Role of Social Media and Online News in 2022 Sri Lankan Riots and Utilization of OODA Loop Based OSINT Framework

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Abstract - Prolonged riots that violate legal rights and peaceful limits, turning violent with the potential to lead to anarchical social unrest, are perceived as threats to national security. In the digital age, these threats are exacerbated by the impact of online news and social media. Activists often utilize platforms such as Facebook, YouTube, and Telegram for riot organization without relying on traditional hierarchical structures. This situation poses significant challenges for national security stakeholders, requiring them to respond swiftly to the rapidly evolving online landscape.

Open-source intelligence (OSINT) proves valuable in comprehending the role of social media in riots. This paper presents a case study of the 2022 riots in Sri Lanka, delving into social media's contribution to propaganda, organization, and mobilization. To achieve this, temporal data regarding hashtags, growth in online group membership, call-for-action posts, and YouTube Live streams were collected for analysis. Furthermore, an analysis of online news volume related to the riots was conducted using the Global Database for Events Language and Tone (GDELT) to gauge the intensity of the riots as depicted in media coverage.

Drawing from these insights and analyses, an operational framework is proposed for responding to the use of online news and social media in the context of riots. This framework incorporates elements from the OODA loop and other existing models and frameworks. It underscores the significance of proactive analysis of online and social media activities associated with riots and emphasizes the need for swift and effective responses to emerging threats.

This research delves into the impact of social media on riots, utilizing the 2022 unrest in Sri Lanka as a case study. The study adds to the growing body of literature on the utilization of online news and social media in riots, shedding light on the critical role of OSINT techniques in comprehending and addressing emerging threats.

Keywords- social media, open source intelligence (OSINT), riot mobilization.

1. INTRODUCTION

According to Boyd and Ellison (2007), social media refers to "web-based services that allow individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system." These platforms enable users to interact, communicate, share content, and engage in various social activities online. In contrast, as defined by the Harvard Dictionary of Sociology (1991), a riot is a violent and disorderly public disturbance where a group of individuals engages in widespread chaos, aggression, property damage, or acts of violence. It is characterized by an escalation of tensions beyond peaceful protests, posing a threat to social order and stability.

Social media has become an increasingly important tool for organizing, mobilizing, and propagandizing riots around the world. With the rise of platforms like Facebook, YouTube, and Telegram, activists have been able to quickly and easily disseminate information and coordinate riots, often without the need for traditional organizational structures. Simultaneously, the use of online news sources has rapidly increased in contrast to traditional news outlets. However, the increased use of social media and online news sources presents potential challenges for governments and stakeholders. These challenges include the rapid spread of misinformation and disinformation, amplification of polarization, difficulties in analyzing and responding to the decentralized organization of events, privacy and security concerns, manipulation through influence campaigns, legal and regulatory complexities, and the delicate balance between freedom of speech and content control. Addressing these challenges requires proactive strategies and policies that promote the responsible use of these platforms while safeguarding democratic values and national security.

An effective approach to understanding and responding to the use of social media in riots is through the

use of open-source intelligence (OSINT) techniques. OSINT involves the collection, analysis, and dissemination of information from publicly available sources, such as social media platforms, news outlets, and other online resources.

By using OSINT techniques, researchers and practitioners can gain valuable insights into the patterns and trends related to the use of social media in riots, which can inform more effective responses to emerging threats.

This research presents a case study of the use of social media in organizing, mobilizing, and propagandizing riots in Sri Lanka during the period from April 1st to July 9th, 2022.

A. Background

Sri Lanka had enjoyed nearly a decade of peace and harmony following the end of a 30-year civil war. However, major economic setbacks caused by the Easter Sunday bombings and the Covid-19 pandemic in the beginning of 2022 led to an intensified economic crisis that created chaos in the social harmony. This resulted in protests and riots, primarily driven by widespread dissatisfaction with the handling of the country's economy. While the causes of such campaigns are varied, they pose a threat to national security once they exceed peaceful nature and legal limits, causing harm to life and property. These riots were largely decentralized and involved a broad cross-section of society. The main demand was for the resignation of the President and other key officials, whom they were seen as responsible for the economic crisis, and demanded a complete system change. Protests under the main theme "Aragalaya" and the main slogan "Gota Go Home" were organized through social media and other grassroots channels. The government responded to the violent riots with measures including declaring a state of emergency, allowing the military to arrest civilians, imposing curfews, and restricting access to social media. This development emerged soon after the post-Covid digital boom. By the beginning of 2023, Sri Lanka had significant social media usage, with 7.2 million Sri Lankans, which is 32.9% of the total population, using social media. Out of these, 6.55 million use Facebook and 7.04 million use YouTube, according to Datareportal (2023).

