Open Source Intelligence as an Approach to Investigating Criminal Events by Journalists (Case Study of the 2019 Forest and Land Fires in the Investigation Report of the Trace of the Geni-Starting Corporation in Tempo Magazine)

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ABSTRACT: Forest and land fires in Indonesia in 2019 reached 1.65 million hectares. Some of the burned areas are included in the concession areas of large corporations. The development of digital forensic studies makes investigations possible. One such method is Open Source Intelligence, which is defined as an intelligence gathering discipline that consists of gathering information from public or open sources and analyzing that information to produce valuable intelligence. The purpose of this research is to determine the use of Open Source Intelligence as an investigative approach used by journalists to uncover the facts of a crime. This research uses a descriptive qualitative method with analysis of Digital Forensics theory, Newsmaking Criminology, and Journalism theories to see how Open Source Intelligence opportunities in revealing the facts of the 2019 forest and land fires committed by companies in South Sumatra, West Kalimantan and Central Kalimantan.

KEYWORDS: Open Source Intelligence, Land and Forest Fires, Investigation, White Collar Crime, Newsmaking Criminology

I. INTRODUCTION

Postmodernist criminology studies the relationship between culture and crime. One of the approaches that is frequently investigated is using the Newsmaking criminology approach. According to Barak, the study discusses the role of criminology in participating in mass media and responding to crime cases. Newsmaking criminology itself is defined as a field of science that studies the relationship between the role of criminology in the mass media (Reksoprodjo, 2022). Newsmaking Criminology is also a thought that critically highlights the impact of disproportionate crime reporting (Mustofa, 2020).

Current technological advances also increase the spread of false news that is unlimited to the industrial and manufacturing sectors. In addition, the Internet is used for a variety of other purposes, including in the field of information dissemination, or journalism. With the advancement of technology, not only the media disseminate information and news, but it is also used to create and process news. Open Source Intelligence (OSINT) is one of the increasingly popular among journalists. There are many definitions of OSINT, but most refer to classified information found, legally collected, categorized, and distributed. OSINT is also referred to as the intelligence gathering discipline that consists of collecting information from public or open sources and then analyzing it to generate valuable intelligence. OSINT is defined as publicly available information that is found publicly in various media, such as radio, television, newspapers, the Internet, commercial databases, videos, images and various social media (Safitra & Abdurrahman, 2023).

OSINT can get open source in the form of text from newspapers, pictures, videos, webinars, or even public speeches from many of these tools. By 2021, OSINT will be one of the most skilled fields of computer science and materials and applications will be much needed by intelligence engineering, especially in the field of cyber security, where war and competition in the future will use digital media.With open-source applications and tools, students can be interested in learning cybersecurity science as they can help as human-power submers in the country's cyber security and password agencies (BSSN) and companies (Yuliadarnita, et al., 2023).

Forest and land fires are a threat to sustainable development as they can have a direct impact on ecosystems, contribute to increased carbon emissions and impact on biodiversity sustainability (Mareta et al., 2019). BNPB states that human activities, either intentional or negligent, are the cause of forest and land fires in Indonesia. The primary source of fires are human activities, such as opening land for agriculture, planting, forestry, and housing needs; land conservation contributed 34%, wild forest

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pollution 25%, agricultural 17%, and transmigration projects 8% (Lestari et al., 2014). According to the Ministry of Environment and Forestry, the total area of forests and land burned in Indonesia in 2019 reached 328,722 hectares. The largest fires occurred in South Sumatra, covering 11,826 hectares; in Central Kalimantan, 44,769 hectare; in West Kalimantán, 25,900 hectars; in South Kalimantin, 19,490 hectares, in Jambi, 11,022 hectare, and in Riau, 49,266 hectare (Muslim Karo Karo, 2020).

Journalists who analyze crimes using OSINT not only follow the principles of true journalism, but also disclose facts to help develop strategies to deal with and prevent similar events from happening again. Open Source Intelligence (OSINT) can be defined as unclassified information that is found, collected, categorized, and distributed legally. (Elguindy, 2021).

