

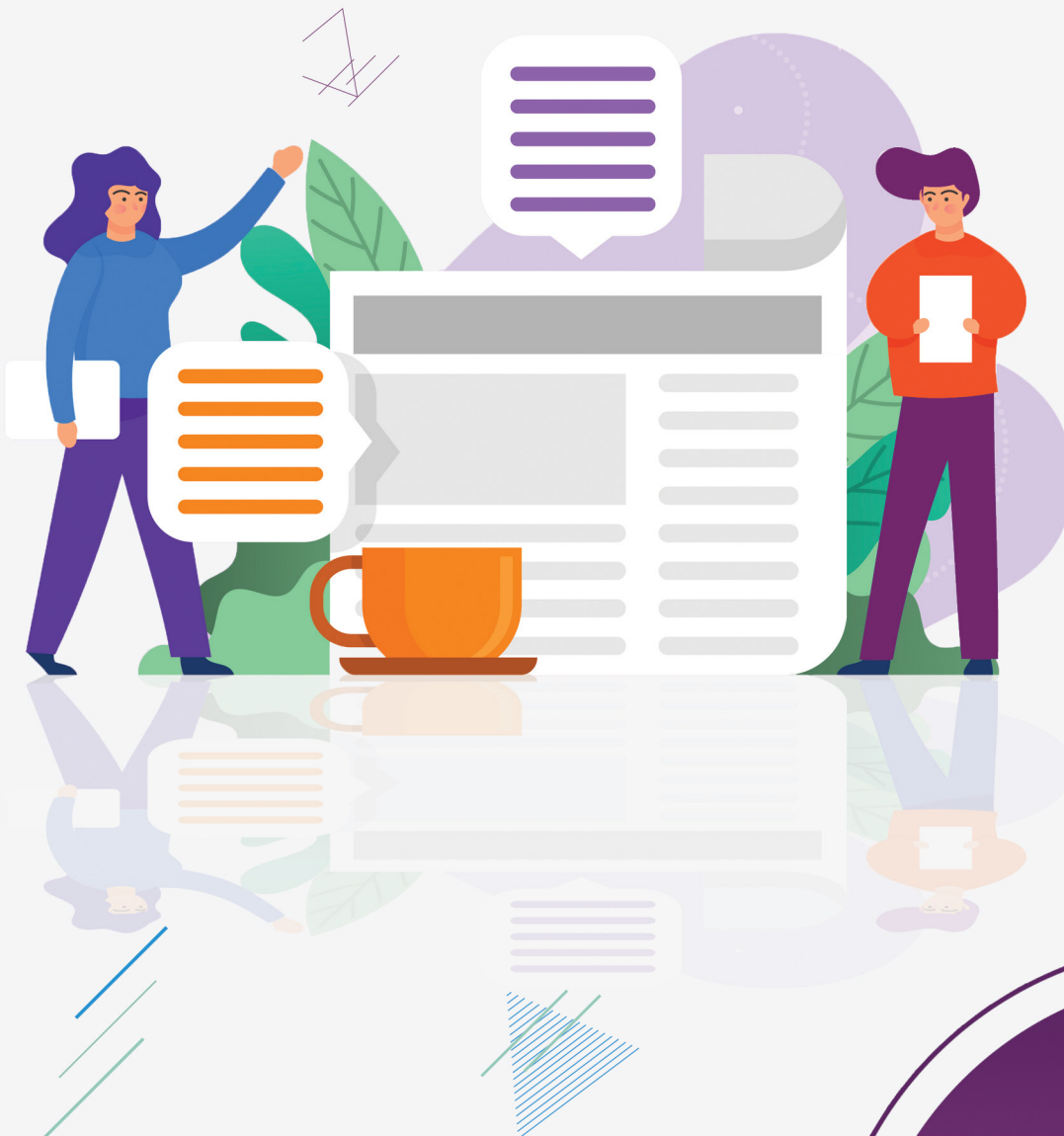


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# Research Report

## Assessing the Application of Data Journalism and Data-Based Investigation in Indonesia





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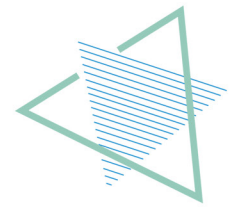


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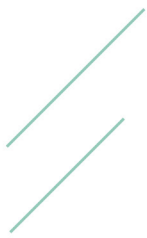
# **Research Report**

***Assessing the Application of Data  
Journalism and Data-Based  
Investigation in Indonesia***



# Research Report

## Assessing the Application of Data Journalism and Data-Based Investigation in Indonesia



### Research Report

Assessing the Application of Data Journalism and Data-Based Investigation in Indonesia

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# **Research Report**

## **Assessing the Application of Data Journalism and Data-Based Investigation in Indonesia**

By

Eva Danayanti, Bayu Wardhana, Adi Marsiela, Febrina Galuh

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### ***Abstract***

*The application of data journalism in Indonesia has received a fairly positive response among the media and journalists. Data journalism allows journalists to construct stories through attractive visualizations such as graphics and maps and provide audiences with a personalized story approach. This study aimed to assess the application of data journalism and data-based investigations in Indonesia, then used the results to map the opportunities and challenges in its application. The results of this study indicated that there were not many mass media in Indonesia that put forward data journalism as an approach in publishing their reports. The research recommends that the opportunities for developing data journalism in Indonesia are wide open because the media industry requires quality content. Collaboration between the media and universities is the solution that can be done to overcome limited resources for the application of data-based journalism in media.*

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## 1. Introduction

The application of data-based journalism in Indonesia has received a fairly positive response among the media and journalists. This can be seen from the growing number of media circles that apply data journalism in their products. There are even some media that focus on data journalism works.

