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# **Russia-Ukraine Information Warfare in the Ukrainian Theater: Ukrainian Preventive Propaganda in Telegram**

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## **Abstract**

Informational warfare has become an integral part of the hostilities between countries in the global arena. Its employment requires effective responses that can mitigate negative implications. The 2022 Russian invasion in Ukraine has resulted in the intensive war in various forms between the countries, forcing both sides to apply new methods of propaganda to withstand on the informational front. The case of Ukraine demonstrates an interest from the perspective of applied measures against Russian propaganda. The prerequisites of the study are the increasing use of Telegram since the invasion and application of this social media in implementing preventive propaganda. Few studies on the use of Telegram in informational warfare and propaganda exist.

The research features the analysis of five Ukrainian-language and state-related channels and their use of preventive propaganda narratives on four topics to address the threats of Russian propaganda. The applied social media analysis, content analysis, and sentiment analysis discover the dynamics of the Telegram channels use and their effectiveness based on the awareness and engagement metrics. Given the limited number of methods to measure the effectiveness of propaganda, a brand new approach was suggested in this paper. Using the emoji reactions and metrics based on the views, reactions, and messages counts, engagement metrics were calculated.

Allowing followers to react to messages increases their engagement and helps to maintain the awareness rate. This study finds that the engagement and awareness metrics do not depend on the number of followers of a Telegram channel. The engagement is higher on separate topics

with specified observed periods. Preventive propaganda may not be effective in covering each of the topics within the public interest. The novelty of this approach to measuring propaganda effectiveness and study results would be beneficial for media practitioners, policy makers, and other researchers.

**Disclaimer:** AI tools have been utilized to support grammatical and structural clarity for this thesis. No analysis has been made by AI at any point in this project.

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# **Russia-Ukraine Information Warfare in the Ukrainian Theater: Ukrainian Preventive Propaganda in Telegram**

## **1. Introduction**

### **1.1. Background and Context**

Since 2014, the conflict between Russia and Ukraine has garnered considerable global attention, emerging as one of the most intricate and multifaceted geopolitical crises of the 21st century. Beyond conventional military strategies, the conflict has undergone a significant transformation characterized by the use of propaganda, which has become a pivotal aspect in the battle for influence and control over the thoughts and opinions of the Ukrainian populace. Besides, propaganda has become a major tool of the waged hybrid war in Ukraine. Numerous informational attacks and media campaigns emerged to discredit the elected government and officials, undermine the unity of the Ukrainian people, and reduce the support for the pro-Ukrainian president and key politicians.

The information warfare preceded the full-scale invasion of the Russian troops in Ukraine in February 2022. The network of pro-Kremlin media, politicians, and agents serving different high-ranking positions in politics, business, and the economic and military fields supported the propaganda efforts via social media and TV shows (Fedor, 2015). They promoted misleading arguments and ideas regarding the Ukrainian future incorporating partially or fully the central narratives of Russian propaganda. The preparations for the full-scale invasion lasted years and included the long-lasting efforts of those agents and other means of misleading people in Ukraine. A special department of the Federal Security Service of Russia (FSB) was responsible

for collecting and analyzing the sentiments of Russian-speaking Ukrainians and their readiness to support Russia in its attempt to change the elected government (Watling et al., 2023). Their misinterpretations of those sentiments, reports lacking real data and information as well as underestimations of the Ukrainian counter-propaganda and preventive propaganda measures formed a false understanding of the political situation and public opinion in the country.

After the invasion, the information warfare and propaganda activities became massive and diverse featuring new tactics, channels, and strategies. Throughout the war, they have been changed and adapted to reality because of Ukrainian preventive propaganda and counter efforts. Those took various forms and differed depending on the war dynamics, the situation on the front, and events in the international arena. A vivid example of the informational attack within the framework of Russian propaganda was the false claims in the media about the Ukrainian president during the first days of the invasion. Media affiliated with the Russian government spread the news that Ukrainian President Volodymyr Zelenskyy had fled abroad (Astuti et al., 2022). To address that informational attack the president uploaded a short video with himself and other key politicians in the country's capital, Kyiv. Similar videos have served as important tools to prevent propaganda during the war.

Social media is the most vulnerable means of spreading disinformation, and false narratives and creating information pollution in the media space. The Russian regime has employed key social media platforms, including Twitter, TikTok, and Telegram, to promote their narratives and undermine the international support for Ukraine. Their strategies in the global South to shape public perceptions of the war and shed negative light on Ukraine, its government, and the Western allies are similar in many aspects to those used by propaganda targeting

Ukrainians. Nevertheless, they worked effectively in most countries in Africa, Asia, and Latin America, making millions of people believe in their messages and engage in whataboutism and hypocrisy.

Despite Russian propaganda efforts, they have been unable to earn support from the Ukrainian population for Moscow's agenda. This lack of success prompts a critical examination of Ukrainian preventive propaganda tactics, in particular those employed on social media. Given the substantial impact of Russian propaganda on the international stage, a comprehensive study focusing on preventive propaganda on social media based on Ukrainian experiences not only addresses gaps in current research but also provides valuable insights to inform policy decisions in other countries.

During the war, social media and propaganda have significantly shaped public opinion and attitudes. With the need to get critical information as quickly as possible people sought convenient and fast sources of news about the ongoing invasion. An instant messaging app Telegram emerged as an excellent option to address those needs. The statistics reveal that the popularity of Telegram surged since February 2022: 63.3% of Ukrainians started reading Telegram channels to receive news, while only 35.9% did so before the full-scale invasion (Nosova et al., 2023). Another study provides similar findings. The research conducted by Internews showed that 72 percent of Ukrainians used Telegram to get their news in 2023, compared to 20 percent in 2021 (Karakikes et al., 2024). The central mass media and the government quickly adapted to the new dynamics in the media space and promoted their official channels in the app. The popularity of new means of information sharing and news sources forced people to develop their media literacy. The 2023 research reports that the average level of

media literacy among Ukrainians improved significantly, with 81% of the respondents having an above-average or high level of media literacy in 2022 in contrast to only 55% in 2021 (Dzholos, 2024). Dariia Opryshko (2023) argues that “this change may be explained by the consistent and systematic work of nongovernmental organizations as well as state authorities”. These dynamics and changes present a scientific interest within the context of preventive propaganda research.

Furthermore, the evolution of propaganda tactics throughout the conflict underscores the adaptive nature of information warfare. Initially, the Russian strategy heavily relied on discrediting Ukrainian leadership and spreading fear and confusion among the populace. However, as Ukraine's counter-propaganda measures became more sophisticated, the Russian approach also evolved. This adaptability highlights the necessity for continuous innovation in countering propaganda. Ukrainian efforts, supported by international allies, have included a combination of technological advancements and traditional media campaigns to expose and debunk false information swiftly. The effectiveness of these strategies is evident in the resilience of the Ukrainian public's morale and the international community's ongoing support for Ukraine.

Moreover, the role of international organizations and foreign governments in combating Russian propaganda cannot be overstated. Entities like NATO, the European Union, and various non-governmental organizations have provided critical support in the form of intelligence sharing, strategic communication expertise, and resources for media literacy programs. These collaborative efforts have not only bolstered Ukraine's defensive capabilities in the information domain but have also set precedents for global standards in addressing state-sponsored disinformation campaigns.

In addition to the external support, internal resilience has played a crucial role in Ukraine's information warfare strategy. The Ukrainian civil society, media, and tech-savvy population have been pivotal in identifying and countering propaganda. Grassroots movements and volunteer groups have emerged, focusing on fact-checking, educating the public, and fostering a culture of skepticism towards unverified information. This grassroots involvement has been instrumental in creating a more informed and resilient society capable of withstanding the psychological operations employed by Russia.

The impact of propaganda on international perceptions of the conflict is another critical aspect. Russian efforts to influence global opinion have included extensive campaigns aimed at portraying Ukraine as a failed state and its leadership as illegitimate. These narratives have been particularly targeted at countries with historical ties to Russia or those skeptical of Western policies. However, Ukraine's proactive engagement with the international media and diplomatic efforts have been effective in countering these narratives. High-profile visits by foreign leaders to Ukraine, coupled with consistent international media coverage, have helped maintain global awareness and support for Ukraine's plight.

Looking ahead, the ongoing conflict and its associated information warfare highlight the importance of resilience and adaptability in modern geopolitical struggles. The lessons learned from Ukraine's experience can serve as valuable guidelines for other nations facing similar threats. Investing in media literacy, fostering a culture of critical thinking, and building robust international alliances are essential components of an effective strategy to combat state-sponsored disinformation.

In conclusion, the Russia-Ukraine conflict exemplifies the complexities of modern warfare, where information plays as crucial a role as traditional military might. The adaptive and multifaceted nature of propaganda necessitates continuous vigilance and innovation in countermeasures. Ukraine's experiences underscore the importance of a holistic approach that combines internal resilience with external support to effectively counter and mitigate the impact of disinformation. As the conflict continues to evolve, the strategies developed and lessons learned will undoubtedly influence future efforts to maintain the integrity of information and protect democratic societies from the pervasive threat of propaganda.

Furthermore, the impact of digital platforms in propagating both misinformation and counter-narratives has highlighted the critical role of technology in modern conflict. As the war progresses, the use of artificial intelligence and machine learning to detect and counteract propaganda has become increasingly important. These technologies enable real-time analysis of information flows, allowing for more agile and responsive countermeasures. Additionally, the involvement of tech giants in monitoring and regulating content has shown the necessity of a cooperative approach between governments and private sector entities to safeguard the digital information space and uphold democratic values against the onslaught of state-sponsored disinformation campaigns.

## **1.2. Significance and Scope**

The research is designed to align with the conceptual framework of preventive propaganda, which encompasses the study of influencing public opinion and behavior through strategic communication tactics. The concept of propaganda can be approached from multiple perspectives, including Communication Studies and Political Science, as well as International

Relations. Each perspective offers valuable insights into the mechanisms, effects, and ethical considerations of propaganda within the context of geopolitical conflicts and power dynamics. By drawing on these interdisciplinary perspectives, the research aims to provide a comprehensive understanding of preventive propaganda and its implications for the contemporary political and communication landscape in Ukraine.

As communication scholars Jowett and O'Donnell point out, propaganda refers to a “deliberate, systematic attempt to shape perceptions, manipulate cognitions, and direct behavior to achieve a response that furthers the desired intent of the propagandist” (Jowett and O'Donnell, 2012). The scholars link the concept of propaganda to the essential element of persuasion, being “an integral part of human nature,” and claim it aims to “bring about large-scale shifts in ideas and beliefs.” According to Ellul (1973), propaganda is “a set of methods employed by an organized group that wants to bring about the active or passive participation in its actions of a mass of individuals, psychologically unified through psychological manipulations and incorporated into an organization”. Both definitions highlight key elements of propaganda, including intentionality, systematic approaches, the dissemination of perceptions, manipulation, and its impact on the behavior of the target audience. This underscores propaganda as a distinct form of communication, characterized by its deliberate efforts to promote a specific agenda and shape public opinion. By employing various techniques and strategies, propaganda seeks to influence individuals' beliefs, attitudes, and behaviors in alignment with its objectives. Thus, propaganda emerges as a specialized method of communication with the overarching goal of advancing particular narratives and agendas within a given society.

The main advantage of employing the propaganda concept, as compared to disinformation or misinformation, is that propaganda can take various forms and is not limited solely to providing misleading facts, false information, and fake news. The Oxford Dictionary of Media and Communication provides an excellent interpretation of propaganda, emphasizing its key distinctive features: propaganda is “persuasive mass communication that filters and frames the issues of the day in a way that strongly favors particular interests; usually those of a government or corporation” (“OVERVIEW Propaganda,” n.d.). This element of information warfare serves the needed narratives, intentionally manipulating public opinion and selectively reporting. It is not always misleading, it does not always refer to fake news and false information, and it does not always originate from state actors (Jackson, 2017). Disinformation and misinformation have narrower definitions. The former is “the intentional and systematic manipulation of information deceiving a target audience to cause public harm, generate profit, and/or advance political goals” (Jackson, 2017). The latter refers to spreading false information knowingly or unknowingly. Eventually, propaganda is a more complex concept having various forms and types and requiring in-depth research. The paper will present more detailed distinctions between the terms.

The notion of propaganda is a well-established term, making it possible to trace the development of propaganda and preventive propaganda in Ukraine. As opposed to the information warfare concept, the notion of propaganda sheds light on the intention of communication, providing room for a more nuanced analysis of Russian and Ukrainian efforts to influence the audience’s perceptions. Unlike the concept of information warfare, propaganda specifically hones in on the method and means of communication rather than being associated with a particular environment. The propaganda framework allows examining the role of public

opinion and thus, to evaluate the effectiveness of communication efforts. It also allows for analyzing rhetorical devices, framing techniques, and emotional appeals necessary for the assessment of Ukrainian preventive propaganda. Employing this framework in the analysis of propaganda campaigns and preventive measures will help evaluate real examples and cases during the war and conclude about their shortcomings, successes, and limitations.

The propaganda under examination takes on a preventive nature, signifying that the analysis will incorporate an element of anticipation. The focus goes beyond dissecting the content and methods after dissemination; it also involves proactively considering and evaluating the potential impact and intentions before the propaganda is deployed. This anticipatory approach aims to enhance our understanding of the persuasive techniques used and the underlying objectives. Preventive propaganda involves communication strategies based on past experiences and designed to proactively address and shape public perceptions, opinions, or behavior to avoid undesirable outcomes. The idea is to influence beliefs or attitudes in a way that prevents or reduces the likelihood of certain events or reactions. However, it's important to note that the term can carry negative connotations, as it may imply manipulative or deceptive practices in attempting to control perceptions. The reason is that propaganda itself entails filtering the issues of the day and manipulations of public opinion often with selective reporting. Given the government's subjective determination of the expected attitudes, perceptions, and behaviors by the public, the negative effects on freedom of speech also persist and should be considered. Criteria for determining narratives as preventive propaganda will be elaborated.

A strict line shall be drawn between the terms of preventive propaganda, prebunking, and counter-propaganda. Preventive propaganda is a proactive approach to anticipate and avert

potential issues. It seeks to shape public perceptions, attitudes, or behavior before a specific event or situation, aiming to discourage undesirable outcomes. The focus is on preventing the emergence or escalation of issues through strategic communication. Counterpropaganda is a reactive strategy that responds to existing or ongoing propaganda efforts. Its goal is to challenge misleading information. Counterpropaganda occurs after the dissemination of propaganda, aiming to undermine the credibility of the original propaganda. Prebunking is a preemptive strategy that aims to “immunize” the audience against propaganda. It involves providing accurate information and context before individuals encounter misinformation. Prebunking aims to build resilience in the audience by equipping them with critical thinking tools to resist misinformation. This approach informs people about the potential informational attacks or operations and makes them resilient to sentiments and emotional reactions those attacks could evoke.

### **1.3. Research Objectives and Questions**

The goal of this paper is to present the analysis within the preventive propaganda framework because this particular method is believed to have shown potential for effective crisis management, ensuring social stability to prevent panic or unrest, and fostering a sense of national identity. Moreover, the phenomenon is under-researched. The prerequisites and circumstances under which preventive propaganda is created also constitute a great scientific and political interest. The example of its employment in Ukraine provides valuable lessons and insights with real data in the context of the war and active and powerful propaganda from Russia. The emergence and quick adaptation to new social media platforms, such as Telegram and TikTok, emphasize the dynamics and ever-changing digital landscape requiring well-thought and comprehensive strategies in the information security fields on state and international levels. That

landscape is a vulnerable environment posing contemporary threats and revealing the disadvantages and limitations of democracy.

