Journal of Sustainability Perspectives

Overseas Smart City Short Course of Airlangga and International Community Service: The Role of Science and Technology Towards Smart City

Nurina Fitriani*[1], Fatmawati [2], Tabina Arqika Samiaji[1], Wahid Dianbudiyanto[1], Dio Alif Hutama[1], Eko Prasetyo Kuncoro[1]

[1]Department of Biology, Universitas Airlangga, Indonesia
[2]Department of Mathematics, Universitas Airlangga, Indonesia
*corresponding author: nurina.fitriani@fst.unair.ac.id

Article Info

Abstract. The smart city concept emerged as an alternative solution to overcome the negative impacts of urbanization in big cities, based on the concept of sustainable development. A smart city is a city that can utilize human resources, social capital, and modern telecommunications infrastructure to achieve sustainable economic growth and high quality of life through wise management of resources by the government based on community participation. Jombang has not been managed optimally due to a lack of digital exposure and promotion. Based on these problems, the Faculty of Science and Technology, Universitas Airlangga organized an international community service program in Jombang to enhance its tourism management and raise awareness of its potential tourist spots. This program was carried out together with international students who were first given an introduction and knowledge about the concept of smart city and its application, locally at Universitas Airlangga and generally in Surabaya City, through short course. The students then were invited to visit several local heritages in Jombang to transfer knowledge to the local community regarding the application of smart city concept to boost the promotion of potential tourist attractions in Jombang. By the end of the program, the involvement of international community in promoting local tourist attractions helped raise awareness on social media, such as Instagram. This evidence shows that international collaboration is important for smart city development.

Keyword:
Community service, Jombang, smart city, tourism

1. Introduction

Indonesia is one of the countries experiencing the fastest urbanization in the world. The Central Statistics Agency (BPS) estimates that in 2020, 56.7% of Indonesia's population lived in urban areas, and this proportion is expected to increase to 66.6% in 2035 due to increasing urbanization trends [1]. Urbanization is the actual movement and concentration of people that affects new communities and is motivated by social, economic, political, and cultural factors [2]. Urbanization is caused by differences in growth and inequality of development opportunities, especially between rural and urban areas. This makes urban areas attractive to city dwellers looking for work. Therefore, urbanization is a process of natural change that aims to improve the welfare of a population or society [3]. However, due to excessive urbanization, urban conditions are increasingly out of control, giving rise to various new problems such as: For example, increasing crime due to poverty, mass unemployment, increasing slum living, etc. [4].

The smart city concept emerged as an alternative solution to overcome the negative impacts of urbanization in big cities, based on the concept of sustainable development [5]. A smart city is a city that can utilize human resources, social capital, and modern telecommunications infrastructure to achieve sustainable economic growth and high quality of life through wise management of resources by the government based on community participation [6]. Smart City is a form of technology-based urban governance that aims to create innovative cities with technology and networks as the maintools to enable better communication between government and society [7]. Thanks to the direct integration of ICT concepts, smart cities can also facilitate more effective and efficient urban planning [8]. The smart city concept has been implemented in several large cities in Indonesia, including Bandung, Jakarta, and Surabaya [9, 10]. For example, to utilize mass transportation and overcome traffic jams, Suroboyo Bus uses a non-cash payment and has a system that can be directly integrated into red lights. The lights always turn green when the bus approaches a red light, this stimulates people's interest in using public transportation because the fares are cheap and the roads are free of obstacles [11].

