Consortium was established, increased by four due to the transition from cooperating institutions to participating institutions (two) and new affiliations to participating institutions (two), reaching 25 in 2022.

(2) First-term training management and operation

- Six senior university statistics professors were hired at the core institution of the Institute of Statistical Mathematics to train 30 or more university statistics professors over three training terms. One senior professor was assigned as a mentor, and one sub-mentor to provide research and education guidance to the trainee.
- For the smooth operation of the Training Department project, a “Training Department committee” was set up, consisting of all professors belonging to the Training Department, including senior professors, as an operating organization of the Training Department.

The Training Department committee met 15 times in FY2021 and 14 times by January 2022 to manage the training, share information among senior professors, and deliberate on various training-related issues.

- To accurately manage the training, an “Achievement Level Management Working Group” was established for each trainee. It consisted of mentor, sub-mentor, professor in charge of training at participating institutions, and trainee.

The Achievement Level Management Working Group held meetings at the beginning and end of each course every six months, formulated each course training plan for each trainee consistent with his/her characteristics and confirmed the progress and achievement level.

- To decide whether young researchers recommended by participating institutions can participate in the training, a “Consortium Selection Committee” was established, consisting of three senior professors from core institutions and three in charge of

projects from participating institutions with no recommended young researchers.

The Consortium Selection Committee met three times each in FY2021 (first-term training) and FY2022 (second-term training) to select young researchers for training by examining whether they had the ability and motivation to participate.

(3) Human resource development in first-term training

○ For the “Basic Concepts of the Program for Training Statistics Professors,” five concepts commonly understood by senior professors were decided by the Training Department committee, such as enabling lectures on four subjects, including basic statistics, for graduate students in the masters course. The training was implemented based on these ideas.

○ The two-year training period was divided into six-month courses, and trainees and goals were set for each course. In the Achievement Level Management Working Group, the goals and training progress of each trainee was confirmed with professors in charge of training at the affiliated institution. In addition, the requirements for “Training Completion Certification” that clarify the content and weights required for training completion for each basic and elective subject were established and presented to the trainees and participating institutions.

○ In the first course, the goal was to “give lectures on basic statistics,” and training was centered on basic and compulsory subjects consisting of “Statistics baseline special training,” “Statistical education training exercise,” and “Statistical research skill enhancement exercise” (October 2021-March 2022).

In the second course, the goal was to “give lectures on advanced statistics,” and training centered on the three basic subjects and individual and selective subjects such as “Advanced data science special lecture” and “advanced data analysis exercise” (April 2022-September 2022).

○ Several teaching materials and reference books used and evaluated by graduate schools in Europe and the United States (40 volumes) and domestic-related books (66 volumes) were collected. In addition, some online lectures were conducted using the online lecture system developed at the Institute of Statistical Mathematics and the Shiga University Satellite.

○ Forums to present results were set up at places like the Japanese Federation of Statistical Science Associations Conference / Program Session (September 2022) and the Experts in Statistical Sciences Training-Interim Report Meeting at Shiga University (November 2022). The trainees presented their research results.

(4) Initiatives of participating institutions

- Participating institutions were engaged in various initiatives to promote training experts in statistical sciences within the participating institutions, including curriculum reorganization, such as enhancing statistics lectures in graduate school education, developing on-demand teaching materials and distribution systems for experts in statistical sciences, and maintaining workstations and related software for advanced statistical analysis.
- Participating institutions individually invited young researchers to participate in the program and conducted internal recruitment. Thus, 12 young researchers from various academic fields, such as economics, pharmaceutical sciences, health sciences, engineering, and informatics (including method C), from ten institutions participated in the first-term training.
- The participating institutions developed an environment where their trainees could focus on the program for training statistics professors, such as reducing and removing the burden of overseeing classes and work. They engaged substitute professors, used assistants and improved work efficiency by developing dedicated PCs and software.

3. From the perspective of Consortium participating institutions

A questionnaire survey was conducted (25 participating institutions) to obtain evaluations, opinions, and requests from the perspective of participating institutions regarding Consortium activities.

The main opinions of the Consortium participating institutions from the survey results were as follows.

(1) Evaluation of Consortium activities

For the evaluation of the current Consortium activities, 13 institutions responded that “the activities exceeded initial expectations” (52%, total of “greatly exceeded” and “exceeded”). When restricted to institutions participating in the first-term training (nine institutions), eight institutions (89%) responded as such, and many institutions highly regarded the current state of the Consortium activities.

In the free-entry field, many responses were received that highly evaluated the training content and the quality of the senior professors.

- “The training curriculum was well-developed, and the mentor professors were enthusiastic about teaching.”
- “Big-name professors beyond my expectations were good instructors.”
- “The fact that I received guidance from a kind and meticulous mentor is more than I expected.”
- “Quality and dedication of senior professors, remarkable progress of trainees.”
- “My skills have greatly improved over this past year.”
- “Remarkable improvement in research leadership.”
- “My awareness of the importance of statistics education has spread in faculties and graduate schools other than statistics.”
- “Through the consignment expenses, tangible and intangible facilities have been enhanced, and it was possible to interact with researchers.”

Meanwhile, ten institutions (40%) responded that they “were not at the stage where they can conduct evaluations” or “cannot say either way.” Many of these institutions did not invite young researchers to participate in the first-term training, so the evaluation was reserved when only a year had passed since the full-scale activities of the Consortium began.

