Productivity of Academic Personnel Across Universities in Implementing the Tridharma PT and Supporting the Indonesian Government's MBKM Program

Sri Wiwoho Mudjanarko*
Departement of Civil Engineering
Narotama University
Surabaya, 60117, Indonesia
sri.wiwoho@narotama.ac.id

Ninis Trisyani
Departement of Fishery,
Faculty of Marine Technology and Science
UHT, Surabaya
nisuht@yahoo.com

Agus Budianto
Departement of Chemical
Institut Teknologi Adhi Tama Surabaya
budichemical@itats.ac.id

I Putu Artaya
Departement of Management,
Narotama University, Surabaya, Indonesia
putu.artaya@narotama.ac.id

Nawir Rasidi
Departement of Civil Engineering
Politeknik Negeri Malang (Polinema)
Malang, 65141, Indonesia
nawirrasidi@gmail.com

Zulkifli lubis
Departement of Civil Engineering
Universitas Islam Lamongan
East Java, Indonesia
zulkifililubis@unisla.ac.id

Dadang Supriyatno
Departement of Civil Engineering
Universitas Negeri Surabaya
dadangsupriyatno@unesa.ac.id

© IEOM Society International
Abstract

The Indonesian government in recent years has carried out a new program that combines the academic world, industry and society in the implementation of the learning curriculum. The program has been running for about 3 years and is known as the Merdeka Learning Campus Merdeka MBKM program. In the MBKM program, there are 8 KPIs that must be implemented in tertiary institutions. This program aims to increase the productivity of Academic Personnel across PTs in implementing the Tridarma of Universities/Institutes. With a legal Law and support for the MBKM program, it will make it easier to implement the Tridharma of Higher Education, which previously had no legal basis. Problems faced by universities / industries / communities will be easily overcome if we partner with other universities / industries / communities. It is hoped that with good cooperation between universities / industry / society, competence and competitiveness will be mutually enhanced in the academic world and its implementation. Increasing the quality of learning, increasing the scientific work of lecturers and students, the benefits of research results for the community and research collaborations of lecturers, students, and industry are also increasing. On the other hand, the tertiary institutions involved will experience a leap in achievement which is not too long compared to before the MBKM program.

Keywords
Academic productivity, College, Curriculum, MBKM, Tridharma
1. **Introduction**

In the learning process, work methods are needed that are focused in one field, when the learning process is to find a solution to a problem. The implementation of the MBKM program in Indonesia as outlined by the Directorate General of Higher Education and Research and Technology has opened new spaces and models of learning since it was rolled out by the government in 2021. In general, the running of the MBKM program nationally aims to grow and create equity in the academic field for lecturers and all students who are currently studying, so that they can master various fields of science more quickly in an applied manner both in one scientific discipline and between disciplines. Students already understand that the goal of the MBKM program is to strengthen students' academic competence (Astuti et al. 2022). Universities must prepare various activities so that the MBKM policy can be implemented properly (Purwanti 2022). This process has a positive impact on the industrial sector through a model of cooperation that is mutualism. This means that with the MBKM program, the industrial world and the business world who are invited to work together as partners will share in the results, in the form of creative activities and various innovation processes in an applied and ready-to-use manner. This method was considered far more effective when Indonesia and the world had just been hit by a pandemic for two years. In general, the Tri Darma of Higher Education in the process of implementing MBKM nationally is manifested in eight activities as follows (Amalia 2021):

1. **Student Exchanges**, this activity is held to shape some of the attitudes of students as stipulated in the Regulation of the Minister of Education and Culture (Permendikbud) Number 3 of 2020, i.e respect for cultural diversity, views, religions and beliefs, as well as other people's original opinions or findings; and cooperate and have social sensitivity and concern for society and the environment.

2. **Work Internships**, Apprenticeship programs provide sufficient experience for students, direct learning in the workplace (experiential learning). During the internship students will gain hard skills (skills, complex problem solving, analytical skills), and soft skills (professional/work ethics, communication, cooperation). Meanwhile, the industry gets talent which, if suitable, can later be recruited immediately, thus reducing recruitment and initial/induction training costs.

3. **Teaching Assistance**, learning activities in the form of teaching assistance are carried out by students in educational units such as elementary, middle and high schools. Schools where teaching practice can be located in cities or in remote areas.

