Proceeding
The 1st International Conference on Social Sciences
University of Muhammadiyah Jakarta, Indonesia, 1–2 November 2017
Toward Community, Environmental, and Sustainable Development
Dwi Firmansyah: Drone for Live Report in The Production of News Television (Qualitative Descriptive Analysis of Liputan Arus Mudik Lebaran 2017 in SCTV)
ISBN: 978-602-6309-44-2

DRONE FOR LIVE REPORT IN THE PRODUCTION OF NEWS TELEVISION (QUALITATIVE DESCRIPTIVE ANALYSIS OF LIPUTAN ARUS MUDIK LEBARAN 2017 IN SCTV)

Dwi Firmansyah

Universitas Mercu Buana, Jakarta, Indonesia

dfi.firmansyah@gmail.com

Abstract

The purpose of using drone for television news coverage is to reduce the risk of accidents for journalists during disaster coverage. It also reducing cost since it can replace the function of helicopter, has wide range power to build media information, and speed up the coverage for it can penetrate the territory that is couldn't be achieved by humans. Coverage for homecoming flow during Eid Al-Fitr holiday, is an annual program conducted almost in all television stations in Indonesia. News about traffic congestion, was being awaited for public road users and their family. Ordinary television stations did live broadcast (live report) so that the information carried was a condition that was real-time. There must be some obstacles for live report news production for its real-time characteristic. Concerning about that, using drone for this news production needs deep knowledge related to visual broadcast material based on drone, how to operate, required technology, and also technical and non technical constraints that may occur during the production process. This study is intended to find a description of the use of drones in the production of live news reports on television. The research method used is descriptive qualitative, with the procedure of completion of in-depth interview data from key informants of outer broadcast producers, reporters, drones cameraman and correspondence with professional pilot drones. The theory used is based on television news production stages theory. Data from informants was analyzed with this theory and other literature study. The results of this study represents live reports production process, capabilities that should be owned by drone cameraman, also advantages and disadvantages of drones in a live report.

***Keywords**: News Production, Live Report, Drone*

INTRODUCTION

Drone in general is unmanned aerial vehicles which can explore the targeted area by only being controlled from a great distance. So drone journalism is the use of drones (unmanned aerial vehicles) for journalistic activities in the form of taking photos or video.

Mark Corcoran, the international correspondent from *Australian Broadcasting Corporation* (ABC) in a journal entitled "*Drone Journalism: Newsgathering applications of Unmanned Aerial Vehicles (UAVs) in covering conflict, civil unrest and disaster (January 2014)* divide the coverage of journalistic drones in three categories namely *"a)* ***Major conflict****; the military 'embed' and the implications of deploying media drones over civil communities during conflict. b)* ***Civil unrest,*** *'Drone journalism' in a hostile urban environment. c)* ***Disaster coverage,*** *Floods, fires, earthquakes, where a small 'eye in the sky' can make a difference*.

At least there are four major uses of drone in news coverage: breaking news and daily news, investigative reporting, conflict, disaster reporting, and photojournalism. In addtition, the picture of drones also offer a unique perspective to enrich news stories. Currently, now many television stations in Indonesia are already using drones as the eye of camera. In the production of television news, visual drones become complementary even often become the main image for information a news. The

ISBN: 978-602-6309-44-2

ability to record images from a height (*bird eye view)* allowing drones to take pictures that are capable of explaining many things, especially regarding the vast point of view (*angle*). John V Pavlik (*Journalism and New Media, 2001*) explain that this kind of camera (drones) can be used to create coverage about public protests, political campaigns, sports coverage, until the traffic in big city. Coverage cultural events, arts, forest fires, the taste can also be added. (Ignatius Haryanto, Kompas, August 14, 2014)

Live reports are one of the strengths of television compared to other mass media. In this program the audience is invited to watch an event directly, as they were also where the event occurred. For television stations doing live coverage is the hardest, the most complicated and the most dramatic of journalism than other coverage. (Morrisan 2008:64).

