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Challenges and Experience from UI GreenMetric's 2nd International Virtual Event

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(IWGM 2021)

Abstract. UI GreenMetric World University Rankings is a non-profit initiative from Universitas Indonesia that ranks universities around the world based on their commitment and actions towards sustainability. During the ranking process, many universities' performance in UI GreenMetric has progressed. To increase the performance of each university in UI GreenMetric, universities need to share their sustainability achievement and current condition in a forum. These universities can share information about the implementation of sustainability policies in each university through the International Workshop on UI GreenMetric World University Rankings. Due to the ongoing pandemic and our concerns that the event could ease the spread of coronavirus, this event was being held online. We evaluate the workshop to capture the experience gained in organizing the virtual event. From the topics modeling based on several regions, we conclude that university leaders around the world are very concerned about diverse sustainability issues, alongside the Covid-19 pandemic that has been going on for more than a year. We also conclude that people are getting more accustomed to virtual events, as evidenced by the increase in IWGM 2021 active participants of around 44% compared to 2020 virtual workshops.

Keyword:

green workshop, sustainability, digital transformation, online workshop, synchronous model, asynchronous model.

1. Introduction

UI GreenMetric World University Rankings is a non-profit initiative from the Universitas Indonesia that ranks universities around the world based on their commitment and actions towards sustainability. The UI GreenMetric World University Rankings aims to increase the

university's awareness of sustainability. For the last 10 years, UI GreenMetric has become a program that ranks universities throughout the world according to determined indicators of campus environmental issues such as setting and infrastructure, energy, waste management, water, and transportation, and education. This ranking is one of the university's efforts in promoting sustainability on campuses and also in involving stakeholders in their effort to create a sustainable environment. The ranking is conducted through an online questionnaire system in which each university provides data about sustainability indicators. The data then automatically processed into a ranking.

Participation from universities throughout the world keeps increasing. During the ranking process, many universities' performance in UI GreenMetric has progressed. To increase the performance of each university in UI GreenMetric, universities need to share their sustainability achievement and current condition in a forum. The 912 universities in UI GreenMetric are examples of how sustainability policies can be implemented in universities in some aspects such as setting and infrastructure, energy and climate change, waste and water management, transportation, and also education. These universities can share information about the implementation of sustainability policies in each university. This information can be used as a basis for sustainability policy preparation for UI GreenMetric participants. International Workshop on UI GreenMetric aims to disseminate and evaluate the implementation of the UI GreenMetric Ranking in which 912 universities from 84 countries in the world have participated, share information about sustainability to improve the campus by studying some best practices, provide an opportunity for universities that get top positions in UI GreenMetric to explain their university's excellence in UI GreenMetric and provide an opportunity for cooperation in sustainability management on campuses.

This workshop captures how UI GreenMetric participants show their university's excellence and how the University Leaders share their achievement in leading sustainability-related programs in their campuses. However, travel restrictions due to the global outbreak of the novel Coronavirus (Covid-19) have created new challenges for organizing international scientific conferences. Most of the conferences have to be moved to a fully online format. Due to the ongoing pandemic and our concerns that the event could ease the spread of coronavirus, this event was also being held online. All materials were presented asynchronously in video format via UI GreenMetric Youtube Channel and discussion sessions were conducted synchronously via Zoom. We believe that by this approach the parallel sessions may conduct a more focused atmosphere even though the partnerships are scattered around 12 time zones. The paper consists of the evaluation method of the workshops and discussions.