As a successful example of a response to propaganda, greater critical discourse on the role of preventive propaganda in Ukraine is necessitated. Delving into the tactics and strategies of Russian propaganda and Ukrainian preventive propaganda targeted at the Ukrainian population, the research aims to both single out preventive propaganda measures as well as evaluate their effectiveness. The research aims to ascertain the characteristics and implications of Ukrainian-language Russia-Ukraine information warfare. The paper will closely analyze the prerequisites, circumstances, and evolution of preventive propaganda measures to determine the best practices and critically discuss failures. To this end, the following objectives will be accomplished: a comprehensive analysis of the historical development of information warfare in the context of the conflict, highlighting its significance and evolution, will be conducted; an examination of the propaganda tactics and strategies employed by Russia and Ukraine, shedding light on their objectives and modus operandi will be carried out; an assessment of the impact of information warfare on public opinion, security dynamics, and international relations will be launched; and the identification of best practices and policy recommendations for countering information warfare in Ukraine and other regions facing similar challenges will be drawn up.

## **2. Literature Review**

### **2.1. Overview of Propaganda Theory**

Propaganda has been closely examined and studied since the beginning of the 20th century. The first studies and attempts to define the term were related to the emergence of effective means of communication and mass media, including newspapers, magazines, and radio. The primary

interest was to understand how public communication could be a persuasion tool to influence human collective behavior. Studying the process of suggestion laid the foundation for future propaganda studies. One of the leading social psychology theorists of the early 20th century William McDougal defined persuasion as “the process of communication resulting in the acceptance with conviction of the communicated proposition in the absence of logically adequate grounds for its acceptance” (Farr, 1986). The suggestion theory based on that definition was limited in its application because it varied widely in interpreting diverse behaviors, responses, and circumstances. Still, it emphasized the connection between the use of emotionally resonant messages and the effects they evoke in society.

Harold Laswell provided a more comprehensive characteristic of the term. That broader definition presented propaganda as “the expression of opinions or actions carried out deliberately by individuals or groups with a view to influencing the opinions or actions of other individuals or groups for predetermined ends and through psychological manipulations” (Laswell, 1927). The central problem of the first attempts to describe and conceptualize propaganda was their abstractness and inclusiveness. This simplistic view only described the process of media influence on passive audiences. Everett Dean Martin (1929) in his debate with Edward L. Bernays argues that “propaganda is not something conducted in the universe of discourse for the ends of formal logic” and specifies that “it is a business conducted for profit or power”. Analyzing these discussions and arguments provides a simplified view of the complex issue. Bernays (1928) wrote in his manuscript at the twenty-fifth convention of the Advertising Affiliation: “A propagandist is anybody who tries to convince other people that his idea is

acceptable”. Though the definitions and ideas above present the term in a general or simplified way, they help comprehend its nature, characteristics, and origins.

### **2.1.1. Relevant Theories and Concepts**

One of the foundational theories that has advanced the views shared by Martin and Laswell was the agenda-setting theory. It critiques the idea of direct injection of information through media into the passive audience’s mind because of its irrelevance. The lack of information and access to it through effective and massive means of communication was used to allow propagandists to directly determine what people thought. The agenda-setting theory, introduced by McCombs and Shaw (1972), emphasizes the primary role of media in shaping the public agenda. Namely, it interprets the effects and power of propaganda and suggests the latter determines topics the public discusses. This relationship is more nuanced; the theory shifts the focus from the quality and plausibility of information delivered by propaganda to its role in highlighting certain issues over others. In other words, it determines what is interesting, important, and mostly discussed at the time. This soft approach guides audience perceptions and provides a set of priorities among the relevant topics. The theory is particularly applicable to the digital age when news feed is overloaded and information is accessible in huge volumes.

The agent-setting theory also lacks arguments to interpret the impact on human collective behavior. Propaganda sets the agenda but it also spreads the information and supports certain narratives. Festinger (1957) developed a cognitive dissonance theory to explain how people feel and behave while holding contradictory beliefs. This theory also applies to preventive propaganda that helps to shape the public’s opinion and defend it from potentially shocking or misleading information. The theory holds that propaganda can create psychological discomfort

and inconsistencies. In this context, preventive propaganda can minimize the effect of contradictions by preventive messages. Festinger (1957) argues that propaganda aims to create a cognitive bias and force people to experience discomfort from dissonance. When the first portion of information contradicts the second one individuals are prone to revising their beliefs to regain a sense of cognitive consistency (Festinger, 1957). This mechanism frequently serves the propagandist's goals and at least disorients and confuses the public.

The social judgment theory suggested by Sherif and Hovland (1961) mentions that people can accept or reject the propagated information. Individuals have beliefs, attitudes, and values that have been long shaped and enrooted. This specificity explains why propaganda often targets those core beliefs and gradually shifts the perceptions. They introduce the concept of the latitude of acceptance, rejection, and non-commitment. It helps understand how people make decisions regarding information they are exposed to. The propaganda goal is to fit within that latitude and shift anchor points gradually without provoking outright rejection (Sherif and Hovland, 1961). This theory is among the first to suggest that propaganda should have a strategy and be carefully planned. Using the latitude of acceptance example, one should evaluate and study the attitudes and beliefs of the target audience and frame their narratives and messages accordingly.

### **2.1.2. Definition, Types, and Effects of Propaganda**

Propaganda has been defined in various ways to highlight its central characteristics and attributes. The most comprehensive definition is by Jowett and O'Donnell (2012): it is "the deliberate, systematic attempt to shape perceptions, manipulate cognitions, and direct behavior to achieve a response that furthers the desired intent of the propagandist". This approach to characterize propaganda is among the most accurate because it does not focus on spreading

information. Propaganda is complex and may not include the dissemination of news and narratives. The scientists emphasize that the attempt may take any form, including actions or even inactivity. Most definitions highlight a similar attribute of propaganda: its purposeful and methodical nature.

The most general propaganda classification suggests there are three types: white, black, and gray propaganda (Gray and Martin, 2007). White propaganda promotes truthful messages and content from credible and open sources. It is not harmful to the public and instead serves educational and informational purposes. Governments and organizations are frequent users of this type. Black propaganda is contrary to white propaganda because it incorporates misleading news and narratives. It often employs covert and sneaky means to spread false information and influence human collective behavior and attitudes. This type aims to disseminate confusion and discord (Gray and Martin, 2007). Gray propaganda is about blending truthful sources with ambiguous content or vice versa. Hence, it leads to confusion and requires fact-checking.

Jacques Ellul (1973) introduced a sophisticated taxonomy for propaganda with the following pairs of types with opposite meanings: political-sociological, vertical-horizontal, rational-irrational, and agitation-integration. Propagandists do not choose one of the paired opposites. They may resort to all types in a single coherent strategy (Ellul, 1973). For instance, appealing first to feelings and emotions and switching to facts and rational arguments. Alfred and Elizabeth Lee (1939) classified propaganda as seven techniques to achieve the desired goal. They reveal the diverse nature of this phenomenon. These techniques include name-calling, glittering generalities, transfer, testimonial, plain-folk, card-stacking, and bandwagon (Lee A. and Lee E., 1939). The authors describe the way propaganda is delivered to the target audience.

Its impact and effects vary depending on the employed techniques, digital and information literacy, frequency, and sources credibility. Pratkanis and Aronson (2001) emphasize that effective propaganda should employ “simple and repetitive messages to evoke strong emotions, bypassing rational scrutiny”. The recent developments in social media and the emergence of artificial intelligence (AI) and machine learning (ML) improved propaganda effectiveness. These technologies increase the frequency factor and require people to spend more time to enhance their media literacy sufficiently.

### **2.1.3. Propaganda, Disinformation, and Misinformation**

The notion of propaganda is known today as solely negative, but its neutral and sometimes positive connotations existed before modernity. The term itself became first known after the utilization by the Catholic Church, Pope Gregory XV in particular, due to the establishment of “Sacra Congregatio de Propaganda Fide,” meaning “Sacred Congregation for propagating the faith of the Roman Catholic Church” that had to propagate and spread Vatican’s beliefs during the age of geographic discoveries (Laskin, 2019). The idea of spreading and enhancing such ideas did not bear such meaning and quickly became embedded into the political perspective. Suggestions on improving the opinions of the public into more suitable and deemed informed ones were widely supported and covered by Bernays, who viewed it as a tool that the minority employed to influence the masses and change their opinions (Martins, 2021). Bernays and philosophers or policymakers thinking like him viewed propaganda as a necessary tool to promote more informed decisions that were problematic for simple people to grasp. Although propaganda has become a more negative process today, it is undeniable that it is used worldwide

for diverse purposes. Propaganda not only involves false information but also the manipulation of truthful facts into a more targeted message.

Disinformation can be viewed as a branch or form of propaganda that the majority of modern publications view as a purposeful act of deceit that aims to mislead the audience and create fictional narratives about the subject. Quite commonly, disinformation is related to political views that people hold confidently even if they are wrong; in other cases, they are the direct result of the political party's attempt to spread questionable data. Fascinatingly, literature often refers to Russia when discussing the notion of disinformation: "Russia is highly capable and willing to spread disinformation... The Russian military has adopted a form of asymmetric warfare (*asimmetrichnaya voina*) whereby Moscow can impose its will on other states without the use of kinetic force" (Lanoszka, 2019, p. 15). Generally, the available literature highlights that disinformation is always related to a specific purpose and does not occur accidentally or without the purpose of typically governmental or political entities. Social media has become a widely accepted tool for disinformation since combatting it is difficult and is characterized by the lack of accountability and perceived freedom of users (Shu et al., 2020). Aside from the intention of affecting the audience, a deeper objective of most agents engaging in disinformation campaigns is to discredit the opponent or confuse the audience.

Contrastingly, misinformation is often described in scholarly literature as the existence, sharing, or spreading of false information without a particular malicious intent that is nonetheless problematic. As Jerit & Zhao note (2020), misinformation is often manifested in the form of confidently held false beliefs, and it may have a ripple effect, impacting a broader public. Aside from emerging from various sources, it can be caused by honest mistakes. It can be spread due to

rumors or emotional misinterpretation of data. Quite often, it can be held in regard to the newest topics about which the majority of the population is not sure, such as climate change (d'I Treen, Williams, & O'Neill, 2020). Such a rapid dissemination of misinformation is often facilitated by social media platforms, where users might share content without verifying its accuracy. As a result, controlling information that will emerge due to misinformation is challenging because individuals with false beliefs are more likely to be vulnerable to protect ideas they see as their own.

#### **2.1.4. Counter-propaganda, Debunking, Prebunking, and Preventive Propaganda**

Due to the threats of propaganda, many state and private agents participate in the counter-propaganda efforts to design and spread messages to oppose and neutralize the original propaganda messages. Quite often, counter-propaganda utilizes truthful data and offers alternative opinions to eliminate the stability of the initial messages. The need for such a response stems from the power information holds over public opinion and the decreasing influence of one of the parties. For example, Al Qaeda's efforts to maintain a unified viewpoint on its violence and authority decisions developed a need for counter-propaganda content that was guided by the efforts to challenge extremist and violent messages through online and offline forms of influence (Schmid, 2014). The literature existing on counter-propaganda typically presents it as morally right efforts by the democratic parties to address the already existing dangers of the non-democratic and often authoritarian powers. As such, ISIS's propaganda is a subject of multiple counter-propaganda attempts due to its full-spectrum scope of appeal that damages the public view and may require complex and long-term plans (Baele et al., 2019). Today's counter-propaganda efforts might involve social media campaigns, public service

announcements, or official federal statements designed to rebut false claims and provide credible alternative opinions.

Unlike counter-propaganda which addresses the reactive process of changing the public opinion after the disruptive information is already shared, preventive propaganda is proactive and instead focuses on creating information that makes the public more resilient against propaganda when and if it comes. The information about preventive propaganda is lacking because the majority of today's efforts seem to target post-propaganda events and response tactics. Mentioning preventive propaganda was found in the article by Fondren (2021), who refers to this approach as creating a positive image of Germany to help create its strong and beneficial image and make it more resilient against the enemies. Most of the studies were dedicated to preventive propaganda or explored it as a notion that appeared in the 20th century. For instance, the article by Cluver (1937) was published in 1937 and discussed the efforts of preventive propaganda in relation to the campaign against prostitution and venereal disease in the U.S.S.R. Based on such limited information it is possible to discern that these kinds of propagandist strategies involve promoting truthful, beneficial messages that reinforce desired attitudes and behaviors among the public. As in the cases highlighted above, preventive propaganda intends to educate the audience about the specific dangers of undesired behaviors and make them more willing to make informed decisions.

Finally, debunking and prebunking are two methods seeking to expose false information or protect the audience before such information is received, eventually being related to counter-propaganda and preventive propaganda. Lewandowsky and van der Linden (2021) explain that propagandist messages can be initially addressed and made less influential due to

such prebunking strategies as establishing warnings, explaining targeted advertisement to users, and generally teaching the audience about active means for inoculation to help them discern false information from real. Such outcomes are seen as effective due to their ability to manage the threat of propaganda before its first negative consequences have taken place. Prebunking can be used by public or private institutions to raise awareness and enhance individuals' critical thinking, which may be useful from the long-term perspective. At the same time, debunking is often performed by specific fact-checking organizations that include journalists or public activists. However, the information on the benefits of debunking is more limited: Jang, Lee, and Shin (2019) argue that the attempts to debunk false information may lead to the opposite effect and create further mistrust in the institution that tries to spread trustworthy facts. Perhaps due to the power of the persistence of the already established beliefs, debunking misinformation is much more challenging than prebunking, though analyzing the benefits and disadvantages of both goes beyond the purposes of this literature review.

## **2.2. Media and Propaganda in Conflict**

Media plays a pivotal role in framing conflict situations and the use of propaganda, including social media and traditional ones, and this dispersion often varies based on the power dynamics and the complex interplay of forces within every conflict. State actors often employ state-controlled media to promote their narratives and suppress opposing voices. Both state and non-state actors regularly incorporate propaganda in their agenda to further their narratives. Authoritarian regimes, such as North Korea, use state-run media to create an alternate reality, glorifying the leadership and vilifying perceived enemies. However, this tendency has a long-term history. The Cold War, for instance, served as one of the primary examples of

aggressive propaganda exercised by state actors across the globe, which Connelly et al. (2021) ironically call diplomacy; it was spread via television programs, radio shows, teaching arrangements, and both private and non-private pursuits. Likewise, the British government employed teaching programs to emphasize democracy in post-war Germany, while the U.S. rapidly created entertainment media to attack its communist rivals on the other side of the globe.

Media during the conflict periods became a powerful tool for creating varying versions of truth, especially in an attempt to promote the counter-propagandist version of events. The same attempts were spread in the Soviet Union and China, where the other version of reality was constructed through the local media channels, including translation or dubbing, pamphlets, posters, and even showing the ballet production (Chen, 2020). By tapping into both entertainment and political propaganda, state actors often masked specific goals to create stronger associations between the viewers and the underlying messages. Therefore, the media became a powerful tool, often being sponsored and manipulated by the government, to reframe specific beliefs in the audience's perception.

Moreover, the state and non-state actors can use media, both traditional and social, in conflict situations in the competition for the local residents' support. In situations when the government holds power over all state agents and allows no opposition, social media or non-state media often become the primary method for spreading other messages. Such a case is recorded in the study by Seo & Ibrahim (2016), who study the visual side of Facebook as the arena where Assad and the National Coalition of Syrian Revolution and Opposition Forces presented contrasting views of truth. By appealing to different emotions while maintaining a strong emotional message, both sides had an equal level of power in determining the narrative

compared to solely traditional media when it is accessible to a limited group. Media has a profound psychological impact on both combatants and civilians, which may provide relatively varied outcomes when alternative sources of news are presented either via private or non-governmental organizations and funding or social media (Atanesyan, 2020). Alternative sources and the general conflict between non-state and state actors often maintain a continuous dynamic between the diverse parties.

Additionally, media coverage during the conflicts may be the determining factor in leveraging international support, and literature has studied the failure of the state or non-state actors to successfully attract attention to their causes. Images and stories broadcast by the media can generate global outrage, leading to international pressure on conflicting parties. Due to the impressive and widely reported media focus on the famine in Ethiopia in the 1980s, the global society became rapidly aware of the devastating consequences of the conflict (Tefero, 2022). Nonetheless, the absence of similar coverage in other situations may lead to poor global response and make the victim isolated. In the Rwanda genocide, the lack of media coverage, aside from government-sponsored sources of information, was one of the tools of genocide as it impaired any chance of an honest international plea for support (Dallaire, 2019). Consequently, the victory or loss of propaganda through media directly affects international support, and many modern conflicts construct images of the state when they share it with outsiders.