Two institutions responded that “the activities were below initial expectations.” Both institutions wished to participate in the method C training, an initiative unique to ISM (not covered by subsidies). Still, they could not participate in the first-term training, and this was cited as the reason.

(2) Effective support for initiatives of participating institutions

Regarding effective support for training experts in statistical sciences within participating institutions, institutions responding that they would “share information on examples of initiatives taken by each institution” accounted for the largest number at 20 (80%). This was followed by “provide standard training curriculum/teaching materials” (15 institutions, 60%) and “continuous distribution of consignment expenses” (12 institutions, 48%).

Regarding consignment expenses distributed for training experts in statistical sciences, institutions that utilized them to maintain facilities and equipment, such as purchasing workstations, software, and datasets, accounted for the largest number at 19 (76%). Additionally, consignment expenses were used to create on-demand teaching materials that could replace the guidance provided by trainees and lectures by researchers outside the university.

Regarding requests for consignment expenses, institutions requesting the enhancement of “administrative processing manuals” that describe the feasibility of execution with consignment expenses accounted for the largest number at 11 (44%). This was followed by institutions requesting the “conclusion of consignment contracts early in the fiscal year” and “simplification of administrative work such as the omission of signature seals” at nine institutions (36%). Other requests included a continued distribution of the consignment expenses from the next fiscal year onwards.

(3) Participation in the program for training statistics professors

Institutions participating in the first-term training engaged in “reducing the burden of classes” by securing substitute professors and “improving work efficiency” by developing dedicated PCs and software (five institutions / 20% for each). In addition, they reduce the number of classes overseen by professors and administrative assistants so that the trainees can focus on their training.

During training or after completing training, participating institutions develop or plan activities for trainees, such as “guidance on research that utilizes statistics” (18 institutions / 72%), “overseeing classes on statistics” (15 institutions / 60%), and “creating curricula and teaching materials” for classes on statistics (15 institutions / 60%). Additionally, trainees are expected to contribute to the statistics community and human resource training projects and provide research consultation to masters and doctoral students.

The number of expected participants (number of trainee candidates, including the actual number of participants in the first-term training) for training statistics professors over the three terms that accounted for the largest share was two people (10 institutions) followed by one person (eight institutions). The highest number of participants was five (one institution). There were 47 people for the entire Consortium, and there was a training need for more people than expected.

Regarding the possibility of having young researchers participate in training if, hypothetically, there is a fourth-term training, even after the completion of third-term training, 16 institutions responded that “there is the possibility of participation of about one person every 2-3 years.” Four institutions responded that “there is the possibility of participation of at least one person per year,” with 20 institutions (80%) responding that participation in the training is possible. Therefore, the training needs for university statistics professors will continue.

Five institutions responded that “there is little possibility of participation,” and the reasons cited included “short on young researchers and departments, and not easy to find substitute professors,” “heavy burden on the affiliated institution to which trainee belongs,” and “no candidates to participate in training.”

(4) Other opinions, requests, etc.

Other main opinions, requests, and answers in the free-entry field provided at the end of the questionnaire were as follows.

Many responses were regarding support and appreciation for the Consortium activities, including the program for training statistics professors. For example, these opinions were expressed, “grateful for the efforts of senior professors,” “hope that mentors will continue to provide meticulous and detailed guidance,” “I was very grateful for the consignment expenses, and I hope that they continue to distribute it,” “I think it is a valuable initiative, and I would like to continue participating in it,” and “wish to establish a system for further cooperation.”

Multiple opinions were received for long-term initiatives. These were “human resource training requires long-term initiatives, and this project should be implemented over the long term” and “it takes time to train professors. Therefore, this should be implemented over an extended timeframe for ten years or more” .

Other opinions included “people at a certain level, not just university professors, should be included,” and “exam tickets should be distributed for the Grade-2 Japan Statistical Society Certificate and the Grade-1 Certificate.” In addition, “an

opportunity to interact with cutting-edge researchers at ISM would be good,” “I would like to know the specific training content and burden on trainees,” and “I want the burden on the participating institution also considered.”

4. From the perspective of the first-term trainees

A questionnaire survey was conducted (12 trainees) to obtain evaluations, opinions, and requests from the perspective of the trainees regarding the first-term program for training statistics professors.

The survey results provided the main opinions of the trainees in the first-term training.

(1) Evaluation of training

The evaluation for training statistics professors was conducted with the question, “Would you recommend other young researchers to participate in this training?” Eight people (67%) responded that they would “recommend” (five people) or “recommend rather than not recommend” (three people), “participation in the training,” indicating that many of the trainees highly regarded this training.

Meanwhile, two people responded that they would “not recommend rather than recommend” participation.

Both reasoned that they could not easily recommend the training because of the high effort rate needed. However, they said that if sufficient support is provided by their institution, such as reducing work burden, they could recommend the training content due to its excellent quality.

Other opinions were that “reducing training effort is not good because it would reduce the training effect. Therefore, instead of revising the training, it is more effective to find people suitable or capable of taking the training course and create opportunities to recommend them,” and “it would be good if examples of clear career paths and benefits could be shown.”