Data journalism can encourage the improvement of news quality for the better by using statistical analysis techniques to provide deeper insight into a news story and highlight relevant data. Data journalism allows journalists to construct stories through attractive visualizations such as graphics and maps and provide audiences with a personalized story approach. Data journalism opens up opportunities for readers to evaluate and assess the accuracy of information. Through data journalism and the rapid flow of information, journalists can compare coverage results and available data, as well as generate story ideas through data processing.

However, the application of data journalism requires journalists to master various digital data processing techniques. In general, journalists in Indonesia do not have this capability. Data journalism also demands the use of digital data processing tools, which most Indonesian media lack. This condition presents a dilemma for the media and journalists in the application of data journalism. Therefore, AJI Indonesia encourages to carry out a journalist and media capacity-building program for the

application of data journalism in Indonesia. The aim is to overcome the gap that exists in the implementation of data journalism in Indonesia.

As part of planning a data journalism development program in Indonesia, AJI conducted a study. The aim is to measure the application of data journalism and data-based investigations in Indonesia today. This study will identify opportunities for the application of data journalism in the context of media editorial policy, staffing structure, technical support needs, and journalistic capacity. The research will also include newsroom perceptions of priority topics for investigative and data coverage.

In general, this study explores the following questions:

1. How does the media use data journalism and data-based investigations in the newsroom?
2. How do journalists use data journalism and data-based investigations in producing journalistic work?
3. What are the editorial and economic challenges to mainstreaming data journalism and data-based investigation in the news cycle?
4. What is the potential for participation of higher education institutions in the development of data-based journalism?

The data processing of the survey results is detailed in the report's appendix.

## 2. Methods

The study applied two data collection methods: focused discussion and survey through questionnaire distribution.

The survey was conducted online using Google Form. The distribution of the questionnaires was carried out by enumerators who had been appointed in each research target area. The number of survey respondents was 296 journalists from 16 provinces in Indonesia, namely DKI Jakarta, East Java, Central Java, North Sumatra, South Sulawesi, Bali, Yogyakarta, Papua, NTT, West Kalimantan, East Kalimantan, Aceh, Central Sulawesi, Maluku, North Maluku, and Banten. The survey questionnaire consisted of 34 questions which were divided into

four parts, namely questions related to the respondent's data, the availability of journalist capacity building programs, data journalism and investigation, as well as expectations for data journalism training.

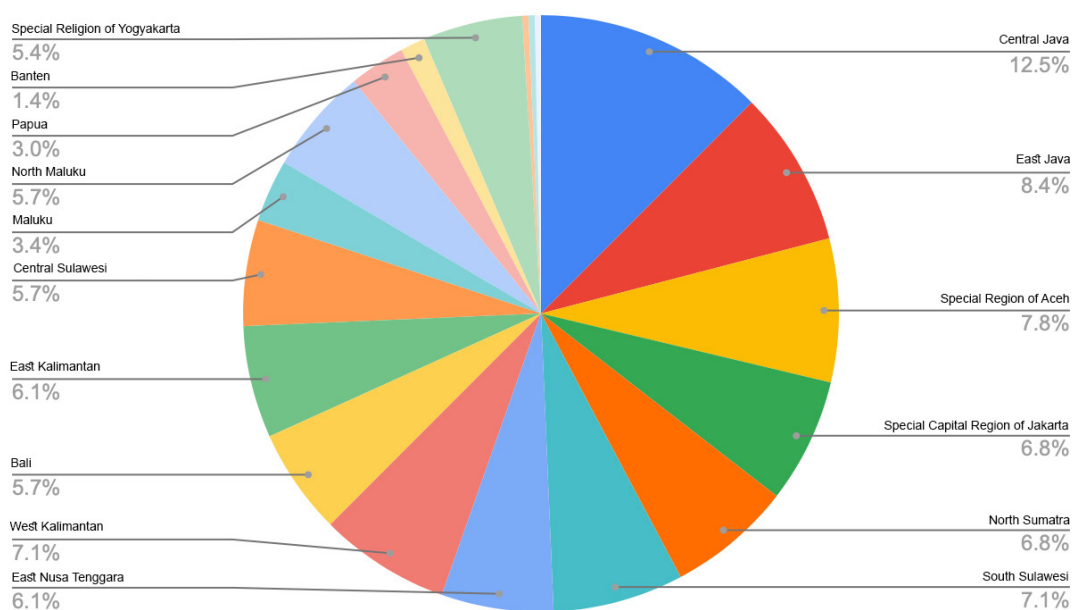
Focused discussions were conducted online using an online meeting platform involving 27 respondents: 11 respondents from the media industry who have implemented data journalism in their daily practice and 16 respondents from colleges or universities with communication and journalism study programs or fields. The discussion was conducted separately for the two groups of respondents. This focused discussion was intended to obtain qualitative information and data from respondents.