B. Research Questions

"How was social media utilized in propagandizing, organizing, and mobilizing the Sri Lankan riots, what is the intensity of this campaign and what would be the suitable pro-active OSINT methods to be utilized to analyse such situations in future?"

C. Research Significance

Research and literature on the use of social media in mass riots and the use of OSINT in mass riot situations are rare and this research contributes to the growing body of literature and highlights the critical role of OSINT techniques in understanding and responding to emerging threats. This research is conducted based on human-verified to scrape and timely data and this research is further expandable.

2. LITERATURE REVIEW

Social media has played a significant role in the organization and mobilization of riots around the world (Castells, 2015; Earl & Kimport, 2011; Tufekci & Wilson, 2012). As Tufekci and Wilson (2012) noted, social media platforms such as Facebook, Twitter, and YouTube have provided a new way for protesters to communicate and coordinate their actions, often in real time.

One way that social media has been used in the organization and mobilization of riots is through the dissemination of propaganda. Propaganda is defined as the use of information, typically biased or misleading, to promote a particular political cause or point of view (Jowett & O'Donnell, 2014). Social media platforms have been used to spread propaganda in a variety of ways, including the use of fake news stories, memes, and other forms of misinformation (Giglietto et al., 2019; Woolley & Howard, 2016).

Another way that social media has been used in the organization and mobilization of riots is through the creation of dedicated groups and pages on social media platforms. These groups and pages allow protesters to share information, coordinate actions, and mobilize support (Earl & Kimport, 2011; Tufekci & Wilson, 2012). For example, during the Arab Spring riots in 2011, social media was used to create dedicated Facebook groups for protesters in Tunisia and Egypt, which helped to mobilize support for the riots (Howard et al., 2011).

In addition to the use of propaganda and dedicated social media groups, social media has also been used to mobilize protesters through the use of hashtags. Hashtags are used to group together posts on a particular topic or theme, and can be used to create a sense of community and solidarity among protesters (Castells, 2015; Woolley & Howard, 2016). For example, during the 2013 Gezi Park riots in Turkey, the hashtag #occupygezi was used to connect protesters and to spread information about the riots (Tufekci & Wilson, 2012).

Despite the significant role that social media has played in the organization and mobilization of riots, there are

several research gaps that remain. One gap in the literature is the lack of research on the impact of social media on the outcomes of riots.

While there is evidence to suggest that social media has been effective in mobilizing protesters in democratic countries, it is unclear whether the same is true in non-democratic countries, where governments may have greater control over social media (Castells, 2015; Tufekci & Wilson, 2012). Finally, there is a need for more research on the ethical implications of the use of social media in the organization and mobilization of riots. While social media has provided a new way for protesters to communicate and coordinate their actions, it has also been used to spread propaganda and misinformation and has raised concerns about privacy and surveillance (Giglietto et al., 2019; Woolley & Howard, 2016).

Open-source intelligence (OSINT) is a valuable approach in the study of social media propaganda, organizing, and mobilizing of riots. According to Albayrak et al. (2019), OSINT provides an efficient way of collecting, analyzing, and interpreting data from various online sources such as social media platforms, forums, and blogs.

This approach enables researchers to obtain relevant information about a particular event, issue, or topic of interest from publicly available sources without having to rely on classified or confidential information. OSINT is a valuable approach for studying social media propaganda, organizing, and mobilizing of riots. It provides a cost-effective way of collecting and analyzing data from publicly available sources, enabling researchers to gain valuable insights into the tactics and strategies used by different groups and individuals. However, there are still several research gaps that need to be addressed to enhance the effectiveness and reliability of OSINT data in this field. Several models and operational frameworks have been proposed to observe, analyze, and counter social media propaganda, organizing, and mobilizing of riots using OSINT.