One of the television broadcasting institutions in Indonesia that use drone in news coverage is PT Surya Citra Televisi (SCTV). The use of drones is carried out to cover the news shown in Liputan 6 news program. Some of which are coverage flow Lebaran, disaster in some areas, cases of evictions in Jakarta and special event of Total Solar Eclipse in Palembang, South Sumetera.

Based on the background of research that has been presented, the problem formulation in this research focused on: "*How to use drones in the news production of live report coverage of Lebaran 2017*?"

The specific purpose of the research is to explain the shooting technique using drones, the use of drones in the production of live report news, the advantages and disadvantages of drone that use in the live report.

RESEARCH METODHOLOGY

This research approach using qualitative descriptive approach. Descriptive qualitative is a method used to dissect a phenomenon in the field. Qualitative descriptive research is a method that describes the findings in the field. Researchers describe clearly the use of drones in news production by television broadcasting companies to support humans activities. While the qualitative method used to obtain the data presentation in the form of detailed, in-depth interview from the informants. Bodgan dan Tylor in Moleong (2001: 21) examples of qualitative research is a research procedure that produces descriptive data in the form of written or oral words of people and behavior that can be observed.

Data is an important factor in research, for it required certain techniques in data collection. The data technique used in this research is as follows:

1. Observation

Observations are made to bring researchers closer to the people they examine and to their actual situations or circumstances. And researchers can get into the environment they studied or known as participative observation. In this observation, researchers observed the events, incidents, poses, and the like are accompanied by lists that need to be observed (Sulistyo-Basuki, 2010:149).

2. Interview

Interviews are conversations conducted by two parties: interviewers who ask questions and interviewees who provide answers to questions (Moleong, 2012:118). Through this interview also the researchers dig deep information from informants about the use of drones in television news production at PT. Surya Citra Televisi (SCTV). This study uses semi-structured interviews in the hope of finding more open information from informants. Technique data collecting is done by in depth interview to key informant and informant. The in-depth interview method is the same as other interview methods, only the role of the interviewer, the purpose of the interview, the role of the informant, and how to conduct in-depth interviews are done many times and takes a long time with the informant at the research sites, which condition has never occurred in the general interview (Bungin, 2007: 111)

ISBN: 978-602-6309-44-2

3. Documentation

Documentation method is a method of collecting data whose data obtained from books, internet, or other documents that support the research undertaken. The document is a record of past events. Researchers collect documents that can be writings, drawings, or monumental works of a person (Sugiyono, 2012:240). In this case, the researcher used the video document of news coverage program 6 SCTV about homecoming flow during Eid Al-Fitr holiday 2017.

The selection of subjects or key informants in this research using snowbolling sampling and done with the steps as follows : researchers when starting to do research and gathering information, seeks to find whoever is the first person to receive at the site of the research object who can give clues about who can be interviewed or observed in order to obtain information about the research object. After interviewing the first person, the researcher asked the key informant to appoint someone else who could be interviewed again and so on.

RESEARCH RESULT

The production process of television news has three stages: pre production, production and post production. But in the production of live report the third stage of post-production, in the form of editing and video script removed. Because during news production, the editing process is done when the reporter stand up, and the results are immediately aired by the relevant television station when the incident is in progress or real time.

In this research, the author were interviewed 4 *key informan* namely Agung Supriysnto (Field Producer or Outside Broadcast Producer), Desa Apridini (reporter), Muhammad Husni (cameraman drone), and correspondence via email with Bondan Adhi Wicaksono (professional pilot drone).

Pre Production Live Report

1. Preparation

Some reasons television coverage using drones, such as reduce the risk of accidents to journalists during disaster coverage, its wide range of power makes it easy for media crews to obtain comprehensive information, and speeds up the coverage process by being able to penetrate areas unreachable by humans.