However, currently, the smart city concept is still focused on metropolitan-scale governance. The growth of a smart city is not limited to large, metropolitan areas [12]. This concept can also be applied to small and medium-scale cities. Smart cities can be used to encourage economic growth in tourism areas through the application of the smart tourism concept. Smart tourism can make it easier for the tourism industry to promote and provide information about tourist destinations. It is one of several factors that play essential roles in enhancing tourist satisfaction and destination loyalty [13]. The application of smart tourism can make it easier for tourists to find information about tourist spots they would like to visit, and find out the location of these tourist attractions, as well as the accommodation used to reach existing tourist attractions [14]. Jombang is one of the cities in East Java that relies on culture and tourism sector as one of the drivers of the local economy. Nevertheless, in reality, the tourism potential in Jombang has not been managed optimally due to a lack of digital exposure and promotion [15]. Based on these problems, the Faculty of Science and Technology, Universitas Airlangga organized an international community service program in Jombang to introduce culture and tourism in Jombang to theworld through international students and transfer knowledge regarding the application of smart tourism to increase promotion of tourist attractions in Jombang. This community service programwas carried out together with international students who were first given an introductionand knowledge of the smart city concept and its application, locally, at Universitas Airlangga and, generally, in

Surabaya through short course. Then, the students were invited to visit several tourist spots and a cultural village in Jombang to transfer knowledge to the local community regarding the application of the smart tourism concept to promote tourism potential in Jombang. This study aims to analyse the importance of international collaboration towards the realization of smart city, especially its impact on the tourism sector.

2. Scenario

The international community service program was prepared in 6 months throughout April—September 2022. The first four months were dedicated to conceptualization of the program and gathering the participants. The targeted participants were recruited from international students across the world. The recruitment was open and accessible through online form. This was an attempt to engage international community for a global collaboration, supporting the realization of Sustainable Development Goals (SDGs) number 17, Partnerships for the Goals [16]. The participants came from a very diverse national background, from South East Asia (Malaysia and the Philipines), South Asia (Nepal), North Africa (Egypt and Sudan), to West Africa (Ivory Coast).

Focusing on smart city and tourism, this program also supported the idea of SDGs number 11 that is Sustainable Cities and Communities. Thus, participants were brought to several places in Surabaya and Jombang that could be developed with smart city and tourism concept. These places included industrial area, cultural architecture, and natural reserve. Participants were made to observe the integration of technology that keeps up with the development of smart city and highlight the potential of these places for tourist attraction.

During the program, participants attended short courses and forum group discussion. These activities enabled knowledge to be shared between participants and people of the local community that was involved in the project. Following the event's conclusion, an evaluation was done by conducting in-depth interviews with the participants. The evaluation was conducted to study the impact of international community's engagement, in the form of global collaboration, towards the initial process of smart city development in Jombang.

3. Implementation

The international community service (ICS) program was conducted in several major stages, including introduction through seminars, field trips and observation, implementation, and later evaluation.

3.1. Seminars

At the initial stage, the participants were given basic knowledge about smart city concept through seminars from a technological, environmental, and economic perspectives. This training aims to make students understand the urgency and benefits of smart city applications. It can stimulate the students to produce various innovations and new ideas that can help solve problems in society using the most appropriate, suitable approach [17]. Four topics were delivered for the seminars, including:
1. Smart City: Developments in Indonesia and Role of Technology
2. The Role of AI and IoT in Infrastructure Development to Build a Smart City
3. Utilization of Clean Energy and Green Technology to Build a Sustainable City
4. Applying Smart Economy to Achieve Smart City

The activity was conducted in hybrid with participants consisting of 24 international students and accompanying lecturers attending on-site and 28 students attending online via Zoom meeting. The seminar aims to provide an understanding of the implementation of