One such framework is the OODA loop, which stands for observe, orient, decide, and act. This framework was first introduced by military strategist John Boyd, and has since been applied to a wide range of contexts, including intelligence analysis and law enforcement. According to Zaman et al. (2019), the OODA loop provides a structured approach for processing large volumes of data and making quick decisions based on the available information. In the context of social media propaganda, organizing, and mobilizing of riots, the OODA loop can be used to identify key players and their tactics, assess the impact of their activities, and develop countermeasures to disrupt their operations.

Another model that has been proposed is the Social Media Intelligence (SOCMINT) model. This model was developed by the UK Ministry of Defense to guide intelligence analysis in the context of social media. According to Ratcliffe and Shearer (2014), the SOCMINT model consists of four stages: collection, analysis, dissemination, and feedback.

In the context of social media propaganda, organizing, and mobilizing of riots, the SOCMINT model can be used to collect and analyze data from multiple sources, including social media platforms, forums, and blogs. This information can then be disseminated to relevant stakeholders, such as law enforcement agencies, government officials, and civil society organizations, to develop countermeasures and mitigate the impact of propaganda campaigns.

In addition to these models, several operational frameworks have been proposed for collecting, analyzing, and countering social media propaganda, and organizing, and mobilizing riots using OSINT.

One such framework is the Intelligence Preparation of the Information Environment (IPIE). According to Johnson et al. (2019), the IPIE framework provides a systematic approach to analyzing the information environment in order to identify key actors, their motivations, and their tactics. This information can then be used to develop countermeasures and disrupt propaganda campaigns.

Another operational framework that has been proposed is the Rapid Analytical War gaming (RAW) approach. According to Popp et al. (2019), the RAW approach provides a structured approach for analyzing complex situations and developing effective countermeasures. This approach involves the use of analytical tools, such as network analysis and sentiment analysis, to identify key players and their tactics. This information is then used to develop scenarios and test different countermeasures in a simulated environment.

Despite the potential benefits of these models and operational frameworks, there is still a need for further research to evaluate their effectiveness and to develop new approaches that are better suited to the evolving nature of social media propaganda, organizing, and mobilizing of riots using OSINT

3. METHODOLOGY

The research adopted a mixed-methods approach, combining qualitative and quantitative data collection and analysis. The study focused on the use of social media in propaganda organizing and mobilizing Sri Lankan riots, with an emphasis on the OSINT approach.
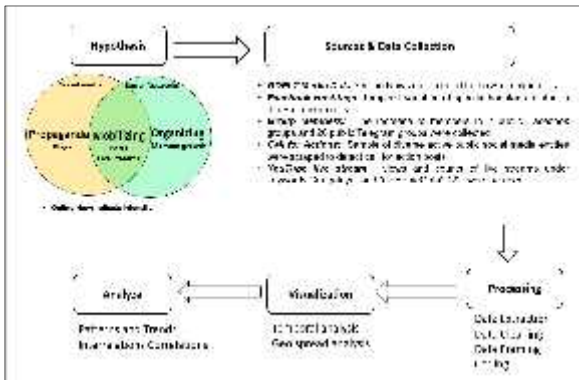

Figure 01. Methodology

A. Hypothesis

The study hypothesized that social media and social network platforms are being used as tools to organize and mobilize riots in Sri Lanka. Furthermore, it was hypothesized that propaganda through social media plays a critical role in shaping the public perception of the riots, the use of social media posts, and live videos allows organizers to mobilize support and direct action more effectively and online media attention on riots shows the intensity of the riot campaign.

B. Sources and Data Collection

The data sources used for this study were entirely dependent on public social media sources and none of the privacy details disclosed nor ethical and community rules of any social media platform were violated during the study. In addition, efforts were made to verify the credibility and authenticity of the sources through cross-referencing with other sources and fact-checking.

Temporal Data collection was carried out using manual and open-source online tools from public social media sources. The collection was conducted focusing on the following parameters:

Hashtags: The temporal variation of specific hashtags related to the Sri Lankan riots was extracted from Facebook to identify the pattern of propaganda

Group Members: The increase of members in two main public Facebook groups and 26 dedicated public Telegram groups were collected to identify patterns in the growth of online communities.