Journalism literally means journalism or reporting. In English, "journal" means report or record, and "jour" means "day" or "diary" (Widiyawati, 2016); (Purnama, Yuli & Andreas, 2016). In accordance with the meaning contained in journalism, the Act No. 40 of 1999 on the Press refers to the functions of the national press as the media of information, education, entertainment, social control and economic institutions (Wajong, 2018); (Sihombing, 2020).

The news presentation used as a media by journalists in providing exposure of OSINT findings in the case of forest and land fires in 2019 has a major role to play. The study aims to learn about the use of Open Source Intelligence as an investigative approach used by journalists to uncover the facts of the 2019 forest and land fires through digital forensic methods.

II. METHOD

Using qualitative methods and descriptive approaches, Forest and Land Fire Study 2019 on the Corporate Trace Investigation Report of Genius Breeders in Time Magazine. Qualitative Descriptive Research is research that develops concepts and aggregates facts, but does not test hypotheses (Herman & Nengsih, 2019). Besides, this study also really describes the conditions of the research site in order to find the scientific intelligence in accordance with the desired (Kartius et al., 2023). Data types and sources consist of primary data and skunder data. For research information is as follows:

Table 1. Research Informants

No	Informer Description	Key Informant	Informant
1.	Kepala Proyek Liputan Investigasi Jejak Korporasi Penyulut Geni	1	-
2.	Pemimpin Redaksi Majalah Tempo	1	-
3.	Ahli Forensik Kebakaran Hutan dan Lahan	1	-
4.	Sekertaris Jendral Aliansi Jurnalis Independen (AJI) Indonesia	1	-

Source: Researchers Process Data, 2023

This research uses several data collection techniques, namely in-depth interviews with research informants, where the process of interviews is conducted directly against the parties directly involved with the research object, Open Soure Intelligence as a Journalist Crime Investigation Approach (Forest and Land Fire Case Study, 2019). In addition to the interview, the author also uses a Documented Data Collection Technique that collects data directly related to the research. The location of the research is the 2019 forest and land fires carried out by companies in South Sumatra, West Kalimantan and Central Kalimantan. After data from the field is collected, the author will separate between primary and skunder data, then compile the research report as well as analyze the results of interviews and documentation so that the report can be accurate and scientific.

III. RESULTS AND DISCUSSION

A. RESULTS

The use of Open Source Intelligence (OSINT) in Tempo Magazine's Fire Corporation Investigation Report, published on Saturday, September 12, 2020, has produced some findings that have been listed in the Main Report entitled Corporate Track of Geniuses. The findings using OSINT, such as the results of interviews, present the fact that there were widespread fires as a result of corporate activities. Besides, in 2019 there were at least 454 land concessions burned. (Majalah Tempo, 2020).The journalistic investigation hypothesis was answered on the basis of OSINT findings and direct verification to the location. As for the findings and tools of OSINT contained in the Main Report of Time Magazine edition 12 September 2020 with the title Pentyulur Geni Corporate Track, among others:

1. Copernicus Atmospheric Monitoring Service (CAMS) report, a Earth monitoring platform managed by the European Centre for Medium-Range Weather Forecast (ECMWF). As a result, estimated total emissions from forest fires in Indonesia from August 1 to September 18, 2019 are equivalent to 360 megatons of carbon dioxide. This figure is almost equal to the impact of 2015's smoke disaster in the same period with the equivalent emissions, 400 megatons of carbon dioxide.

2. Fire Information for Resource Management System (FIRMS), a platform owned by the United States Space Agency (NASA). Generating, capturing hot spots whose number has re-increased since June 2020 in the territory of Indonesia.

