

# Questionable Conferences and Presenters from Top-Ranked Universities<sup>1</sup>

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**Abstract:** This paper aims to investigate the structures of 935 conferences organized by OMICS and 296 conferences organized by WASET from 2015 through 2017. These conferences are characterized in existing literature as so-called predatory or questionable conferences that provide low-quality academic meetings. We analyze 40,224 presenters, focusing on top-ranked institutions according to three global university ranking systems (Academic Ranking of World Universities, Times Higher Education World University Rankings, and QS World University Rankings). Our analysis shows that participants in OMICS events were primarily researchers from the United States, India, the United Kingdom, and China. WASET attracted more researchers from Turkey, India, and South Korea. We found that 11.0% of OMICS and 5.7% of WASET presenters were affiliated with institutions ranked in the top 100 in one of the three aforementioned rankings. We also found that both companies mostly organized conferences in cities that were top tourist destinations.

*Keywords:* predatory conferences, university rankings, questionable conferences, tourist destinations, scientific conferences

## 1. Introduction

Academic conferences have been an important means of scholarly communication and the dissemination of tacit knowledge among researchers for decades. With the proliferation of research evaluation, audit culture, and the internationalization of science, attending and presenting at conferences have become key elements in research output in every field of science. Researchers (and their institutions) spend substantial sums, time, and resources on planning, traveling to, attending, and presenting at conferences. Reducing the financial costs and environmental/ecological impact of these conferences (i.e., heavy carbon footprints, carbon

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emissions) has been discussed in the literature, mainly in recent years [1,2,3]. Originally, scientific conferences were primarily organized by learned societies or universities. However, with the development of an entire industry surrounding science communication, specialized companies have emerged to organize or assist in the organization of scientific conferences. This has also created a niche in the market for companies that are less interested in communicating science and more interested in profiting financially from organizing these conferences. Such companies use two “arguments” associated with academic (mostly “international”) conferences to attract researchers to their events. Firstly, presenting at conferences is perceived as a necessary step in any research career, and being an invited keynote speaker is considered a hallmark of prestige. Secondly, prior to the onset of COVID-19, presentations at conferences were mostly linked to distant travel (which resulted in significant financial costs and ecological damage); thus, conferences were often organized in the most popular tourist destinations to attract researchers.

Over the past decade, there have been many academic articles published that warn against these so-called “predatory” or “questionable” conferences [4,5,6,7,8]. We prefer to use the term “questionable” to avoid attributing unscrupulous intentions a priori to both these conferences’ participants and their organizers. Nonetheless, such conferences are characterized by their use of misappropriated photos and biographies of researchers from prestigious institutions [9], their use of names that resemble those of prestigious and long-running conferences, and their offering of low-quality academic meetings that gather researchers from almost all fields of science during one event. Thus, many researchers—both early-career investigators and those at the senior level—may be misled into attending such a conference. Presenting or helping to organize such a conference (by accepting, e.g., a role as scientific committee board member) can damage the reputations of researchers if or when their academic communities recognize their participation in these types of questionable conferences [10]. Most papers on questionable conferences do not systematically study such events; however, they do describe and caution against participation in conferences that advertise through spam emails and that organize low-quality events only in tourist destinations. The Caltech Library provides a guide to questionable conferences that is widely known as the Caltech list [11]. The Dolos list, which is based on Beall’s list but wider in scope. The Dolos list provided the names of “dubious or fake conferences organizers”; unfortunately, it is no longer accessible [12]. Sonne et al. [13] called for a list of questionable conferences analogous to the list of predatory journals initiated by Beall. In 2019, South Korea announced a new policy that would serve to reduce the participation of researchers in certain “weak” conferences [14] that were previously confirmed by analysis and a sting operation [15].

This study provides a systematic analysis of conference structures organized by two companies, namely, OMICS (Conference Series LLC LTD, part of the OMICS International group) and WASET (World Academy of Science, Engineering, and Technology), along with an analysis of the presenters at these conferences in terms of their home countries and affiliated institutions. Moreover, this article analyzes whether the presenters at conferences organized by these companies were researchers from top-ranked institutions in the three global university rankings (Academic Ranking of World Universities, Times Higher Education World University Rankings, and QS World University Rankings), either as presenters or invited keynote speakers. This study focused on events organized between 2015–2017, analyzing 26,163 presentations (presenters) at 935 OMICS conferences and 14,061 presentations (presenters) at 296 WASET conferences.

The conferences organized by OMICS and WASET are identified as “predatory” or “questionable” in the literature [16,17,18,19]. Although there is an attempt to underline the networking possibilities at OMICS conferences [20], it is clear that networking is one of the most common aims/results of

academic conferences. Also, as made clear by Edwards [21], who attended one of the OMICS conferences, there are good quality attendees/presentations at these conferences; however, these positive aspects do not outweigh the drawbacks of the organization as a whole.

At the DEF CON 26 conference in 2018, a group of journalists presented findings of their investigations on OMICS and WASET that demonstrated how WASET conferences work and highlighted the low academic standards of these events [22]. In 2019, the U.S. District Court for the District of Nevada ordered OMICS to pay \$50.1 million in damages as the result of a U.S. Federal Trade Commission investigation. A press release from the commission states that “the defendants [OMICS] allegedly include the names of prominent researchers as participants and presenters at the conferences, which charge registration fees that can cost more than \$1,000, when in fact many of those researchers often did not agree to participate in the events” [9]. In 2020, OMICS rebranded hundreds of websites, removed references to OMICS, and introduced the “Hilaris” brand [23].

Regarding WASET conferences, we believe that it is crucial to investigate the current approach to WASET in Turkey—the birthplace of this conference organizer. There are, however, no existing studies that have been published on WASET conferences in Turkey. The primary reason for this lack of literature may be a court decision reached in 2016 [24] that considered Law no. 5651, which enables blocking content published on the internet [25]. After various news and blog posts about sting operations that aimed to send fake papers to the conferences and the subsequent acceptance of these papers [26,27], the WASET founder filed suit on March 14, 2016, to block the news on the web, which the Criminal Court allowed on March 17, 2016. Nearly 50 websites were blocked following the decision. Since these developments, no further studies on WASET in Turkey have been conducted.

## 2. Material and Methods

Obtaining data on the OMICS and WASET conferences is crucial to addressing our research question. However, this study faced various challenges related not only to harvesting data from websites (multiple data structures, particularly with OMICS websites) but also—and most importantly—regarding the structure of the conferences themselves. Moreover, this study found that various conferences were intentionally duplicated or triplicated by using various conference titles. We have made every effort to ensure that the data in this study is accurate; however, we recognize that it is challenging to identify all potential problems. Therefore, we manually verified key data from the perspective of this study, such as information about conference venues and presenters’ countries of origin and institutional affiliations.