The use of drones in live reports has certain reasons, for example to show the condition of a region or a crowd of people who are visually appealing indeed. In order the live report material presented by the reporter in accordance with the image of the drone camera, a reporter must coordinate with the outside producer, the executive producer (EP) in the master control center of SCTV, and of course with the cameraman of the drone itself. Live report material usually tell the location, site conditions and atmosphere of the location, as well as other content related to the reason of selecting the live location. Coordination in the planning of live report is done from field producer, reporter, cameraman, cameraman drone, engineering team running SNG and transmission, and team in newscasting studio.

Related to this, SCTV reporter, Apridini Village explained:

> "The use of drones in a live report aims to show activity in a place that is massive or crowded, so it will be visually appealing if it is recorded from the air (aerial shot). A drone cameraman must coordinate about the storyline (story of live report)".

Besides research is also absolutely necessary, both library research for broadcast data, and field research for broadcast equipment placement (SNG). The most important thing is to observe the field, because the main strength of the live report precisely in the current condition (real time) of the location to be told. Desa Apridini explained :

"When we get to the coverage location, we have to observe the field and mapping. Exploring important drone images is done, as it is very likely to affect news content."

ISBN: 978-602-6309-44-2

To be able to hold live broadcasts, television stations usually use a set of Satellite News Gathering (SNG) tools as well as OB van cars or outdoor broadcast cars. The essence of this device is that there are cameras and devices to transmit audio and video to news center stations via satellite. Inside the OB van there is also an editing and video tape recording (VTR) device that can help the producer in the field to insert the image when the reporter is explaining the event.

According to drone cameraman, Muhammad Husni, the problem of technical equipment that appears in the live report can be minimized by examining the drone camera and its accessories such as gimbal, camera lens, propeller, battery and others. This step is usually done 30 minutes before the live report takes place.

The drone camera equipment will be connected to SNG, so technical obstacles that may be encountered must be observed first, so that while doing a live broadcast, the disturbance can be overcome. Some of the major disruptions in flying a drone are signal interference. Although technically a drone can fly up to a distance of more than 1 kilometer for example, but if there is signal interference then the potential loss of signal is very large. Some of the disturbances that arise are usually due to the presence of telecommunications transmitters or BTS, then high voltage power lines (SUTET), and the presence of a strong wifi signal source from a location. In addition, non-technical factors that must be considered before start of the broadcast is a kite disturbance that may be flown by citizens.

In addition, the location point of the farthest object from the location of SNG and the location of the stand-up reporter, must also be considered, do not let the drone movement can not approach the object because it is too far. Here the role of an outside producer (field producer) to conduct a survey in determining the location. Before the live report, coordination is still done so that between the content stand up reporter, camera images below and drone camera images can be in tune.

News Production Live Report

Upon arrival at the scene, the reporter is in charge of finding a credible source person, observing the event that will be covered, and looking for background issues. Resource persons become the most important object in the coverage, because the information submitted will be the latest data of the events to be reported.

When a live report occurs, a reporter stands in front of the camera (stand up) and broadcasts what was collected in the field, of course with the appropriate image insert. In a traffic jam broadcast, a reporter just simply explains in front of the camera (on cam) about 10 seconds, then the camera leads to locations that will be report by the reporter, can also insert the image that has been taken earlier. Here the function of shooting using drones is very important, because the depiction of the current situation will be very clear. The total live broadcast on the news program is usually no more than 5 minutes. But if the material is very good and it is being awaited viewers, then the duration can be adjusted to the situation.

A cameraman should be able to analyze and discuss with the reporter, the conditions of the place that will be covered and the characteristics of the environment. Placement of the right camera position, will produce an interesting image so it can record a dramatic moment to serve.

Accordingly, for drone cameraman, According to drone camera practitioner, Bondan Wicaksono, when interviewed the authors he explained that, there are some drone shooting techniques that are commonly used, but until now have not been standardized in theory, because each practitioner often uses his own definition. Aerial shot on the drone, technically similar to the use of cameras on steady cam, dolly or jib that has the movement of conventional cameras.