4. **Research**, For students who have a passion to become researchers, independent learning can be realized in the form of research activities at research institutes/study centers. Through research students can develop a critical way of thinking, something that is very much needed for various scientific groups at the higher education level. With critical thinking skills, students will deepen, understand, and be able to do research methods better (Hajar 2022).

5. **Humanitarian Projects**, Indonesia has experienced many natural disasters, whether in the form of earthquakes, volcanic eruptions, tsunamis, hydrological disasters, and so on. Universities have so far helped overcome disasters through humanitarian programs. So far, student involvement is voluntary and only short-term. In addition, many international institutions (UNESCO, UNICEF, WHO, and so on) have conducted in-depth studies and made development pilot projects in Indonesia and other developing countries. (Payong et al 2021).

6. **Entrepreneurial Activities Based on the Global Entrepreneurship Index (GEI) in 2018, Indonesia only has a score of 21% of entrepreneurs from various fields of work, or ranks 94 out of 137 countries surveyed. Meanwhile, according to research from the IDN Research Institute in 2019, 69.1% of millennials in Indonesia have an interest in entrepreneurship. Unfortunately, the entrepreneurial potential for the millennial generation has not been managed properly so far. The Merdeka Campus policy encourages the development of student entrepreneurial interest with appropriate learning activity programs.

7. **Independent Study**, Many students have a passion for creating great works that are contested at the international level or works from innovative ideas. Ideally, independent studies/projects are carried out to complement the curriculum already taken by students. Universities or faculties can also conduct independent studies to complete topics that are not included in the class schedule, but are still available in the study program or faculty syllabus. Independent project activities can be carried out in the form of interdisciplinary group work.

8. **Thematic Real Work Lectures**, Thematic Real Work Lectures (KKNT) are a form of education by providing learning experiences for students to live in the community outside the campus, which directly together with the community identify potential and deal with problems so that they are expected to be able to develop village/regional potential and concocting solutions to existing problems in the village. KKNT activities are expected to hone partnership soft skills, cross-disciplinary/scientific (cross-competence) teamwork, and student leadership in managing development programs in rural areas.
The benefits obtained by lecturers and researchers through the implementation of the MBKM program open up opportunities to increase productivity in the field of Higher Education Tri Darma activities and cooperation in the field of research between universities and countries. The purpose of this research is to solve common problems between countries that are collaborating in this research field. Through the MBKM program activities, fellow lecturers from various tertiary institutions are increasingly open to opportunities to increase their long-term collaboration, including improving the quality of joint research.

There are several outputs that can be obtained through cooperation and increased productivity in the Tri Darma of Higher Education for fellow domestic and foreign universities Dillon et al (205), including:

1. There are several outputs that can be obtained through cooperation and increased productivity in the Tri Darma of Higher Education for fellow domestic and foreign universities Dillon et al (205), including.
2. Providing the ability for joint scientific publications through scientific disciplines that can be scientifically collaborated for the process of disseminating research outputs in the academic field, Tri Darma, and the field of renewable technology. With this model, various problems that occur in the community can be resolved more quickly and bring higher benefits.
3. Various forms of community service activities that involve students as a form of institutional teaching factory, even this model is able to provide added value to business culture and the industrial world directly without limits. Several developed countries such as China, India, Singapore, Japan and America have shown significant progress and results.
4. Increasing student exchanges between universities both at home and abroad, including lecturer exchanges in an effort to disseminate knowledge more intensively for the development of applied science and technology in an effort to improve methods of handling problems that hit various parts of the world such as plastic waste, renewable energy, handling environmental damage, improvement of earthquake-resistant housing technology, prevention of landslides and floods, handling of global warming through the development of electricity-based technology.

1.1 Objective Research
The main goal that we really want to achieve is to establish cross-university collaboration, the goal is none other than to increase the cooperation that used to exist to be further optimized. all of this is carried out with the hope that all the academic staff involved can improve their tri dharma performance as academic beings. On the other hand, this activity will have other collaborative impacts related to the MBKM (Merdeka Learning Kampus Merdeka) program which has been launched by the government since 2021. Of course, collaborative activities in the tri dharma field of the MBKM program will be able to increase the level of productivity of each the academic staff involved.