### 2.1 Data Collection

The data collection phase of this study took place from December 2020–March 2021. For all conferences organized by the two companies, we harvested the conferences’ titles, programs, venues, and start/end dates from the companies’ websites:

1. **OMICS:** <https://www.conferenceseries.com> (Conference Series LLC LTD, part of the OMICS International group);
2. **WASET:** [www.waset.org](http://www.waset.org) (also using the Wayback Machine – Internet Archive, i.e., [web.archive.org](http://web.archive.org)). We have limited the collected data to the years 2015–2017 to ensure

an accurate comparison between the two companies. WASET changed its website structure, making the full data on conferences after 2017 no longer available through either the Wayback Machine – Internet Archive or the WASET website.

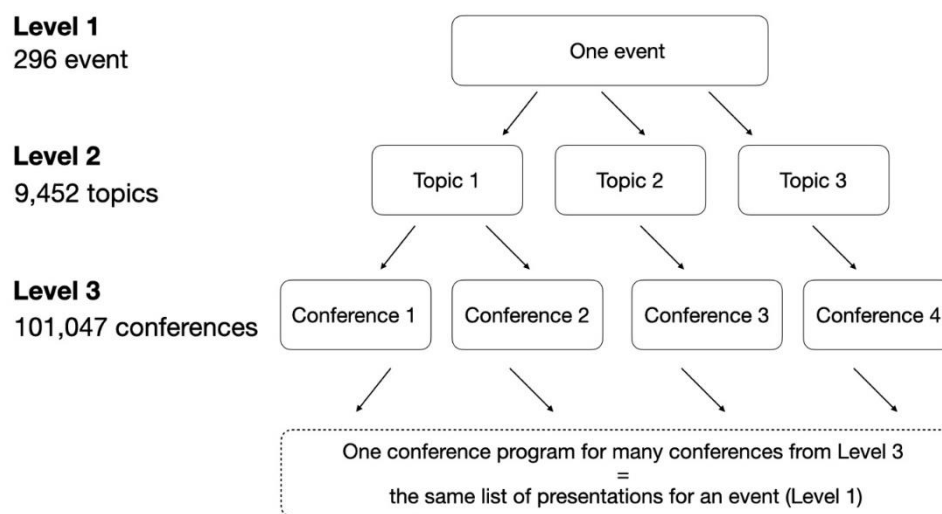
## 2.2. Structure of the Conferences

We have identified two different conference structures. The first structure relates to the OMICS conferences that seem to take the form of “regular” conferences (i.e., there is a venue and conference dates with a list of presenters included within a conference program). There is only one program for each conference. In the 2015–2017 period, OMICS organized 1,195 conferences. We were able to reach the websites of 1,124 of these conferences and download complete data about the presentations and presenters from 1,011 conferences. However, the data we gathered also contained 77 “twin conferences” (even a “triplet conference” was found) that had different websites linking to events that looked almost identical. These twin conferences were organized in the same venue on the same dates (in a few cases, the dates were different on a website but the same in a PDF file describing the program). Although the conferences had different titles and PDF files with programs at both events, these programs contained the same keynotes and presenters with identical presentation orders. We manually analyzed the 1,011 conference programs to discover cases such as these. We excluded from the sample all identified duplicate conferences and presentations from twin conferences that took place at the same venue on the exact same dates. Following these exclusions, our sample consisted of 935 unique OMICS conferences. The following example illustrates typical OMICS practice. The Third International Conference on Genetic and Protein Engineering (10 Plenary Forums – 1 Event) was organized in Las Vegas, Nevada, in the United States from November 8–9, 2017. During these two days, there were a total of four keynotes and 30 regular presentations. At the same time (November 8–9, 2017) in the same city (Las Vegas), The Third Antibodies and Bio Therapeutics Congress B2B was organized and held. Each event had a different website: <https://protein-engineering.conferenceseries.com/2017/> (Accessed on March 22, 2021) and <https://antibodies.conferenceseries.com/2017> (Accessed on March 22, 2021). However, all the presentations from the first event, including their titles and abstracts, were included in the program of the second event in the identical order. However, the second event also had a poster session that formed the last part of the event before the closing ceremony. The presenters from that poster session could be found in the PDF program of the first conference, although they did not appear in the program on the website of the first event. Because of this, we removed all duplicate presentations and, ultimately, the entire first event from our sample. What remained was only the second conference, which contained all the presentations of the first conference as well as the poster session.

The structure of WASET’s conferences differs to some extent. For all WASET conferences organized during 2015–2017 that are available in the Wayback Machine – Internet Archive, three levels of events can be identified. Figure 1 illustrates how one actual event (Level 1 = Event), meaning one conference at a certain venue and on a certain date, is divided into various topics (Level 2 = Topics), which are eventually presented as separate conferences (Level 3 = Conference). Figure 1 shows the actual numbers from our data set for 296 events (of the 335 organized by WASET during the analyzed period) and 9,452 topics, which were eventually organized and are accessible through the Wayback Machine – Internet Archive.

**Figure 1**

*Structure of Conferences Organized by WASET*



On Level 1, there are a venue and dates, for instance, Paris, December 30–31, 2015. On Level 2, there are multiple topics (i.e., during the event organized on December 30, 2015, in Paris): there are 27 topics ranging from “Nuclear and Quantum Engineering” to “Humanities and Social Sciences.” Every topic from Level 2 is divided into multiple “conferences” that appear on Level 3. Conferences organized within one topic from Level 2 (e.g., Humanities and Social Sciences) were divided into three separate conferences on Level 3, for instance: International Conference on e-Commerce, e-Business and e-Service; International Conference on Anti-Corruption, Good Governance and Human Rights; and International Conference on People, Politics, and Media.

The WASET conference program, however, is the same for all topics. In one session of such a conference, there are presentations on all topics from Level 2 (e.g., “Review of Current Literature on Use of Prazosin for Treatment of Post-Traumatic Stress Disorder Related Sleep Disturbances in Child and Adolescent Population” and “Stakeholder Management in Project Environments”).

Our analysis revealed that all conferences from Level 3 that were held in one place on a specific date (Level 1, e.g., Paris, 30–31 December 2015) had the same program. Therefore, in the final process of data collection, we harvested data directly from the WASET website only for Level 1 (including programs and abstracts). Such conference structures might serve to hold broad conferences; however, at the same time, they allow researchers participating in them to appear relatively professional and focused.