## 3. Results

### 4.1. Respondent Profile

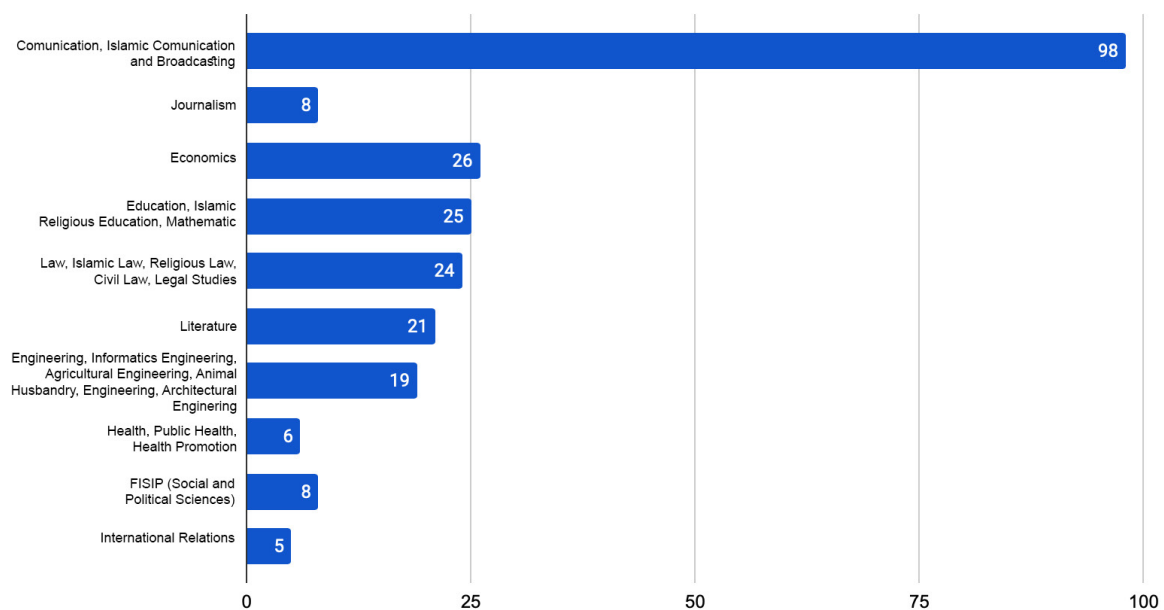
#### 4.1.1 Profile of Survey Respondents

The survey on mapping opportunities for data journalism development in Indonesia was attended by 296 respondents with a composition of 153 men (52%) and 142 women (47%) spread over 16 provinces.



The majority of respondents have an educational background of undergraduate (74.3%), high school, vocational high school, or equivalent (11.8%), postgraduate (7.7%), and the rest have associate's degree. The majority of respondents' scientific background was communication.

Respondents' Scientific Background



Most of these respondents worked in media companies with cyber media platforms (54.3%), print media (28.7%), television (8.4%), radio (5%), and the rest were multimedia (3%).

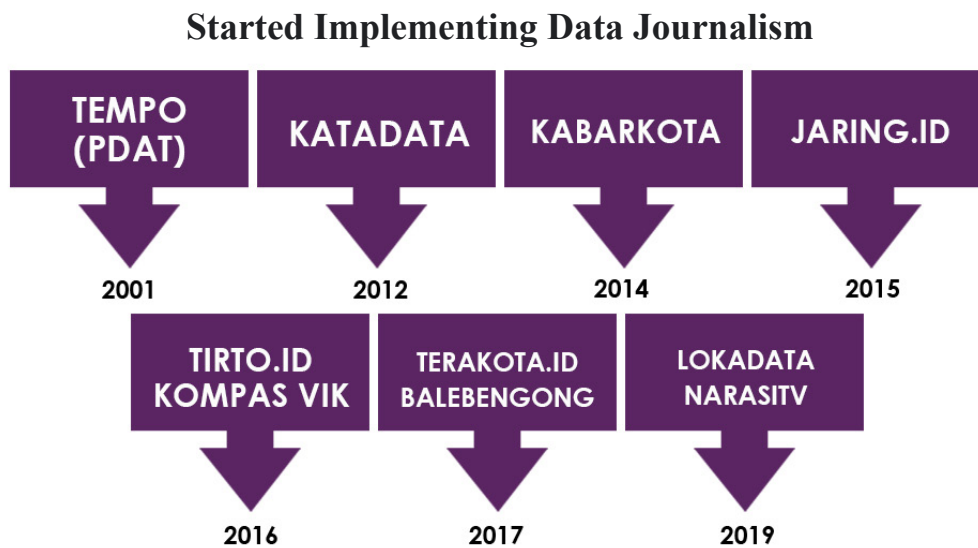
Respondents' work experience as journalists was divided into four, namely less than 2 years (2%), between 2-5 years (30%), 6-10 years (32%), and more than 10 years (35%).

## 4.1.2 Profile of Focused Discussion Respondents

The focused discussion was attended by 28 people with the composition of 13 women and 15 men. Participants came from 11 media and 17 universities in Indonesia.

Participants from the media have a minimum position of editor level, with a composition of 4 editor-in-chief, 5 executive editors or equivalent, and 2 editors or equivalent.

Participants from universities consisted of 1 vice-rector, 2 deans, 2 study program heads, 1 study program secretary, 11 active lecturers in the field of communication science.



## 4.2 The Use of Data Journalism and Data-Based Investigation in the Newsroom

To find out how the media implement data-based journalism, we asked questions related to human resources, availability of rubrics, facilities, and other forms of support for data-based journalism from the media where respondents work.