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3. Visible Infrared Imaging Radiometer Suite (VIIRS) and Moderate Resolution Imaging Spectroradiometer (MRIS) or heat point detection sensor from FIRMS. Producing, the recording of four hot spots or hotspots picked up the first time from the concession territory of PT Earth Mekar Green (BMH) at the coordinates 105.60354,-3.88019, the area of Village Mulya, Viceroy River Menang, district of Ogan Komering Hilir, South Sumatra on September 11, 2019. In the next three days, the number of hotspots increased much northward to melt outside the concession. This OSINT tool also produces, hot spot on the west side, near the Dead Elephant Village, Menang River Prefecture, Ogan Komering Hilir district, also appeared at the end of September 2019 from the company's concession area. Exactly at 105.5217, -3.8708. The fire signal point spread and spread northward until the end of October 2019. The P.T. BMH concession map is like a full canvas of red polkadot when it is stamped with the spread of hot spots in the September-November 2019 period.

4. Sentinel-2. The result, on November 9, 2019 showed a picture of the concession of BMH in the area of the Village of Elephants Mulya and the village of elephants Mat, where the land that once looked green turned black.

5. Satellite image. Producing, the face of the land area difference. The opening of the land (visualization of the new canals and security blocks) is expected to take place a few moments before the fires burned the concession of PT BMH around Gai Mulya and Dead Elephant Village, that is, throughout June to August 2019. The first hotspot is also around the soil that is supposed to be being prepared for new planting. The canals were gradually built over more than 11 kilometers from east to west, covering the area of the Great Elephant, then the Dead Elephants Village. Earlier, in May 2019, satellite images still captured this plain green area without a fence.

6. Data of the Hydrological Unit of Gambut (KHG) 2017. The resulting, of the 11 kilometers of the channel, the last 2.8 kilometers built on the west side are also indicated to divide the sheltered area of KHG River Beberi-Sungai Way Mesuji. In accordance with Article 21 of Government Regulations No. 71 of 2014 as amended by Government Regulation No. 57 of 2016 on the Protection and Management of Gambut Ecosystems, the protected area must be used only for research, scientific, educational and environmental services. Article 26 of the same regulation also prohibits the opening of new land and drainage channels in the shelter.

7. Passage with hidden cameras on a nirvana. The result, at the end of August last (2019) also clearly showed the new faces of the BMH concession in the region of the River Menang. From the air photos, the darkness of last year's burnt land (2019) has been replaced by crops bordered by canals about nine meters wide.

8. Satellite image. Producing image of the land concession of PT Kalimantan Prima Agro Mandiri (KPAM) indicated burned heavily in September 2019 in Sweet Eye Prefecture, Ketapang district, West Kalamantan. PT KPAM is planning to open the ground for a new planting area when the fire breaks out. Satellite images of September 14, 2019 confirm this assumption. The gardens that hadn't existed two months ago, began to be lined up in the southern part of the concession. During that period, the supposed old plant block opened in 2018. The land between the two gardens is depicted as a crater, with a tongue of fire flowing into the sky, a week later. By August 2020, the landscape in the KPAM consensus area has changed a lot. There are no more firefighters in the same land. The empty land that once burned turned into a new grove. Young switches are crawling over it. On the other deck, the straw or wood scissors of the planting plan have also been in order. Two trucks full of young palm trees looked towards the location.

9. Satellite image of Sentinel 2. Producing, analysis of hotspot finds first appeared simultaneously on August 21, 2019 outside and within PT Kumai Sentosa. The hotspot outside of this concession is in the Tanjung Puting National Park area. But the second hotspot is about 5.5 kilometers away. The area burned more than half of the company's concession area of a total of 11,890 hectares in River Branch Village, Kumai district, West Kotawaringin District, Central Kalimantan. The land under the concession of PT Kumai Sentosa is believed to have been opened before the fire, including the construction of a canal. Hotspots on corporate concessions even first appeared on the newly built channel on the third week of July 2019. Interestingly, these first 10 hot spots appear in rows of two rows at regular distances.

10. Hydrological Union of Gambut (KHG) 2017. As a result, the new channel at PT Kumai Sentosa adds the length of the channel network that has been awakened since 2018. If stacked with the 2017 KHG map, it is clear that the watercourses that stretch from north to south are undermining the protection function of the Buluh Buluh River. Now that location has been planted. Young saviets are beginning to be threatened in a number of plantation blocks. On the west side, the 10-meter canal is the boundary of the concession area and the national park.