Finally, for events organized from 2015–2017, our data set provides information on 935 conferences organized by OMICS and 296 organized by WASET.

### **2.3. Presenters**

This study analyzed 26,163 presentations (presenters) at 935 OMICS conferences and 14,061 presentations (presenters) at 296 WASET conferences. During the registration of the conference participants, OMICS allows only one person to register per presentation. This person (as the only person listed in connection with a presentation in the conference’s program) is treated as a presenter according to this study. However, in a few cases, attendees manually added another

presenter name (literally writing two names in the space for one person). For 3,639 (8.5%) of 28,294 presenters (including those from twin conferences), we were unable to automatically harvest affiliations from the conference websites. Thus, we manually gathered the missing data from the conference programs either stored on the conference websites or in corresponding PDF files. All the gathered affiliations were unified to allow for the counting of institutions.

By contrast, WASET enables presentations to have multiple co-authors listed in the conference program. According to the information provided on WASET's website, "All authors' names should be written in order according to their relative contributions to the research" [28]. However, according to the description of the author registration for WASET conferences, the affiliation listed in the program is provided for the corresponding author, who might not be listed as the first author of the presentation. Furthermore, there is no information in either the program or abstract about which author is presenting. Therefore, we have assumed that the first author of a presentation listed in the conference program (the primary contributor) is the presenter and, thus, the affiliation listed in the program is this person's affiliation. To verify this assumption, we sent a query to 50 randomly selected presenters from our sample. Eight responded, all of whom confirmed our assumption. Finally, each presentation has one country assigned as the country affiliation of the presenter. In a few cases, when authors two different country affiliations, we have taken the first country listed. Moreover, we sent emails to 147 presenters (eight of which could not be delivered) from universities ranked in the top 10 positions of all rankings (henceforth referred to as "Top 7" universities) asking for confirmation as to whether they actually sent their submissions to and presented at these conferences. Of the 30 researchers who replied, all confirmed their participation. One of the affiliated presenters wanted to talk with us about the event. Therefore, we conducted an in-depth interview with this presenter.

It should be noted that we have not identified unique presenters (individuals) but rather presenters of a given presentation. This means that we excluded duplicate (not unique) presentations from OMICS's twin conferences and included only presentations from WASET Level 1.

Moreover, we identified keynotes at both OMICS and WASET conferences. At OMICS, they presented during the "Keynote Forum," and at WASET, their presentations were marked as "Keynote Speech or Speaker or Talk." We identified 4,033 keynote presentations at OMICS conferences and only 96 such presentations at WASET conferences.

## 2.4. Lists of Countries

We employ two sets of countries in our research. The first set is a list of countries in which conferences were held. The second set lists the presenters' country affiliation. We have used the ISO 3166 country code norm [29] for the names of countries and manually checked the names of all countries to ensure their consistency with the norm. We used the World Bank's Country and Lending Group classification<sup>2</sup> to classify countries in terms of their income levels. One WASET conference that did not have venue information on the conference website was excluded from the analysis presented in Figure 5.

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<sup>2</sup> <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>, data access: 14<sup>th</sup> of February 2022.

## 2.5. University Rankings

Using the unified affiliations of presenters, we assigned information regarding whether the affiliated universities were ranked in three major global university rankings during 2018. We used data from the following ranking systems: (1) the Academic Ranking of World Universities (ARWU), (2) the Times Higher Education World University Rankings (THE), and (3) the QS World University Rankings (QS). We prepared a list of institutions that were ranked in the top 100 of at least one of the rankings mentioned above. We also selected all seven universities that were ranked in the top 10 of each of these ranking systems. We followed the careers of all presenters that represented these institutions. Using university websites, social media, and other sources (e.g., ORCID), we investigated the status of presenters (e.g., Ph.D. students, postdoctoral fellows, visiting scholars, or faculty) during their presentation at either an OMICS or WASET conference, their actual status in 2021, and whether they were still affiliated with the same institution.

## 3. Results

### 3.1. Conference Venues

We analyzed the cities and countries in which OMICS- and WASET-organized conferences and found that both companies organized conferences in 75 cities, mostly in Europe and North America. The two cities with the highest number of conferences organized by OMICS were London (with 72) and Dubai (with 65). WASET organized its highest number of conferences in London and Paris (with 36 conferences in both cities). Table 1 presents a top 10 list of countries in terms of the number of organized conferences and of presentations given during these events. In total, 996 conferences (81% of all conferences) were organized in these countries.

**Table 1**

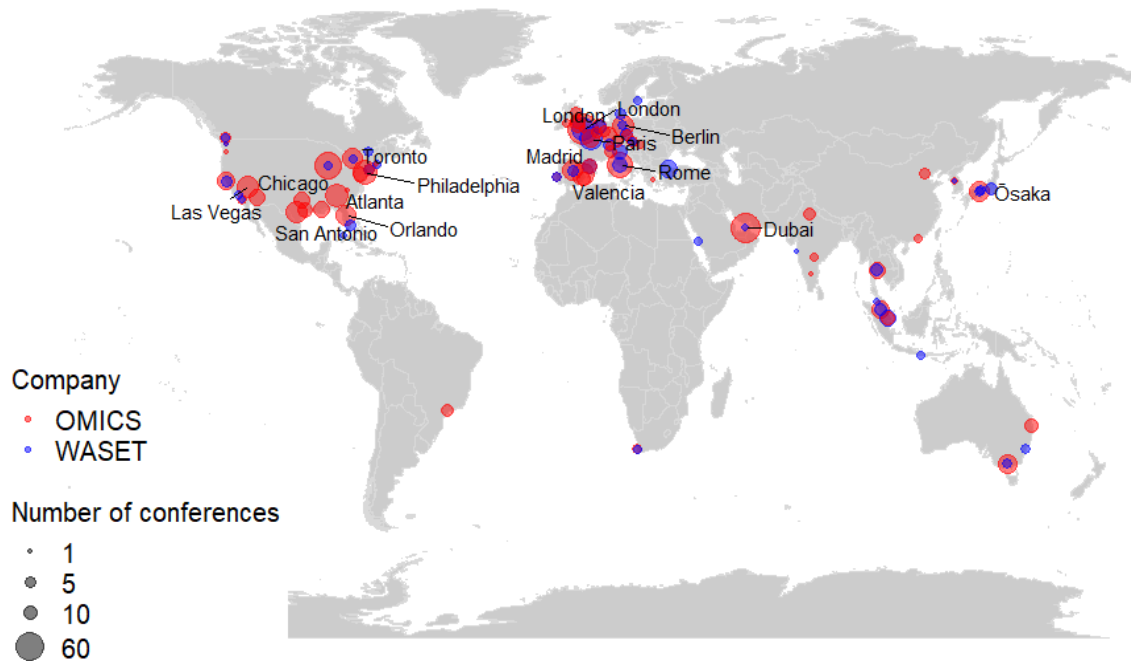
*Top 10 Countries in which OMICS and WASET Conferences were Organized*

<b>Country</b>	<b>Number of presentations</b>	<b>Number of conferences</b>
United States of America	10,266	356
United Kingdom	4,711	139
Spain	3,395	104
Italy	3,064	85
United Arab Emirates	1,898	67
Germany	1,991	60
France	2,506	57
Japan	1,656	44
Australia	1,122	42
Canada	1,367	42

Figure 2 illustrates the venues of these conferences. The size of each circle represents the number of conferences held during the 2015–2017 period.