Social media has gained a comparatively similar or even more powerful scope of support in recent years because it promotes public participation and faster information sharing. Exposing specific events through the reports of direct witnesses, especially in dangerous situations when the journalist either has not yet appeared or cannot do so due to security reasons, can offer

first-hand information that is impossible to imitate. Such cases were noticeable when using Twitter as a microblogging platform for news sharing, and its effect became even more crucial through the usage of tags, allowing users to disperse the crucial news and find relevant data (Matheson & Allan, 2010). At the same time, social media may be deemed unreliable, especially if it is retranslated into the official platforms. When reporting in delayed areas, journalists have accepted the need to utilize news from social media platforms but practice caution when verifying and vetting information (Christensen & Khalil, 2021). Due to the sensitivity and lack of censorship on most social media platforms, propaganda can garner irreversible power and spread false information, which necessitates its careful use.

The interplay between social media and traditional media serves to amplify propaganda, supporting one of the sides of the conflict. Social media platforms like Facebook, Twitter, and Instagram are potent tools for disseminating propaganda. Unlike traditional media, which can be heavily regulated and controlled by the state, social media allows both state and non-state actors to bypass conventional barriers and reach a global audience directly. While in some cases, traditional media channels are controlled by the state, in others the governments use social media platforms to share information that directly contradicts mainstream and objective news sources (Bahar, 2020). Many social media websites or applications can also work with the particular state, which makes some news sources more promoted than others. For example, TikTok is known as a tool that spreads positive images of China, which can either positively promote its relationship with the Western audience or reject the U.S.-centered narratives (Highhouse, 2023). Because today's conflicts between such global powers remain high, TikTok and other social

media can be utilized in collaboration with traditional media to deliver the desired propaganda outcomes.

### **2.3. Previous Studies on Social Media and Conflict in Ukraine**

Contemporary studies are increasingly exposing the dual nature of propaganda through social media between Russia and Ukraine, emphasizing successful attempts of the Russian government to create false messages through popular channels. Russia Today (RT) and Sputnik have become channels for some of the most severe forms of Russian propaganda, often reaching out through Twitter or other sources to find new audiences that are not necessarily only anti-Ukrainian but also garner large support in foreign countries that allow it to gain following (Furman, Gurel, & Sivashioğlu, 2023). They promote positive narratives about Russia as a country, and these channels have a highly noticeable following on many social media websites unless deleted due to misleading information. Russia started to engage in social media propaganda before its invasion of Ukraine in 2022, achieving rapid results (Geissler et al., 2023). The general popularity of Russian media and information worldwide, despite regular accusations of false data sharing, emphasizes successful propaganda attempts.

Russian propaganda achieves its heightened results through the use of troll farms and false news presentations, often successfully constructing virtual spaces where the desired audience views specifically curated messages. Russia's ownership and leadership of large troll farms worldwide enable it to create false personalities of users online, spreading distorted, often emotional appeals, to foster the emergence of pro-Russian ideas (Nasrin et al., 2019). Moreover, social media's lack of fact-checking makes it easier for the Russian government to create false news about Ukraine and encourage others to share it. The conflict between mainstream media

and social media news enhances Russia's efforts in propaganda because many users of social media show distrust toward mainstream news sources (Al-Rawi, 2018). The role of disinformation in the conflict has been widely studied, with findings indicating that Russia employs a sophisticated, multi-layered approach to disinformation that includes the strategies mentioned above but is not limited to them. Russia even creates fake news websites and uses deepfakes to create confusion and mistrust.

It can be argued that Russian disinformation aims to create a fragmented information environment where truth becomes difficult to discern, thus weakening the resolve of opposing populations and governments. In particular, the informational rivalry between Russia and Ukraine has called for the use of deepfakes on social media; literature showcases the lack of awareness of such technologies and emphasizes that encouraging carefulness only diminishes the legitimacy of the real videos provided by other sources (Twomey et al., 2023). The ability to spread modified ideas has enhanced Russia's propaganda abilities. Since deep fake prevention remains in its beginning stages and few regular social media users can discern well-made videos using this technology, legislation, and regulation can be implemented to at least regulate such forms on reliable social media platforms (Westerlund, 2023). As a result, such achievements grant Russia an opportunity to deliver its specific narratives to wider audiences.

Russia employs all the strategies mentioned above and focuses on the historical and cultural narratives that allow it to design the image of Ukraine as a false nation and present Russia as a defender against the West. Russia regularly uses social media to promote the idea that it protects ethnic Russians in Ukraine from the oppressive government in an attempt to create a separate group of people in need of its military intervention; it also attempts to show Ukraine and

Russia as one country (Kuzio, 2019). Regardless of this standpoint, literature also notices the other theory presented by the Russian propaganda, in which it calls Ukraine a false state and a “bloody junta,” which requires Ukraine to engage in counter-propaganda (Pavlyuk, 2019). It is worth mentioning that such literature has been published even before the large invasion in 2022, indicating the continuous pattern of studies and Russian efforts to undermine Ukraine’s legitimacy as a state. In many sources, Russia accuses the Western countries of attempting to attack it, calling its invasion of Ukraine an act of self-defense (Mirra, 2022). Such an attempt allows Russia to present its aggression as necessary and reasonable, even though such myth-making and social media applications are well-studied in literature.

In contrast to the publications on Russian propaganda, information about Ukrainian use of social media varies depending on the subject, but the main path chosen by Ukraine’s state is focused on collaborating with official media sources and fostering a positive public image of its government and citizens. Ukraine’s use of social media as a potent attention-getting tool has been widely discussed, revealing effective knowledge of social media marketing as a powerful strategy to influence both internal and external audiences (Alberti & Di Serio, 2020). Nowadays, literature studies the majority of Ukraine’s efforts in social media and through its official news channels. Popular mainstream media cover the war and appeal to anti-Russian sentiments in the majority of news sources, even the ones not related to the social or political dimensions (Lytvynenko, 2023). The war is, perhaps unsurprisingly, a central topic in Ukrainian news sources, but this discourse has also shifted to social media and how its users address the conflict with Russian propaganda.

Ukraine's propaganda via social media focuses on its presentation of Ukrainians as free people and defenders of democracy while attracting international support. Ukrainian use of Telegram as a potent social media tool to spread news sources is much more flexible than the Russian strategy, and the Ukrainian sources adopt a moralizing frame to appeal to the audience (Ptaszek, Yuskiv, & Khomych, 2023). This flexibility allows the audience to be exposed to more diverse information sources, though it may lack control over the central narrative, in contrast to the Russian social media sources. Ukrainians, including citizens with large to little social media following, actively utilize social media to promote support of Ukraine and establish its position as a strong state to gain more international support (Chen & Ferrara, 2023). Ukraine's social media sources often present it as the protector of the democratic world, emphasizing that it is one of the shields against Russia. Consequently, Ukraine does not engage in myth-making about Russia so often but constructs a separate imagery of its potential as an independent, free state.

### **3. Methodology**

#### **3.1. Research Design**

Social media is among the most common channels for disseminating propaganda. It has been mentioned in the previous sections that the central Russian propaganda narratives are found in social networks and mass media. Given the popularity of Telegram, the latter has been chosen as a crucial platform for implementing propaganda strategies in Ukraine from both sides of the conflict. Since the primary sources of information and news in this network are channels, appropriate research methods should be applied to analyze the nature and effectiveness of preventive propaganda in Ukraine. The following research methods have been chosen to achieve the objectives of this study: social media analysis, content analysis, and sentiment analysis.

### 3.1.1. Social Media Analysis

Propaganda in Ukraine after the full-scale invasion of Russia became more frequent in social media. Since the study focuses on Telegram as a central social network to spread propaganda narratives and employ preventive propaganda by the Ukrainian government, social media analysis is another method to achieve research goals. Marcellino et al. (2017) argue that textual data predominates in analyzing social media and its analytics have real-world applicability in solving information operations problems. Deriving insights and findings from the analysis of textual data does not suffice to provide a general analysis. The comparative analysis of Telegram channels is important to determine the key characteristics of the chosen social media, its actors, and how Telegram functionalities are applied for the purposes of preventive propaganda.

Many studies on propaganda and information warfare feature the comparative description approach. An excellent example is the research of Kristina Mikhailidi (2023) who compares Russian and Ukrainian Telegram channels debunking fake news in that social media. The comparative study allows identifying the diversity of instruments and strategies employed by the channels to influence their audiences. The comparison is essential to emphasize those distinctions and similarities and present the typical functionalities of the social media used to propagate certain narratives. Ghasiya and Sasahara (2023) have carried out research to investigate the messaging strategies of Ukraine and Russia on Telegram to contrast the context, environment, and tactics of both sides of the conflict. The authors carried out an in-depth analysis of the selected Russian and Ukrainian Telegram channels communicating news on war-related topics. The comparison method of a few representative channels provides a grasp of

the primary features of communication strategies and their specificities. For instance, it reflects the audience interests, communication dynamics, and differences of audiences based on the channel's approaches to presenting news and information on the selected topics.

Given the successful application of the comparative approach within the framework of social media analysis, this method will be incorporated in the study. Using the features of Telegram to collect data and general information on the selected channels, basic metrics and characteristics of the channels will be evaluated, analyzed, and presented in table formats. This analysis will provide an idea of how the preventive propaganda tools in the form of Telegram works in Ukraine.

### **3.1.2. Content Analysis**

The variety of text arrays diversity of content in high volumes and frequent occurrence of 'noise' in the form of slang, spelling and grammar mistakes, and punctuation issues entail many challenges in analyzing social networks. Still, content analysis remains a common and universal approach to investigating textual data and inferring insights. It allows researchers to conduct a qualitative and quantitative analysis of the text arrays in question and emphasize numerical patterns. The transformation of qualitative findings into quantitative data with statistical processing is necessary to obtain credible results.

American sociologists Berelson and Lasswell laid the foundations of this research method (Sebestyén, 2023). Berelson has developed a comprehensive definition of this method. According to this scientist, "content analysis is an objective, systematic, and quantitative description of the explicit content of communication" (Berelson, 1952). Most scientists agree on the fact that content analysis helps reflect the reality that is hardly or non-quantifiable. According

to Forman et al. (2007), “content analysis is a translation into quantitative indicators of mass text information with its subsequent statistical processing”. Besides, the approach does not focus solely on writing pieces or texts. It can be applied to videos, illustrations, media objects, and other things that convey any content or meaning. This universality explains the common employment of content analysis in sociology and mass communication studies.

This method differs from semiotic approaches because their empirical verification is challenging. Content analysis is one of the positive empirical science methods. Empirical approaches are similar in many features. They require hypothesis development, data collection, and data classification. While applying these research methods one may also resort to experimental methods to evaluate the results' reliability and test hypotheses or findings. Semiotic approaches focus on the form of the message, cultural context, and other external factors not related to the exact text content.

This study features content analysis to obtain objective, measurable, and verifiable results and best research preventive propaganda spread through Telegram as a mass communication means. This approach allows for determining the correspondence of the selected channel messages to the propaganda topics. Previous researchers have determined the relationship between propaganda and distortions of information through the mass media by employing content analysis (Oleinik, 2023). It also helps investigate the responses, behaviors, and attitudes of the target audience.

The application of content analysis is appropriate for studying the topic because of the assumption that the qualitative characteristics of propaganda appear with sufficient frequency (Berelson, 1952). The study with the application of content analysis should meet other

requirements. These include the obvious and explicit nature of content, semantic or interpretative unity, and clarity (Bardin, 1979). The framework also emphasizes the frequency of units of each category regardless of their significance or other potential differences.

Bardin (1979) comes up with three critical elements of content analysis: categories, analysis units, and account units. Categories are difficult to select without limitations in the form of subjectivity and abstraction. Therefore, they are chosen through supplemental research and refer to the conceptual idea of the study. Analysis units are distinct semantic pieces of content that fall under a similar category. Account units are characteristics of the text under research. It is also crucial to ensure that one content fragment is not attributed to two different categories. The mentioned elements, circumstances, and requirements guide the application of content analysis in this study.

Content analysis requires a structured and logical approach. This paper features Bardin's methodological approach because it meets the challenges and peculiarities of analyzing Telegram channels and interpretations of study results. Its key features include "the search of the true meaning of the message; comparison of messages considering different recipients or different situations involving the same recipients; placing standardized messages in front of others aiming at an objective, systematic and qualitative description" (Bardin, 1979). Since the objectives of this research meet those procedures, the selected approach helps structurally study propaganda messages in Telegram channels and transform their qualitative description into quantitative findings. Table 1 below represents the step-by-step guidance provided by Bardin to carry out content analysis.

**Table 1**

STEP 1	STEP 2	STEP 3
Pre-analysis	Material exploration	Treatment of results
<ol style="list-style-type: none"> <li>1. Floating reading.</li> <li>2. Choice of documents.</li> <li>3. Preparation of materials</li> <li>4. Formulation of hypothesis.</li> </ol>	<ol style="list-style-type: none"> <li>1. Division: choice of units of meaning and context.</li> <li>2. Categorization and codification.</li> <li>3. Choice of counting rules.</li> </ol>	<ol style="list-style-type: none"> <li>1. Quantitative and/or qualitative analysis.</li> <li>2. Inferences.</li> <li>3. Interpretations.</li> </ol>

*Note: Content analysis guidance by Bardin (1979).*

The guidance is crucial to navigate the research and determine the key stages with proper analysis and interpretation of the selected content. Bardin has been heavily cited in scientific papers and referred to as a credible and recognized contributor to the research of content analysis and its application. In the present paper, the aim is to emphasize the reaction and influence of the content on the target audience. The intention and purposes of the communicator are predetermined and assumed within the framework of preventive propaganda. Bardin's content analysis will help ensure the consistency and accuracy of the applied method and measure the content adequately with qualitative and quantitative tools.

The combination of applied software for collecting, processing, and interpreting big data from Telegram channels and procedures specified by Bardin in his guidance helps conduct an in-depth analysis of propaganda narratives and their dissemination through the chosen means of communication. It enables the quantification of the parameters of the selected textual data to provide distinct characteristics of preventive propaganda in Ukraine.

### **3.1.3. Sentiment Analysis**

The research aims to understand how preventive propaganda works in the specified context. One of the central characteristics is the response of the target audience. More accurately,





### 3.2.1. Telegram Channels

Preventive propaganda is the product of the government that should convey an official position on any topic related to national security and falling under national strategic interests. Therefore, the initial purpose of the research is to identify the sources of preventive propaganda and central official actors. Given the limitations in different characteristics of official Telegram channels related to the Ukrainian government, the exception has been made for channels of accredited and credible news organizations with high scores in transparency and journalist professional ratings. The following criteria determine the suitability of a Telegram channel for this research:

1. **Credibility.** The channel should be related to the Ukrainian government or represent a reputable media recognized as one of the most professional in the journalism field in the country.
2. **The creation date.** The channel should be created before the full-scale invasion of Russia.
3. **The availability of the emoji reactions.** Emoji reactions will be studied as a part of the content and sentiment analysis.
4. **The absence of disinformation or fake news accusations.** The selected channels should not be mentioned in any investigations and accused of spreading false information.
5. **The content character.** The channels should focus on news and information related to the ongoing political, social, and economic life in Ukraine to mention topics used by Russian propaganda.

6. **The use of Ukrainian language.** The majority of messages in the channel should be in Ukrainian.

The first two channels to be included in the study are Ukraine Now and Ukrinform. The former is the large-scale branding and marketing campaign to increase international awareness of Ukraine and spread credible news and information about the ongoing life in the country. The campaign has different platforms, accounts, and channels that present the official position of the Ukrainian government on critical topics and spread news. The chosen channel is in the Ukrainian language in Telegram and ranks among the top news channels the Ukrainians use. Ukrinform is a governmental organization also referred to as the National News Agency of Ukraine. It serves as an international broadcaster of Ukraine and delivers news in different languages and platforms. The agency has a Telegram channel in Ukrainian with a relatively small number of followers. However, it is an integral part of the Ukrainian information arsenal.