B. DISCUSSION

Time magazine search results through the use of OSINT and field reports on investigations of forest and land fires caused by the company's activities, at least ten. PT Kumai Sentosa was sued in court for burning land as a result of the company's actions in 2019. Time magazine investigated forest and land fires through OSINT and found that losses and violations of the law had occurred because the company's activities were a form of corporate crime.

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Time magazine collaborates with Mongabay, Betahita, Malaysiakini, and Auriga Nusantara civil society organizations to collect and process data using OSINT. Therefore, the authors would like to know more about how journalists use open source intelligence in their research. The study focuses on the findings and stages of OSINT use in the case study of forest and land fires in 2019, according to Tempo Magazine's Fire Corporation Investigation Report.

Digital forensics Investigations

Digital forensic investigations, further referred to as Digital Forensics Investigations (DFI), are phases of linking extracted information and digital evidence to build factual information for review by the judiciary. (Nur Faiz et al., 2018). Mikayla's Digital Forensics Investigation Theory (DFI) consists of 10 items including Planning, Detection, Collection, Transportation, Reporting, Presentation, Examination, Identification, Analysis, Classification. (Mikayla et al., 2023). But in this study the author took only five theories to speak and answer the research among which are:

1. Prepare. The results of an interview with the author showed that a team of investigators from the Genius Scavenger Corporation by Time Magazine's collaborative team was in the process of preparation. These results were presented by Agoeng Wijaya who made the coverage hypothesis of the investigation over the occurrence of forest fires and land extended in Indonesia in general.

2. Identification. The author's interview with Agoeng Wijaya showed that he was conducting a review of the rulings of previous cases in court to see the methods, motives, and methods of evidence of forest and land fires. As well as a collaborative investigation team started collecting evidence from the appropriate OSINT tools.

3. Collections or collections. Research from the results of interviews with Agoeng Wijaya shows that there is an enterprise that continues to collect assets of OSINT analysis results and is developed through various OSINT tools as data processing sites, such as ArcGIS and QGIS.

4. Analysis. Through an interview with Agoeng Wijaya who said that the team described the method of drawing conclusions tested by descending landscapes, found strong evidence and accessible access and came to forest and land fire forensics. Likewise, the author's interview with Prof. Dr. Ir. Bambang Hero Saharjo, M.Agr who said he had verified the accuracy of the method and drawn conclusions from the data of the investigation team. This stage is also the writer's rating, included in the validity stage of the investigative report that was assessed by the Time magazine's editorship at the time, so that the report can be published.

5. Presentation. Theoretically, a presentation is meant to be a report of the findings of an investigation to be received in court. While based on the results of an interview with Agoeng Wijaya, only three companies are of complete evidence; OSINT data and field inspections are allegedly strongly engaged in activities that caused extensive forest and land fires in 2019. Among them, PT Bumi Mekar Green in South Sumatra, PT Kalimantan Prima Agro Mandiri in West Kalimanthan, and Kumai Sentosa in Central Kalimantin.

Jurnalisme sebagai Fungsi Kontrol Sosial

The Press Act No. 40 of 1999 mentions several functions of the national press, one of which is as a function of social control. Badri (2013); (Iqbal, 2020) It states that the press can report corrupt behaviour of government or officials, abuse of power, and arbitrary acts to the public. Through this research, the authors discovered OSINT's role in revealing new facts about corporate attempts to illegally burn forests and land, build canals in forbidden areas, and cause huge ecological losses. This is confirmed by the results of a research interview with Ika Ningtyas who discussed the issue of personal data in the field of journalism.

The Role of Criminologists in Newsmaking Criminology

Through these researches and interviews, the researchers discovered the fact that there was a new discovery of the facts of a forest and land fire event carried out by a large corporation. Besides, there were systematic and planned initiatives, such as opening land and building canals. The results of this investigation using OSINT reinforce the role of criminologists in the world of newsmaking criminology as presented by Gregg Barak, which aims to involve criminology scholars in the formation of "realities" mass media actively reporting (Mustofa, 2020). This is because mass media reports are often disproportionate to reality. Most crimes committed by large corporations can be categorized as White Collar Crime because of the complexity, the impact of losses, the difficulty of disclosure, and the unconscious victim being the victim of organized crime. The author assessed the fire incident in a Time magazine Investigation Report that three companies suspected had been engaged in widespread fire-causing activities, including in the White Collar Crime category.