2. Literature Review
2.1 Productivity of Academic Personnel.
What exactly is meant by productivity in academic personnel, i.e an ability based on areas of competence and knowledge when a researcher describes a possible answer that is the most rational when facing problems together with a team and or through FGD activities. Through the ability of a person in the field of research both individually and as a team, it is possible for a problem encountered to be made or alternative solutions designed using very likely scenarios. If one possibility fails, then the problems encountered will still have the opportunity to be overcome (Nguyen and Klopper 2014). In one field of knowledge or between fields of study, personal abilities in a team will complement each other when they start executing their respective assignments. From the results of Kyvik and Terje's research in 2008, research activities will be considered successful for the strength of developing Tri Darma PT activities if each person involved in building outcomes has a level of competence and experience that supports each other in the process of implementing activities. The value of success is much greater if the research is carried out with a very limited team. Besides this, it is certainly possible to exchange experiences when trying to unravel the causes or root causes that occur by testing each other's methods. This field will trigger collaborative activities and research implementation, community service and the eight University Performance Indexes in the MBKM program (Ishak 2021).

2.2 The Impact of Tri Dharma Activities on the MBKM Program.
Learning in the Merdeka Campus provides challenges and opportunities for developing creativity, capacity, personality, and student needs, as well as developing independence in seeking and finding knowledge through field
realities and dynamics such as ability requirements, real problems, social interaction, collaboration, self-management, demands performance, targets and achievements, in this way it is expected to create university graduates who are able to compete. Suhartini et al. (2022) this activity also provides opportunities for lecturers or teaching staff to support the Tri Dharma of Higher Education. Implementation of the MBKM program that can support Tri Dharma activities in the form of inter-personal/inter-university lecturer research activities, community service activities involving lecturers, students and beneficiary communities as well as in the relevant industrial world. According to Sabatini et al. (2022) Another impact is the form of cross-university joint scientific publication activities in an effort to disseminate research results and outputs as well as community service activities. The rolling of the Merdeka Campus Creativity Program activities in the MBKM program provides benefits in strengthening link and match, improving the quality of lecturers and education staff, and improving the management and performance of Higher Education's Tri Dharma. Another activity that has a major impact on the business world and the industrial world is the Matching Fund, i.e increasing funding for research, development and application of research results in universities through joint funding from the government and partners. Reducing some of the financial burden borne by the industrial world in research and development activities carried out with universities (Deak et al. 2022).

3. **Method**

3.1 Conducting inter-campus visits, for all lecturers who are involved in collaborative Tri Dharma activities, to discuss everything that can be done together across tertiary institutions and across study programs. The fields of science of academic staff who are incorporated in research activities and community service are mutually relevant and bring relevant benefits.

3.2 Determine one focus of activities which includes research activities, then the outputs can be applied as community service activities, by involving all elements of lecturers and students.

3.3 Conducting FGDs to get input from all lecturers and students involved so that this activity is as minimal as possible with obstacles or obstacles and other preparations deemed necessary. This process is very important when every lecturer involved is truly in a state of readiness with their respective duties when the research is implemented in the field.

3.4 Research implementation activities to completion, with the focus on the outputs to be achieved in the form of: scientific publications, textbooks, activity reports, research products, and the last is taking care of patents or IPR if the opportunity exists, and holding joint proceedings seminars. Everything that is done besides increasing the productivity of lecturer performance is also to support Tri Dharma activities that are relevant to the government's MBKM program (Kholifah 2022).

4. **Results and Discussion**

4.1 **Main Purpose of Tri Dharma Activities in Supporting the MBKM Program.**

There are several things that can be achieved through joint research and community service activities across tertiary institutions in an effort to support or improve the implementation of the Tri Dharma of higher education and support the government's MBKM program. Through this activity and the elements of its activities, it is of course very beneficial for all lecturers involved in efforts to establish a quantity of cooperation and a network of cooperation in the long term. There are 14 (fourteen) main targets through activities to increase the performance productivity of lecturers across tertiary institutions. More details can be seen in the Figure 1.