To compare and better understand preventive propaganda in Ukraine two reputable news channels have been selected. The top two selections have been made based on the most recent quality list of the Ukrainian Institute For Mass Information (“Quality List: the 11 Media Outlets Deemed Most High Quality,” 2024). Suspilne and Hromadske satisfy the criteria set above and represent quality journalism in Ukraine with objective coverage of the most important events in the country. The analysis of the most popular Telegram channels in Ukraine in the second half of 2022 revealed that Suspilne and Hromadske were in the list of the top 10 Ukrainian media channels with the highest subscriber growth rates (Ryaboshtan et al., 2022). Hromadske is also only allowing followers to leave comments under the messages.

During the floating reading, the Telegram channel of the Ukrainian president Volodymyr Zelenskiy has been examined. It satisfies the selection criteria for this research. Furthermore, this channel features the news as one of the most credible sources of information in Ukraine.

V\_Zelenskiy\_official is also under study in this paper because it has a high number of followers and may influence many Ukrainians. Given these characteristics, the channel is an indispensable instrument of preventive propaganda in Ukraine.

The presented selection approach is similar to studies investigating and analyzing Telegram channels. For instance, Ghasiya and Sasahara (2023) have also selected UkraineNow and V\_Zelenskiy\_official along with the Russian account of the news network RT. They argue that the Ukrainian channels best represent the messaging strategies in Ukraine and communication with the public on behalf of the government. Kristina Mikhailidi (2023) applied a more comprehensive approach using the same Barding guidance and specifying custom parameters to sort out and determine only four channels for her comparison review. Thus, the presented selection strategy for this study partially complies with the practice of other researchers.

The table below represents the comparison table of the selected channels with their main characteristics and satisfaction with the criteria above.

**Table 3**

*Comparison table of the main characteristics of the chosen Telegram Channels*

Selected Telegram channels					
<b>Name</b>	<b>Ukraine Now</b>	<b>Ukrinform</b>	<b>Suspilne</b>	<b>Hromadske</b>	<b>V Zelensky official</b>
<b>Type</b>	Government	Government	Non-Governme	Non-Governm	Governmental

	al	al	ntal	ental	
<b>Followers</b>	572 000	50 000	296 000	93 000	750 000
<b>Language</b>	Ukrainian	Ukrainian	Ukrainian	Ukrainian	Ukrainian/English
<b>Created before February 24, 2022</b>	Yes	Yes	Yes	Yes	Yes
<b>Availability of emoji reactions</b>	Yes	Yes	Yes	Yes	Yes

### 3.2.2. Topics of Preventive Propaganda

The effective analysis of preventive propaganda in Ukraine requires the selection of examples of propaganda topics and their in-depth investigation. The topics should be related to resonance events drawing wide public attention and featuring many news and journalistic papers. Though no specific criteria have been set to choose the topics, they should be within the researched period of two years since the full-scale invasion of Russia on 24th February 2022. The literature analysis and review of journalistic materials on the most popular Russian propaganda narratives have helped to single out four critical topics that may have harmed the public trust and exposed the Ukrainians to disinformation.

The first topic has no specified period to study because it has been used by the Russian propagandists since the first weeks of the invasion. Mobilization became a necessary decision by the Ukrainian government to strengthen the armed forces and defend the country against the invasion. Given that mobilization entails a mix of emotions and reactions of different social groups, Russian propagandists have taken advantage of the scandal mobilization campaigns. According to Johansson-Nogués and Şimanschi (2023), “(dis)information may pander to positive

emotions about shared values to conjure up collective feelings of national pride, while fear and anger prompt mobilization against perceived dangers and injustices”. Namely, manipulations of the public feelings of injustice and selective mobilization in Ukraine have been a central tactic to undermine the public support of the government.

Another topic relates to the military and financial aid by the Western countries to Ukraine. Since the invasion, the country has been in dire need of military supplies because of the high material and financial costs of waging the war. The allies provided billions of dollars in various forms to support Ukraine. However, the volume of aid provoked speculations and manipulations regarding the fair and transparent disposal of that aid. For example, the recent statement by Ukraine’s Main Directorate of Intelligence reveals that “Russia is plotting a provocation by planning to spread fabricated images of partner weapons given to Ukraine being used in Sudan” (Voshchevska, 2024). The target audience of those propagandist campaigns is not limited to the allies but also focuses on the Ukrainian audience by representing the government as corrupt officials and traitors.

The last two events are military operations and dynamics with significant media coverage during their implementation. The analysis of the mass media topics over the two years of war revealed that the Bakhmut defense operation and the Ukrainian counter-offensive had attracted relatively more media attention compared to other events during the same period (December 2022 - April 2023). For instance, the planned counter-offensive in 2023 was intensively discussed and critiqued by both Russian and Ukrainian media, with the former expecting it to be a total failure (“Why is Bakhmut Still Not Ours?” Russian Media Monitoring Report,” 2023). The goal was to undermine the faith and hope of Ukrainians to fight back the Russian army. The

Bakhmut operation was also surrounded by a variety of propagandist attacks, disinformation campaigns, and provocations. A vivid example of those campaigns was the accusation of the Ukrainian forces of the use of chemical weapons near Soledar and Bakhmut (“Disinfo: Ukraine used chemical weapons near Soledar and Bakhmut,” 2023). The propagandist narratives targeting the Ukrainian audience mostly focused on the speculations about the argument between president Zelenskiy and army chief Zaluzhnyi, neglectance of the Ukrainian losses, and mistakes in defending the city.

Therefore the complete list of the topics to research in the selected Telegram channels includes:

1. Mobilization in Ukraine.
2. Corruption and selling of donated weapons in the dark market.
3. The Bakhmut defense operation.
4. The counter-offensive operation in 2023.

The table below provides examples of messages on each topic from the Telegram channels.

**Table 4**

*Examples of Posts on Each Topic*

<b>Topic</b>	<b>Mobilization</b>	<b>Corruption/selling Western weapons</b>	<b>Bakhmut operation</b>	<b>Summer 2023 counter-offensive</b>
Post	Zaluzhnyi commented on the mobilization of 500,000 people. The military command is constantly forming its requests for ammunition, weapons and	Continuation of the scandal on the embezzlement of humanitarian aid in Zaporizhzhya. 300 tons of humanitarian aid hidden from people were found at 2 more enterprises. It reached neither the	President Zelenskiy said that Ukrainian troops will defend Bakhmut as long as it is reasonable. It is important for us to	This is not a movie. It is difficult for me to say how you will see the counterattack. The main thing is to make Russia see it... . The deoccupation of

<p>human resources, but did not submit a request for a specific number of mobilized individuals. This figure takes into account the coverage of the current replenishment, the formation of new military units, as well as the forecast of our losses that we may suffer during the next year. (<i>Ukrinform; 26 December, 2023</i>)</p>	<p>military, who defended our peace 30 kilometers from the regional center, nor the migrants from occupied territories. Tons of food products transferred to Zaporizhzhya region in 2022 by Western partners and friends simply spoiled due to the criminal negligence of officials of the regional administration, the head of Zaporizhzhia Oblast Yury Malashko reported. (<i>Ukraine Now; 24 November, 2023</i>)</p>	<p>protect it, but not at any cost so that everyone dies - he answered the question of the Italian newspaper Corriere della Sera whether it is worth losing people defending a small town in Donbas. (<i>Suspilne; 20 February, 2023</i>)</p>	<p>our territories is the result of a counteroffensive. When it happens, you will understand that it is happening, this is how Zelensky answered the question of an Estonian journalist about whether the counteroffensive has already begun and how it will be seen. (<i>Hromadske; 2 June, 2023</i>)</p>
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The pre-analysis step has allowed us to select and prepare Telegram channels and topics for the study. Afterwards the following hypotheses have been developed:

1. *Hypothesis 1:* The target audience responds mostly positively and supportively to messages on the selected topics.
2. *Hypothesis 2:* The followers number does not determine the frequency of messages on the selected topics.
3. *Hypothesis 3:* The audience reaction is higher on “hot propaganda topics” compared to the average reaction over the studied period.
4. *Hypothesis 4:* Preventive propaganda effectiveness is significant on each selected topic.

### 3.3. Data Collection

To collect posts from the selected Telegram channels we used Telegram API and the Telethon python library. The script was launched in the Jupyter Notebook environment with the use of a local server at localhost:8888. According to the Telethon documentation, “the library is

meant to make it easy for you to write Python programs that can interact with Telegram”

(“Telethon’s Documentation,” n.d.). Using the features of the library, we adjusted the Python script to specify all the necessary filters and data preprocessing. We imported TelegramClient and GetMessageReactions from the library. The GetMessageReactions functions allow us to collect data on the total number of reactions on the posts. Furthermore, we also decided to count the number of the top ten emoji reactions in each of the selected Telegram channels. Finally, we created a draft of the table with the data to be imported from the channels with the following columns:

1. Message ID.
2. Date.
3. Message.
4. Message Views.
5. Total Reactions.
6. Reaction\_1.
7. Reaction\_2.
8. Reaction\_3.
9. Reaction\_4.
10. Reaction\_5.
11. Reaction\_6.
12. Reaction\_7.
13. Reaction\_8.
14. Reaction\_9.

## 15. Reaction\_10.

The column number varied depending on the number of allowed emojis as reactions to messages in the channels. For instance, followers of V\_Zelenskiy\_official could choose among four emojis to react to a message. We also had to create dictionaries for the emoji to codify them and represent them in the form of column headers. The example of the dictionary of emoji reactions from V\_Zelenskiy\_official is shown in Table 5 below.

**Table 5***Emoji Dictionary Example*

<b>Reaction_1</b>	❤️
<b>Reaction_2</b>	😞
<b>Reaction_3</b>	👍
<b>Reaction_4</b>	🙏

Given the need for the emoji dictionary and their count in separate columns, we also imported Counter from collections. According to the Python documentation, a Counter “is a collection where elements are stored as dictionary keys and their counts are stored as dictionary values” (“Collections — Container Datatypes,” 2024). We also imported re, datetime, and timezone libraries to preprocess the data. The re-library allowed cleaning of the message text for its further analysis while the datetime helped to specify the selected period of the messages to be imported from Telegram channels.

The final step of the data collection was to group and save the imported data in the files. The dictionary was saved in the JSON format using the functions from the JSON library in Python. The main table containing the columns mentioned above was saved in the CSV format

using the CSV library in Python. Eventually, the output of the data collection stage included five CSV tables with respective columns and values and five dictionaries with encoded emojis and their corresponding names in the form of column headers (“Reaction\_1”, “Reaction\_2” etc.).

Table 6 below represents the file name, the number of rows, and the number of columns of the final files with the collected data.

**Table 6**

*Final Files with the Collected Data*

<b>File Name</b>	<b>Rows</b>	<b>Columns</b>
<b>ukrainenow.csv</b>	44 491	15
<b>ukrinform.csv</b>	69 360	15
<b>suspilne.csv</b>	23 015	14
<b>hromadske.csv</b>	26 706	15
<b>zelenskiy.csv</b>	8 799	9

*Note: the rows include messages with no text and messages featuring ad integrations. They are filtered out during the data analysis.*

### **3.4. Data Analysis**

Since the files contained large volumes of data, the decision was to import them into the local database through the free-to-use software DBeaver and feature the SQL programming language for the in-depth analysis. The files were uploaded to a newly created database in the form of tables with the respective number of columns. The tables were created following the CSV structure beforehand with the specified data types. The next step was to determine the keywords for the selected topics to single out the needed messages. Table 7 below shows the list of keywords for each topic.

**Table 7**

Topic 1	Topic 2	Topic 3	Topic 4
Mobilization	Corruption/selling Western weapons	Bakhmut operation	Summer 2023 counter-offensive
<i>Keywords</i>	<i>Keywords</i>	<i>Keywords</i>	<i>Keywords</i>
1. mobilization 2. recruitment office 3. territorial recruitment center 4. conscription	1. corruption 2. weapon selling black 4. theft	1. Bakhmut 2. bakhmut	1. counter-offensive 2. Counter-offensive

The messages were processed with the AND and OR filter functions in the WHERE clause of the SQL script. The metrics and other calculations were carried out using basic calculation functions such as AVG, SUM, etc. Since the sentiment analysis required the classification of three types of responses (negative, positive, and neutral), the emojis from dictionaries were collected in one dictionary and assigned to a positive, negative, or neutral group. For calculation purposes, the names of columns to count the reaction types for each topic in each channel were specified. Table 8 represents the combined dictionary of emoji reactions with their types and availability in the selected channels.

**Table 8**

*Dictionary of Emojis And Their Correspondence to Emotion Group and Availability in Telegram Channels*

Emoji	+	-	0	Ukraine Now	Ukrinform	Suspilne	Hromadske	V Zelensky official
❤️	yes			yes	yes	yes	yes	yes
😞		yes		yes	yes	yes	yes	yes
👍	yes			yes	yes	yes	yes	yes
🙏			yes	no	yes	no	no	yes
👮		yes		yes	yes	yes	yes	no
🔥	yes			yes	yes	yes	yes	no
😬			yes	yes	yes	yes	yes	no

😱			yes	yes	yes	no	no	no
🔥	yes			no	yes	no	no	no
💔		yes		no	yes	no	no	no
🤢		yes		yes	no	no	yes	no
👍		yes		yes	no	no	no	no
🐼			yes	yes	no	no	yes	no
🤔			yes	no	no	yes	yes	no
👎		yes		no	no	yes	no	no
👏	yes			no	no	yes	no	no
🤩			yes	no	no	no	yes	no

*Note: the total number of unique emojis is 17, with positive - 5, negative - 6, and neutral -*

6.

The data analysis revealed an essential limitation. Telegram introduced reactions in its 12th update and announced the news on the 30th of December 2021 (“Reactions, Spoilers, Translation and QR Codes,” 2021). However, not all Telegram channels turned on the feature and allowed its followers to leave reactions. For instance, the analysis of the average total reactions per message by day of V\_Zelenskiy\_official allows assuming the channel admins turned on the reaction feature only in March-April 2023. Thus, counting and using emoji reactions for the purposes of the study entail limitations and distortions of the determined metrics. We decided to determine the date when the emoji reactions were enabled in each channel to specify in which periods and in which channels emoji reactions would not be considered. The dynamics of the average total reactions per message by day have been calculated by using SQL and visualized in Excel. The findings section provides the detailed results of the dynamics.

### **3.5. Measurement of Effectiveness**

Measuring the effectiveness of preventive propaganda in Ukraine is among the key goals of this study. Since the public polls and social studies on the Ukrainian resistance and attitudes towards the war and Russian propagandist narratives emphasize the positive results of Ukrainian propaganda and high national awareness, the current research aims to support these claims. Nevertheless, effectiveness-related measurements are challenging because of the sampling issues, methodology limitations, and interpretation confusion. We have examined the suggested methods from various peer-reviewed papers and examples from other studies to determine the most suitable and applicable approach.

### **3.5.1. Approaches to Measuring the Effectiveness of Propaganda**

The possible options to measure the effectiveness of propaganda differ and may be based on the use of multiple tools and techniques. Van Eerten et al. (2017) argue that it may not be possible to determine the overall effectiveness of a campaign and specify that one should focus instead on testing specific elements of a campaign, in a specific context, and for specific people. The presented strategy provides accurate and adequate results with fewer limitations. Van Eerten et al. (2017) mention quantitative metrics based on the data collected from social media to analyze the effectiveness of communication campaigns. They evaluate the impact in the online environment and do not require experiment-based methods or surveys. The suggested types of metrics are awareness metrics and engagement metrics.

Awareness metrics aim to calculate and describe the number of people covered by an informational campaign. They may be further complicated by aggregating and grouping the metrics by various demographics, geographic locations, or other characteristics of the target audience. Engagement metrics represent the attitude and reactions of users with a campaign.