Bondan Wicaksono also explained that, visual drone when the live report is usually to describe an area as well as its crowded or massive activity. The pilot drone uses a communication device connected to the SNG tool or car to coordinate with the live coordinator or PD in the field. Because it is connected to a communication device, the pilot drone not allow to move during a live, therefore it takes an initial spot survey before live to determine which spots or areas to fly are safe but can describe the content once it is reported. Movement of drone is usually more smooth with still referring to one point which become source of report. Communication between the pilot drone and the live / PD

ISBN: 978-602-6309-44-2

coordinator determines the visual result of the drone shown. Whether it's about camera movement and drone battery conditions.

DISCUSSION

In operating the drones, technical skills and understanding of compositions are absolutely necessary. Because a cameraman drone must understand the advantages of drone technology as well as operate properly. In addition, an understanding of possible technical constraints must also be understood. While aesthetically, the beauty of a "luxurious" air image must be displayed by understanding the composition and movement of the camera.

related to the aesthetic image, Andi Fakhruddin defines aerial shot by shooting from the air by placing the camera position on an airplane. This shooting function to see the atmosphere under the land as a whole and freely. Usually used as a picture program needs news, sports games that involve many people or describe the atmosphere of natural disasters (Andi Fakhruddin 2012:156).

Practically, Muhammad Husni explained that ideally air shooting is to describe the atmosphere of the location around the live report. But for the beauty of the image and not monotonous, a drone pilot usually takes several variations of shot and drone movements.

In general, the resulting image of the drone is an extreme long shot or a very broad picture. If referring to the basic techniques of camera movement (pan, tracking, pedestal, dolly), then the camera movement applied in the use of drones, can be defined, among others:

1. **Aerial Pan Shot,** in practice pan shooting is usually done by moving the camera mounted on a tripod. In shooting the use of drones, the camera position is attached to a device called gimbal, which serves to keep the camera stability from the slope when the drone is moving or maneuvering. In this shot, a drone cameraman can move the camera direction to the right or left, forward or backward, according to desired composition.

2. **Aerial Tracking shot,** in this technique the movement of the camera moves closer or away following the movement of the object. In visual follow tracking, drone cameras can move to follow moving objects, for example a car that drove on the highway. This technique requires alignment to adjust the speed of the drone with the object. In addition it must also consider the height of the camera drone, distance and focus.

3. **Aerial Pedestal shot**, in this technique the drone move up or down, without moving the direction of the camera lens. This technique relies on drone flight from high to low (pedestal down) or from flying low to high (pedestal up). this shooting usually to cover high-rise buildings, landscape / scenery from altitude, and others.

4. **Aerial Dolly shot,** is a shooting from the direction of the horizontal moving altitude to the right or to the left of the object, so that the object dimension is clearly described.

While the development of camera movement composition based on aesthetic (beauty shot) made by the cameraman, according to Bondan Wicaksono, can be developed as follows:

1. Movement of Cranes (Crane Moves): the movement of this drone camera is probably the easiest to do and gives good results. The cameraman directs the drone in one particular direction and keeps the subject visible by moving the camera to the right or to the left (panning), as a variation of the cameraman can move the gimbal up or down. Remember the camera movement should be stable and smooth.

2. Movement follows the object (Wellsfar): Although the movement of the camera following the moving object is very difficult to do, but the cameraman can do with a stable and smooth. The trick is to follow the movement of the object (target), but slightly to the side, and when the camera drones through it, the direction of the camera made still (hold) on the object, then move away and back.