Figure 1 shows that the performance productivity of lecturers in Tri Dharma activities can be increased together through a collaborative activity, collaborative network and joint publication activities. Collaborative activities carried out include three activities in the tri dharma, namely activities in the fields of teaching, research, and in the field of community service. This activity involves a collaboration of several cross-college academic staff, i.e Narotama University Surabaya from various disciplines according to the scope of the research object, Hang Tuah University, Adhi Tama Surabaya Institute of Technology, Malang State Polytechnic, Veteran Bangun Nusantara University, UNESA, UTHM, Universiti Teknologi Mara Malaysia, Bandung Institute of Technology and Lamongan Islamic University, by involving experts in the field of civil engineering and experts in the field of management science, who have experience doing research individually.
By involving many experts, it is hoped that the process of carrying out research activities will be more targeted and can improve the quality of studies according to scientific fields. Fourteen targets to be achieved in real terms and have mutual benefits are as follows (Firdaus et al. 2022):

1. Off campus advisor. Every lecturer who has the appropriate experience and competence, works together to provide a mentoring process both to students and to lecturers according to their expertise. This activity model will provide additional experience for lecturers in mentoring activities to fellow lecturers and also to students outside their campus. In the long term, this will form a bond in the form of a better network of cooperation among the lecturers involved. Collaborative activities include joint publications, joint book writing, even joint research activities (Indriyanto et al. 2022).

2. Joint Proceedings article. As an output of the cooperation that has been carried out, in research activities, every lecturer who is involved in cross-university research teams can become a co-author in proceedings both nationally and internationally, as a form of enrichment of knowledge in the academic field.

3. Joint visits abroad. The purpose of this activity is to provide dissemination of research results in the form of periodic cross-campus scientific activities to mutually support scientific development in the Tri Dharma of higher education. This condition creates a better and wider academic atmosphere, especially in studying and finding solutions to cases in research activities and their scope.

4. Speakears. Each lecturer has the opportunity to become a guest lecturer at another campus. Both in seminars, productions and other similar activities. The aim is to provide guidance to other lecturers when they have to work together in solving various cases in the field (Rorstad 2015).

5. Teaching off campus. All results of Tri Dharma activities can be disseminated in the form of teaching activities at other campuses as a form of dissemination of renewable knowledge that can provide benefits to the academic community at each of these campuses. This is very evident in the MBKM program (Bakti et al. 2022).

6. Laboratory. The manifestation of joint research activities can be continued through laboratory test activities, as a form of fostering other lecturers who have scientific relevance when they go into the field to conduct research, so that the results can provide renewal in mindset and problem solving skills through simulation activities, discussions, and FGDs.

7. Guest lecture. Lecturers who are more senior will provide guidance, examples, role models, to younger lecturers. The method commonly used is public lectures in the form of guest lecturers in the academic field. Most of these activities are carried out in the form of presenting the latest research results in certain fields of science and finally creating collaborations in other academic activities (Ramsden 1994).

8. Moderator. This activity is closely related to cross-campus seminars, proceedings and scientific discussions in order to provide presentation, guidance, guidance to the academic community involved in research activities and further study activities.
9. Write a book together. One method of disseminating research results that is widely used is by writing a book. Every lecturer who is involved in cross-university research can become a co-author in systematically discussing one subject matter for the enrichment of shared teaching materials on their respective campuses.

10. Journal editor. Lecturers can also become cross-campus reviewers when they focus on scientific publication activities in the form of writing books and scientific articles. Lecturers who are involved in academic and research collaboration networks are able to provide and contribute their expertise to make joint progress in the field of publications, both print and online.

11. Joint reviewers. Every lecturer or academic staff who is an expert in their field can become a reviewer to guide other younger lecturers when they are involved in scientific publication activities. The aim is to improve the quality of studies and synthesis in good and correct scientific publication activities (Okon 2013).

12. Joint research. Younger lecturers and all lecturers who develop their academic abilities, can become team leaders alternately as a form of training and self-improvement in research and publication activities, the goal is that each case encountered becomes important learning material in improving the quality of their joint research (Yen et al. 2015).

13. Write articles together. It is appropriate for more senior lecturers to provide examples and guidance by becoming the first author or member writer in a publication activity. Through this method all lecturers will be able to learn more by seeing, reading and exploring the forms of studies that have been given from various forms of scientifically appropriate research results and their supporting knowledge (Lestari et al. 2022).

14. Professi organization. Professional organizations are a common forum for academics to gather and hold discussions and share in dissemination activities in various scientific forms to find the latest ways to solve increasingly complex cases. This provides valuable experience and is highly beneficial for academic groups working together. In fact, this activity has developed in a cross-country form with foreign academic staff, especially solving various problems that occur in society and the country (Ani et al. 2015).

The numbers presented in Figure 1 above show the quantity of activity frequency that provides the most academic and scientific benefits. The bigger the number, the higher the benefit across tertiary institutions, especially the 14 (fourteen) fields shown in Figure 1. In the future, this number will continue to grow as more and more universities and lecturers are involved in activities to increase the productivity of academic staff in Tri Darma activities in supporting the government's MBKM program.