2. Method to Evaluate the Workshop

This section describes how we evaluate the 7th International (Virtual) Workshop on UI GreenMetric World University Ranking (IWGM 2021). IWGM 2021 was hosted by Universiti Putra Malaysia for the synchronous model sessions. This workshop aims to provide an opportunity for UI GreenMetric participants to show their university's excellence and also to provide an opportunity for cooperation in sustainable campus management. It is hoped that this event will be the discussion ground among many university leaders so that all the participants will obtain detailed programs inspired by their colleagues. Due to the ongoing global outbreak of Covid-19 and our concerns that the event could help spread coronavirus, this event was held online on the Zoom Meeting platform. We evaluate the workshop to capture the experience gained in organizing an online event. The data for the current study

were collected via questionnaire. We also built a dataset and analyzed the data regarding the workshop, i.e. topics model per region, speakers of all sessions, article distribution based on country and region, and number of attendees. Data analysis was mainly conducted with python and natural language processing libraries, i.e. Natural Language Toolkit and Pandas. The topics model per region are obtained through the following steps:

- a. Collect corpus or paragraph from Abstract and Conclusion grouped by Region
- b. Convert the whole paragraph into sentences. It is done by splitting the paragraph whenever a period is encountered.
- c. Remove unnecessary words, i.e. stop words, special characters from all the sentences.
- d. Convert all the words to the lower case to avoid miss calculation of word frequency.
- e. Tokenize all the sentences to get all the words that exist in the sentences.
- f. Find the weighted frequency of occurrences of all the words. Weighted frequency of each word is calculated by dividing its frequency to the frequency of the most occurring word. The formula of the weighted frequency of occurrences is shown in Equation 1.

$$W = \frac{f}{\max(f)} \dots\dots\dots (1)$$

Where:

- W = weighted frequency of a word
- f = frequency of word in paragraph
- $\max(f)$ = frequency of the most occurring word

- g. Find the sentence score by averaging weighted frequency of words in a sentence. The formula of sentence score is shown in equation 2.

$$Score = \frac{\sum_{i=1}^n W_i}{n} \dots\dots\dots (2)$$

Where:

- Score = Score of a sentence
- n = number of words in a sentence
- W_i = Weighted frequency of word in i order

- h. Sort the sentences by sentence score and summarize each sentence into keywords. The keyword with the highest sentence score summarizes the article.

3. Discussion

IWGM 2021 was held in 3 days on 24-26 August 2021. On Day 1, all videos related to the event i.e. video profile of UI GreenMetric, video profile of Universiti Putra Malaysia, video of UI GreenMetric World University Rankings Network (UIGWURN)’s Country Reports, 44 presentation videos from selected invited speakers, and 18 presentation videos from selected paper for poster session. All country reports and selected papers were presented in video format so that the parallel sessions on day 2 - day 4 can be more focused on discussion. On day 2, the steering committee meeting of UI GreenMetric World University Rankings Network was held. This meeting is mainly focused to discuss UIGWURN’s country reports and the

future activities of UIGWURN, e.g. Shaping Global Higher Education and Research in Sustainability, Creating Global Sustainability Leaders, and Partnering on Solutions to Sustainability Challenges. On day 3 and day 4, the selected papers for invited speakers and poster sessions were being presented in 4 parallel session rooms.

1. Topic Model of IWGM 2021

In conducting IWGM 2021, Proceeding Book of The 7th International (Virtual) Workshop of UI GreenMetric World University Rankings: Universities’ Responsibility for Sustainable Development Goals and World’s Complex Challenges has been compiled. This proceeding contains invited papers and posters that have been presented by university leaders in IWGM 2021. All contributors around the world were submitting their work regarding sustainability in the scope of Issues and Innovation in Managing Setting and Infrastructure, Issues and Innovation in Managing Energy, Issues and Innovation in Managing Waste, Issues and Innovation in Managing Water, Issues and Innovation in Managing Transportation, and Issues and Innovation in Managing Education.