(2) Own career development and human resource training within institutions

Regarding whether training statistics professors help trainees develop their careers, seven people (58%) responded “beneficial,” and four (33%) responded “somewhat useful.” It was found that most trainees considered this training helpful in their career development.

Additionally, regarding whether the training is helpful for training experts in statistical sciences within the institution, seven people responded that it would be “useful” (58%, total of “very useful” and “useful”), which accounted for over half the respondents. Still, four people (33%) responded “cannot say either way,” and a sizable number also withheld their evaluation. Currently, the program is in the intermediate stage of the first-term training, with no opportunities to reflect on the

training results.

Meanwhile, one person responded that the training would be “not useful rather than useful” to training experts in statistical sciences. This was because the “burden of work within the institution has been reduced to secure training initiatives, and they no longer oversee classes and student guidance.” From the next fiscal year onwards, “plans are afoot for overseeing lectures and establishing statistics-related study groups within the institution.”

Other opinions regarding training contents considered important for training experts in statistical sciences within the institution are: systematic curriculum aimed at acquiring field-specific knowledge, such as biostatistics and basic knowledge of statistics; acquiring knowledge through special baseline training; and practical competence through mock lectures. Mock lectures are effective because having prior teaching experience is important. In addition, acquiring knowledge about statistical methods from the basic to applied statistics levels in specialized fields, creating easy teaching materials for students to understand, and experience in research guidance seminars on campus and conducting research with teachers and students are important.

(3) Development of an environment to focus on training

Regarding the development of an environment where trainees can focus on the program for training statistics professors, nine people (75%) responded that this was “being done,” and three people (25%) responded, “not being done.”

The improvements in the environment included “improving work efficiency by developing dedicated PCs and software” (six people), “reducing courses overseen” (four people), “securing substitute professors” (three people) and adjusting the number of companies overseen as part of the research, reducing work such as involvement as internal committee members, and being excluded from managing student guidance.

Additionally, improvements in the environment desired by those for whom such an improvement was not implemented were “securing substitute professors,” “reducing courses overseen,” and “reducing work other than courses.”

(4) Utilization of training results after completion of training

Regarding utilizing the training results after completing the program, many people wanted to use the results through “lectures on statistics courses” (10 people), “guidance on research using statistics” (10 people), and “creating curricula and teaching materials on statistics and other topics” (eight people).

Several people utilized the training results in their research activities. Opinions such as “continuing research that integrates previous research content and statistics,” “introducing knowledge of statistics and data science to one’ s specialized field,” and “utilization of correct knowledge of statistics in own research” were expressed.

(5) Other opinions and requests

Other main opinions, requests, and answers in the free-entry field provided at the end of the questionnaire were as follows.

There were requests for in-person training and connections between trainees, such as “regular holding of in-person workshops like seminars,” “1-2 weeks of research and teaching material development within ISM” , and “a university laboratory to train with second-term trainees.”

There were opinions, such as “wish for continued reporting and advertising results to our institutions, leading to our achievements and career development.” In addition, “until now, I have been giving mock lectures on applied fields in which I have an interest, but I would like to learn all the basic subjects again,” and “the training thus far has been excellent, and I have no complaints” were received.

5. Self-inspection results

Inspection area 1: Consortium operation

Inspection item 1-1: Do the core institutions build a system to appropriately manage the entire Consortium?

(1) Overview of initiatives

The Institute of Statistical Mathematics is the core institution; it established a Consortium consisting of departments and centers in participating universities as “participating institutions” and “cooperating institutions” ; and established bylaws (August 31, 2021).

The bylaws stipulated the establishment of a “General Assembly” as part of the Consortium to discuss basic matters related to project implementation and operation and a “Steering Committee” to discuss important Consortium project implementation policy. In addition, they stipulated that the core institution would oversee the administrative work necessary for operation.

The core institution established the Center for Training Professors in Statistics within the Institute of Statistical Mathematics as the Consortium secretariat and management organization. It also established the “Institute of Statistical Mathematics Shiga University Satellite” with the Shiga University (participating institution) as a training base facility in western Japan.

The Training Experts in Statistical Sciences (TESS) Steering Committee, comprising the Director-General, Vice Director-General, and relevant faculty and staff members of the Institute of Statistical Mathematics, was established to establish the decision-making and management system within the core institution. Through regular meetings, it ensures the smooth operation of the Consortium.

(2) Inspection results

The Consortium bylaws position the Institute of Statistical Mathematics as a core institution and clarify its decision-making and management. Additionally, one General Assembly (with all participating institutions) and 4-5 Steering Committees are held every fiscal year to ensure the smooth operation of the Consortium project.

The Consortium Steering Committee comprises five members from each core and participating institution so that the opinions of the participating institutions can be

accurately reflected in the Consortium project under the appropriate management. Therefore, a close collaboration system within the Consortium is built. Examples include immediately disseminating information such as meeting materials and summaries of proceedings from the Steering Committee to all participating institutions.

The Center for Training Professors in Statistics, which serves as the Consortium secretariat, organizes regular TESS Steering Committees to collaborate with related faculty members and departments within the core institution and establish a system to manage the Consortium project. Additionally, the entire Consortium is appropriately addressed through the projects such as the execution of the secretariat function of the General Assembly, Steering Committee, and workshops; distribution of consignment expenses (subsidies) to participating institutions; and the opening of the first-term program for training statistics professors.