C. CONCLUSIONS

The use of Open Source Intelligence in Fire Corporation Investigation Reports in Time Magazine's September 12, 2020 edition, according to the results of an interview the author did, the OSINT results of the Main Report investigation titled Track of a Genius-Purchasing Corporation there are some conclusions that the author can draw. First (1) that the use of OSINT in the

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investigation of criminal events especially forest and land fires is very effective because it can be proven directly through satellite recordings. Second (2) the results and obtaining of data as well as the results of data processing from OSINT depends on the availability and ability of journalists. The third (3) OSINT has a great opportunity to uncover systematic and planned major crimes, through digital scanning and analysis. The fourth (4) requires collaboration and transfer of science in conducting in-depth investigations to reveal large and complex crime events. Fifth (5) that the use of OSINT cannot completely replace direct reporting, it must be conducted direct verification with the monitoring of the victims or witnesses of a criminal event to confirm the evidence of the OSINT findings. Six (6) authors see the potential of OSINT to be used by the wider public, not just by journalists, investigators or experts. Of course used for the right interests and appropriate methods.

Of the six conclusions in the use of Open Source Intelligence as a Journalist's Crime Investigation Approach, the authors' views on the Digital Forensics theory formulated in the Digital forensics Research Workshop, which were later reviewed into five stages, could be a reference to the methodology for using OSINT in the disclosure of various criminal events. These stages are used to ensure standard work and accuracy of methodology, although the way the OSINT is collected and used will be very flexible according to the knowledge and ability of the journalist himself.

Through this research, the researchers put forward some suggestions, namely:

1. In the use of OSINT, journalists need to conduct more in-depth checks by comparing information from various other OSINT tools, or using conventional methods. Because there is a possibility of data monopolies by interested parties.

2. Journalists need to pay attention to ownership of OSINT platforms or tools to ensure truth and strengthen the independence of journalists in their work in accordance with the ethical code of journalism.

3. To journalists in various fields who must be able to use OSINT in journalistic work to extend quality and new, qualitative, and in-depth journalistical products. Too many crimes or other incidents happen in various parts of Indonesia.

4. The police of the Republic of Indonesia (Polri) should develop investigations through scientific methodologies such as OSINT in the disclosure of various crime cases. Because when relying on equipment in the Polri Forensic Laboratory that is not even will take a long time and not maximum efficiency. Included in the Polri Human Resources building.

5. Civil society groups (NGOs) can play an active role in using OSINT to conduct research to carry out surveillance functions against major powers. Especially in Riau that has historical traces of forest and land fires.

6. Educational institutions that focus on the study of criminology in order to develop curricula on its technical knowledge and related sociological reviews. Above the potential of technology in the discovery and cause of crime.

REFERENCES

1) Elguindy, M. (2021). Applying Digital Forensics Methodology to Open Source Investigations in Counterterrorism. *Lex Et Societatis*, *1*(1), 11–64. https://doi.org/10.54873/jolets.v1i1.32

2) Herman, H., & Nengsih, I. A. (2019). Strategi Pelayanan Izin Praktek Dokter Pada Dinas Penanaman Modal dan Pelayanan Terpadu Satu Pintu (DPMPTSP) Kota Pekanbaru. *Asketik*, *3*(2), 163–175. https://doi.org/10.30762/ask.v3i2.1568

3) Iqbal. (2020). Implementasi Teori Pers dalam Pemberitaan Harian Republika. *Konferensi Nasional Komunikasi*, *03*(01), 657–667.