**Figure 2**

*The Venues of OMICS and WASET Conferences*



*Note.* City names are presented for the venues in which a company organized at least 25 conferences.

Furthermore, we analyzed the conferences' venues compared to the most popular tourist destinations. We found that 62% of OMICS and 89% of WASET conferences in the 2015–2017 period was organized in cities classified as “top 100” city destinations in 2019 [30].

### 3.2. Presenters by Country

At OMICS and WASET, 26,163 and 14,061 presentations, respectively (40,224 in total), were presented during 1,232 conferences in the years 2015–2017. At OMICS conferences, there were presenters from 167 different countries, whereas at WASET conferences, 143 countries were represented.

Table 2 shows the top 20 countries with the highest numbers of presenters (in total). The 29,665 presenters from those 20 countries constituted 70% of all presentations.



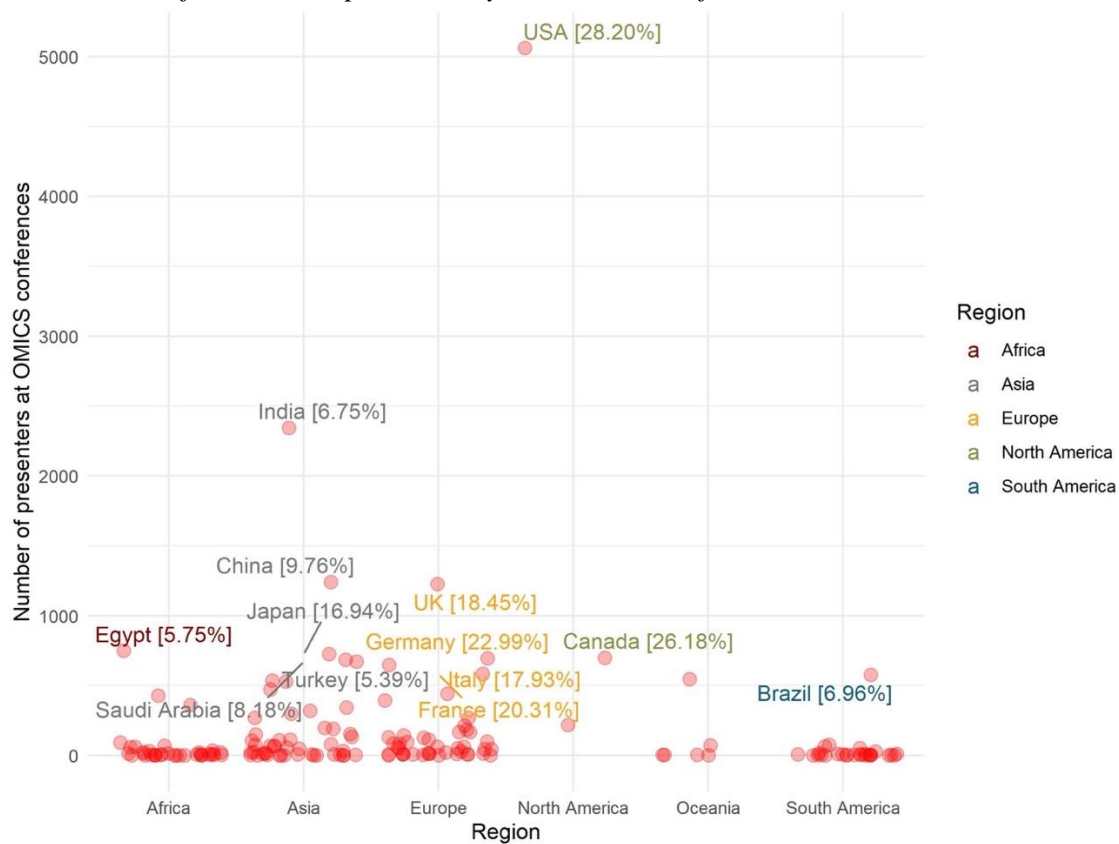
**Table 2***Top 20 Countries with the Highest Number of Presenters (in Sum of Both Conferences)*

Country	OMICS		WASET		Total	
	n	%	n	%	n	%
United States of America	5,060	19.3	518	3.7	5,578	13.9
India	2,341	8.9	969	6.9	3,310	8.2
United Kingdom of Great Britain and Northern Ireland	1,225	4.7	580	4.1	1,805	4.5
Turkey	686	2.6	1,014	7.2	1,700	4.2
China	1,240	4.7	380	2.7	1,620	4
Korea, Republic of	527	2	965	6.9	1,492	3.7
Japan	726	2.8	419	3	1,145	2.8
Taiwan, Province of China	472	1.8	659	4.7	1,131	2.8
Iran (the Islamic Republic of)	535	2	557	4	1,092	2.7
Egypt	748	2.9	335	2.4	1,083	2.7
Germany	696	2.7	254	1.8	950	2.4
Canada	699	2.7	222	1.6	921	2.3
Saudi Arabia	672	2.6	219	1.6	891	2.2
Brazil	575	2.2	275	2	850	2.1
Australia	545	2.1	296	2.1	841	2.1
Italy	647	2.5	169	1.2	816	2
Malaysia	269	1	489	3.5	758	1.9
France	581	2.2	174	1.2	755	1.9
Thailand	153	0.6	599	4.3	752	1.9
South Africa	428	1.6	218	1.6	646	1.6
Total	18,825	72	9,311	66.2	28,136	69.9

Figure 3 illustrates the number of presenters per country at the OMICS conferences, grouped into regions. The highest numbers of presenters were affiliated with the United States (N = 5,060) and India (N = 2,341). Of the 26,163 OMICS presenters, 4,033 were classified as keynotes. The average share of keynotes among presenters from a given country is 6.9% (median is 11.9%).