Inspection item 1-2: Consortium activities useful for fostering experts in statistical sciences in the participating institutions?

(1) Overview of initiatives

The Consortium conducted the following activities based on the basic policies and project plans approved by the Steering Committee and the General Assembly.

- The Consortium Selection Committee selected 11 people (from nine participating institutions) for method A training and the first-term program for training statistics professors from October 2021 (the training period is two years until September 2023).
- The construction and promotion status of the system for training experts in statistical sciences at all participating institutions is compiled and shared. Along with the Consortium workshops (February 2022, August 2022), the detailed status of the initiatives of some participating institutions and the initiatives of each participating institution are shared.
- A members-only site was set up on the Consortium website (in February 2022), operating since August 2022, to support the participating institutions by sharing detailed information necessary for training experts in the statistical sciences.
- Collected teaching materials and reference books (40 volumes) used and evaluated by graduate schools in Europe and the United States and domestic-related books (66 volumes). They were trialed in the first-term training to examine the possibility of using some as standard teaching materials.
- While developing a training system for university statistics professors, we provided information on the curriculum and teaching materials used in the first-term program.

- We utilized national subsidies (subsidies for research implementing artificial intelligence, etc.) as consignment expenses. We distributed the costs necessary for constructing and promoting training experts in participating institutions and developing the environment for training statistics professors.

(2) Inspection results

The program for training statistics professors, central to Consortium activities, had 12 participants in the first term (including method C). Considerable numbers of participants were expected in the second-term training (questionnaire survey results), making this a useful project that meets the training needs of university statistics professors at participating institutions.

Additionally, as per inspection items 1-4, four universities joined the Consortium as participating institutions in the fiscal year following the establishment of the Consortium. These results show that the Consortium activities are useful for each university.

Furthermore, judging from the “Self-Inspection Questionnaire Survey for Participating Institutions,” the Consortium activities successfully responded to the 25 participating institutions’ needs for training experts in statistical sciences.

- “Major expectations when participating in the project” (multiple answers allowed) were (1) attendance for training statistics professors (21 institutions), (2) providing standard curricula (12 institutions), and (3) distributing consignment expenses (seven institutions).
- The “main impetus for the initiative” (multiple answers allowed) for the 16 participating institutions that have already built a system for training experts in statistical sciences were (1) joining the Consortium and sharing information (10 institutions), (2) participating in the program for training statistics professors (six institutions), and (3) utilizing consignment expenses (six institutions).
- The “Consortium initiatives and information that would be useful during consideration” (multiple answers allowed) for the nine participating institutions considering the construction of a system for training experts in statistical sciences were (1) sharing initiatives by each institution in the result report (nine institutions), (2) workshops/lectures (eight institutions), (3) program for training statistics professors (six institutions), and (4) Consortium website/member site (five institutions).
- “Effective support for training experts in statistical sciences” (multiple answers allowed) were (1) examples of initiatives by each institution (20 institutions), (2)

providing standard training curriculum and teaching materials (15 institutions), (3) continuously distributing consignment expenses (12 institutions), and (4) improving Consortium website and member site (seven institutions).

Additionally, in the self-inspection questionnaire survey, “improvement requests regarding the distribution of consignment expenses” were (1) improvement of administrative manuals (11 institutions), (2) early conclusion of consignment contracts (nine institutions) and (3) simplification of administrative work such as the omission of signature seals (nine institutions). “Support measures for training experts in statistical sciences” included improvements in the Consortium website/member site (seven institutions), which must be improved sequentially.

Inspection item 1-3: Are the initiatives of the cooperating institutions useful for the Consortium activities?

(1) Overview of initiatives

The Consortium bylaws stipulate that “cooperating institutions” cooperate with the project regarding educational system development and quality assurance, or institutions expected to become participating institutions during the project period.

Initially, there were five cooperating institutions (Kyoto University, Tokyo Gakugei University, Hitotsubashi University, Hiroshima University, and Rissho University). However, after the Japanese Association for Promoting Quality Assurance in Statistics joined in November 2021, Kyoto University and Hitotsubashi University transitioned from cooperating to participating institutions, currently leaving four universities.

Initiatives by the Consortium cooperating institutions include (1) receiving advice regarding specialized knowledge in human resource training from Tokyo Gakugei University during the first-term program for training statistics professors implemented by the core institution; (2) collecting and analyzing information on systems, curricula, and training, for fostering experts in statistical sciences centered on the United Kingdom (Hiroshima University); and (3) hosting invited lectures on the current affairs, positioning, and transformation of graduate-level statistical education by leading figures from overseas (Japanese Association for Promoting Quality Assurance in Statistics).

(2) Inspection results

The advice from Tokyo Gakugei University (repeated lecture experiences and Achievement Level Management system by related parties) is introduced and practiced as the basic component for the first-term program for training statistics professors. Furthermore, it

helps Consortium activities.

Additionally, collecting and analyzing information related to international systems for training experts in statistical sciences, curricula, and training by Hiroshima University and the Japanese Association for Promoting Quality Assurance in Statistics contribute to developing Japan's educational system (teaching materials, curriculum, etc.). These are useful Consortium activities.

The necessary encouragement and support are provided to cooperating institutions expected to become participating institutions.