smart cities in the immediate environment from a science and technology perspective, provide an understanding of the role of artificial intelligence (AI) and the Internet of Things (IoT) in the development of smart city infrastructure, explain the introduction of the concept of clean energy, green technology, sustainable cities and their applications, as well as explaining smart economy, goals and objectives of smart economy, development indicators of smart economy, benefits and applications of smart economy, challenges and opportunities of smart economy, as well as correlation of all of those aspects in a smart economy related to the development of a smart city.
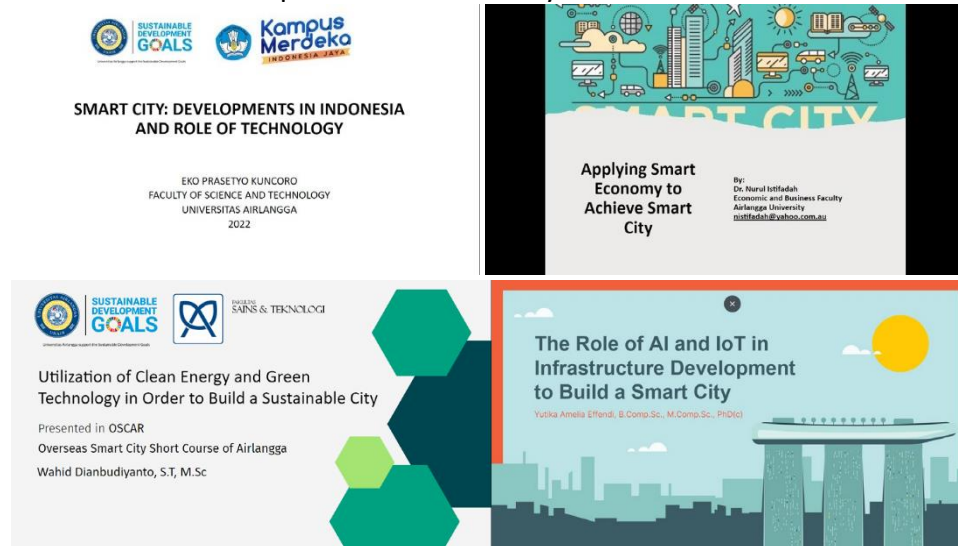

Figure 1. Seminar topics

Figure 2. The participants having a photo session after seminar

3.2. Campus Tour

This activity aims to introduce the digital system that is mainly used as data central at Universitas Airlangga. The activities carried out included visiting Kahuripan Room 301, Universitas Airlangga Rectorate Building located at Campus C, and Airlangga Sharia and Entrepreneurship Education Center (ASEEC) Tower at Campus B. The activity that took place at Campus C, Universitas Airlangga was visiting the Directorate of Information and Digital Systems (DSID) as part of Universitas Airlangga Smart Campus. Participants took part in a discussion with the Head of Sub-Directorate of Systems Development on the topic of

"Directorate of Information and Digital Systems as part of Universitas Airlangga Smart Campus". Data safety is important in the development of smart city due to the need of big data management, those that are compiled from each component that is integrated in the system, such as population characteristics and traffic data [18].

Figure 3. Campus tour

On the same day, the next activity was visiting Airlangga Sharia and Entrepreneurship Education Center (ASEEC) Tower located at Campus B. Participants boarded the Unair Flash Bus in 2 different groups. At ASEEC Tower, participants took part in a discussion with the Head of Airlangga Assessment Center on the topic of "Become an Assessment Center Institution with Reliable, Digital-Based Service Consistency". This activity concluded the introduction phase that was dedicated for giving the participants enough knowledge to share to the local community during international community service.

3.3.   International Community Service

The first day of International Community Service (ICS) was held on Tuesday, September 20, 2022. This activity began with the opening of the 2022 International Community Service which took place at the Jombang Regency Hall. ICS is a collaboration between Jombang Regency Government and Universitas Airlangga which involves international community that comes from Universiti Tun Hussein Onn Malaysia (UTHM) and Management and Science University (MSU) Malaysia. This activity aims to exchange knowledge from academics both from within the country and abroad regarding efforts to increase the promotion of environmentally based tourism in Jombang Regency. The activity was attended by around 50 international students from several countries including Egypt, Nepal, Afghanistan, Malaysia, and Ivory Coast. This event was also attended by representative lecturers from UTHM and representatives from MSU. Jombang Regency Forkopimda officials and the Head of Regional Apparatus Organization related to the Jombang Regency Government were also present at the opening of ICS 2022. The activity began with donations for orphans from Tampingmojo Village, Tembelang District, Jombang Regency, and continued with the presentation of the Remo Boletan Dance.