**Figure 3**

*The Number of Presenters per Country at OMICS Conferences*

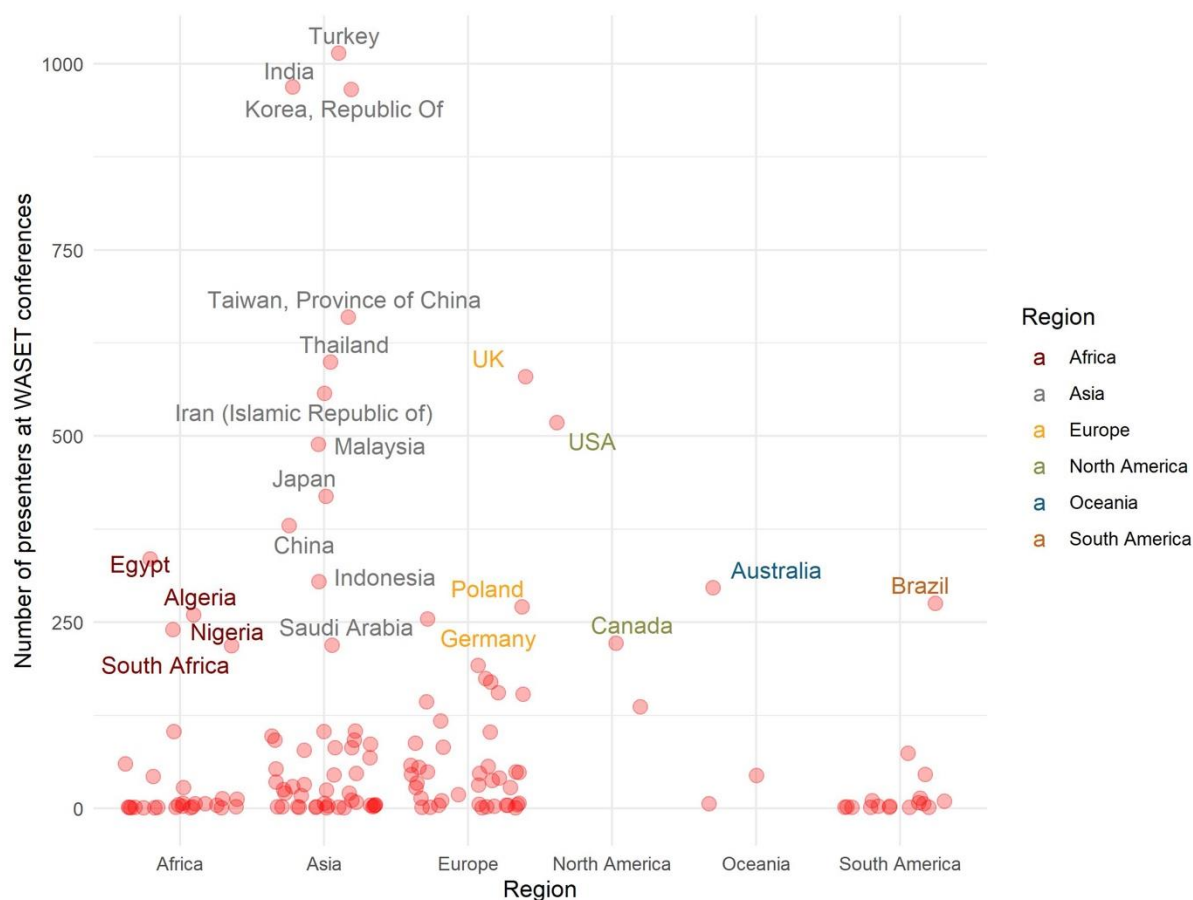


*Note.* Country names are presented only for countries with more than 550 presenters. The percentage of presenters who are keynotes is shown in square brackets.

Figure 4 shows the number of presenters per country at the WASET conferences, grouped into regions. The highest numbers of presenters were affiliated with Turkey (N = 1,014) and India (N = 969). The share of keynotes is not presented in this figure because WASET keynotes constitute only 0.7% of all presentations. Of the 96 keynotes given, 21 were from the United States, 20 from Malaysia, and eight from India.

**Figure 4**

*The Number of Presenters per Country at the WASET Conferences*



*Note.* Country names are presented only for countries with more than 200 presenters.

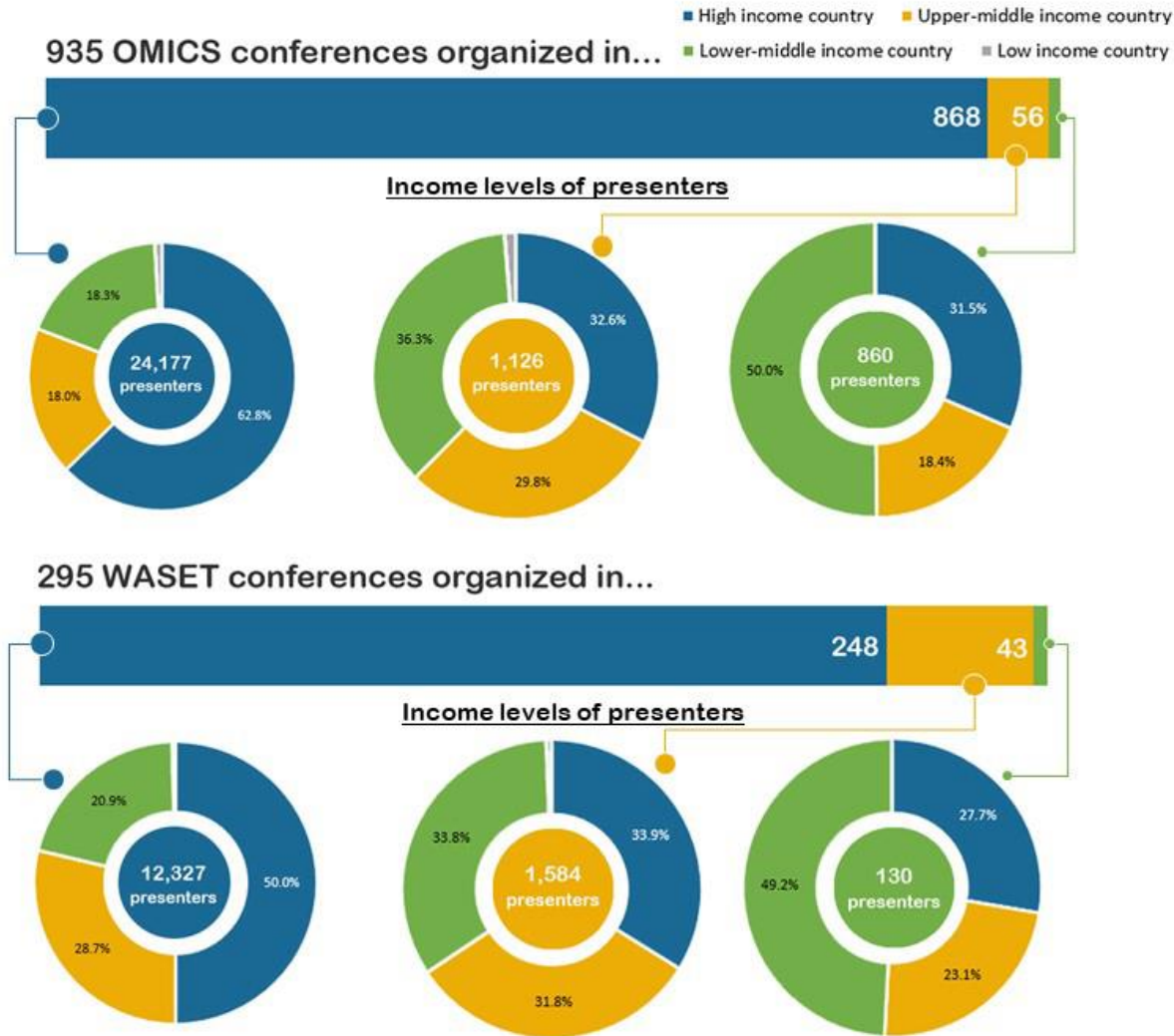
### 3.3 Conference Venues, Presenters, and the Economic Levels of Countries