Call for Actions: sample of public media entities out of which, 70% Facebook, 15% WhatsApp, 10% Telegram and 5% Twitter e were scraped to detect call-for-action posts to determine the frequency and intensity of the calls to action.

YouTube live stream: YouTube views of live streams under keywords "Aragalaya" and "GoHomeGota2022" were scraped and analyzed to understand the mobilization and online engagement.

GDELT Media Data: Global Online News data related to the Sri Lankan riots from the GDELT project was collected to figure out intensity patterns through media attention on Sri Lankan Riots.

C. Coding

A coding scheme was developed based on the research questions and was refined through an iterative process to categorize the collected data. The hashtags were categorized based on their use for propaganda on hashtags with political affiliations, corruption-related issues and specific events. Groups were categorized based on platform and membership size over a specified period. Networking and the call for action were categorized based on location at the district level. The GDELT media data was used to provide additional insights into the broader context of the riots.

D. Data Analysis

The data collected were analyzed using a combination of quantitative and qualitative techniques. Quantitative analysis involves calculating frequencies and percentages of the coded data, while qualitative analysis involves identifying patterns and trends in the data. The findings were then triangulated with existing literature on the use of social media in propaganda organizing and mobilizing riots to draw conclusions and recommendations.

4. RESULTS AND DISCUSSION

Sri Lanka Riots and Social Media

Online news volume on selected keywords filtered by Sri Lanka in 2022 was utilized to get initial insight by identifying events and trends of the campaign. After visualizations, trends and impact levels of specific events such as Start of the riots on 31st March, Galleface occupation on 09th April, Violent mobs on 09th May and Climax on 09thJuly, protests to resign of president on 13 July and gradual decrease were clearly identified. However, this method in isolation is less proactive in dynamic

situations since media attention is gained mostly after the occurrence of such incidents.
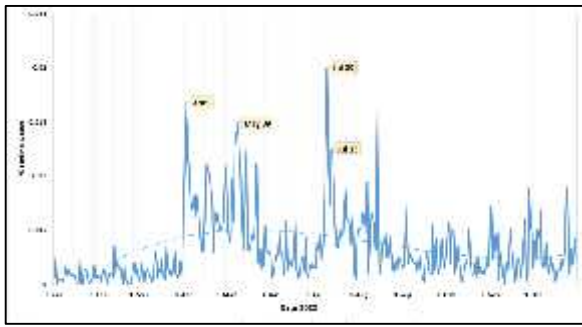

Figure 02: Global online news on Sri Lanka Protest

A.   Propaganda

1) Hashtags with political affiliations

The Sri Lankan riots 2022 were mainly themed by the *#GohomeGota2022* hashtag and it was used extensively throughout the social media campaign to oppress and urge the resignation of the president.
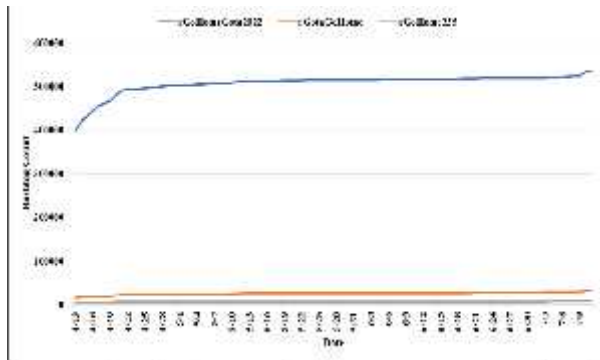

Figure 03: hashtags with political affiliations

2) Hashtags on Political security related Issues

The economic crisis was identified as a major cause for the riots and "corruption" related propaganda and discussions were prominent during the beginning of the riots. Among them, *#GiveUsOurStolenMoneyBack* hashtag was used over 100K during the period.
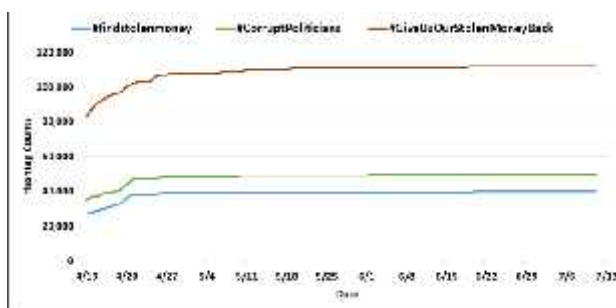