Inspection item 1-4: Are the Consortium activities spreading to more universities?

(1) Overview of initiatives

The core institution promotes public awareness of Consortium activities and results through the Consortium website for the general public and holding workshops where participants are not limited to members (February and August 2022) and planning sessions at the Japanese Federation of Statistical Science Associations meeting (September 2022).

Additionally, core institutions requested recommendations for trainees in the second-term program for training statistics professors to encourage cooperating institutions expected to become participating institutions during the project period.

Therefore, Hokkaido University and the Joint Support Center for Data Science Research joined the Consortium as participating institutions in July 2022. In addition, Hitotsubashi University and Kyoto University transitioned from cooperating to participating institutions.

(2) Inspection results

The number of participating institutions expanded from 21 universities at its establishment to 25. As shown in inspection item 1-3, necessary institutions and Consortium activities have spread to many universities.

Strengthening information dissemination, such as further improving the Consortium website, will be necessary to expand the number of participating institutions.

Additionally, according to the "Self-Inspection Questionnaire Survey for Participating Institutions," 21 out of 25 participating institutions mentioned the program's attendance as an expectation. It was also found that the need for human resource training for experts in statistical sciences would continue even after the completion of the third-term training. Therefore, the ideal way for human resource training after the project

period needs to be extensively considered.

Inspection area 2: first-term training management and operation
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Inspection item 2-1: Do the core institutions provide support so the trainees can focus on training?

(1) Overview of initiatives

All mentors always considered the training and provided support so trainees could focus on training.

Furthermore, once every six months, the Training Department held an “Achievement Level Management Working Group,” which brought together trainees, mentors, and professors overseeing training at the participating institutions. Here, opinions on the training content were exchanged, and the burden on trainees and whether they could focus on training was also discussed.

As seen from the questionnaire, the burden of teaching and guidance had been reduced for many trainees. However, some did not have enough time for training due to individual circumstances. The Training Department shared information about such trainees and provided support so the training could be conducted without difficulties, but the scope was limited.

Additionally, the core institution supported participating institutions to develop an environment for their trainees. This made it easier for participation (securing substitute professors, developing equipment and software that contributed to the efficiency of regular work, reducing the burden) and distributing necessary expenses for conference presentations as consignment expenses (the total was 48,221,000 yen for FY2022).

(2) Inspection results

All mentors supported the trainees so that they could focus on training, such as by hosting the “Achievement Level Management Working Group” by the professors in charge at the core and participating institutions. However, there are also limits to the support provided. When accepting the trainee, assuming and understanding the environment during training at the affiliated institution was necessary.

Additionally, the consignment expenses distributed to the participating institutions are used in (1) developing facilities and equipment; (2) securing and utilizing substitute professors and assistants; and (3) collecting related materials. However, opinions in the questionnaire survey results of the participating institutions requested improved consignment expense administration manuals and the simplification of administrative work

and early distribution. Moreover, opinions also requested securing substitute professors and reducing the number of courses overseen. Therefore, improvements to review and disseminate the consignment expenses and examples of utilization need to be promoted.

Inspection item 2-2: Is there a system for senior professors that can sufficiently achieve the purpose of the training?

(1) Overview of initiatives

Generally, one senior professor is assigned as a mentor to two trainees. Additionally, sub-mentors are assigned for unforeseen situations to ensure continuous trainee consultations.

Six senior professors were assigned to the 12 first-term trainees. However, considering crowding and an increase in the number of trainees in the future, two senior professors may be added from the next fiscal year.

When selecting, senior professors were considered for various specializations in the applied fields of statistics, securing first-class professors in each field. Additionally, professors with research and human resource training experience could provide meticulous support. The questionnaire survey results pointed out that this was highly regarded.

(2) Inspection results

The system comprises experienced senior professors with various specialties and sufficient staff to achieve the purpose of the training. This point was highly regarded, and there were no problems here.

Inspection item 2-3: Are the equipment and facilities maintained and managed so the training purpose can be fully achieved?

(1) Overview of initiatives

The Institute of Statistical Mathematics, the core institution, has a dedicated facility for training and research. A high-performance computer is installed to conduct advanced statistical analysis, and trainees can access this computer from participating institutions. The computer is equipped with various purchased data so that multiple data analyses can be experienced. A senior professor and a professor from the Training Department manage this equipment and facilities.

However, due to the COVID-19 pandemic, the training facility was rarely used by trainees.

Shiga University has the core institution satellite. The Shiga University Satellite has a special training room where trainees from the Kansai region and other places can gather anytime. Professors assigned to the Training Department operate the satellite (cross-appointment with Shiga University).

Both facilities are equipped with studios, and training can be provided through effective online lectures.

(2) Inspection results

The equipment and facilities are maintained and properly managed so that the purpose of the training can be fully achieved. Significantly, the Institute of Statistical Mathematics, the core institution, and Shiga University, the satellite, have the same studio and conduct online lectures.

Due to the COVID-19 pandemic, the training facility has rarely been used by trainees. However, the effective use of equipment and facilities should be considered in the future.

Inspection item 2-4: Is there a smooth division of roles and cooperation between the core and participating institutions?

(1) Overview of initiatives

The mentor professors guide the trainees so that they are equipped with teaching and leadership skills in statistics. Additionally, trainees are advised, and joint research is conducted using statistics in specialized fields.