Based on their experiences, each respondent of this survey mentioned the number of human resources (HR) involved in making a journalistic work in their workplace. HR includes journalists, videographers, researchers, and graphic designers. HR involvement of fewer than 10 people was the most common (45%). While 27% of respondents worked in a scope of 10-30 people, the percentage of

respondents who worked in a scope of 30-50 people with more than 50 human resources was around 10%. The remaining 19 respondents answered that they did not know how many human resources in their office.

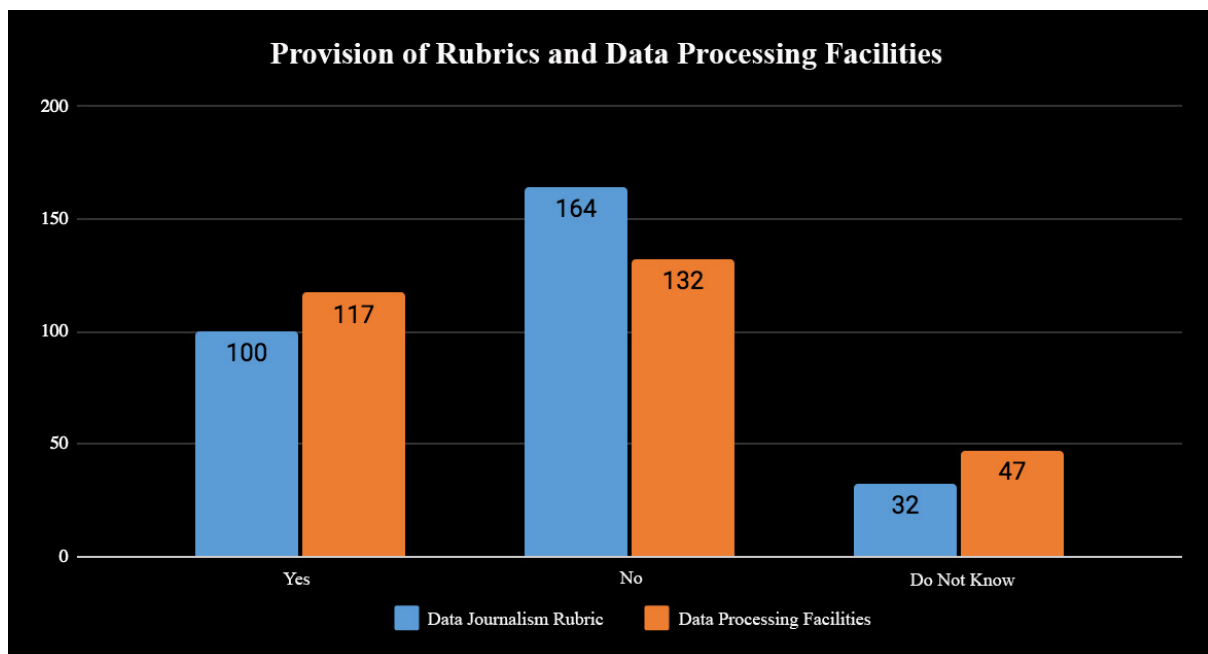
Practically, mass media that carry data journalism requires a special team other than reporters who go out into the field. Tirto.id, for example, has a research team under the editor's supervision that assists reporters and writers in collecting data for journalistic work. Due to the need to release data and fact-check materials every week, the editorial crew at Tirto.id is equipped with technical skills regarding data journalism. At least one journalist from each desk or rubric undergoes data journalism training.

This data journalism practice is also carried out by Terakota.id, an online media from Malang, whose human resources are much smaller than Tirto.id. The covering and reporting of data journalism are carried out by three people. They all take on the roles of a searcher, analyzer, data visualization designer, and narrator.

The same thing applies to Kabarkota.com, an online media from Sleman, Yogyakarta. This media employs eight journalists on a daily basis. All of this is done in tandem with journalistic reporting and a data journalism approach. When a reporter requests coverage, everyone helps and

participates in the quest for open data. There are three people in charge of data processing and analysis specifically. They work alternately. As for the infographic production process, there is one person who handles it.

Regarding data processing facilities, as many as 47 respondents or 15% admitted that they did not know anything. Meanwhile, 132 respondents or 44% of respondents stated that their media did not provide data processing facilities. Only 117 or 39% of respondents received data processing facilities in their media.



The provision of a special rubric for data journalism was not the focus of most of the media in Indonesia. More than half of the respondents stated that their media did

not have a special rubric related to data journalism. Only 100 respondents or 33% stated that their media has a special rubric.

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In addition to special rubrics, some media used data journalism as the main dish. For example, katadata.co.id started this data journalism practice in 2012. They emerged with a focus on presenting data-based information. Their mission was to help the public make decisions based on the analysis of the data on their website. The momentum they used was the government's decision to increase the price of fuel in 2015.

This media presented reports based on the results of the analysis and calculation of fuel subsidies data as well as international pricing practices. Based on data analysis, they identified ten reasons why the government should raise fuel prices.

A representative from Tempo states that data presentation is the most effective way to verify and confirm an issue or information. To present this pithy report, Tempo has its own team. However, for the economic desk, they worked on their own data findings.

Tempo is currently preparing Tempo Data Science as a sign of seriousness in providing information to readers. Apart from being able to digitize reports that have been published since 1971, the hope is that this unit will have particular tools and infrastructure to assist in the production of data-based reports to Tempo's trademark investigative reports.