Figure 04: Temporal variation of issues related to hashtags

3) Hashtags on Events

There was an extensive propaganda campaign requesting famous "Anonymous" hacker groups' support to retrieve so-called stolen money and reveal corruption using *#AnonymousSaveSriLanka* hashtag. This campaign mostly consisted of fake news and disinformation. According to the graph, the popularity of this campaign exponentially increased between the 15th to 22nd of April and then faded out.
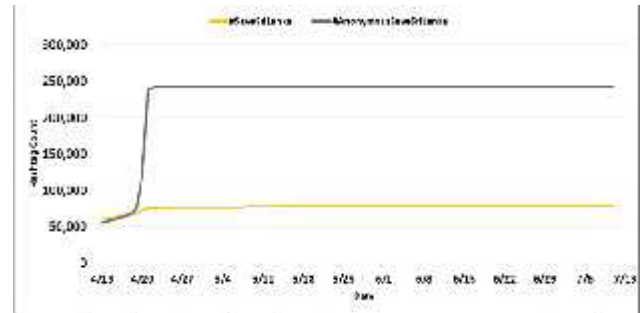

Figure 05: Temporal variation of event-related hashtags

B.   Organising

Organising and networking is the next key consideration in analyzing riots. The organizing for mass riots initially started by requesting members to join Telegram groups created district-wise and simultaneously an affiliated main Facebook group named "Gohomegota2022" (*referred to as Group A*). Later many Facebook groups also emerged with similar names but "Gohomegota2022 (People Revolution)" (*referred to as Group B*) became the second most engaging group. Both groups were popular and active by July 09th, the member count was over 300k and 100k respectively. These groups were used to share thoughts and discussions as well as to encourage riot participation.
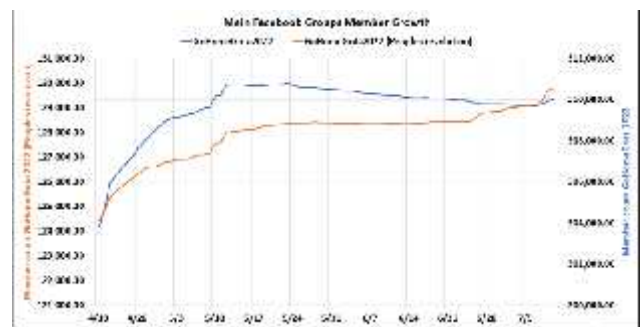
1) Facebook Groups

Figure 06: Member growth of Facebook groups

It is observed that the member growth rate of group A is higher in April which was the beginning period of the riots. Then both group's growth rates showed a sudden increasing trend after the May 09th violent mobs. Then after the later part of June, the Group B member growth rate increased in

contrast to Group A and continued until July 09th. This is a clear indication that organizing and networking increased for the climax on 09th July.
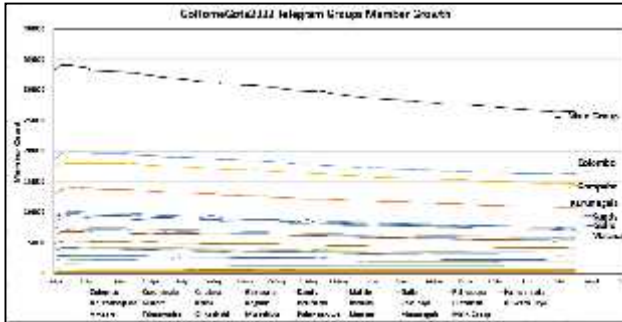
2) Telegram Groups

Figure 07: Member growth of Telegram groups

It is observed that the member growth rate of all the telegram groups initially increased were then gradually decreased over time. The main groups, Colombo, Gampaha and Kurunegala were the most engaged and active groups whereas Kandy, Galle and Matara were with medium member strength. Other groups with fewer members especially the groups related to Northern and Eastern districts were with lesser members and mostly inactive.