ISBN: 978-602-6309-44-2

3. Side-Slide: shooting begins with a subject outside the frame, and slowly (maintaining altitude) moves sideways (in a straight line), letting the subject slide across your frame and out from the other side.
4. Fly-Through Movement: Although isn't most difficult, but it is the most dangerous. You should direct the drone through a gap, or a hole in the obstacle course. Keep it as smooth as possible. Here the cameraman must pay attention to Newton's Law where object in motion stays in motion.

5. Circling motion (Orbit): the drone camera moves around the object with almost 360 degrees of rotation. Here the cameraman must adjust the movement of the gimbal to keep the camera directed at the object, although the drone moves circular. A good gimbal with a good damper is important here. Cameraman will make many adjustments to the remote control. It is important to keep the yaw level constant and adjust the forward / backward movement and the right or left side to keep the distance and speed of the drone from the subject. Movement of cameras like this takes a lot of practice to get good picture results.

In a live report, SCTV uses a drone under the DJI Inspire 1 brand of DJI Innovation production. This statement was delivered by SCTV drone cameraman, Muhammad Husni. The selection of drones of this type is done with consideration of stability against strong winds. Stability factor is important in live report because if there is a problem due to the weather, the broadcast may fail.

> *"DJI Inspire excellence is capable of flying in bad weather. When the wind is strong, this type of drone can still be stable. This capability is perfect for use in live reports that are often weather constrained".*

From the technical data that the author sees from the web review page, Drone DJI Inspire 1 is equipped with 4 pieces of propeller that makes the process of landing and take off it runs smoothly. At the time of flying in the air was very good stability, despite the strong winds. Other supporting features are the four legs can be folded and removed, making it easier in storage. When it is above any drone legs can be folded, so the drone feet will not interfere with your shooting from different angles. The camera is directly connected with gimbal, which will make you record video with good quality, not rocking and stay clear even if there is a wind.

DJI inspire 1 camera also has high resolution. The resolution is up to 4k 30 fps and the camera's ability is 12 megapixels. With the combination it will produce clear picture and video quality. One of the advantages of DJI inspire 1 drone camera is the camera can be folded up to 125 degrees, so as to maximize the shooting point of view with more flexibility. The Inspire One camera is capable of recording 360 degree views of the video without an obstacle. As for the connector, DJI inspire 1 has an HDMI ouput and usb port that you can connect to your tablet, smartphone or monitor screen instantly.

For the controller, the drone from DJI is already using a wireless transmitter that uses Lightbridge wifi connection that can stream 1080p video to Android or iOS device as far as 1.7 kilometers. The return to home technology will allow the drone to return to the controller position rather than to the first point of takeoff. While the battery is only about 4500 mAh, so only able to fly for 18 minutes.

Source: http://techno.khedisfile.com/2015/07/24/dji-inspire-1-drone-dengan-desain-ringkas-kemampuan-unggul/ (Cited: August 6, 2017 at 13.00 WIB)

The Use of drones in a live report

Implementation of live report, usually using three cameras, such as : 1: focus on stand up reporter, camera 2: congestion atmosphere from roadside and camera 3: camera of drone for shooting from a height (bird eye view). The position of the drone camera is not to replace the conventional camera, but rather serves to increase the image variant, so there is a certain point of view, namely aerial shor or aerial images. Another important point to consider is to look for any pictures related to the event, take picture with the essence of the story, coordinate with the reporter and the producer of the field to

ISBN: 978-602-6309-44-2

adjust the image with the live report material. The entire image ideally is the most dramatic picture moment to display.

The most difficult live report is when there is chaos in the city due to long traffic jams in East Brebes Toll or Brexit. Stagnation of vehicles for hours to make the position of SNG cars can not get closer to the main point of congestion. Yet at that time many people are waiting for information about it. Here the drone has an important role, because it can take pictures from a distance of more than 1 kilometer from the starting point of flying. The function of the drone in addition to describing the wide angle of a congestion area, can also to describe the details of congestion up close. The way, by flying low while combing the point of jam, so that the audience's eyes are represented to see clearly.