Many social networks allow users to interact with the content in the form of comments, reactions, etc. These provide data on interactions that are frequently used to study the engagement aspect. The example metrics include likes, shares, retention or loyalty metrics, and comments.

Alternative approaches require a different research design and circumstances to measure the effectiveness of propaganda. Van Eerten et al. (2017) outline the following quantitative and qualitative options: online focus groups and interviews, one-on-one interviews, online surveys, experiments, and netnography. Every method has drawbacks and limitations that do not allow the overall evaluation of preventive propaganda. Hence, drawing on quantitative data from social networks is the best practice to reflect reality.

### **3.5.2. Examples from Other Studies**

There is a limited number of studies on preventive propaganda and little-to-no attention is paid to propaganda effectiveness. It provides challenges because of no recognized approaches and methods. A review of several studies attempting to analyze propaganda effectiveness has presented insights on how this study should be designed and carried out.

The selected research papers feature different methods to investigate the selected topic. For instance, Oleinik (2023) presents an original method for assessing war propaganda effectiveness by tracking the propagation of a political leader's message through the mass media. This example has drawbacks because it does not consider the engagement and reactions of the target audience. In turn, the study shifts its focus to the dissemination of propagandist narratives through the mass media. Another example is the research on the persuasiveness of AI-generated propaganda. Goldstein et al. (2024) apply the experimental design by selecting articles with

propagandist narratives from Iran and Russia, creating AI-generated versions, exposing them to the selected participants, and interviewing the latter. This approach has many advantages but it is limited in its application and does not reflect the context, user media literacy, and public awareness. Liu and Shao (2023) employed survey experiments to determine how nationalist propaganda manipulates public opinion. They exposed the participants to propagandist materials and measured the effectiveness through surveys. This research features well-known methods and does not provide unique and universal insights for other studies on similar topics.

### **3.5.3. Method of Measuring Effectiveness of Propaganda**

Preventive propaganda in Ukraine has been among the first examples of using Telegram as a central communication platform to provide media coverage of the war and spread its narratives to protect the public from Russian propaganda. The opportunity to collect quantitative data from Telegram and its recently added features in the form of emoji reactions to the messages allows the development of an original approach to measuring the effectiveness of preventive propaganda. The emoji reactions functionality has emerged relatively lately and little research has been done to investigate its impacts and importance for studying other topics. It may become an effective method to understand the overall public reaction to a separate propagandist message or narrative and evaluate the whole propaganda with data-based metrics. The suggested approach features the use of engagement metrics. It has already been determined that “when campaigns spark comments and conversations, audience-generated messages can be coded and analyzed for sentiment or tone, key themes and topics, and so forth” (Van Eerten et al., 2017). We argue that replacing comments with emoji reactions and coding them can serve the same goals and provide meaningful insights.

Many scientific papers have investigated the role of emoji and reactions in social media and understanding the audience. Firdiani and Kahar (2022) studied the use of emojis in nonverbal communication and concluded that participants replaced words or sentences with emojis to save time and minimize ambiguity. Emojis may provide more insights into one's attitude. Völker and Mannheim (2021) conclude in their paper that "emoji may provide the cues necessary to extract emotional information from text-based messages". The rising popularity of this communication tool makes it highly representative when it comes to evaluating the audience response. However, they also have limitations. Firdiani and Kahar (2022) argue that emoji may have varied meanings depending on who sends the message. Another crucial factor is the context. Alharbi and Mahzari (2023) emphasize the importance of context in interpreting the functions of emojis.

Telegram API and the Python library Telethon allow importing data on emoji reactions from the selected Telegram channels. With the data on the number of total reactions to a particular message and the number of specific emoji reactions, we can calculate the necessary engagement metrics and measure the effectiveness of preventive propaganda. The metrics can be calculated for each topic and each channel and provide points of comparison to infer insights and benchmarks.

The suggested metric is the share of emoji reactions. The measurement will include the calculation of the average share of reactions per topic, the total share of reactions per topic, and the total share of reactions on the selected topics per channel. The dynamics of the metrics will also be analyzed. All possible emoji reactions to messages will be considered while the top 10 emoji will be used instead for the sentiment analysis.

## 4. Findings

### 4.1. Social Media Analysis Results

The initial goal of the social media analysis has been to understand the distinctions between the chosen Telegram channels and their primary characteristics based on various quantitative metrics. The following metrics describe those channels: *total messages, messages per day, total views, views per message, total reactions, reactions per message, and reactions/messages (share, %)*. Table 9 below shows the general characteristics of the channels with the respective calculations of those metrics.

**Table 9**

*General Metrics of the Selected Telegram Channels*

channel name	total messages	messages per day	total views	views per message	total reactions	reactions per message	reactions/ views, %
ukrainenow	34 754	48	7 860 782 185	226 184	105 648 053	3 040	1,34%
ukrinform	46 432	64	380 625 607	8 197	6 488 926	173	1,99%
suspilne	21 099	29	3 334 255 254	158 029	24 899 114	1 180	0,75%
hromadske	22 108	30	847 855 643	38 351	20 399 280	923	2,41%
zelenskiy	4 239	6	4 188 255 325	988 029	12 467 974	6 172	0,99%

*Note: reactions per message and reactions/views ratio have been calculated considering the different dates when Telegram channels allowed followers to use reactions.*

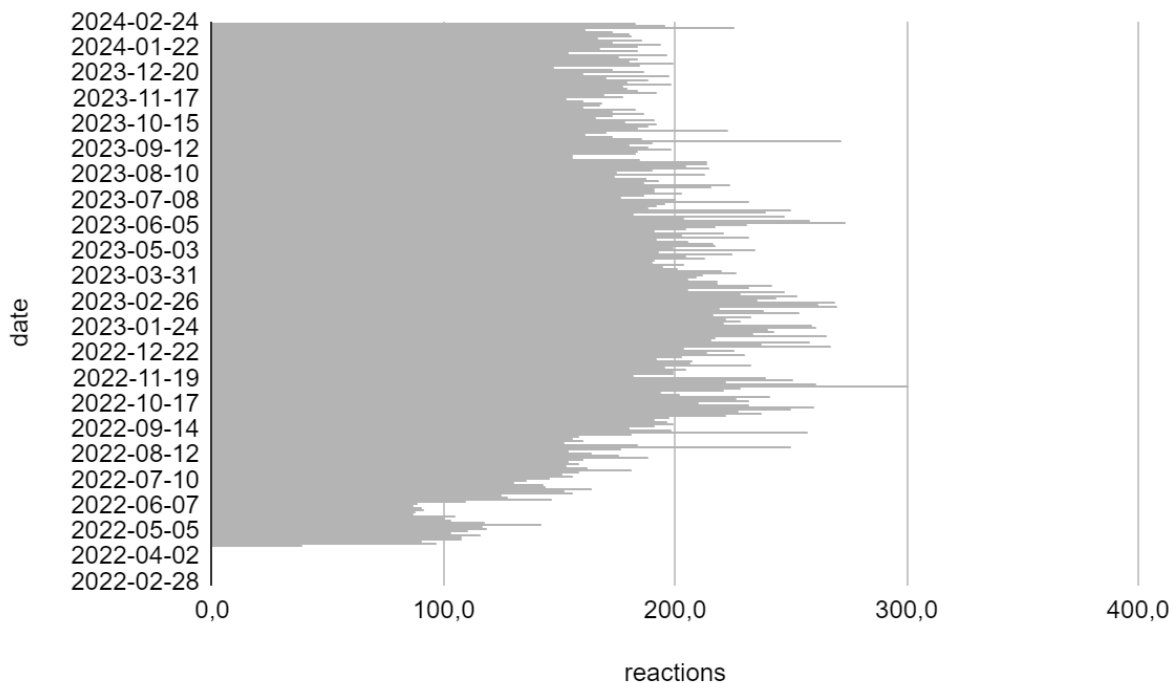
The table shows that Ukrinform has the highest frequency and number of messages but its absolute metric values are lower due to the lowest number of followers. Hromadske has the

highest average engagement rate, meaning that it effectively communicates with its audience. The number of total reactions is higher in Ukraine Now because of the availability of diverse reactions and the channel size. Still, the reactions/views ratio is close to a median value. Suspilne and V\_Zelenskiy\_official have the lowest engagement rates despite a relatively high number of views per message.

The general absolute and relative metrics provide the full picture of the effectiveness of communication with the target audience and overall engagement and awareness situation. Nevertheless, the dynamic changes over the selected period are also necessary to better understand the potential limitations and followers' behaviors. Since certain topics were mostly covered during separate periods, the changes in followers' behaviors may alter the key awareness and engagement metrics. Figure 1 below represents the dynamics of reactions per message in the Telegram channel Ukrinform.

**Figure 1**

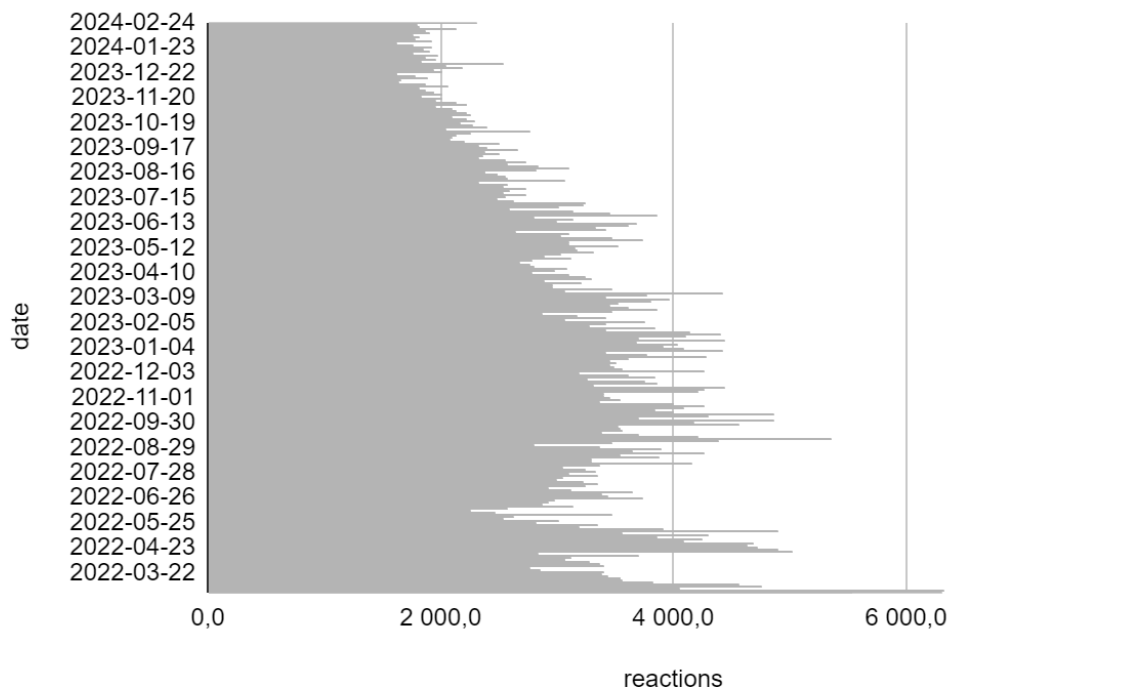
*Dynamics of Reactions per Message in Ukrinform*



The chart helps identify the start of using reactions on the posts in this channel. The calculated date is April 18, 2022. Since the introduction of the reactions, the metric value had gradually grown till September 2022 when it reached the average value. This illustration presents no significant deviations from the average reactions, despite some days enjoying a relatively higher or lower number of reactions. Nevertheless, Figures 2, Figure 3, and Figure 4 feature a different situation with a negative decreasing trend in the number of reactions per day over the observed period.