With above analyses, it shows that online activism on organizing and networking has shifted from Telegram to Facebook groups in the latter stage. WhatsApp groups also must have played a prominent role in networking and organizing but due to limited access and member limitation up to 256 (before November 2022) it is concluded that WhatsApp groups may have used in close circles.

C.   Mobilising

A sample of active social media sources on Facebook, Telegram and WhatsApp were scraped to detect call-for-action posts from 1st April 2022 to 09th July 2022. This included graphical and textual content mentioning the date, place, and time of an organized event. Then it was
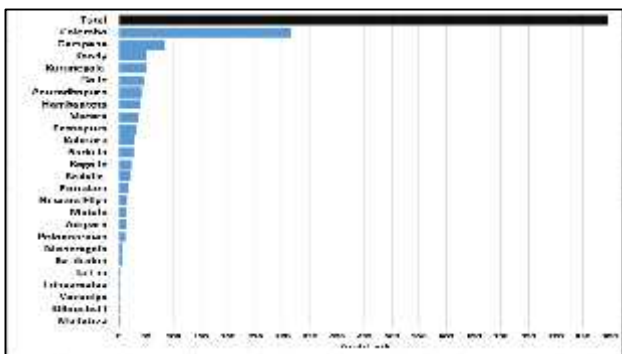
categorized by districts to identify the most active locations at the district level.

Figure 08: posts volume at the district level

As shown in Figure 08, 895 total unique call for action posts were detected and analyzed. As a result, Colombo, Gampaha, Kandy, Kurunegala and Galle were identified as the most active districts which also confirm the observation of mostly active telegram groups as discussed above.

Then the patterns identified were compared with global online news on Sri Lanka Riots extracted from the GDELTS Database to identify the intensity of the riots. It is clear from the correlations that riots received media attention afterward as shown in *figure 09*. In that, the correlation of riots hikes followed by media coverage indicates the intensity of the observed posts.
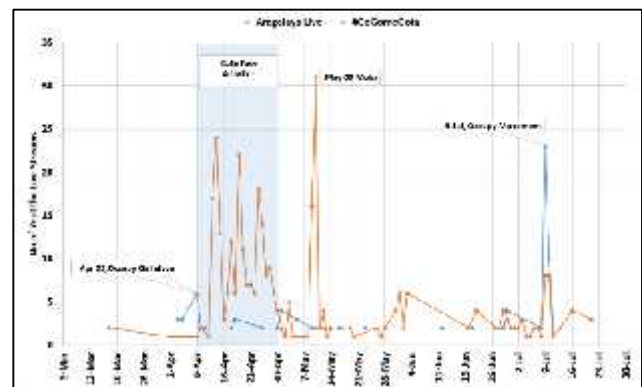

Figure 09: Post volume vs. online news volume

Live Streams on YouTube were identified as a key component to analyse since it indicates the live engagements with online activism. Number of Live Streams per day indicate the intensity of the mobilization activities and total live views indicate the online engagement with such activities.
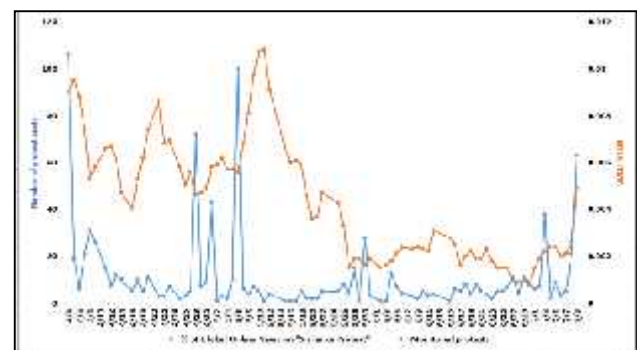

Figure 10: Number of YouTube Live Streams

Above figure indicates that #GoHomeGota themed activities were broadcasted mainly at the period of

Galleface occupation and May 09 mobs. Later during July 09 "Aragalaya" theme was used for online broadcasts.