Table 1. Summary keyword of article submitted in IWGM 2021 based on Region

No	Region	Summary Keyword	Sentence Score
1	Asia	reduce carbon emissions; waste management	0.02564
2		achieve sustainable development goals; university lead position	0.02214
3		water use awareness; effort	0.02190
4	Europe	alternatives air travel; sustainable transport	0.02566
5		mobility plan 2030; sustainable mobility policy	0.02171
6		lower travel environmental impact	0.02079
7	North America	training and involving society; environmentally sustainable lifestyles	0.05127
8		environment management model; prevention programs; ecosystem protection; sustainable strategies	0.03656
9		scenario of chaos; educational system; bulwark; new culture	0.03629
10	Latin America	COVID-19; unique challenges; health care delivery	0.01982
11		Pandemic; actions in universities; ensure safety; public health	0.01895
12		alive during pandemic; working on behalf of society	0.01882

The topics of the articles are modeled by the number of word occurrences in all documents. Topic modeling is conducted to analyze the greatest concerns to university leaders. The topics model of IWGM 2021 are shown in Table 1. Topics included in Table 1 are the top 3 scorers in each region. The main concern for Asia universities is reducing carbon emissions by doing waste management at the university. Water usage awareness also became the main concern of universities in Asia. They also mentioned that universities should lead in order to achieve sustainable development goals.