4) Kartius, Herman, H., & Purnomo, D. (2023). Efektivitas Pendistribusian Zakat Oleh Badan Amil Zakat Nasional Kabupaten Siak. *JDKP Jurnal Desentralisasi Dan Kebijakan Publik*, *3*(2), 430–437. https://doi.org/10.30656/jdkp.v3i2.5936

5) Lestari, R. K., Watanabe, M., Imada, Y., Shiogama, H., Field, R. D., Takemura, T., & Kimoto, M. (2014). Increasing potential of biomass burning over Sumatra, Indonesia induced by anthropogenic tropical warming. *Environmental Research Letters*, *9*(10). https://doi.org/10.1088/1748-9326/9/10/104010

6) Mareta, L., Latifah, A. L., & Hidayat, R. (2019). The Influence of Natural and Anthropogenic Factors on the Area of Forest and Land Fires in Kalimantan. *Jurnal Tanah Dan Iklim*, *43*(2), 143–151. https://doi.org/10.2017/jti.v43i2.10456

7) Mikayla, H. S., Kusyanti, A., Brawijaya, U., & Korespondensi, P. (2023). *Analisis Forensik Digital Untuk Investigasi Kasus Cyberbullying Digital Forensics Analysis To Investigate Cyberbullying Cases In Social Media Tiktok*. *10*(7). https://doi.org/10.25126/jtiik.2023108017

8) Muslim Karo Karo, I. (2020). Implementasi Metode XGBoost dan Feature Importance untuk Klasifikasi pada Kebakaran Hutan dan Lahan. *Journal of Software Engineering, Information and Communication Technology*, *1*(1), 11–18.

9) Mustofa, M. (2020). Kriminologi Budaya Untuk Kesejahteraan Indonesia. *Jurnal Hukum Pidana Dan Kriminologi*, *1*(1), 73–91. https://doi.org/10.51370/jhpk.v1i1.3

10) Nur Faiz, M., Adi Prabowo, W., & Fajar Sidiq, M. (2018). Studi Komparasi Investigasi Digital Forensik pada Tindak Kriminal. *Journal of Informatics, Information System, Software Engineering and Applications (INISTA)*, *1*(1), 63–70.

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https://doi.org/10.20895/INISTA.V1I1

11) Purnama, Yuli, F., & Andreas, Y. N. & S. (2016). Jurnalisme Bencana Dalam Pemberitaan Kecelakaan Airasia Qz8501 Pada Surat Kabar Jawa Pos Dan Kompas. *Jurnal Visi Komunikasi*, *15*(01), 62–78.

12) Reksoprodjo, F. S. (2022). Newsmaking Criminology Dan Kejahatan Terkait Corona Di Indonesia. *Nusantara: Jurnal Ilmu Pengetahuan Sosial*, *9*(6), 2070–2078.

13) Safitra, M. F., & Abdurrahman, L. (2023). Open-up International Market Opportunities: Using the OSINT Crawling and Analyzing Method. *SEIKO : Journal of Management & Business*, *6*(1), 923–931. https://doi.org/10.37531/sejaman.vxix.346

14) Sihombing, T. R. (2020). Kebebasan Dan Tanggung Jawab Pers Ditinjau Dari Undang-Undang Nomor 40 Tahun 1999 Tentang Pers. *Lex Et Societatis*, *10*(1), 54–75

15) Wajong, P. B. (2018). Perlindungan Hukum Bagi Wartawan Dalam Melaksanakan Tugas dan Fungsi Terkait Dengan Kebebasan Pers Menurut Undang-Undang Nomor 40 Tahun 1999. *Lex Et Societatis*, *6*(2), 7.

16) Widiyawati, W. (2016). Akurasi Dan Objektivitas Berita Media Online (Studi Tentang Kualitas Pemberitaan di Solopos.com periode 19 - 25 September 2016). *Jurnal Komunitas*, *September*, 93–105.

17) Yuliadarnita, Febriansyah, M., Wijaya, A., Apridiansyah, Y., & Toyib, R. (2023). Analisis Komparatif Aplikasi Open Source Intelligence Berbasis Website Dengan Tools Osint Command Line Kominfo Bengkulu. *Jurnal Media Infotama*, *19*(2), 256.