Figure 5 shows the income levels of countries in which the conferences are organized and with which the presenters are affiliated. The color of inner circles represents the conference venues (countries). Thus, a blue inner circle indicates conferences organized in high-income countries. The outer circles show the distribution of presenters regarding their affiliations. The findings reveal that 93% of OMICS conferences were held in high-income countries, while this rate is 84% for WASET. It is possible to say that WASET conferences are held more frequently in upper-middle-income countries compared to OMICS conferences (6% for OMICS; 15% for WASET).

Looking at the number of papers presented at the conferences, an interesting distribution can be seen. For OMICS, an average of 28 papers are presented per conference in high-income countries versus 20 papers in upper-middle-income countries, while the latter number is 78 in lower-middle income countries. For WASET, these ratios were calculated as 50, 37, and 32, respectively. In light of these figures, it is obvious that when OMICS conferences are held in lower-income level countries, they attract the attention of participants who are affiliated with these countries.

The results show that both conference organizations, when their conferences are held in upper-middle- or lower-middle-income level countries, attract more attention from these groups of countries. It is possible to interpret this result in the following way: participants from these countries attend these conferences in countries where access to conferences is economically easier. However, future investigations are needed to reveal other reasons behind this phenomenon.

**Figure 5**  
*Distribution of Income Levels of Countries (Conference Venues and Presenters by Country)*



**3.4. Presenters from Top-Ranked Universities**

We found that 2,873 of 26,163 OMICS presenters (11.0%) were affiliated with 152 different institutions ranked in the top 100 of one of the three rankings (2,063 in the top 100 of ARWU; 1,983 in the top 100 of THE; and 2,092 in the top 100 of QS). Of 14,061 WASET presenters, 800 (5.7%) were affiliated with 121 different institutions that were ranked in the top 100 in one

of the three rankings (388 in the top 100 of ARWU; 481 in the top 100 of THE; and 673 in the top 100 of QS).

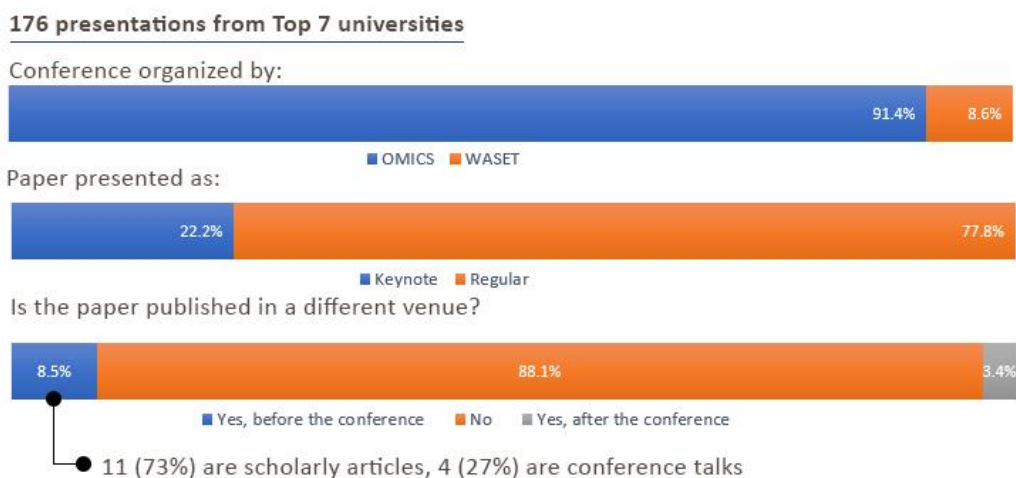
The participation of 147 researchers from Top 7 universities (Harvard University, Massachusetts Institute of Technology, the University of Chicago, Stanford University, California Institute of Technology, the University of Cambridge, and the University of Oxford) at the OMICS and WASET conferences was examined in detail in two parts. The first part presents analyses of conference papers, and the second part presents information about the researchers' participation in these conferences.

### 3.4.1. Investigation of Conference Papers Presented at OMICS and WASET Conferences by Top 7 Universities

A total of 176 papers were presented during the conferences by 147 unique presenters from Top 7 universities. Four of these papers were presented at more than one conference. The number of unique titles within this group is 170. Details of these papers are shown in Figure 6.

**Figure 6**

*Information About Papers Presented by Authors from Top 7 Universities*



Although it might be expected that most of the papers presented by authors from top universities would be keynote speeches, Figure 6 shows that only 22% of the presentations by these authors were keynotes. Also, there were interesting results for papers presented at these conferences: 15 papers were published in different publication venues, such as scholarly journals or seminars, before the OMICS or WASET conferences. The titles and abstracts of these publications were nearly identical to the abstracts found in the conference programs. Thus, one interpretation is that the authors were invited to the conferences in consideration of their publications. Another possibility may be that the authors attended these conferences to disseminate their current papers to the scientific community. Conversely, the names of the researchers may have been added to the program without their permission. However, the probability of this is very low because, in response to the email that we sent to researchers to confirm their participation in these conferences, all researchers who replied confirmed their participation.