How often is the coverage with a data journalism approach published in the media where the respondent works? A total of 85 respondents (28%) stated that they published a data-based journalistic report once a month. Respondents who published 2-4 coverages per month reached 118 respondents (39%). Meanwhile, there were 31 respondents (10%) who published their work once per quarterly; not much different

from 23 respondents (7%) who have never published data-based journalistic reports.

The themes of this data-based coverage were quite diverse. Respondents classified them into 14 themes such as public budget, economy, environment, health, education, crime and law, disasters, armed conflict, human rights, urban development, sports, the Covid-19 pandemic, to social issues adapted to events in the field.

The five themes that worked the most with data-based reporting are public budgets, health, economy, environment, and education.

Regarding investigative coverage, the majority of respondents (23%) stated that they had never published investigative coverage or reports in the media. Meanwhile, respondents who stated that investigative coverage was broadcast in their media between 1-4 times per month reached 109 people (36%). The rest, 15 respondents stated that investigative coverage was broadcast once per quarter, 24 respondents with one report per quarter, and 26 respondents with one investigative coverage per quarter.

The choice of theme for investigative coverage was not much different from coverage with a data journalism approach. The majority mentioned the theme of public, environmental, criminal, or legal budget issues. Other themes that were executed with investigative coverage were economics, education, disasters, armed conflicts, human rights, to politics.

For other forms of support, such as providing facilities to increase the capacity of journalists, as many as 61 respondents or 20% stated that they had never received training or increased internal capacity from their media. Meanwhile, as many as 30%

of respondents stated that they received training or capacity building within the last 4 months when the questionnaire was distributed. The rest or 49% of respondents stated that they received at least one training in the last 8 months-2 years.

The internal training materials were varied. Respondents can choose more than one theme that they have participated in in the last two years. The internal training materials that most respondents participated in were writing or reporting techniques, followed by the theme of safety for journalists, data journalism, fact-checking, environmental issues, human rights, investigative reporting, and budget issues.

Regarding the internal training materials, some respondents answered that the materials they received were competency tests, diversity issues, child-friendly news guidelines, issues of reporting on terrorism, human trafficking, to training related to SEO and English.

Regarding external training, the majority of respondents claimed that they received training in the last 4 months (37%) while another 51% attended external training within the last 8 months-2 years. Only 33 respondents or 11% have never attended any training outside their office.

The number of respondents who did not attend this external training was lower than those who did not attend any internal training at their workplace.

Regarding external training materials, the majority were writing or reporting techniques, security for journalists, fact-checking, environmental issues, while the rest revolved around human rights issues, investigations, and budget issues. Respondents also argued that the topics

were more diverse in terms of external training materials. This diversity can be seen in the themes of human trafficking, science, and health journalism.

### **4.3 Application of Data Journalism and Data-Based Investigation by Journalists**

To see the extent of the use of data journalism and data-based investigations among journalists, we asked about the respondents' understanding of the definition of data journalism, the patterns and work mechanisms they apply in producing journalistic work.

The majority of respondents perceived data journalism as a journalistic reporting process by applying, utilizing processing tools, visualizing, and analyzing data.

This survey also showed that the majority of respondents were accustomed to using Microsoft Excel and Google Sheets as their data processing applications. Other applications such as Python, Tableau, Flourish, SPSS, Turnitin, and others were only used by 1-3 respondents.

Most commonly, respondents implemented data-based coverage at least once a month (28%). This finding was directly proportional to the number of respondents who implemented 2-4 coverages per month. Meanwhile, 44 respondents (14%) admitted that they had never implemented data-based coverage.

Regarding the investigative coverage, the majority of respondents (31%) stated that they had never done it. This number was greater than the respondents who covered the investigation 1-4 times per month (30%).

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In the pattern of work, 114 respondents (38%) stated that they carried out an assignment from the editor, whether it had been decided or not discussed in the editorial meeting. Meanwhile, 112 respondents (34%) conducted coverage based on news peg/viral/hot issues.

A total of 49 respondents (16%) conducted coverage based on the initiative or suggestion of reporters in the field. Meanwhile, 21 respondents (7%) stated that they carried out the coverage based on the availability of data. The remaining 10 respondents admitted to reporting based on a combination of the things above.

In carrying out this data-based coverage, the majority of respondents relied on data from the Central Statistics Agency (BPS), units of local government, non-governmental organizations, and the ombudsman. The institutions and ministries whose data were most frequently accessed by respondents were the financial audit body and the corruption eradication commission.

Respondents often got the various data directly from the source (39%). A total of 73 respondents or 24% used the internet to search the data. While the rest (25%) accessed open data through publications or press conferences, request information and documentation from officials in public agencies, anonymous leakers or sources, purchase data, and process information disputes.

We also dug up information related to the work patterns of journalists using one actual issue, namely the pandemic. In the context of responding to Covid-19 data,

the majority of respondents analyzed data published by the government. Some respondents combined the government version of the data with other data or used it as initial information for further investigation so that it is used as comparison data only. As many as 50 respondents stated that they immediately published the data they get from the government.

The survey also explored opportunities for developing data-based journalism by asking respondents' expectations. As for the application of digital data processing tools that respondents wanted to learn or master, the majority answered R, Google Spreadsheet, Microsoft Excel, Data Wrapper, Python, Tableau, and Flourish. In this context, respondents were allowed to choose more than one digital data processing device.

If a data journalism training was conducted, the majority of respondents (66%) agreed if it was held online and offline. However, 71 respondents agreed that the training would be held offline.