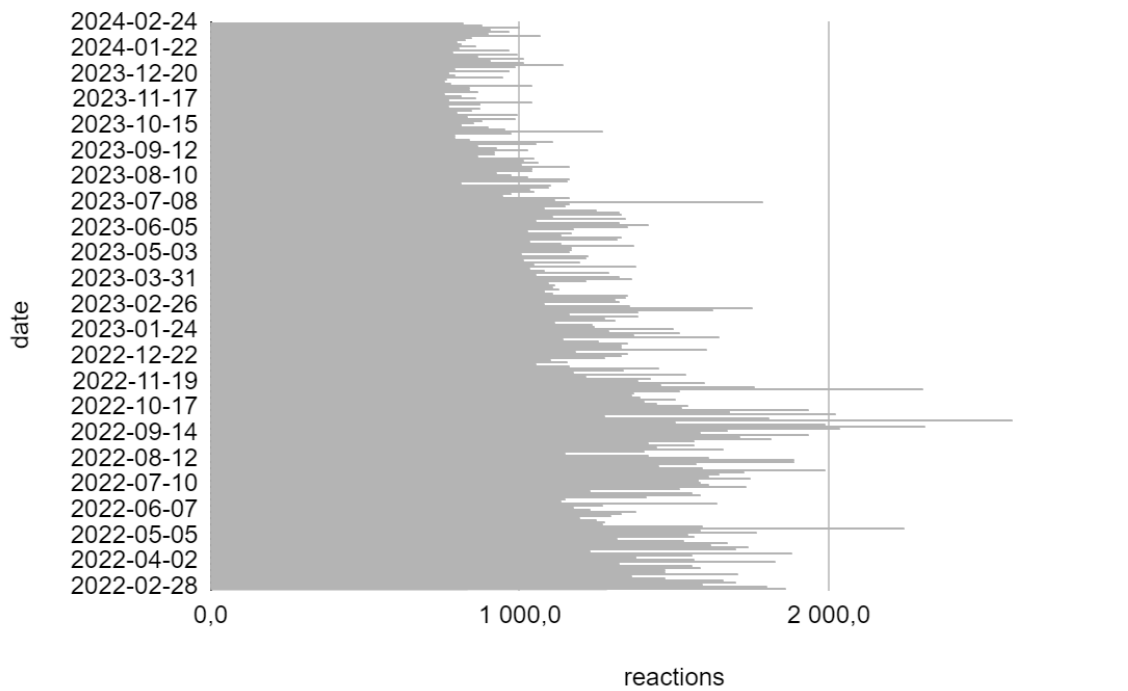
## Figure 2

*Dynamics of Reactions per Message in Ukraine Now*



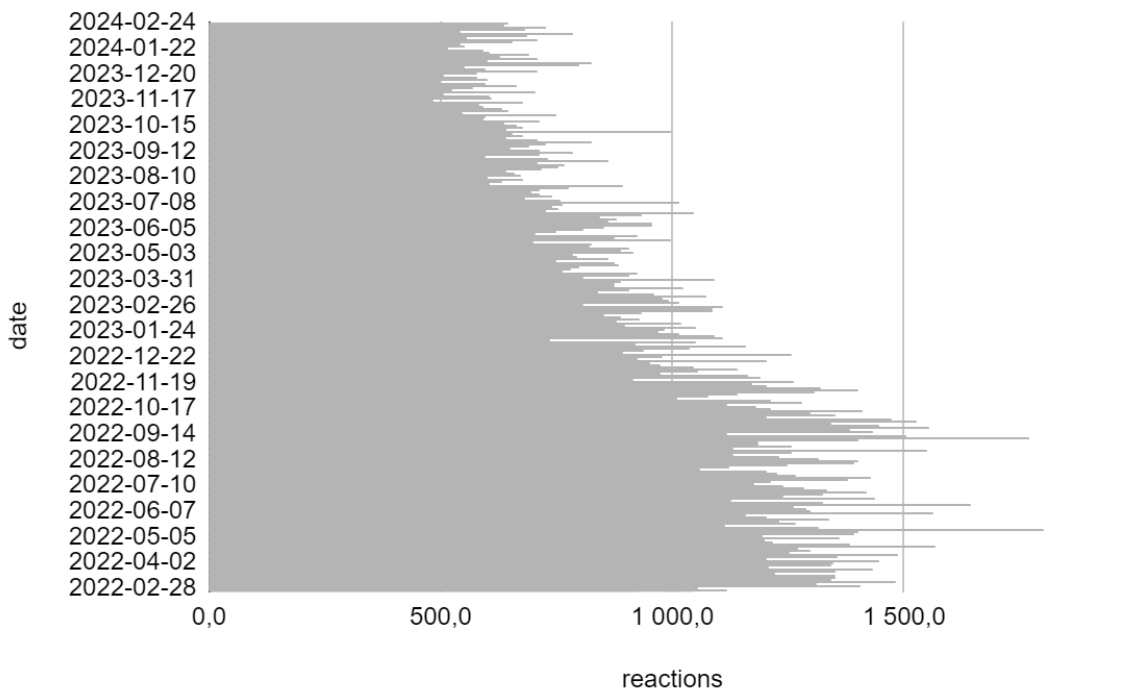
**Figure 3**

*Dynamics of Reactions per Message in Suspilne*



**Figure 4**

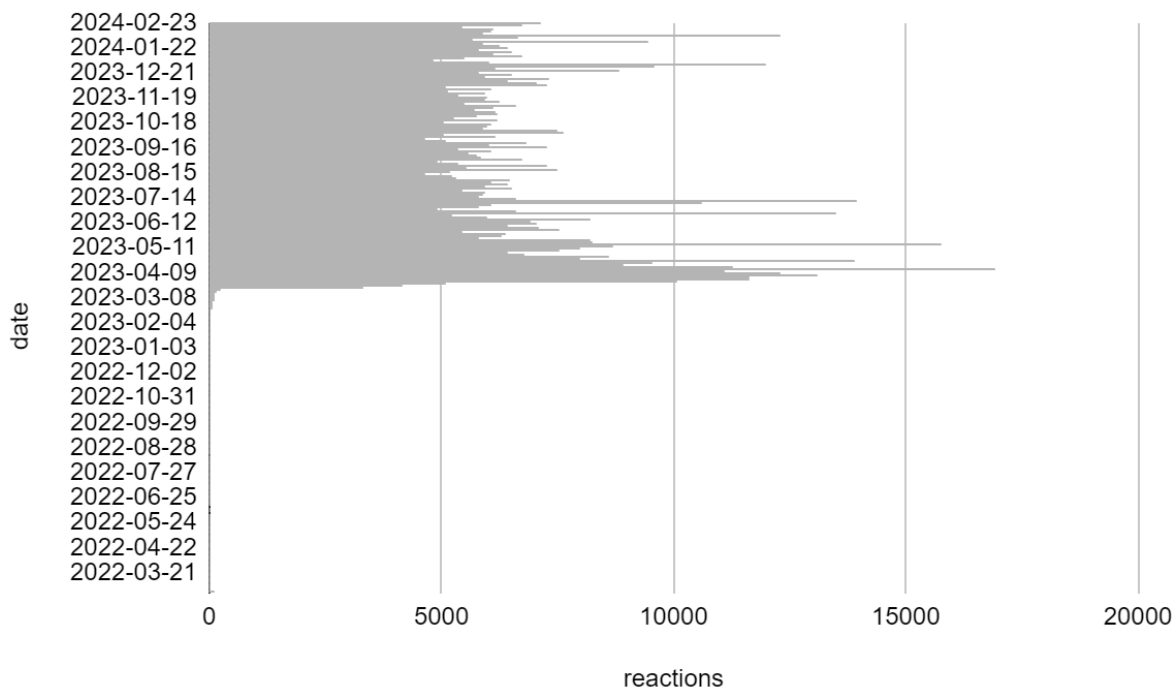
*Dynamics of Reactions per Message in Hromadske*



The charts above represent the changes in behaviors of the Ukrainian public. Namely, they emphasize that people become less engaged while reading media and news on current events. The decrease in this metric may serve as an objective limitation to comparing metrics on topics over different periods of time. The reason is that the organic decrease in engagement is challenging to consider in evaluating propaganda effectiveness. Figure 5 shows the dynamics in V\_Zelenskiy\_official and differs from the above figures.

**Figure 5**

*Dynamics of Reactions per Message in V\_Zelenskiy\_official*

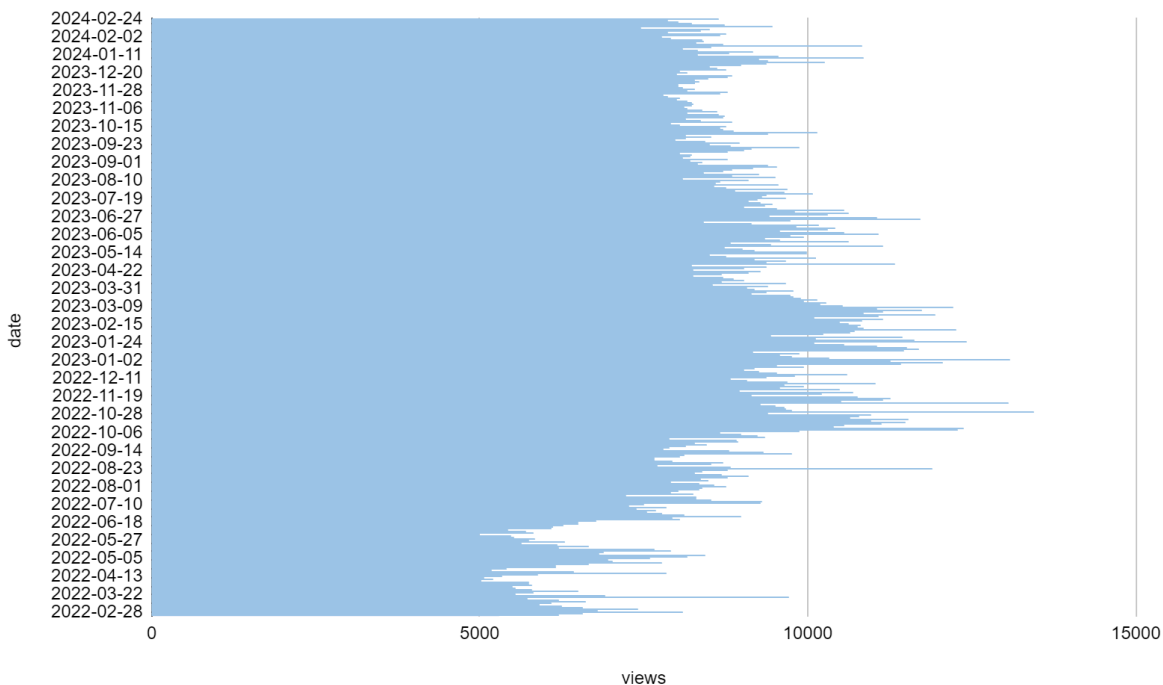


The chart reveals that the channel has allowed its followers to leave reactions to messages since March 2023. It imposes certain limitations on the calculation of engagement metrics to evaluate the effectiveness of preventive propaganda through this channel. However, they have been partially considered. The illustration does not have a vivid negative trend. The drop occurred in April 2023 and in June 2023 it leveled with values around the average of this metric for this channel.

Given the identified organic dynamics and negative decreasing engagement trend, the analysis of the dynamics of an additional metric is necessary. We have chosen views per message as the next metric to illustrate. Figure 6 below represents the growing awareness in the channel Ukrinform.

### **Figure 6**

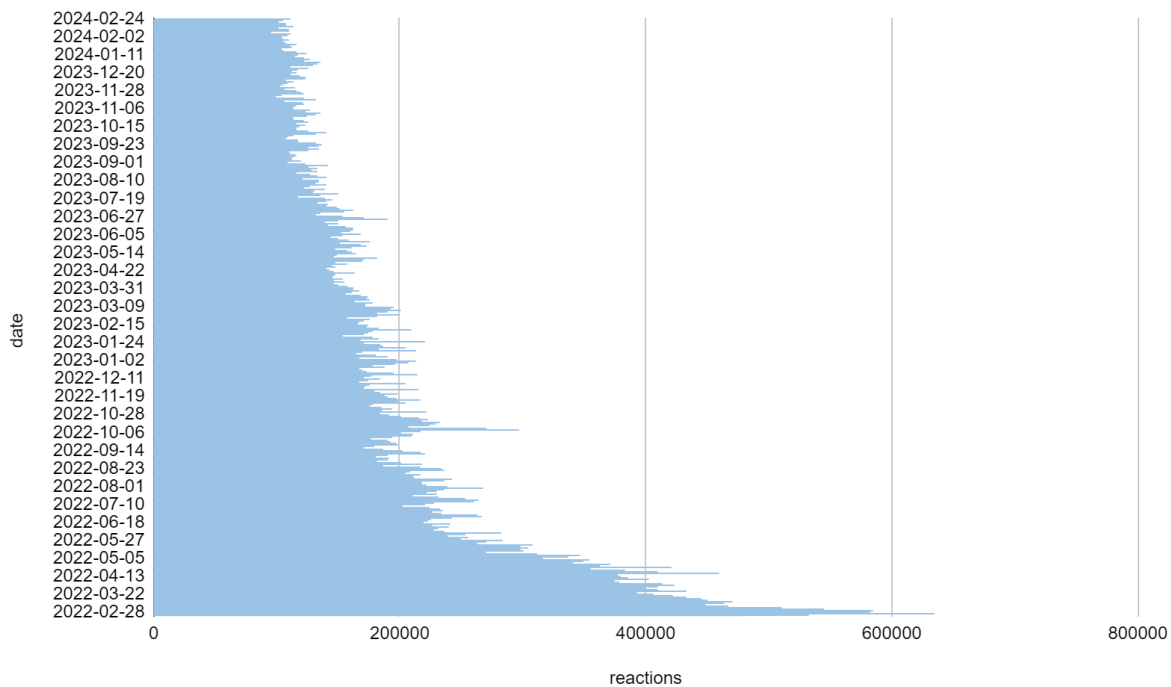
*Dynamics of Views per Message in Ukrinform*



The chart confirms the dynamics of the previous metric. Ukrinform enjoyed increased awareness and engagement levels between the late fall of 2022 and the winter of 2022-2023. It has avoided the negative decreasing trend. Still, other channels have experienced the downfall of the awareness metric as well. Figure 7, Figure 8, and Figure 9 represent that trend.

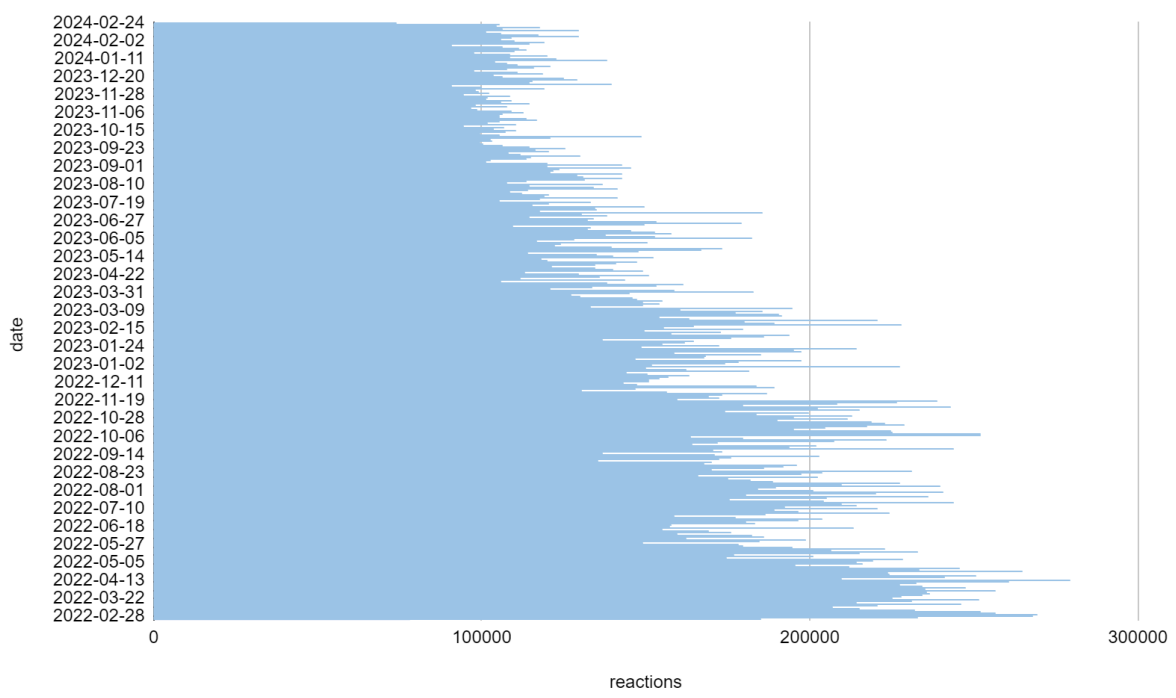
### **Figure 7**

*Dynamics of Views per Message in Ukraine Now*



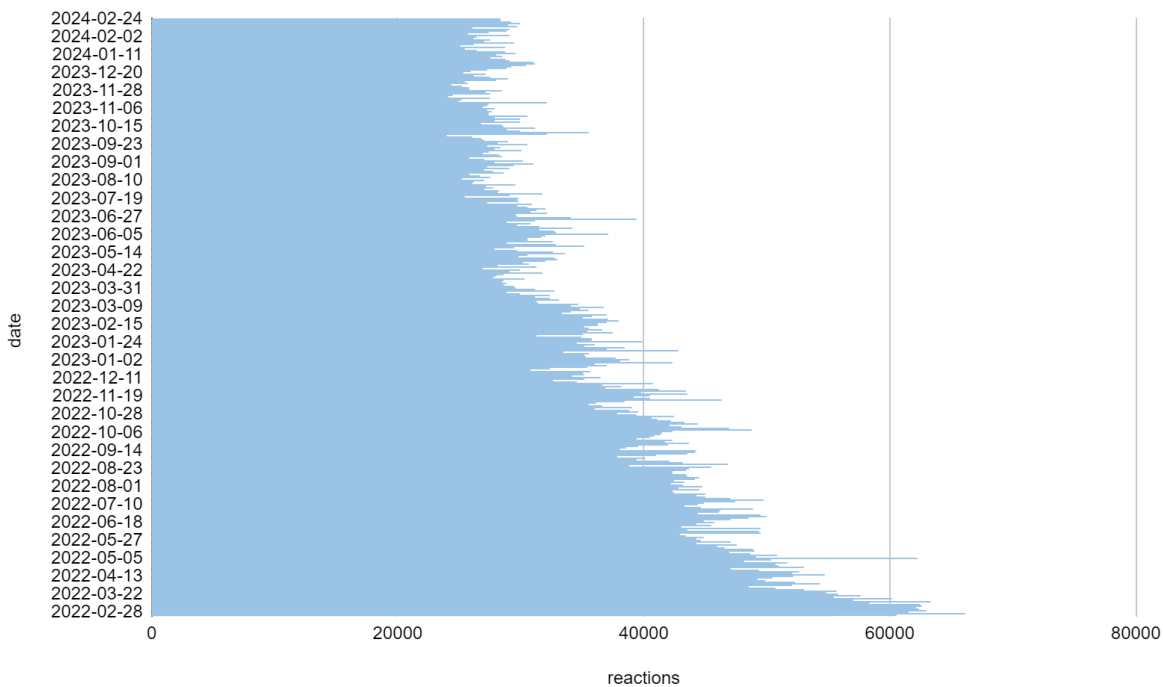
**Figure 8**

*Dynamics of Views per Message in Suspilne*



**Figure 9**

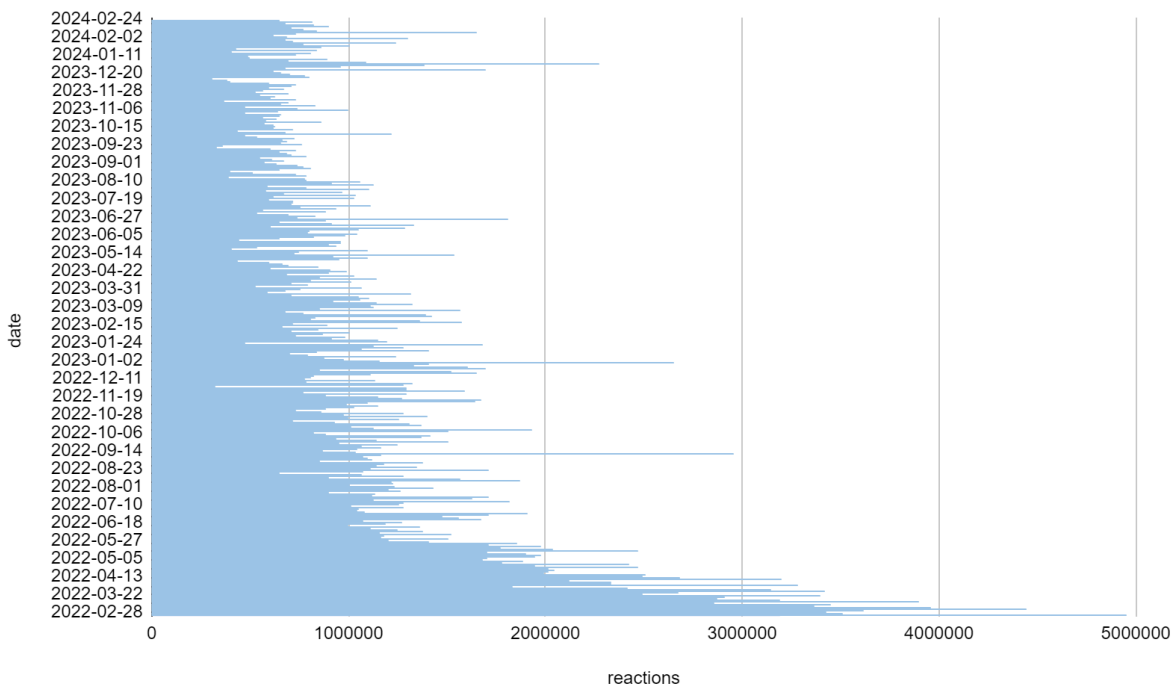
*Dynamics of Views per Message in Hromadske*



Ukraine Now has a gradual negative trend of decreasing engagement and awareness. In turn, Suspilne and Hromadske leveled up the drop in the mid-spring of 2023. Figure 10 illustrates the same changes. However, they occurred earlier.