Figure 2. Total performance achieved in tri dharma activities in support of the MBKM program.

Figure 2 above shows the level of performance for each lecturer who is involved in Tri Darma activities in supporting the MBKM program. The horizontal line shows the names of the lecturers (abbreviated names) and the vertical line shows the frequency of performance achievements. During the two-year implementation period, the results above in
Figure 2 shows significant and quite good results. In total, there are 14 (fourteen) main targets that ideally should be achieved in overall tri dharma activities within the cooperation network that has been formed through communication and information ties. Fourteen main objectives have been shown in figure 1 on the previous page. Even though the results or productivity levels shown in Figure 2 above have not reached the ideal number for all participants, over time these ideal conditions will one day be achieved with an increasing number of types of activities that must be participated in by academic staff who are members of the partnership. Because every leader shown in Figure 2 above will always be a driving force for change and an increase in the quantity and quality of activities in the field of science both individually and as a team, when they have to carry out an academic activity together in the future. With a model like this, the eight targets of the MBKM program can slowly be easily achieved within a certain period of time. Leaders are academic staff who are more senior with sufficient experience in their field comprehensively and have related experiences with other disciplines during their careers, so they are worthy of being placed as team leaders.

Conclusion
Based on the results of the analysis and study of Tri Darma activities through increasing the productivity of academic staff or lecturers, the impact can provide good outcomes for the government's MBKM program. Therefore, for future opportunities, an activity model like this can be continuously improved while still referring to the fourteen activity targets that have been reviewed as shown in figure 1 on the page above. Why should it be, because the collaborative model can always provide added value in the form of a faster transfer of knowledge between academics who work together and this will lead to a better learning atmosphere in the long term. This model of cooperation is still rare except for those who are involved in professional organizations and it has not been maximal in achieving the target. This model can also be developed in the implementation of different activities in the future, because the individual development process is not limited to one scientific point. So we need a collaboration that is able to provide added value that is cross-university in nature in developing all forms of results and outputs from the Tri Darma field in Indonesia in an effort to further improve individual and team performance in implementing the MBKM program. With this collaboration which is based on various disciplines, academic staff will receive more comprehensive learning in the long term, especially in the field of research and scientific publications. It can even be a driving force for lecturers in pursuing further studies to a higher level.

Acknowledgements
We express our gratitude for this well-run cooperation to all academic staff. Our thanks also go to all cross-campus LPPM heads for all their approval and encouragement so that all Tri Darma activities bring the benefits we want.

References
Ani, Okon E., Patrick Ngulube, and Bosire Onyancha, Perceived effect of accessibility and utilization of electronic resources on productivity of academic staff in selected Nigerian universities. SAGE open 5,4, 2158244015607582, 2015.
Hajar, Siti, Strengthening Education Governance Management University in Penta Helix Perspective Towards the Era Society 5.0. 2nd International Conference on Social Science, Political Science, and Humanities (ICoSPOLHUM 2021), Atlantis Press, 2022.


Kholifah, Y. B, Implementasi Kurikulum Melalui Program Merdeka Belajar Kampus Merdeka di Era Digital, Al-Fatih: Jurnal Studi Islam, 10(01), 16-29, 2022.

Kyvik, Svein, and Terje Olsen, Does the aging of tenured academic staff affect the research performance of universities?, Scientometrics 76.3, 439-455, 2008.


Okon, Edet Ani, Accessibility and utilization of electronic information resources for research and its effect on productivity of academic staff in selected Nigerian universities between 2005 and 2012, Diss, 2013.


Zhang, Xinyan, Factors that motivate academic staff to conduct research and influence research productivity in Chinese project 211 universities, Diss. University of Canberra, 2014.

Acknowledgements

Thanks to the Government of Indonesia for launching the Independent Campus Learning Program (MBKM), we can carry out joint writing activities as well as carry out Key Performance Indicators between universities, state institutions, and the people involved.