Meanwhile, the professors overseeing the training in the participating institutions confirmed the growth and contribution of trainees to training experts in statistical sciences within the participating institutions. They also planned current and future classes and activities.

The division of roles between the two groups of people is thus clear.

Inspection item 2-1 shows that the biannual exchange of opinions at the “Achievement Level Management Working Group” facilitates collaboration between the core and participating institutions. In addition, related parties in the participating institution can participate in the mock lectures, allowing them to confirm the actual growth of the trainees.

(2) Inspection results

A clear division of roles between the core and participating institutions is observed. There is smooth cooperation between the two, centering on the “Achievement Level

Management Working Group.” The questionnaire survey shows the results and that there was no strong demand for training from the participating institutions.

Inspection area 3: Human resource development in first-term training

Inspection item 3-1: Is there a clear human resources vision to be fostered, and is the training content suitable?

(1) Overview of initiatives

Human resources to be fostered are university statistics professors who can lecture graduate students on statistics, the basis of data analysis, and guidance on applied research in statistics.

To clarify this human resource vision, the Training Department set a specific goal to provide lectures in four subjects to masters students (lectures on basic statistics, advanced statistics, and those that integrate specialized fields and statistics (two subjects)).

Additionally, the training period was divided into half-year segments from the first course to the fourth to learn each lecture without difficulty. The goals and achievement levels for each course were made possible.

Based on the helpful advice from Professor Keiichi Nishimura of Tokyo Gakugei University, a cooperating institution, trainees repeatedly gave mock lectures in which all members of the Training Department (trainees, mentors, and other Training Department professors) participated. This created an environment where they could improve collectively. This is a globally unprecedented and valuable initiative. Furthermore, the mock lectures were saved as videos and shared among the trainees and Training Department professors, and some of them were posted on the Consortium member website.

Additionally, the mentors provided fine-tuned statistics guidance to the trainees in group training. The questionnaire survey results also indicated the importance of mock lectures and group training in their responses, which were generally good initiatives.

(2) Inspection results

The vision of human resources to be fostered in the Training Department was clarified, and suitable training content has been devised and implemented.

Determining how the abilities of a professor, cultivated in the mock lectures, were utilized in the actual lectures at the participating institutions is necessary. Additionally, using this training content as a reference at several Japanese universities would be beneficial.

Inspection item 3-2: Is the training course organized considering the career development

of the trainees, international success, etc.?

(1) Overview of initiatives

Before beginning this training, western textbooks were selected after class content and textbooks used by internationally renowned universities were examined. In particular, “An Introduction to Statistical Learning: with Applications in R (Springer Texts in Statistics)” was preferred during group training and mock classes so all trainees could understand it.

Additionally, new textbooks were necessary to proceed with the training. Therefore, a significant textbook review was conducted before the third course.

In the individual subject, “Advanced data science special lecture,” the current mentor gave the lecture with subtitles. Some of this included the latest content not discussed at other universities or research institutions. Various measures have also been taken, such as inviting prominent researchers from external entities as needed.

The research themes utilized these results, and publishing them in international paper publications was considered.

(2) Inspection results

Internationally acclaimed textbooks and courses with advanced content help the career development and international success of the trainees.

The textbook review and inviting speakers were thought through properly; admittedly, there was substantial content.

Inspection item 3-3: Is the policy for selecting the trainees defined clearly, and is the ability and motivation objectively evaluated?

(1) Overview of initiatives

Following the selection policy approved by the Consortium Steering Committee, young researchers were selected for training. An impartial Consortium Selection Committee consisting of three project professors from participating institutions who have not recommended participation in the current term and three senior professors from core institutions were involved in this selection. However, the Consortium Steering Committee includes professors of participating institutions who recommended participation. Therefore, the selection process and results of the Selection Committee were reported to the Steering Committee afterwards for a fair selection.

In the selection process, requirements for the trainees specified in the training

participation recommendation guidelines were a doctoral degree and ability and motivation (three items for first-term selection and four items for second-term selection). At the Selection Committee, scores based on training participation recommendation documents were provided (research outline) on four points; achievement in the specialized field, statistical knowledge or experience, motivation or positiveness, and contribution or future potential. When a decision was difficult, the selection process was conducted objectively and carefully, such as by seeking additional documents. All participating institutions that recommended participation understood the selection process results, and the questionnaire survey results did not reveal any opinions or requests regarding the selection process.

Among the young researchers recommended to participate in the first-term selection, some applicants could not evaluate their knowledge of statistics. Therefore, to confirm the basic understanding of statistics more objectively, applicants were asked to attach the “test result report” of the Grade-2 Japan Statistical Society Certificate from the second-term selection onwards. Additionally, if the applicant did not fully understand the program’s purpose for training statistics professors, additional materials were sought for confirmation. All trainees had the same goal when the training began.

(2) Inspection results

The trainee selection policy was clearly defined based on the deliberations of the Consortium Steering Committee.

Additionally, the young researchers recommended to participate are objectively evaluated for their ability and motivation based on fair examinations by the Consortium Selection Committee.

The selection process is smooth if recommended participants, young researchers fully understand the purpose of the training at the application stage.