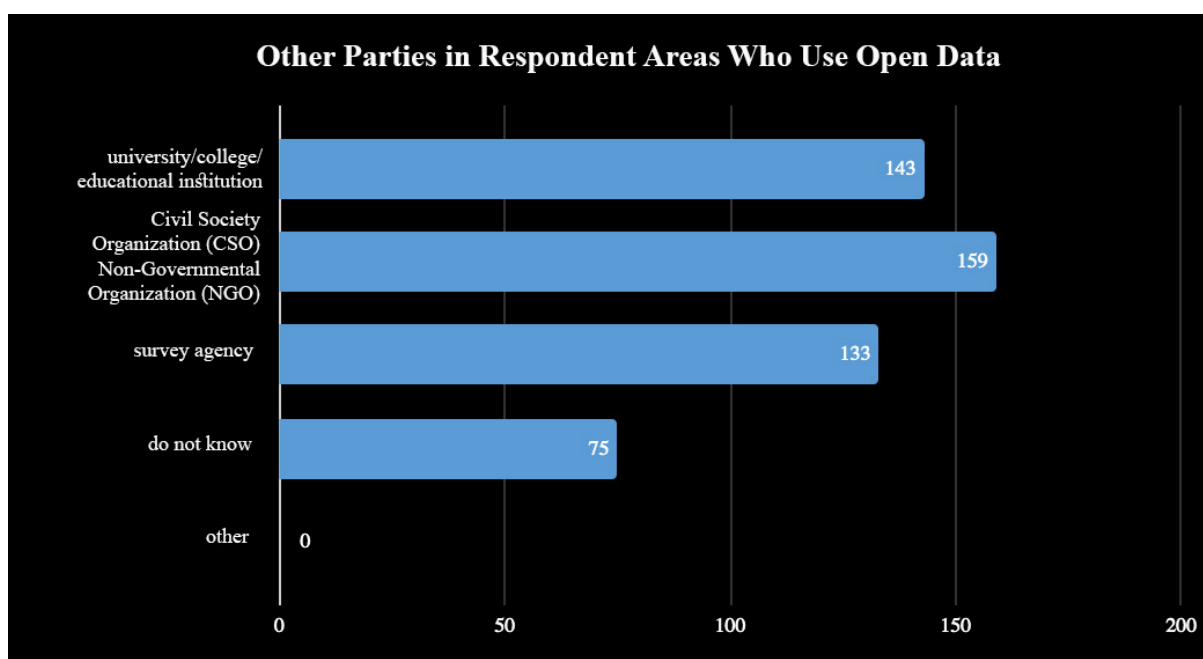
Respondents also expressed interest in training accompanied by fellowships or funding coverage (55%). Meanwhile, 90 respondents (30%), 40 respondents (13%) stated their interest in training accompanied by a certificate. Only three respondents chose the combination of the three (1%).

Regarding the duration of the training, the majority of respondents (66%) agreed that it would be held periodically between 1-3 months. Meanwhile, 85 respondents (28%) chose intensive training in one month.

#### 4.4 Challenges to Mainstreaming Data Journalism and Data-Driven Investigation in the News Cycle

The majority of respondents argued that the biggest obstacle in conducting data-based reporting was the availability of data sources. In this regard, it is important to encourage the use of open data. Optimizing the use of open data will create demand that can encourage data owners to improve their data presentation.

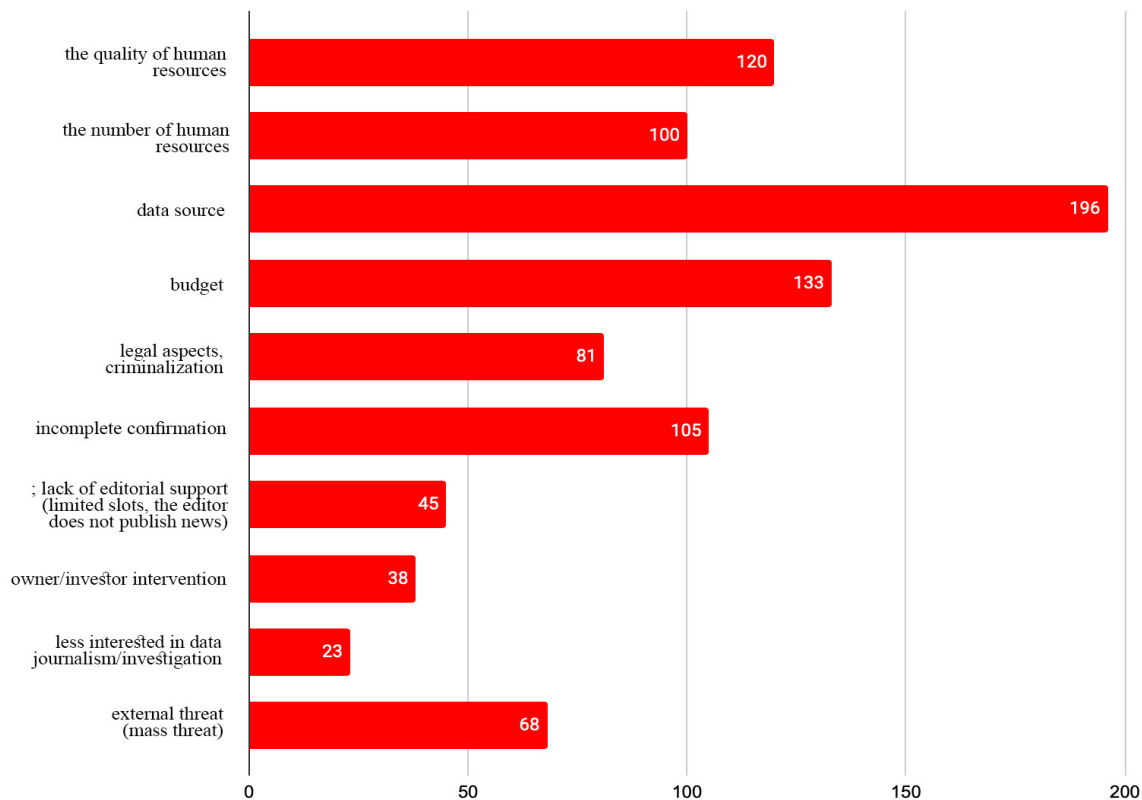
The survey has identified several parties who also used open data in their respective cities. In this context, respondents were allowed to choose more than one answer. Starting from universities or educational institutions, non-governmental organizations, to survey institutions. Only 75 respondents answered that they did not know about other institutions or parties that used open data in their cities.