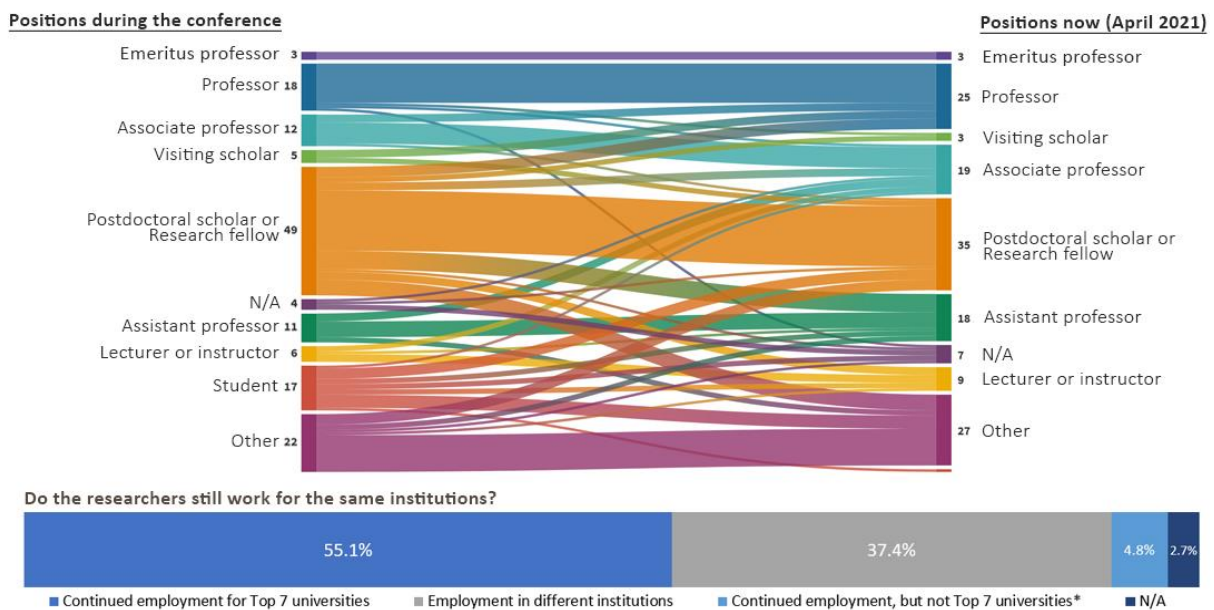
In a revealing result, we found that six papers were published in different venues as proceedings or full-text articles following their presentation at these conferences. It is a common practice to publish extended/full-text versions of conference presentations in books of abstracts or special issues of scientific journals. However, these six publications have no connection with the questionable conferences. For example, an identical twin of an OMICS conference abstract presented in 2016 was again presented in the program of an IEEE conference in 2017 with three additional authors. Similarly, one abstract covered by OMICS in 2017 was presented at a different conference later in the same year. One year later, the authors published a full-text version of this paper using the same statistical data and results in an international journal without giving any credit to preliminary works.

### 3.4.2. Investigation of Researchers Affiliated with Top 7 Universities

We collected data regarding researchers' positions at the time of their respective conferences and their actual positions in April 2021. Figure 7 displays a detailed summary of the conference participants.

**Figure 7**

*Previous and Current Positions of Conference Participants from Top 7 Universities*



*Note.* \* Although authors' affiliations are indicated as Top 7 universities on conference websites, the biographies of these authors on the same websites indicate that these authors graduated from these universities and are not currently affiliated with them.

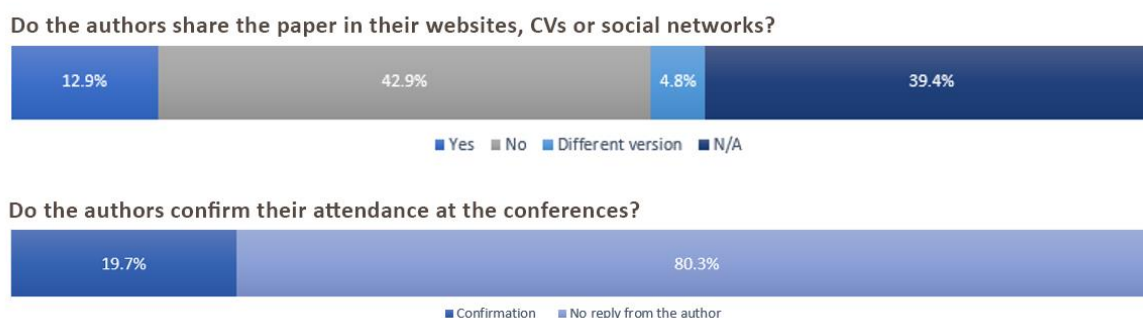
Surprising results were obtained regarding authors' affiliation information. Although some of the presenters graduated many years ago from Top 7 universities or were students/collaborators of these universities for a short period, they were nevertheless added to the conference program with Top 7 university affiliations. It remains unknown whether these addresses were added at the authors' request or by the conference organizations. A significant finding of this study

reveals that more than half of the researchers within the dataset were still working in Top 7 universities, even if their positions had changed. On the other hand, the fact that the majority of researchers were students or postdoctoral researchers points to two important aspects: the expertise of individuals from these groups may not be sufficient for them to follow the conferences in their fields, and the participation of these groups within these conferences may result from the pressures of academic promotion and tenure. These questions can only be answered through participant interviews.

Within the scope of the study, we investigated whether 147 conference participants from Top 7 universities listed their participation in these conferences on their websites or social networks (see Figure 8). With the help of this analysis, we concluded that 19 researchers shared their papers, metadata of these papers, or presentation videos on their pages or networks. Seven researchers listed different versions of their papers (article versions), while 58 did not have an accessible publication list or CV on the web. Furthermore, it is possible to follow the confirmation rates of authors in Figure 8. The low rate of confirmation, along with the high rate of not sharing the papers anywhere (43%), suggests that these people did not actually attend the conference. A recent *Nature* paper on OMICS provides examples of using people’s names without their consent [23].

**Figure 8**

*Confirmations of Attendance at the Conferences (N = 147 presenters from Top 7 Universities)*



## 4. Discussion and Conclusions

Scholarly conferences that are open to researchers from various disciplines and held in tourist destinations have been a subject of discussion in academic circles for many years. There is a commonly held belief that these conferences are questionable. However, such conferences are still held in various countries. The main aim of this study was to examine these questionable conferences in terms of their venues and participants. In this context, two organizations, namely OMICS and WASET, were examined in depth.