Inspection item 3-4: Are the course evaluation and completion criteria clearly defined and implemented objectively strictly?

(1) Overview of initiatives

For first-term trainees, only basic subjects that all students should take (Statistics special baseline training, Statistical education training exercise, Statistical research skill enhancement exercise) and individual elective subjects (Consultation exercise,

Teaching material development exercise, Joint research exercise, Advanced data science special lecture, Advanced data analysis exercise) were decided. However, no specific evaluation method or completion requirements were indicated.

Therefore, necessary considerations were made in parallel while implementing the training. The Training Department committee set the evaluation criteria for each subject.

Mentors graded basic subjects through mock lectures, and confirmation and evaluation were provided on whether they exceeded the criteria. Additionally, ‘passing the Grade-2 Japan Statistical Society Certificate’ was set as an objective statistics-related ability.

For individual subjects, points were given for participation and deliverables in each subject, and students were expected complete the course with a total score of 100 or more.

The trainees understood when this was explained to them at the end of the first course. The questionnaire survey results show no particular opinions regarding the completion requirements. From the second course onwards, each trainee formed their training plan based on this completion requirement.

Additionally, when the completion requirement was satisfied, a certificate of completion and course list was provided.

(2) Inspection results

The evaluation and completion criteria for the training course are clearly defined and presented in a list. The evaluation is objectively and rigorously implemented.

In the first-term training, the completion requirements were not indicated before the start of the training due to insufficient preparation. However, in the second-term training, the completion requirement was attached to the materials for recommending participation, and the trainees could participate without any misunderstanding.

Inspection area 4: Initiatives of participating institutions

Inspection item 4-1: Are the participating institutions advancing initiatives for building a system for training experts in statistical sciences?

(1) Overview of initiatives

According to the results of the “Self-Inspection Questionnaire Survey for Participating Institutions,” each participating institution formulated plans and curricula for developing university statistics professors and experts in statistical sciences within the institution. Of the 25 institutions, 16 had “implemented” this, and the remaining nine were “under consideration.”

Information on each participating institution’s initiatives was collected in the results report to the core institution every fiscal year. This information was also shared with all participating institutions.

(2) Inspection results

All participating institutions implement or consider initiatives to build a system for training experts in statistical sciences.

The “Consortium initiatives and information useful during consideration” (multiple answers allowed) for the nine participating institutions were (1) examples of initiatives by each institution in the result report (nine institutions), (2) implementing workshops/lectures (eight institutions), (3) providing curricula for training statistics professors (six institutions), and (4) improving the Consortium website and member site (five institutions).

Therefore, each participating institution had a different faculty system and curriculum for training university statistics professors and experts in statistical sciences. Thus, information must be collected and provided from a broader perspective, including examples of initiatives in other countries.

Inspection item 4-2: Do the participating institutions have young researchers useful for training experts in statistical sciences participating in the training?

(1) Overview of initiatives

According to the results of the “Self-Inspection Questionnaire Survey for Participating Institutions,” of the 25 participating institutions, ten participated in the first-term program for training statistics professors (October 2021-September 2023). Thirteen applied

for the second-term training (April 2023-March 2025), and 12 have been recommended or are considering participation in the third-term training (April 2024-March 2026). There are initiatives for encouraging young researchers to participate in the training at all participating institutions.

Additionally, the total number of young researchers planning to be recommended and applying to the third-term training, including the first-term results, is 47.

(2) Inspection results

All participating institutions encouraged young researchers useful for training experts in statistical sciences to participate in the training.

“Trainee utilization policies” (multiple answers possible) mentioned by participating institutions (25 institutions) in the questionnaire survey were (1) providing research guidance using statistics (18 institutions), (2) overseeing statistics courses (15 institutions), and (3) creating curricula and teaching materials to be used in statistics classes (15 institutions). The institutions expected young researchers to participate in training experts in statistical sciences within the institutions.

The core institutions must encourage participation and ensure the quality and quantity of mentors for young researchers to participate in the program for training statistics professors and to demonstrate their roles as the core of training experts in statistical sciences in each institution.

Inspection item 4-3: Do the participating institutions develop an environment that allows the trainees to focus on training?

(1) Overview of initiatives

The participating institutions were engaged in securing substitute professors and assistants, streamlining work by developing dedicated PCs and software, reducing the number of classes overseen and internal committee work to develop an easier environment for trainees to participate.

Additionally, the core institution distributed the necessary expenses for the initiatives as consignment expenses to support participating institutions (48,221,000 yen in FY2022).

(2) Inspection results

According to the “Self-Inspection Questionnaire Survey for Trainees” results, nine

out of 12 trainees responded that developing an environment for trainees to focus on the program for training statistics professors was “implemented.” Many participating institutions developed the necessary environment for this training.

Specific content for improving the environment included (1) streamlining work by developing dedicated PCs and software (six people), (2) reducing class burden by securing and utilizing substitute professors and assistants (four people), and (3) reducing overseen classes (four people).

Meanwhile, some trainees requested a reduction in class burden (four people) or in overseen classes (two people) by securing and utilizing substitute professors and assistants. Therefore, room for further efforts by the participating institutions to develop an environment that makes it easier for trainees to participate in the training is recognized.