Later, the participants were divided into 2 groups with different activities. The first activity is focus group discussion (FGD) between Regional Apparatus Organization of Jombang Regency with Deputy Chair of UI Green Programs, Communications, and Partnership Metric (UIGM) and representatives of the Jombang Tourism Office. The first discussion was about the relationship between smart cities and SDGs. The session continued with another topic that was related to optimizing tourism in Jombang towards SDGs.

The other group that consisted of ICS participants visited Islamic boarding schools Tebu Ireng and Rice Ponds. The visit aimed to introduce international students to the culture in Islamic boarding schools, apart from that there were also sessions and presentations made by representatives of ICS participants to introduce their home country and university. This activity involved an interactive session with the students at the boarding school. The interaction between two significantly different groups could be a driving force to promote more diversity and collaboration in the future [19].

Figure 4. Focus group discussion

On the second day, ICS participants were made to pay a cultural visit at Mendiro, Panglungan Village, Wonosalam District, Jombang Regency. This activity was carried out to introduce the cultural and natural tourism areas in Mendiro to the international community. The participants were introduced to various local snacks made directly by residents. They explored the forest provided with information about various surrounding plants and went trekking to Selolapis waterfall with local guides. The guides explained to the participants about various plants seen during the trip. After that, participants interacted briefly with residents to get to know each other and gather information. The second day of ICS was completed by resting at the De Durian Park accommodation.

The third day of International Community Service (ICS) was held on Thursday, September 22, 2022 with activities that included visiting the production center of Batik Colet Jatipelem and Hong San Kiong Gudo Temple, as well as cultural visits to Sumber Beji and Gereja Kristen Jawi Wetan (GKJW) Mojowarno. This activity aimed to show the special features of Jombang Regency and its surroundings, and learn about making batik, beads, and Wayang Potehi, as well as study the history of each location visited. ICS participants were welcomed by the Jombang Trade and Industry Service, the Jombang Culture Education Service, and employees of the Colet Jatipelem Batik industry. They were shown the whole process of making batik and participated in several of the process. At Griya Manik, ICS participants learned the process of making accessories made from beads. The group then headed to Hong San Kiong Gudo Temple where, upon arrival, they were welcomed by kindergarten students. The ICS group was given a performance of Wayang Potehi, displaying Chinese mythology in Javanese language. The fourth visit was to Sumber Beji. The ICS group visited the Sumber Beji site together with the Jombang Education and Culture Office representatives. The final activity for the third day of ICS was visiting GKJW Mojowarno. One of the church administrators

explained the history and conditions of GKJW Mojowarno. After leaving GKJW Mojowarno, the ICS group returned to Surabaya.

Figure 5. Visiting Hong San Kiong Gudo temple

3.4. Company Visit

The final day of ICS was held on Friday, September 23, 2022, which consisted of company visits and the closing of a series of events. The company visit activity aimed to introduce ICS participants to the types of industries in Surabaya that are related to smart city. The activity started with the participants gathering at Universitas Airlangga. Participants then went to Jawa Post office, located in the Graha Pena building. During the visit, participants were explained about the process of making news at Jawa Pos. Participants were also explained about the company's marketing strategy. By the end of the program, the involvement of international community in promoting local tourist attractions helped raise awareness on social media, such as Instagram. This evidence shows that international collaboration is important for smart city development.

4. Summary

The problems that exist in Indonesia due to urbanization include dense, dirty, unkempt environments; crowded and irregular transportation; a less safe and conducive social environment; as well as the uncertain economic situation. Being a solution to the problems that occur in people's lives, both in rural and urban areas, is one of our responsibilities as students who are the young generation required to improve Human Resources in the form of intelligence and skills. Airlangga's Overseas Smart City Short Course program with the theme "The Role of Science and Technology Towards Smart City" is expected to be able to overcome these problems while incorporating global collaboration. The Faculty of Science and Technology, Universitas Airlangga also holds programs for the international community service located in Jombang Regency. The aim of this program is to introduce culture and tourism in Jombang Regency to the international community. By the end of the program, the involvement of international community in promoting local tourist attractions helped raise awareness on social media, such as Instagram. This evidence shows that international collaboration is important for smart city development.