According to Agung Supriyanto:

> *"the most difficult live report is when covering long traffic jams at the east brebes toll. All the way to the location of traffic jams, even thousands of homecoming travelers trapped up to more than 24 hours in the location. A number of travelers have died from illness. The nearest location that allows the installation of SNG is about 1 kilometer to the toll booth brexit. Taking pictures using a drone camera is very effective, though dangerous, because cameramen can not predict the weather at a traffic jam. It takes a signal booster so that the drone image can be sent properly to the SNG car."*

The advantages and disadvantages of drones in a live report

One of the advantages of drone in a live report is High Definition (HD) image quality with high resolution, so this visually not inferior to the quality of Electronic News Gathering (ENG) camera images commonly used by crew coverage. This condition makes if the live broadcast uses 2 ENG cameras and 1 camera drone, then when the quality is not different.

In a live report on SCTV, drone operators are only operated by one person, so that the human resources more efficient. Not only that, if comparing live report using helicopter, then the use of drones is technically simple, because the technology has made possible recording directly. Live report by helicopter is technically possible, but the delivery of images from helicopters must be by using a mini microwave, which is transmitted to SNG, this way is very complicated.

In terms of cost, helicopter rentals are very expensive for once coverage. Rental costs can reach 20 million per hour, for a minimum of 2 hours of flying. It means that the cost of rent issued at least 40 million per live broadcast. The price may be almost the same as the purchase of HD quality drones, ranging from 30 million to tens of millions of rupiah, depending on technological excellence, and can be used many times.

The disadvantages of using drones in a live report is the condition of objects that can change quickly. From the previous survey 30 minutes before the condition is still jammed, but when the broadcast, it turns out the condition of traffic flow back to normal. Here the reporter must be honest when doing stand up, so that the audience is not deceived by the report submitted by the reporter.

Another thing is the prohibition of flight rules related to the Minister of Transportation of the Republic of Indonesia in 2015, on the Operation of *Unmanned Aerial Vehicles* in Air Space served by Indonesia. Drones are prohibited from being flown in places that interfere with air traffic or processes such as airports, flight schools and controlled air spaces. In addition, according to Agung Supriyanto, the arrival of VVIP state officials such as the President and Vice President, often done signal scrambling by the Security Force of the President (Paspamres), so that the signal connection from the remote control to the drone can be lost (lost signal).

The biggest obstacle in drone operation for live report is weather factor. Strong winds and torrential rains can cause drones to fall or break down, so if suddenly bad weather happens, the pilot drone cancels its flight.

While technically, the current drone battery capacity only 20 minutes to once fly. This makes it difficult during the live report process, so the cameraman of the drone must calculate the battery's ability with the preparation time of the broadcast. This is important to avoid when the broadcasting takes place, the battery is running low, so the drone should be lowered. Another obstacle is the

ISBN: 978-602-6309-44-2

electrical factor of the SUTET and the wifi signal from other stronger sources. This condition has the potential to make sending images from the drone camera to the recorder undisturbed, allowing for blank or freezing images.