**Figure 10**

*Dynamics of Views per Message in V\_Zelenskiy\_official*



The drop had been gradual since the beginning of the invasion in February 2022, but it leveled up in July 2022. The assumption is that Ukrinform has retained awareness and engagement levels because of its high message frequency. There is also a connection between the enabled reaction feature and the increase in both aspects.

The recent studies on the mental health and behaviors of Ukrainians after the first months and years of the war emphasize similar trends. For instance, Kurapov et al. (2023) mention that Ukrainians try to distance themselves from the war because of the increased levels of stress anxiety, and depression. Thus, they may refrain from daily monitoring of news in Telegram channels to avoid negative emotions. This avoidance coping strategy is confirmed by another study conducted by Chudzicka-Czupala et al. (2023). They compared the war's impact on the mental health of populations in Ukraine, Poland, and Taiwan and found that Ukrainians were more likely to resort to avoidance.

## 4.2. Content Analysis Results

Following the framework by Bardin, we have developed a table with the results. These enable the quantitative analysis of the content of the chosen topics in five channels. The frequency of messages reflects one of the KPIs of effective preventive propaganda. It should be sufficient to provide media coverage of an event and raise awareness of the public. Table 10 below features the message frequency metric by topic in each Telegram channel.

**Table 10**

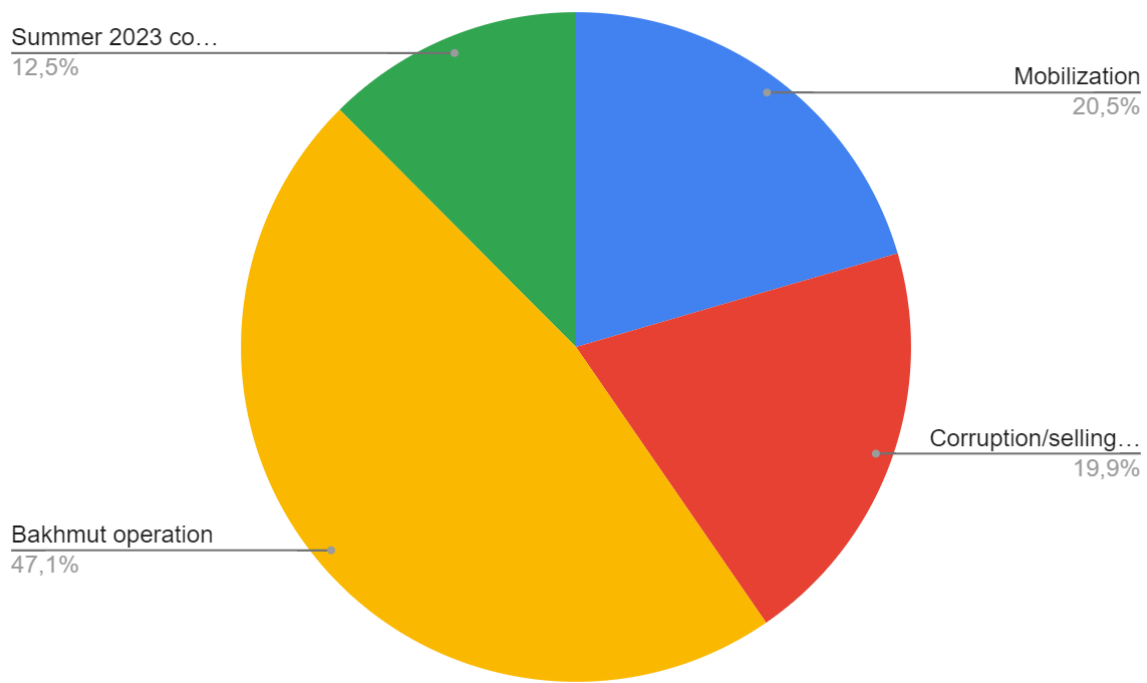
*Messages Frequency on Selected Topics in Each Telegram Channel*

	<b>Ukraine Now</b>	<b>Ukrinform</b>	<b>Suspilne</b>	<b>Hromadske</b>	<b>V Zelensky official</b>	Total mentions
<b>Mobilization</b>	111	202	122	191	15	641
<b>Corruption/selling Western weapons</b>	178	185	98	152	10	623
<b>Bakhmut operation</b>	559	486	124	250	56	1475
<b>Summer 2023 counter-offensive</b>	112	136	53	76	13	390
Total messages per channel	960	1009	397	669	94	
Total messages overall	3129					

The use of keywords specified in Table 7 allowed for calculating the number of messages covering the topic. The table shows that Ukrinform and Ukraine Now are leaders in the number of posts per topic. Suspilne and Hromadske are closer to the average in the group while V\_Zelensky\_official is far below the average with a tiny share. The potential reason is that the channel is an official and personal channel of a politician and cannot provide diverse information on the topic. Figure 11 and Figure 12 below visualize the distribution of messages by topics and by channels.

**Figure 11**

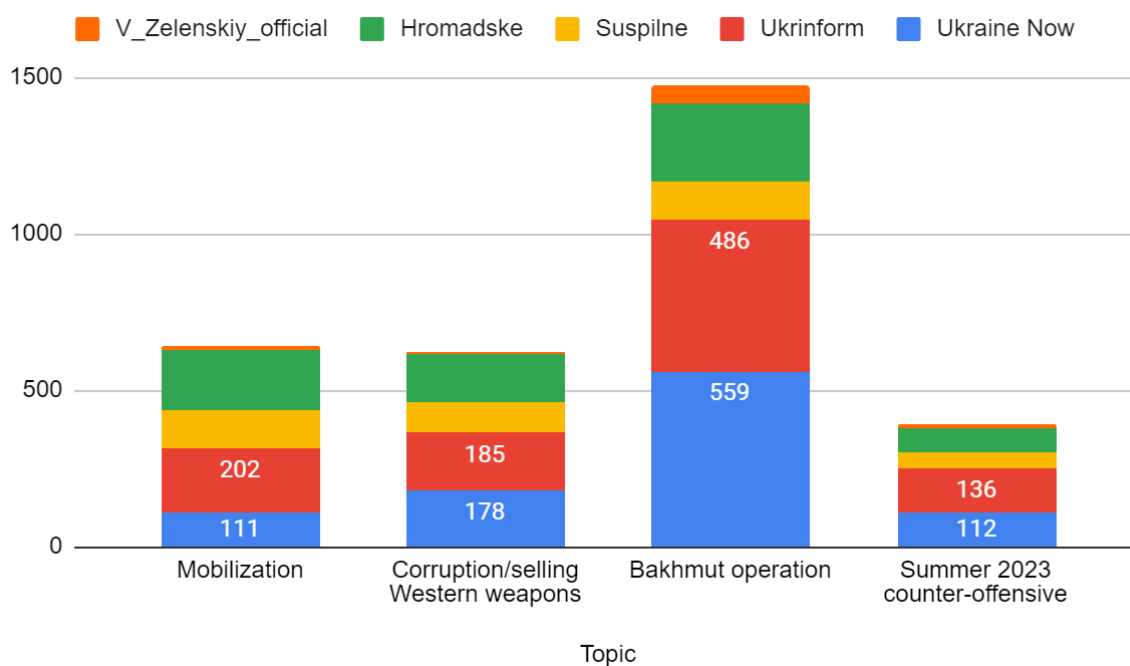
*Share of Messages by Topic*



*Note: the total of messages in each channel by topic have been calculated.*

**Figure 12**

*Distribution of Messages by Topics and Channels*



Since the distribution does not reflect the share of messages on topics out of the total number of messages over a specific period, an in-depth analysis of two topics with specified periods has been conducted. The findings are represented in Table 11, Table 12, Figure 13, and Figure 14 below.

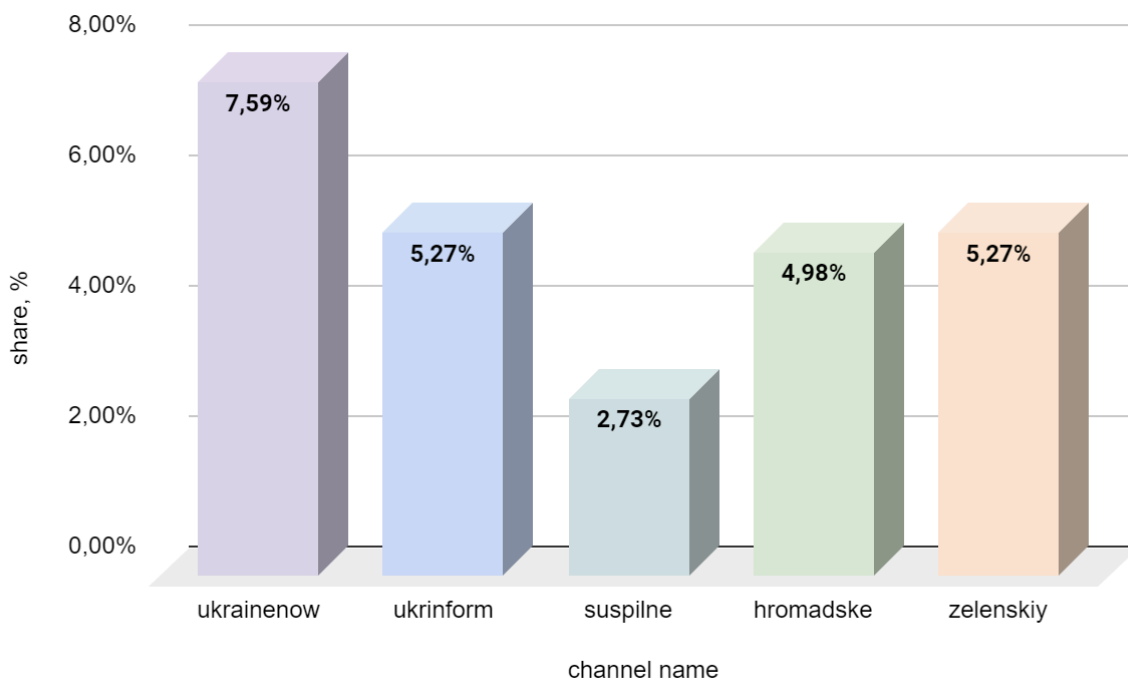
**Table 11**

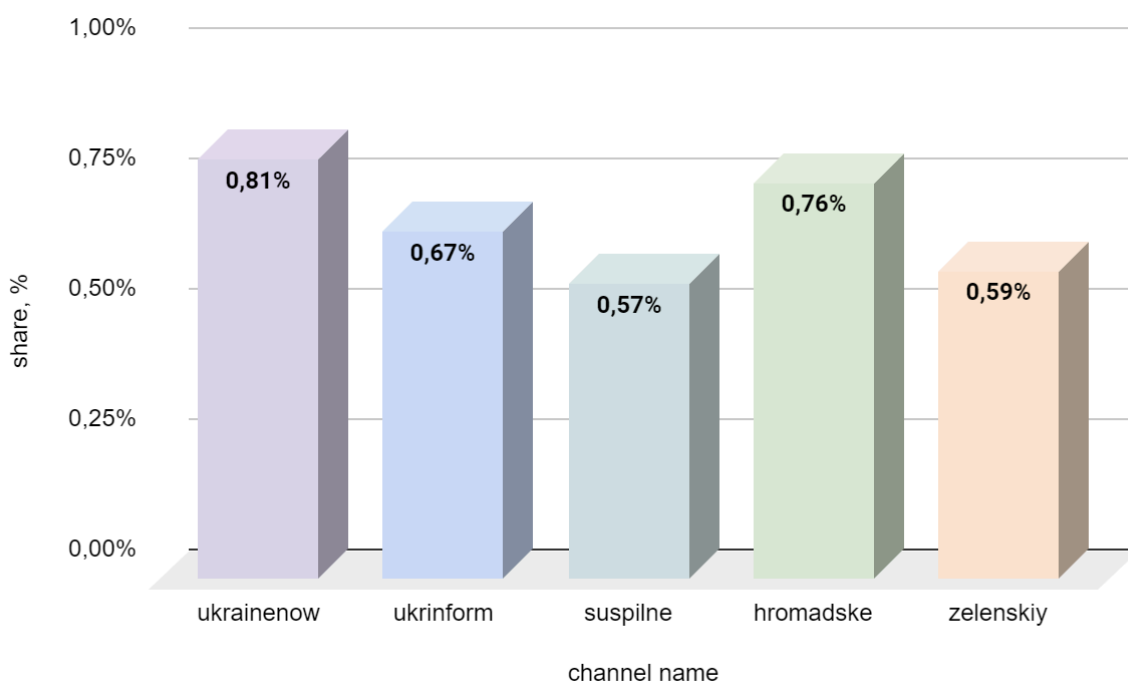
*Share of Messages on Bakhmut Operation*

channel name	total messages	messages on Bakhmut	share, %
ukrainenow	7 367	559	7,59%
ukrinform	9 223	486	5,27%
suspilne	4 537	124	2,73%
hromadske	5 016	250	4,98%
zelenskiy	1 062	56	5,27%

**Table 12***Share of Messages on Counter-Offensive*

channel name	total messages	messages on counter-offensive	share, %
ukrainenow	13 905	112	0,81%
ukrinform	20 379	136	0,67%
suspilne	9 351	53	0,57%
hromadske	9 987	76	0,76%
zelenskiy	2 199	13	0,59%

**Figure 13***Share of Messages on Bakhmut Operation by Channel***Figure 14***Share of Messages on Counter-Offensive by Channel*



The results from these tables and figures reflect a different situation. Ukraine Now and Ukrinform remain at the top with the higher share of messages on the selected propaganda topics. However, Hromadske shows higher results on one of the topics compared to Ukrinform. V\_Zelenskiy\_official also has a high share of messages on these topics, implying that the channel confirms the average coverage in the group. Its coverage of counter-the Bakhmut operation is similar to Ukrinform.