Regarding the frequency or how often other parties other than journalists used open data, respondents answered that non-governmental organizations (36%) used it the most. Meanwhile, 19% of educational institutions, 17% of survey institutions, and 78 respondents or 26% said they did not know anything.

The next challenge was the availability of the budget, the quality of human resources in the media, and the lack of confirmation. The factor of lack of human resources to carry out data-based coverage was the fifth obstacle.

### Challenges to Data and Investigative Journalism Coverage



Other barriers that became the attention of respondents were the potential for criminalization, external threats, to the lack of editorial support and intervention by media owners or investors. A total of 23 respondents also admitted that they were not interested in data-based journalism and investigative reporting.

#### 4.5 Opportunities for Higher Education Institutions to Participate in Data Journalism Development

Students' interest in studying journalism has tended to drop over the last decade, according to responders from various universities. This has an indirect impact on courses related to concentrations or the

field of journalism being closed or reduced. Others used the courses as part of their media studies and communication strategy programs.

The majority of these respondents admitted that practical learning for students was now emphasized on the need for online media. This was in line with the dimming of the print media industry.

Responding to technological developments, they also recognized the importance of the data journalism genre that was developing globally. Respondents, most of whom come from lecturers' backgrounds, agreed to push the study of data journalism into their new curriculum. Some summarized it in the

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concentration of multi-platform journalism. This was a necessity for universities to bring the quality of their graduates closer to the needs of the media industry.

The Islamic University of Indonesia (UII) tried a media creativity approach as a way to attract students' interest in journalism. Instead of using journalistic terms, they challenged students to think up ideas or quality content for the media.

In the context of the intersection with data journalism, UII tried to introduce it through the concept of digital humanity. Cultivating this digital humanitarian issue opened up great opportunities for the development of data journalism without forgetting the narrative related to the public interest.

Padjadjaran University, the campus with the longest history of journalism study programs in Indonesia, argued that data journalism has only been introduced to the extent of knowledge via contemporary journalism courses. This has an impact on the lack of student skills related to data journalism.

In the context of the skill aspect, respondents were aware of the lack of lecturer resources who mastered data journalism.

This is an opportunity for practitioners of mass media who often run data journalism to collaborate with universities. Both in the preparation of training programs, the development of data journalism in the mass media, to the application of data journalism on campus. Universities may become institutions that can provide certificates for journalists or mass media who take part in a series of data journalism training by universities.

The experience of journalists or editors in the media can be an advantage for campus

circles whose lecturers have never been in the media industry at all. Students can get direct updates from the industry on campus through media practitioners.

Respondents also explained that developing issues for investigative reporting was closely related to understanding data journalism. Journalistic reports that accuse certain parties cannot be done arbitrarily by the media. The data journalism approach is an important ground for the media to realize the allegations or ideas for their investigative coverage.

The potential for developing data journalism in universities is truly high. This can be seen from the research ecosystem which bases everything on the existence and validity of the data. At least for students, they will encounter this in the research methodology course. Indirectly, universities already have the initial capital to realize the collaboration.

Another opportunity is the obligation to carry out the tri dharma of higher education, two of which are research and development along with community service. The ecosystem that supports the realization of data journalism is public information disclosure. Universities, apart from being able to provide teaching to their students, can also cooperate with public bodies regarding the disclosure of public information which is closely related to research in their institutions.

Talking about collaboration, Universitas Multimedia Nusantara (UMN) is one of the universities that collaborate with practitioners in teaching methods, especially data journalism for journalism study programs. They started with one organic lecturer and one practitioner. Currently, there are four organic teachers and one from an external campus.

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Teaching at UMN is also not limited to data journalism but has moved to data science. In the future, they will develop basic and advanced levels based on observations at their institutions. This advanced education deals with processing more complex data using R and Python applications to data mining and natural language processing for content production and analysis.

#### 4. Discussions

In general, not many mass media in Indonesia put forward data journalism as an approach in publishing their reports. The results of this study indicate that the challenges in producing data journalism reports or investigative coverage are divided into several areas. Starting from the availability of open data by public agencies and limited human resources, except for the media that have quite large personnel.

So far, public information disclosure in Indonesia has existed formally but is still a question mark in terms of the quality or depth of public information disclosure. Information and Data Management Officers (PPID) generally already exist, public information channels on the institution's website and methods/procedures for requesting public data are provided. But not all public information is provided on the site. And when journalists ask for information, the process takes a long time with no response. This is one of the things that journalists complain about in carrying out data journalism.