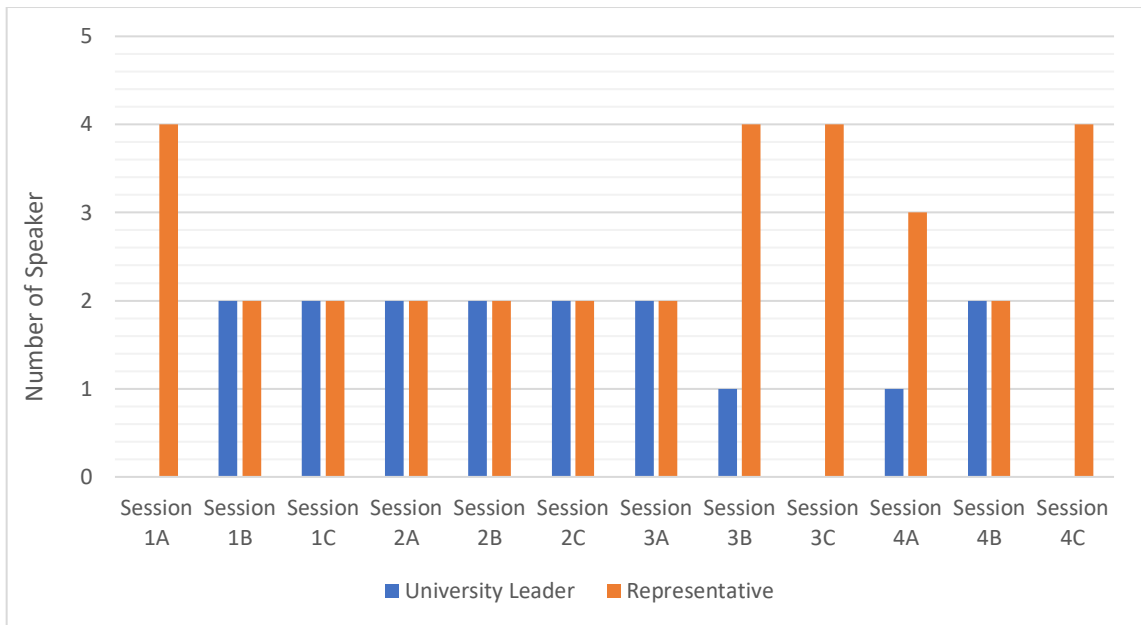


Figure 2. Number of speaker in IWGM 2021

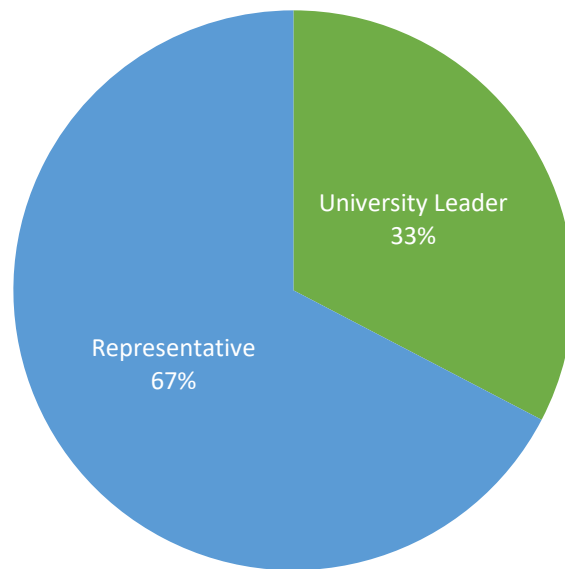


Figure 3. Ratio of speakers in IWGM 2021

3. Article distribution

All contributors around the world were submitting their work regarding sustainability in the scope of Issues and Innovation in Managing Setting and Infrastructure, Issues and Innovation in Managing Energy, Issues, and Innovation in Managing Waste, Issues and Innovation in Managing Water, Issues, and Innovation in Managing Transportation, and Issues and Innovation in Managing Education.

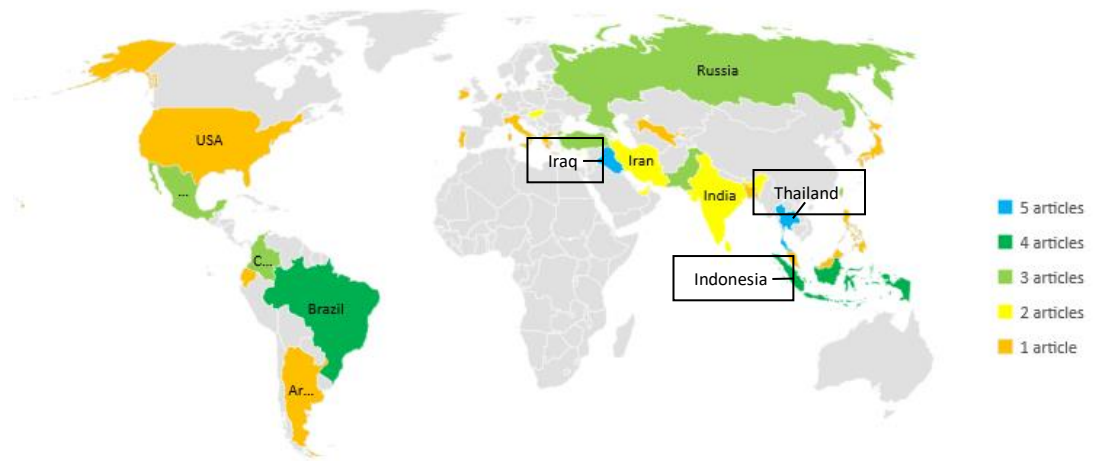


Figure 4. Articles distribution per country in IWGM 2021

From the submitted paper, it is recorded that there were 67 papers and posters from 30 countries contributing to IWGM 2021. The distribution of the paper based on their country origin is shown in Figure 4. It is also noted that Asia became the highest article contributor in IWGM 2021 with 39 articles. The distribution of the paper based on their region origin is shown in Figure 5.