Because data on questionable conferences is difficult to obtain, only part of the data collection process could be automated. We made every effort to obtain as much data as possible and to ensure its accuracy and correctness. However, we are aware that some inaccuracies may appear in the results, either due to data quality or to the carelessness of the conference organizers.

Therefore, we publish full codes for harvesting the data in the appendices of this study to allow readers to replicate our research.

We analyzed 935 conferences organized by OMICS and 296 conferences organized by WASET from 2015 through 2017. We investigated 40,224 presenters and focused on top-ranked institutions according to three global university ranking systems. We found that 11.0% of OMICS and 5.7% of WASET presenters were affiliated with institutions ranked in the top 100 in one of the three global university rankings. We also found that both companies mostly organized conferences in cities that were top tourist destinations.

Considering the high number of OMICS conferences held in the United States (in various cities) in comparison with WASET, the expected result is that OMICS events would be primarily participated in by researchers from the United States. However, researchers from India, the United Kingdom, and China also represented a significant share of the presenters. These conferences also attracted a significantly higher percentage of presenters from Top 7 universities than did conferences organized by WASET. However, WASET, being based in Turkey, where Istanbul is among the top venues, attracted the most researchers from Turkey, India, and South Korea. Only a few researchers from Top 7 universities participated in WASET conferences. The presenters' countries for WASET and OMICS greatly differ from widely-known conferences in different areas. A study [31, p.486] that evaluated the first 20 Frontiers in Service Conferences (1992–2011) found that presenters represented 57 different countries, where 87.9% of the presenters at the 1992–2001 conferences and 74.2% of the presenters at the 2002–2011 conferences represented 10 countries (the United States, Germany, Australia, the United Kingdom, Sweden, the Netherlands, Canada, Finland, Norway, and New Zealand). The 25th International Conference on Science, Technology and Innovation Indicators (STI 2021) was held online with 61 presenters from 17 countries, of whom 77% were from seven countries (the United Kingdom, the Netherlands, Norway, Denmark, the United States, Germany, and Belgium).

The other remarkable finding was the high number of keynotes for OMICS (15.4%). The share of keynotes is generally well below this value for widely-known academic conferences. For instance, there were two keynotes at STI2021 (3.2%) and at ASIS&T 2021 (0.84%). Because the keynotes are privileged regarding their registration, accommodation, and/or travel costs, this may be a strategy to attract prestigious scientists for the recognition/validation of these questionable conferences, as also mentioned by Broman [32]. On the other hand, Edwards [21], who was an invited speaker at one of the OMICS conferences, was suspicious that everyone who attended the conference was invited. As is widely known, it is a common questionable publisher behavior to flatter scientists by inviting them to publish/present [33].

These highly international events, during which people from the entire scientific spectrum present their findings, can be the birthplace of new ideas, interesting cross-disciplinary research topics that might change the world, or avenues of possible inclusion into the scientific community for young researchers. These events can also serve as a forum for individuals affiliated with (semi)peripheral countries to share their ideas and find research partners from different disciplines, institutions, or countries. As stated by one of the participants now affiliated with a (semi)peripheral country with whom we conducted an interview, being invited to give a keynote speech at an international event is not something that happens all the time to those affiliated with non-central countries, especially considering the fact that organizers make participation possible by partially waiving the conference fee. However, according to the conference program, this participant was affiliated with a Top 7 institution, even though they only completed some of their education at that institution.



When perusing the websites and programs of conferences organized by OMICS and WASET, one might get the impression of having missed an opportunity to participate in exciting scientific events. However, questionable practices like creating twin conferences with the same program or organizing hundreds of artificial events during one legitimate event, as well as OMICS' multimillion-dollar fine from the Federal Trade Commission, are facts that do not create an impression of legitimacy. Thus, providing answers about the intentions of a company that, according to its own website, organized more than 100,000 conferences in three years (~1,000 conferences a day) while, at the same time, silencing all comments about its practices by a court ruling, could be revealing.

It is important to note that none of the authors of the present study have attended any conferences by OMICS or WASET. For this reason, we would like to state that all findings presented in this study are based solely on information acquired via conference websites and are related neither to the contents of the papers presented therein nor the quality of the conferences. The results of the present research confirm that although participation in questionable conferences is considered problematic by scientific communities, even researchers from the seven leading universities in the world (according to university ranking systems) participate in these conferences. There may be different reasons for this. Researchers may have been invited by the organizers to share their current research, the conference may have been held in a nearby city, or there may have been other unforeseen reasons. Understanding these reasons will provide important findings not just for conferences organized by OMICS or WASET but for all scientific conferences.

The fact that the vast majority of researchers from Top 7 universities who attended these questionable conferences were students or early-career investigators may indicate that young researchers face various challenges regarding awareness of prestigious conferences in their fields and lack of judgment in assessing the legitimacy of conferences. While drawing attention to the need for raising awareness on this issue, this finding also reveals that universities should implement stricter and well-informed policies regarding publishing platforms. Conversely, this situation can also be explained by the publishing pressure faced by young scholars. In this respect, it is of great importance to investigate researchers' main motivations to participate in scientific conferences. We aim to investigate this issue in a future quantitative study.

According to the results of our research, there is no control mechanism for the affiliations given on the conference websites. Throughout this research, it was determined that the addresses of Top 7 universities were used even for researchers who had been students of or short-term collaborators at these universities many years prior. While this may be the author's preference, it can also be a strategic method for attracting participants to the conference. If it is a move to attract participants, it requires more attention.

We believe that the increasing pressure in various countries for participation in international conferences will increase the number of organizers of questionable or predatory conferences. Therefore, it is crucial to educate students and early career investigators, in particular, and show them how to recognize a high-quality and legitimate conference. Those responsible for such education are primarily supervisors and research group leaders, who are sometimes unaware of the challenges and pressures faced by young researchers. We believe that building a database of predatory or questionable conferences will not be an effective tool because companies can, as the OMICS case shows, rebrand quickly. Instead, academic communities need a range of tools and initiatives that aim to educate researchers from all fields and build trust in credible conferences.

### **Data availability**

The full collection of scripts used for collecting, parsing, and cleansing the data are available in Appendix 1 (OMICS) and Appendix 2 (WASET).

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### **Conflict of Interest**

The authors declare that they have no conflict of interest.

### **Availability of data and material**

The full collection of scripts used for collecting, parsing and cleansing the data are available in Appendix 1 (OMICS) and Appendix 2 (WASET).

### **Author contributions**

E.K. designed the study. M.H., E.K., Z.T., G.D. collected and analyzed the data. E.K. and Z.T. constructed the figures. E.K. and Z.T. wrote the manuscript. All authors read and revised the manuscript.

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