Related to the limited human resources, several non-profit media that put forward data-based investigative reports, overcome them by collaborating with mainstream media. Regarding the facilities for searching, retrieving, and processing data, this collaboration puts forward open-

source tools. However, data analysis and illustrations can be done with the cooperation of a third party, especially when dealing with data that is quite 'big'. Someone with a background in information technology and coding expertise is usually required.

Another factor that is quite challenging for the media is to generate reader interest, especially reports published online. Reports that are painstakingly compiled on a weekly or monthly basis are sometimes accessed by only a few readers. In business, this is not profitable for the media. A new player in the media business, Narasi. TV has succeeded in monetizing content related to data journalism because it has other channels or rubrics that are trusted by the public. Tempo continues to prioritize quality journalistic reports because it believes the media business can continue as long as there is a public trust.

Infographics or data visualization isn't the most essential element of producing data-based journalism reports. The fundamental aspect that supports the journalistic report is still narratives or stories that provide a complete picture of data relevant to the public interest. Balebengong.id, a non-profit media portal that prioritizes citizen journalism, has its own tips. They use the media to provide information to citizens. Citizen journalists can also produce data-based journalism content, with the assistance and direction of professional journalists who join the group. This online media that is developing in Bali, assesses that the challenges for them are equitable internet access or connection and the quality as well as the validity of data opened by public agencies. The citizen journalists who join are self-taught without being equipped with technical skills related to information technology.

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The need to increase the capacity of journalists is also reflected in this research. The majority of respondents hope to be able to take part in a training held by external media companies, both online and offline. This is reflected in the respondents' expectations that the training will take place intensively accompanied by funding for coverage. Training materials should also use open source applications. Starting from basic levels such as introduction, retrieval, cleaning, to analysis, processing, and visualization of data. Interest in advanced training is also evident in applications that use codings such as Python, R, and others.

On the other hand, academics are looking for the right formulation to provide teaching related to data journalism to their students. Teaching about data journalism is essential for the world of education. They hope that students who graduate can answer the needs of the media industry in the future. Moreover, data journalism can be presented in a multi-platform format.

The synergy between industry and universities can also be developed towards data journalism training certification. In the process, universities can also cooperate with journalists or the mass media to provide teaching staff from practitioners.

With research disciplines that characterize the academic world, universities can also encourage public bodies to open their data. Indirectly, the availability of quality open data helps the research process and the process of writing journalistic works that are more weighty and accountable.

The business model of data-based journalism is one component that the media consider when implementing it. Tirto.id,

which has put forward reports based on data journalism since 2012, has not yet experienced a direct impact on the revenue from the works they publish. On the other hand, the media brand is increasingly known to the public, as a media that carries data journalism. The introduction of this brand is considered extremely valuable because it is directly proportional to the growth in public trust.

Reflecting on this, it is crucial for media industry players, especially those who carry data journalism to look for new business models that can support the production of quality journalistic reports. The media also need to invest in the quality of human resources, generally the entire editorial staff, especially reporters in the field. The goal is to ensure that reports from the field are confirmed and bolstered with valid data. So that the quality of journalistic products is maintained. The impact of brand awareness is also felt by Kompas in the context of quality journalism. Consumers or advertisers feel safe if they place ads in the Kompas group because they trust the brand.

Business continuity is essential so that the editorial team can still produce quality content. Efforts to withdraw funds from the subscription system have been made but the impact has not been felt. Online reader visits are the only thing that is consistent and can have an immediate impact. However, it is not conducive to the growth of data journalism. Kompas works around this by applying cross-subsidies to free products.

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## 5. Conclusions and Recommendations

Opportunities for the development of data journalism in Indonesia are wide open because the media industry requires quality content. However, currently, there is still limited availability of open data, human resources, and insufficient budget for the application of data-based journalism in the media. As a solution, the results of this study offer collaborations between the media and universities that can be done to overcome limited resources for the application of data-based journalism in the media. The results of FGDs and surveys show a positive response to collaboration between the media and other parties. Therefore, it is necessary to have activities such as fellowships that encourage collaboration between the media and other institutions.

This study recommends the following:

1. Skills training using data journalism. From the survey, the majority of journalists receive training (both internal and external) but the theme is mostly about deepening certain issues such as human rights, environment. Internally obtained skills training focuses on reporting or the basics of journalism. As a result, it's critical to educate them on how to use data journalism tools.
2. Encouraging newsrooms to schedule coverage or in-depth rubrics based on data journalism. The survey results show that there is still little space or rubric in the media for data-based in-depth coverage because it is considered costly and does not have many readers/viewers. On the other hand, from Kompas.com's experience, Tirto.id shows that data-based in-depth coverage provides a positive image for advertisers. And Narasi.TV is able to monetize from in-depth coverage.
3. Collaborating with media and other institutions (universities, CSOs, etc.) to create data-based investigative coverage.
4. Encouraging data journalism curriculum in universities. From the results of the FGD, university managers, especially the Department of Communication/Journalism, believe that data journalism is the future of journalism that needs to be taught to students. However, the obstacles faced by these teachers are knowledge and skills about data journalism. Therefore, it is necessary to conduct training for trainers and mentoring for lecturers at universities so that they are able to create curriculum or data journalism courses.
5. Encouraging in-depth public information disclosure in public agencies.



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