CONCLUSION

1. Visual drone when the live report is usually to describe an area as well its crowded or massive activity. The pilot drone uses a communication device connected to the device of SNG car to coordinate with the live coordinator. Because it is connected to a communication device, the pilot drone does not allow to move during a live, therefore it takes an initial spot survey before the live to determine which spots or areaa fto fly are safe but may represent the content that the reporter will report. Coordination between cameraman drones with live coordinator, both outdoor producer and program director and reporter determine the visual result of the drone shown. Whether it's about camera movement and drone battery conditions.
2. A cameraman drone, in addition have the technical ability to fly the drones, must also understand the technical obstacles that arise such as signal loss due to the transmitter tower (BTS), high voltage electrical network (SUTET), signal scrambling by certain agencies such as presidential security forces (paspampres) and another potential wifi source that interferes with the signal from the remote control to the drone. Weather factors, such as rain and strong winds, are important to note by understanding the capabilities of drone technology. In addition, cameramen drones must also understand the rules of prohibition of flight drones in certain locations according to the rules of the minister of transportation.
3. Air shot composition (aerial shot) remains based on basic camera movements, namely panning, pedestal, tracking and dollying. But experiencing the development based on the aesthetic needs (beauty shot). In live report taking pictures done taking into account the events that occurred. The entire image ideally is the most dramatic picture moment to display.
4. The advantages of using drones in a live report: getting an aerial image that can explain an on-site event, a high definition image quality similar to the quality of an ENG camera, operating costs much cheaper than helicopter hire, technically simpler than installing a camera at altitude or from helicopters, certain types of drones can remain flown in bad weather, and can reach distances up to 1 kilometer from the broadcast location.
5. The disadvantages of drone use in live report: the condition of events in a location is very likely to change quickly, the reporter's material when the live report must be adjusted. Drone battery technology averages just 20 minutes, so cameramen must calculate the broadcast schedule with battery capability. The rules of the minister of transportation that prohibit the flight of drones in certain locations. The potential loss of signal due to a number of technical disturbances, which allows the drone can not function optimally. The weather constraints that make the drone impossible to fly.

SUGGESTION

1. The use of drone technology for the benefit of television journalism allows the media crew to take dramatic images of the air. But broadcasting material often becomes an obstacle, when there is a change of atmosphere or condition of the event, such as visual from congestion becomes smooth. Though the picture jammed of course more dramatic than the picture of traffic smoothly. This condition makes the media crew have to choose between being honest or lying to the audience. Live reports The flow of Lebaran Mudik, often a source of information from the community of road users to choose the fastest route. The honesty of media crews to report the latest information by describing the real-time atmosphere should take precedence.
2. Technical obstacle that may arise in the development of drone technology to make the media crew more freely explore the news. This condition should be followed by understanding the rules of using the drone, so as not to harm the public interest.

ISBN: 978-602-6309-44-2

3. Practically, aerial shot exploration has been highly developed, but theories that review the use of drone technology in journalism are still very minimal in Indonesia. This makes the technical and aesthetic capabilities of the drone cameraman, still only for himself. Television media crews should start documenting their practical abilities, especially regarding the use of drones in television journalism, in the form of writings that can be accessed by the public, so that the utilization can be more optimal.
4. Further research can deepen the study of the communication model of information delivery from the police to reporters about the route of the fastest traffic flow for road users, so that information can be a guide.

REFERENCES

Al-Banjary, Syaifurrahman.2015. Teknik Reportase dan Produksi Berita Televisi. Yogyakarta: Deepublish

Ardianto, Elvinaro, *2004*. Komunikasi Massa : Suatu Pengantar. Bandung: Simbiosa Rekatama

Bungin, Burhan. 2007.Penelitian Kualitatif Komunikasi, Ekonomi, Kebijakan Publik, dan Ilmu Sosial Lainnya. Jakarta: Kencana Prenada Media Group.

Effendy, Onong Uchjana. (2003). *Ilmu, Teori dan filsafat Komunikasi*. Bandung : Citra Aditya Bakti

Fachruddin, Andi. 2014. Dasar-dasar Produksi Televisi. Jakarta: Kencana Prenada Media Group.

McNabb, David. 2002. *Research Methods in Public Administration & Nonprofit Management: Quantitative & Qualitative Approaches*. M.E. Sharpe.

Moleong, Lexy. 2001. *Metodologi Penelitian Kualitatif.* Bandung: PT Remaja Rosdakarya.

Sugiyono. 2012. *Metode Penelitian Kuantitatif Kualitatif dan R&B* Bandung: Alfabeta.

Jurnal:

Corcoran, Mark. 2014. *Drone Journalism: Newsgathering applications of Unmanned Aerial Vehicles (UAVs) in covering conflict, civil unrest and disaster.*