Additionally, according to the questionnaire survey results for the participating institutions, there were opinions requesting improvements in the consignment expense administrative manual, simplification of administrative work, and early distribution of consignment expenses. Therefore, it is important to review the operation of consignment expenses and promote improvements such as disseminating utilization examples.

6. Consortium activity issues and responses

(1) Consortium operation

(1) Tasks

For the Consortium activities to expand further, it is important to continue to strengthen support and disseminate information, such as providing the necessary encouragement and support to cooperating institutions expected to become participating institutions during the project period. The Consortium website should be improved to increase the number of participating institutions to raise awareness among new universities.

Consignment expenses distributed by the core to participating institutions require (1) improved administrative manuals, (2) early conclusion of consignment contracts, and (3) simplification of administrative work, such as the omission of affixing signature seals. Therefore, it is necessary to support the initiatives of participating institutions to improve operations such as administrative procedures.

The program for training statistics professors will have a long-term need for human resources training for experts in statistical sciences. Hence, the ideal way for human resource training after the end of the project period needs to be extensively considered.

(2) Direction of future responses

Aiming to expand Consortium activities, continue to provide necessary encouragement and support for cooperating institutions expected to become participating institutions during the project period, and seek to improve the Consortium website to increase the recognition of Consortium activities by universities.

Engage in initiatives to revise the administrative manual toward simplifying the administrative work, such as omitting signature seals, and simultaneously coordinate with the participating institutions to conclude the consignment contract soon.

Establish a place within the core institutions for extensively examining how to foster Experts in Statistical Sciences after the conclusion of the project period and conduct examinations in collaboration with participating institutions.

(2) First-term training management and operation

(1) Tasks

Trainees are provided support so they can focus on training, but there are limits to the support provided. Therefore, when accepting the trainee, it is necessary to assume and understand the circumstances, such as the environment during training at the affiliated institution.

The core institution has sufficient and appropriately managed equipment and facilities. However, there were few training facility users due to the COVID-19 pandemic. Therefore, promoting more effective use of the equipment and facilities must be considered.

Additionally, regarding the consignment expenses, there is a need to improve the administrative manual, simplify administrative work, review operations such as the early allocation of consignment expenses, and further use of consignment expenses at participating institutions. Therefore, improved support is needed for trainees.

(2) Direction of future responses

Considering the environment during training, the core institution should guide the participating institutions if a significant burden exists. Therefore, ensuring that a trainee is not caught between the core and the participating institution is important.

From the second-term training onwards, increasing opportunities for face-to-face instruction and effectively using the equipment and facilities of the core institution should be considered. Additionally, the Shiga University satellite will be available for trainees in the Kansai region.

Briefings on accessing high-performance computers from participating institutions will be provided, and ways to increase the utilization rate will be considered.

Furthermore, operating consignment expenses will be reviewed to develop the training environment for trainees, and examples of utilization will be disseminated at participating institutions.

(3) Human resource development in first-term training

(1) Tasks

Determining how the abilities of a professor cultivated in the mock lectures were utilized in the actual lectures at the participating institutions would be necessary. Additionally, it would be beneficial if this training content were used as a reference at many Japanese universities.

If young researchers recommended for participation fully understand the purpose of the training at the application stage, this would lead to a smoother selection process.

(2) Direction of future responses

Regular contact with the trainees and participating institutions will be maintained even after the completion of the training; follow-up surveys will be conducted to regularly monitor and confirm the training effects. Furthermore, the Consortium website will be improved, so universities will recognize that this training is highly regarded. Moreover, the hosting of lectures on the training content will be considered.

Young researchers did not fully understand the purpose of the training at the participation recommendation stage. This is related to the understanding of the individual and the participating institutions. Therefore, measures such as briefings on the training for young researchers considering participation and for participating institutions will be taken.

The third-term training participation recommendation guidelines will be enhanced by improving the explanation of “aspirations related to training” in the participation recommendation documents. In addition, the participating institutions will be asked to explain the purpose of the training.

(4) Initiatives of participating institutions

(1) Tasks

Promoting the collection and sharing of information, including the initiatives of each institution and those in other countries, is necessary for the participating institutions to proceed with constructing a system for training experts in statistical sciences according to their respective characteristics.

The core institution must advance initiatives to encourage participation and ensure the quality and quantity of mentors for promising young researchers in the program to train statistics professors and to demonstrate their roles as the core of training experts in statistical sciences in each institution.

Promoting initiatives such as developing an environment at participating institutions where trainees can focus on training and reviewing the operation of consignment expenses of the core institution that support these initiatives and disseminate utilization examples is necessary.

(2) Direction of future responses

Workshops where participating and cooperating institutions can effectively share information, such as case studies and situations in other countries, are needed. Furthermore, enhancing the Consortium website maintained by the core institution, collecting, sharing and providing various information that contributes to the system for training experts in statistical sciences in collaboration with initiatives by the Japanese Federation of Statistical Science Associations are necessary.

The core institution appropriately manages participation status in the program for training statistics professors for each participating institution. They simultaneously increase the number of mentors in preparation for the crowding and more trainees in the future to promote the environment making it easier for trainees to participate in training.

Additionally, fully determine the actual circumstances regarding the efforts of participating institutions to develop the training environment and sequentially engage in initiatives to improve the consignment expense administrative manual, simplify administrative work, and distribute consignment expenses at an early stage.