Biographies
Sri Wiwoho Mudjanarko is currently Deputy Chancellor III concurrently Head of LPPM Narotama University Surabaya Indonesia. Previously served as Chancellor in the 2000-2022 period. Obtained Diploma 3 from Petra Christian University, Bachelor of Civil Engineering from Narotama University, Master of Civil Engineering at the Sepuluh Nopember Institute of Technology (ITS), Doctor of Civil Engineering at Brawijaya University (UB) and a Professional Degree in Engineering from UGM. For 33 years as a practitioner with the business currently held, especially in the field of construction-material services. Member of the Indonesian Railroad Society (MASKA) Indonesia., FSTPT, Concrete Society of Malaysia (CSM), Secretary of LPTNU Sidoarjo, DPD Intakindo East Java, Chair of DPD ADRI East Java, Chair of the Journal of Service Consortium and Manager-Editor-Reviewer of Sinta Accreditation Journal. Various written works in the form of articles, books, copyrights-patents have been produced and winners of National Research-Service grants have been obtained.

Ninis Trisyani, Profesor, lecturer, Departement of Fishery, Faculty of Marine Technology and Science, UHT, Surabaya

Agus Budianto. Assc. Profesor, lecturer, Departement of Chemical, Completed bachelor, master, and doctoral degrees at the Sepuluh Nopember Institute of Technology

Nawir Rasidi is a Senior Lecturer / Prof. Madya, Departement of Civil Engineering, Polinema Negeri Malang, Malang, Indonesia. Obtained Bachelor at Brawijaya University in 1995, Master at Brawijaya University in 1996 and Doctor at Brawijaya University in 2013. Has participated in IEOM since 2018 and has expertise in the field of building structures

I Putu Artaya is a Senior Lecturer, Departement of Management, Narotama University, Surabaya, Indonesia. I Putu Artaya, born in Jakarta on June 29, 1966, obtained a master's degree in human resource management from Narotama University, Surabaya, in 2002. An economics degree in marketing management from the same campus, graduated in 1991. Besides teaching, he was also active in activities research, as a researcher and as a principal researcher and other activities carried out are routine writing books. Another additional activity is training home businesses or home industries in the field of product packaging and labeling.

Zulkifli Lubis is a Senior Lecturer / Supervisor, Departement of Civil Engineering, Departement of Civil Engineering Universitas Islam Lamongan, East Java, Indonesia

Dadang Supriyatno is a Lecturer / Supervisor, Departement of Civil Engineering, Universitas Negeri Surabaya, Surabaya Indonesia

Hendramawat Aski Safarizki is Dean of Engineering Faculty Veteran Bangun Nusantara University, Sukoharjo Indonesia. Assistant Professor, Hendramawat Aski Safarizki holds a Bachelor Engineering degree in Civil Engineering from Universitas Sebelas Maret, Surakarta Indonesia, a Master of Civil Engineering degree from Universitas Sebelas Maret, Surakarta Indonesia, and Engineer profession degree (Ir) from Lambung Mangkurat University, Kalimantan Selatan Indonesia. He has been recognized as a professional engineer with more than 18 years of experience working with closely held businesses. He is a member of the Institution of Engineers Indonesia (PII). Currently managing the journal as chief editor of MoDuluS: Media Komunikasi Dunia Ilmu Sipil, UN Penmas and Consortium of Community Services Journal (CCSJ).

Rizal Bahaswan is a Lecturer / Supervisor, Departement of Civil Engineering, Narotama University, Surabaya Indonesia. He graduated from InstitutTeknologi Sepuluh Nopember Surabaya with degree of Bachelor of Engineering (ST.) from Ocean Engineering Department in year of 2002. He continued to study at Hogeschool Van Arnhem en Nijmegen, the Netherland and graduated with a degree of Master of Science (MSc.) in Construction Management in 2005.

Mayastuti, Student Doktoral, Management, Airlangga University, Worked at a government agency, LLDIKTI7

Mohd Haziman Wan Ibrahim, Profesor, is a Lecturer, Department Jabatan Kejuruteraan Awam, Universiti Tun Hussein Onn Malaysia, Malaysia

© IEOM Society International
Mohd Fadzil Bin Arshad, Professor, Department of Civil Engineering, Universiti Teknologi MARA, Malaysia. In 2022 has the honor of being a Professor. Expertise: Cementitious, Concrete Materials, Concrete Technology and Repair.

Firdaus Pratama Wiwoho, Student, Faculty of Civil and Environmental Engineering's Master Program, Institut Teknologi Bandung, Bandung, Indonesia. Undergraduate education in ITS Environmental Engineering and has been active in ITS IO (International Office) since the beginning as a student while being active in the field of research and international seminars. Initiated moderator activities and submitted articles at IEOM Bangkok 2019.