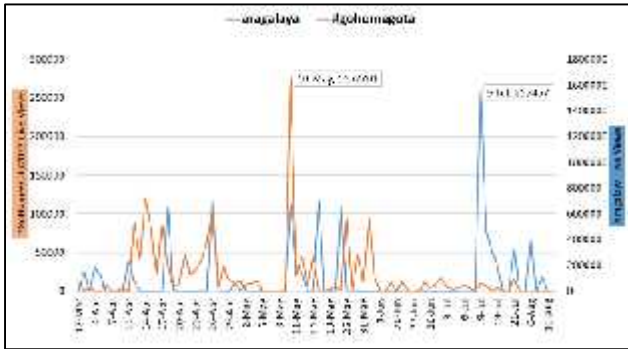Figure 12: OODA loop OSINT framework

Figure 11: Live Views of YouTube Live Streams

However, when analysing number of views on each theme, "#GoHomeGota" themed live videos had over 10 million views in total and "Aragalaya" themed live streams had only 1.3 million views.

Both charts confirm that the intensity in online activism correspondent to the beginning of Galleface occupation after April 09th, May 09th and July 09th riot related incidents. It further correlates with the patterns of call-to-action post volume and online news volume.

OODA LOOP OSINT APPROACH

According to the analyses discussed in the previous section, it is proven that social media has played a key role in propaganda, organizing and mobilizing of "Sri Lanka riots 2022" campaign until it reached the climax on 09th July 2022 and anticipated a similar role in future mass riots too. Hence to detect such campaigns, a proactive OSINT approach is required. Based on the above results, the OODA loop (Observe, Orientate, Detect and Act) OSINT approach is proposed as follows.

D. Observe

Proactive observation of diversified and continuous expansion of updated sources and analysis of social media activity related to riots, including identifying indicators of mass mobilization. There are several indicators that can help to identify high-impact riots and occupy movements when observing social media. These include:

a) *Volume of Social Media Activity*: A high volume of social media activity, such as a large number of posts, shares, and comments, can be an indicator of high-impact riots and occupy movements.

b) *Trending Hashtags*: The use of trending hashtags related to a protest or occupy movement can also be an indicator of its impact.

c) *Geographical Spread:* The geographical spread of social media activity related to a protest or occupy movement can be an indicator of its impact. If the activity is concentrated in a specific area, it may be a local protest. However, if the activity is spread across different cities or countries, it may be a more significant movement.

d) *Involvement of Influencers:* The involvement of social media influencers or celebrities in a protest or occupy movement can be an indicator of its impact. These individuals have a large following on social media and can help to amplify the message of the movement.

e) *Coordination and Organization*: The level of coordination and organization of a protest or occupy movement can also be an indicator of its impact. If the movement is well-organized and has a clear set of goals and demands, it is more likely to have an impact.

f) *Response of Authorities:* The response of authorities to a protest or occupy movement can also be an indicator of its impact. If the authorities respond with force, such as by using tear gas or making arrests, it may be an indication that the movement is having an impact and is seen as a threat.

E. Orient

Analysis of the data to identify patterns and trends related to the use of social media in the riots, including:

a) Identification of key themes or issues driving the riots

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b) Geographical location of protest activity and online conversations

c) Identification of clusters, leaders or key figures within the riots

d) The emergence of new actors or groups within the riots

e) Identification of potential flashpoints or escalation points

F. Decide

Based on the analysis of the data, make informed decisions about the appropriate response to the protest. Determine the level of threat posed by the protest and whether or not it requires immediate action. Decide on the appropriate messaging and actions to take in response to the protest, based on the goals of the response and the potential impact of the protest. Assessment of the data to determine the appropriate course of action, including:

a) Identification of potential risks and threats associated with the riots

b) Assessment of the likelihood of violence or other disruptive behaviour

c) Determination of appropriate response strategies, such as engaging with mob leaders or law enforcement intervention

d) Identification of opportunities for engagement or de-escalation

G. Act

Take appropriate action in response to the protest. This may include deploying law enforcement or other resources to contain the riot, engaging with mob leaders to attempt to de-escalate the situation, or launching a counter-cognitive campaign to counteract propaganda and countering false information. Observe the response and adjust as necessary based on the ongoing situation. Implementation of the selected response strategies, including:

a) Communication with stakeholders and partners to coordinate response efforts

b) Mobilisation of resources to support response efforts, such as additional law enforcement personnel or community outreach teams

c) Implementation of targeted interventions or initiatives aimed at de-escalating tensions and preventing violence

d) Continual observation and analysis of social media activity and protest behaviour to inform ongoing response efforts.