References

1. Badan Pusat Statistik. 2013. Proyeksi Penduduk Indonesia 2010-2035. Jakarta: Badan Pusat Statistik. 2013.

2. Abbas A. Diktat untuk Kalangan Sendiri: Sosiologi Perkotaan. Padang: Universitas Andalas. 2002.

3. Tripathi S and Maiti M. Does urbanization improve health outcomes: a cross country level analysis. Asia-Pacific Journal of Regional Science. 2023;7(1):277-316.

4. Harahap F. R. Dampak Urbanisasi Bagi Perkembangan Kota di Indonesia. Journal Society. 2013;1(1):35-45.

5. Echendu A. J. and Okafor P. C. C. Smart city technology: a potential solution to Africa's growing population and rapid urbanization?. Development Studies Research. 2021;8(1): 82-93.

6. Allwinkle S and Cruickshank P. Creating Smart-er Cities: An Overview. Journal of Urban Technology. 2011;18(2):1-16.

7. Syed A. S., Sierra-Sosa D., Kumar A., and Elmaghraby A. IoT in smart cities: A survey of technologies, practices and challenges. Smart Cities. 2021;4(2):429-475.

8. Amalia D., Nesya N., and Tryta M. Implementasi Kota Pintar (Smart City) di Kota Surabaya. Jurnal Birokrasi dan Pemerintah Daerah. 2023;5(1):57-63.

9. Widiastuti I and Suryawati N. Implementation of smart city development policy in Bandung city, Indonesia. IJEBD International Journal of Entrepreneurship and Business Development. 2021;4(1):91-98.

10. Purba Y. D. A. and Jayadi R. A Study on the Implementation of the Smart City Concept in Indonesia, Study on the Capital City of Jakarta. Journal on Education. 2023;5(4):15689-15702.

11. Rahman C. N. A., Santoso E. B., and Nurlaela S. The Physical Integration of Smart Transportation Characteristics of Suroboyo Bus and the Feeder. Journal of Infrastructure & Facility Asset Management. 2021;3(3).

12. Duygan M., Fischer M., Pärli R., and Ingold K. Where do Smart Cities grow? The spatial and socio-economic configurations of smart city development. Sustainable Cities and Society. 2022;77:1-12.

13. Azis N., Amin M., Chan S., and Aprilia C. How smart tourism technologies affect tourist destination loyalty. Journal of hospitality and tourism technology. 2020;11(4):603-625.

14. Asmawati S., Musyrifah, Wajidi F., and Zulkarnaim N. Implementasi Smart Tourism sebagai Media Promosi Wisata di Sulawesi Barat. SAINTIFIK: Jurnal Matematika, Sains, dan Pembelajarannya. 2022;8(1):76-84.

15. Salwa A., Mas' udah K. W., Nisa H. M., Lestari A. D., Astutik S., and Rahmanto R. M. A. E. Upaya Pengembangan Potensi Wisata Alam di Desa Wonomerto Sebagai Daya Tarik Wisata Desa. AMMA: Jurnal Pengabdian Masyarakat. 2022;1(6):545-549.

16. Moreno-Serna J., Sánchez-Chaparro T., Mazorra J., Arzamendi A., Stott L., and Mataix C. Transformational collaboration for the SDGs: The Alianza Shire's work to provide energy access in refugee camps and host communities. Sustainability. 2020;12(2):1-28.

17. Rampa R. and Agogué M. Developing radical innovation capabilities: Exploring the effects of training employees for creativity and innovation. Creativity and Innovation Management. 2021;30(1):211-227.

18. Simić M., Perić M., Popadić I., Perić D., Pavlović M., Vučetić M., and Stanković M. S. Big Data and development of Smart City: System architecture and practical public safety example. SJEE. 2020;17(3):337-355.

19. Loyd D. L., Wang C. S., Phillips K. W., and Lount Jr R. B. Social category diversity promotes premeeting elaboration: The role of relationship focus. Organization Science. 2013;24(3): 757-772.