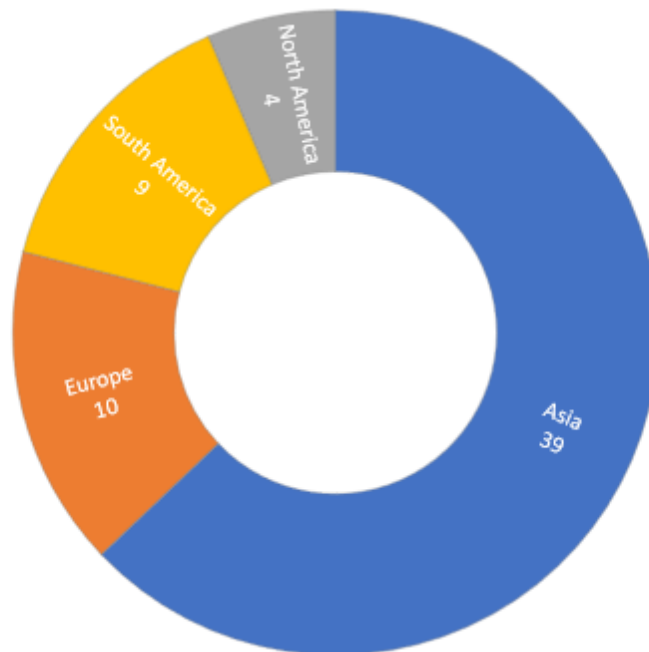


Figure 5. Articles distribution per region in IWGM 2021

4. Number of attendees

During IWGM 2021, there were 1.163 active participants across the globe who joined via Zoom and 231 active participants who joined via Youtube. We record that there is a 44%

increase of participants from the previous workshop (IWGM 2020). The distribution of IWGM 2021 participants is shown in Figure 6.

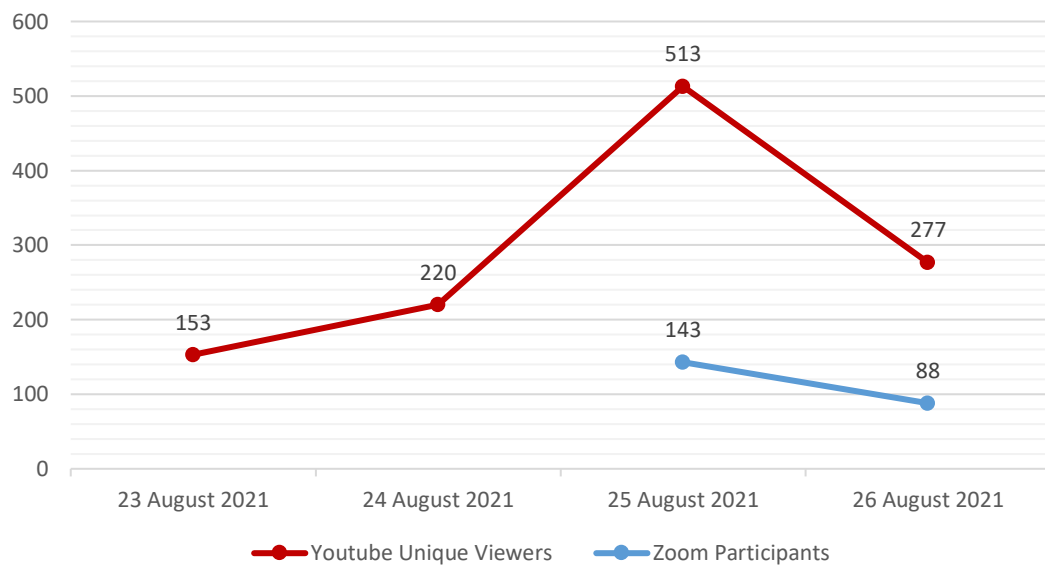


Figure 6. Attendees in IWGM 2021

4. Conclusion

The closure of higher education institutions caused by the advent of the recent global health emergency has prompted numerous efforts and adaptations. From the topics modeled based on analyzing several regions, it can be seen that universities leaders around the world are still very concerned about diverse sustainability issues. The workshops were successfully conducted with 1.394 active participants around the world, we believe that online workshops such as IWGM are conductible, although we also understand that every event is unique and new lessons can be learned from each new event. Regardless of the pandemic, we see that people are getting more accustomed to virtual technology, as evidenced by an increase in IWGM 2021 active participants of around 44% compared to last year. With more and more people getting used to new ways of conducting workshops, we hope that there are more new lessons which can be learned from each new event. Regarding the digital divide and the lack of inclusion as drawbacks of virtual events, we believe that reflection about policies to support participants in order to facilitate their integration and adaptability is required.

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