The proposed framework for social media analysis prioritizes respecting fundamental rights such as freedom of expression and individual privacy. It strictly focuses on publicly available data, adhering to data protection laws and community standards. Transparent practices, ethical data usage, and collaboration with civil society and tech companies ensure responsible and unbiased analysis. By continuously evaluating and reviewing the process, stakeholders strike a balance between national security and safeguarding individual rights without violating any social media community standards

H. Challenges and Limitations of Implementing the Proposed Framework:

a) Data Challenges: Handling large volumes of social media data requires robust tools and resources for effective analysis, with privacy concerns and data protection laws adding complexity.

b) Real-Time Analysis: The need for real-time analysis is crucial due to rapidly changing situations, but the time required for data processing can hinder timely insights.

c) Misinformation and Reliability: Distinguishing between accurate information and misinformation on social media is challenging but crucial for reliable analysis, requiring careful verification.

d) Bias and Objectivity: Human interpretation introduces biases that can impact the objectivity of findings, highlighting the need for unbiased analysis methods.

e) Expertise and External Influences: Adequate technological expertise is essential for successful analysis, and the influence of foreign actors adds complexity to identifying genuine threats within social media conversations.

I. Overcoming the Challenges:

a) Automation and AI: Utilize AI and automation to streamline data processing and enable real-time analysis, improving efficiency.

b) Fact-Checking Mechanisms: Implement reliable fact-checking mechanisms to identify and filter out misinformation, ensuring data accuracy.

c) Collaborative Partnerships: Collaborate with tech companies and civil society organizations to access expertise and resources for enhanced analysis.

d) Ethical Guidelines: Establish and adhere to ethical guidelines to ensure unbiased analysis and responsible data usage.

e) Continuous Skill Development: Provide training and ongoing skill development for analysts to improve the quality of analysis and decision-making.

COUNTER COGNITIVE OPERATIONS

In addition to proactive detection and analysis of social media activity related to riots, the recommended operational framework also emphasizes the importance of developing and implementing counter campaigns and measures against fake news and misinformation. These are important strategies to counteract the potential negative effects of social media on riots, such as the spread of rumours and false information.

Furthermore, it is important to continuously evaluate and adjust these strategies based on their effectiveness in countering the spread of false information. This can involve using sentiment analysis to measure the public's perception of the counter campaigns and measures and adjusting messaging and tactics accordingly.

Overall, the use of counter campaigns and measures against fake news and misinformation is a crucial aspect of effectively responding to the use of social media in riots. By implementing these strategies in conjunction with the OODA loop and other tactics outlined in our framework, stakeholders can more effectively navigate the complex and rapidly evolving landscape of online activity related to riots.

5. CONCLUSION

In conclusion, social media has become an increasingly important tool for organizing, mobilizing, and propagandizing riots around the world. The case study of the Sri Lankan riots has shown that social media played a significant role in organizing and mobilizing the riots. The use of dedicated Facebook groups and Telegram channels, as well as hashtags, provided a platform for activists to coordinate and disseminate information quickly and easily.

Open-source intelligence (OSINT) techniques have proven to be a valuable tool for understanding and responding to the use of social media in riots. This research demonstrates the effectiveness of using OSINT techniques to collect, process, analyze and disseminate information from publicly available sources to gain valuable insights into the patterns and trends related to the use of social media in riots. These insights can inform more effective responses to emerging threats.

The proposed operational framework for responding to the use of social media in riots draws on the OODA loop framework. The framework emphasizes the importance of proactive observation and analysis of social media activity related to riots, as well as the need for rapid and effective responses to emerging threats. The use of counter-campaigns and measures against fake news and misinformation can also help to control social media activism on riots while safeguarding fundamental rights.

This research contributes to a growing body of literature on the use of social media in riots and the role of OSINT techniques in understanding and responding to emerging threats. The patterns and trends identified and the recommendations in this study provide valuable insights for researchers, practitioners, and policymakers working in this important area.

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