It is also crucial to compare two topics and the share of messages covering them. The counter-offensive coverage is up to ten times lower than the coverage of the Bakhmut topic. One of the potential explanations is related to the agenda-setting theory. It holds that the media shapes the public agenda (McCombs and Shaw, 1972). Considering the sensitivity of this topic and the decision to prevent public discussions of its probable success or failure, the government may have decided to prevent significant media coverage. Craisor-Constantin Ionita (2023) mentioned

that the Ukrainian government used a massive disinformation campaign to shift the focus from the expected counter-offensive direction in 2022 and achieved success in the Kharkiv operation. Thus, the low share messages on the counter-offensive in 2023 may be caused by the lack of political will to set the respective agenda.

### 4.3. Sentiment Analysis Results

This analysis is a logical continuation of Bardin's approach to content analysis. Since social media analysis and preliminary review of the selected Telegram channels have provided insights and understanding of the producers of messages, this part is essential to investigate how the audience receives and reacts to those messages. The quantifiable data from the Telegram channels allows for calculating the necessary metrics to fill the accounting matrix (table) presented in the previous section. Table 13 features the blend of the qualitative and quantitative analysis results in a structured form.

**Table 13**

*Accounting Matrix with Results*

№	Name of topics	Name of Telegram channel															total topic mentions from all channels	total reactions of codifications				
		Ukraine Now			Ukrinform			Suspilne			Hromadske			V Zelensky official				+	0	-		
		+	0	-	+	0	-	+	0	-	+	0	-	+	0	-						
1	Mobilization	70	1	40	13	2		68	1	43	90	5	47	1	1	0	641	379	9	16	6	6
2	Corruption / selling Western weapons	130	1	47	12	2		75	8	15	92	2	35	1	0	0	623	433	6	12	2	8
3	Bakhmut	336	3	22	31	1	160	81	2	41	14	1	90	4	1	7	1475	923	3	51	3	51

operation			0	0	6					8	2		8				4	8	
4 Summer 2023 counter-offensive	75	2	35	97	0	19	40	3	10	59	6	11	2	0	1	390	283	1	76
total reactions on channels	611	7	2	34	67	9	26	2	10	38	9	18	8	4	2	8			
total messages on channels	960		1009			397			669			94							
total number of overall messages	3129																		

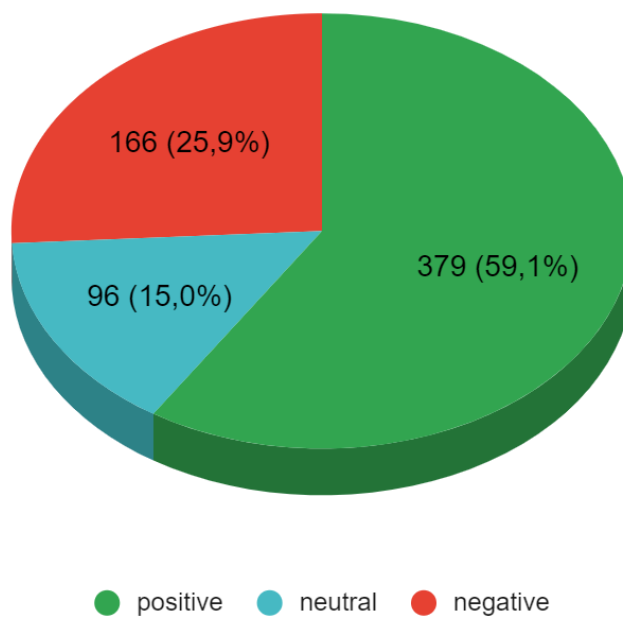
*Note: this matrix features the number of messages with the largest number of emojis pertaining to a certain emotional group. If a message has more positive emoji reactions, it is counted as positive etc. This method was applied to aggregate and compare the number of emotional reactions of followers.*

The findings from this table show that the majority of emoji reaction messages for each topic and each channel are positive. V\_Zelenskiy\_official has the lowest number of messages with the majority of negative reactions. The share of mostly negatively perceived messages in other channels on the selected topics varies between 25% and 30%. The close analysis of the distribution by topics shows that Bakmut attracts either negative or positive emoji reactions. It implies that news and messages on this topic are sensitive to the audience. Besides, the share of negatively perceived messages on this topic is the highest (more than 35%). Figure 15, Figure

16, and Figure 17 present a detailed look at the distribution of emoji reaction types by message per topic.

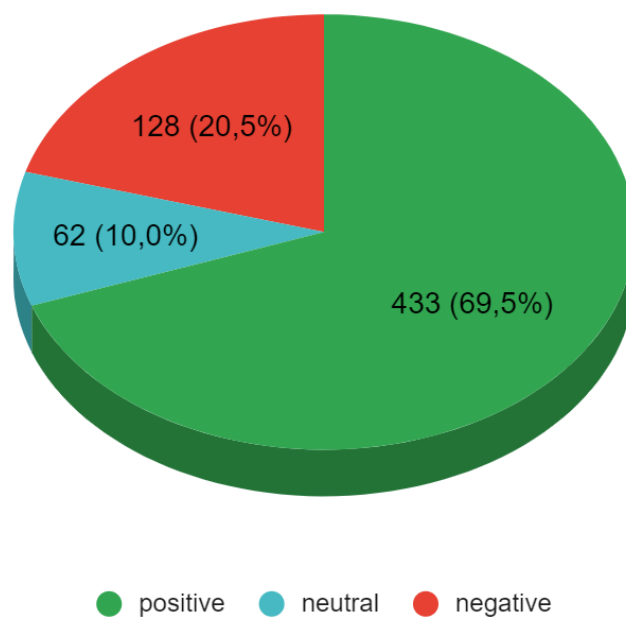
**Figure 15**

*Total Reactions of Codifications on Mobilization*



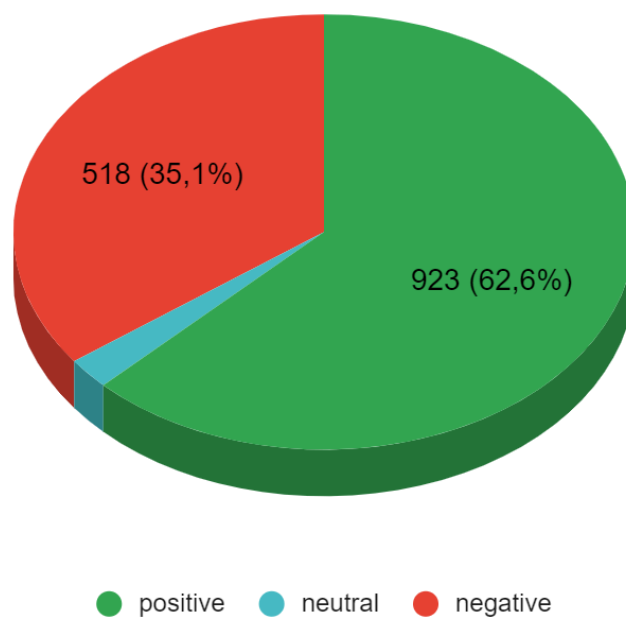
**Figure 16**

*Total Reactions of Codifications on Corruption/Selling Western Weapons*



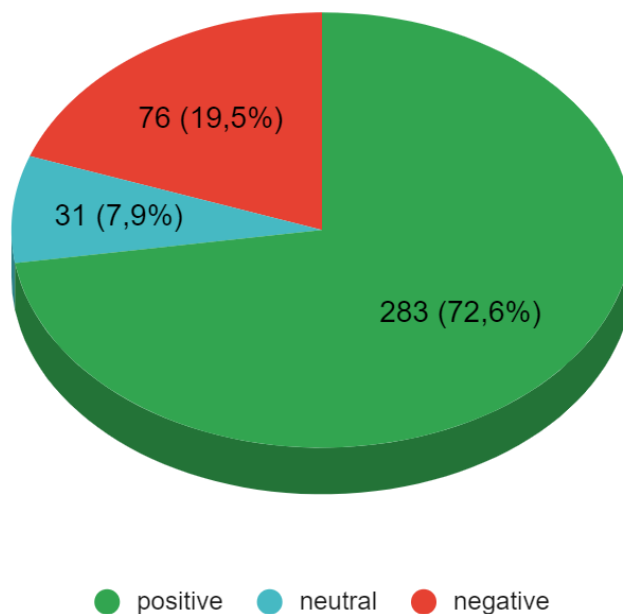
**Figure 17**

*Total Reactions of Codifications on Bakhmut Operation*



**Figure 18**

*Total Reactions of Codifications on Counter-Offensive*



These charts show that the selected topics are perceived mostly positively in Telegram channels. Thus, the engagement and interaction outcomes are satisfactory. Counter-offensive and corruption topics have relatively similar shares that can be explained by the potential optimistic expectations of the audience. The counter-offensive entails many emotions and feelings such as hope, faith, and optimism. News about investigating and fighting corruption also attracts positive reactions. The optimistic sentiments of the Ukrainians are reflected in recent polls and studies. For instance, Matsiyevsky (2023) notes that “the share of surveyed Ukrainians who believe that the country will emerge victorious consistently surpasses 90 percent”. In turn, mobilization has a higher number of negatively perceived messages and the lowest number of positively perceived posts. It reflects the perceptions and sentiments of the public following those channels. This topic is more debatable and more likely to have opponents and critics in society.

The Bakhmut operation has the highest share of negatively perceived messages and the lowest share of neutral messages. It implies that the topic evokes emotional reactions from the audience. Besides, the previous findings on the frequency of messages covering this category confirm a higher interest and response rate. Counter-offensive features the lowest number of messages with emotional reactions. It may be consistent with the negative trend of decreasing awareness and engagement rates. The social media analysis has shown that the drop stopped and leveled up in the mid-spring of 2023. The observed period for the counter-offensive topic encompasses 2023 while the coverage of Bakhmut has been studied for the period before the drop. The propaganda effectiveness metrics are needed to compare with the average values and infer conclusions on the outcomes.

#### **4.4. Measurement of Preventive Propaganda Effectiveness**

The effectiveness of propaganda messages in shaping public perceptions is based on three key metrics: views per message, reactions per message, and views-to-reactions ratio. They reflect the engagement dynamics and differences on separate topics. The general analysis of Telegram channels in the first part of this section provides an overview of the average values of these indicators over two years of the collected data since the invasion. Calculating the same metrics for each channel per topic allows for comparing the results and determining in which instance preventive propaganda works with satisfactory outcomes. Table 14 illustrates the percentage difference between the average views per message over the observed period and the views per message for a selected topic.

#### **Table 14**

*% Change between Views per Message Averages and Views per Message by Topic and*

*Channel*

	Ukraine Now		Ukrinform		Suspilne		Hromadske		V Zelensky official	
	<i>metric value</i>	<i>change from average</i>	<i>metric value</i>	<i>change from average</i>	<i>metric value</i>	<i>change from average</i>	<i>metric value</i>	<i>change from average</i>	<i>metric value</i>	<i>change from average</i>
<b>Mobilization</b>	183 537	-18,9 %	9 189	12,1%	193 218	22,3%	31 522	-17,8 %	881 589	-10,8 %
<b>Corruption/selling Western weapons</b>	161 223	-28,7 %	8 729	6,5%	136 225	-13,8%	30 634	-20,1 %	567 203	-42,6 %
<b>Bakhmut operation</b>	164 598	-3,2%	9 801	-0,3%	200 346	34,1%	32 304	-2,2%	1 662 501	146,9 %
<b>Summer 2023 counter-offensive</b>	147 105	3,0%	9 306	1,3%	181 338	42,0%	29 941	0,0%	425 360	-31,2 %
<b>Average over the period</b>	<b>226 184</b>		<b>8 197</b>		<b>158 029</b>		<b>38 351</b>		<b>988 029</b>	
<b>Average over 2023</b>	<b>142 828</b>		<b>9 190</b>		<b>127 661</b>		<b>29 938</b>		<b>618 457</b>	
<b>Average over December, 2022 - May, 2023</b>	<b>169 984</b>		<b>9 832</b>		<b>149 363</b>		<b>33 026</b>		<b>673 334</b>	

The calculations of this metric show that the Bakhmut operation and counter-offensive have higher values compared to the average. Namely, the percentage difference in views per message in four channels covering the counter-offensive reflects the increased awareness.

Bakhmut has also attracted an increase in views, but in three channels - Hromadske, Ukrinform, and Ukraine Now it has remained relatively unchanged. Mobilization and corruption do not show

spikes in awareness rates. They are mostly lower compared to the averages over the observed period. Table 15 provides findings on reactions per message.

**Table 15**

*% Change between Reactions per Message Averages and Reactions per Message by Topic*

*and Channel*

	Ukraine Now		Ukrinform		Suspilne		Hromadske		V Zelensky official	
	<i>metric value</i>	<i>change from average</i>	<i>metric value</i>	<i>change from average</i>	<i>metric value</i>	<i>change from average</i>	<i>metric value</i>	<i>change from average</i>	<i>metric value</i>	<i>change from average</i>
<b>Mobilization</b>	2 636	-13,3%	133	-23,3%	1 060	-10,2%	630	-31,8%	6 107	-1,1%
<b>Corruption/selling Western weapons</b>	2 548	-16,2%	139	-19,8%	874	-25,9%	610	-34,0%	4 531	-26,6%
<b>Bakhmut operation</b>	3 290	-0,5%	254	22,8%	1 330	14,8%	869	1,8%	8 328	10,7%
<b>Summer 2023 counter-offensive</b>	2 904	7,4%	192	0,5%	1 055	5,0%	733	1,3%	5 776	-7,0%
<b>Average over two years</b>	<b>3 040</b>		<b>173</b>		<b>1 180</b>		<b>923</b>		<b>6 172</b>	
<b>Average over 2023</b>	<b>2 704</b>		<b>191</b>		<b>1 005</b>		<b>723</b>		<b>6 211</b>	
<b>Average over December, 2022 - May, 2023</b>	<b>3 307</b>		<b>207</b>		<b>1 159</b>		<b>854</b>		<b>7 520</b>	

This table illustrates the changes in the engagement metric on the selected topics. The results are similar to those in the previous table. Reactions per message for the Bakhmut

operation and counter-offensive are higher in four channels compared to their averages over the observed periods. It implies that the audience is more engaged with the posts on those topics and preventive propaganda works effectively. Nevertheless, the engagement dynamics on mobilization and corruption are negative. The averages are higher in every channel for these two topics. Two tables form a pattern that allows inferring conclusions on the propaganda effectiveness by topic. Still, the third final metric is necessary to confirm these observations.

**Table 16**

*% Change between Reactions/Views Averages and Reactions/Views by Topic and Channel*

	Ukraine Now		Ukrinform		Suspilne		Hromadske		V Zelensky official	
	<i>metric value</i>	<i>change from average</i>	<i>metric value</i>	<i>change from average</i>	<i>metric value</i>	<i>change from average</i>	<i>metric value</i>	<i>change from average</i>	<i>metric value</i>	<i>change from average</i>
<b>Mobilization</b>	1,4%	7,2%	1,4%	-27,4%	0,5%	-26,9%	2,0%	-17,1%	0,7%	-30,0%
<b>Corruption/ selling Western weapons</b>	1,6%	18,0%	1,6%	-20,1%	0,6%	-14,5%	2,0%	-17,4%	0,8%	-19,3%
<b>Bakhmut operation</b>	2,0%	2,7%	2,6%	23,2%	0,7%	-14,4%	2,7%	4,0%	0,5%	-55,1%
<b>Summer 2023 counter- offensive</b>	2,0%	4,3%	2,1%	-0,8%	0,6%	-26,0%	2,4%	1,3%	1,4%	35,2%
<b>Average over the period</b>	<b>1,3%</b>		<b>2,0%</b>		<b>0,8%</b>		<b>2,4%</b>		<b>1,0%</b>	
<b>Average over 2023</b>	<b>1,9%</b>		<b>2,1%</b>		<b>0,8%</b>		<b>2,4%</b>		<b>1,0%</b>	
<b>Average over December, 2022 - May, 2023</b>	<b>1,9%</b>		<b>2,1%</b>		<b>0,8%</b>		<b>2,6%</b>		<b>1,1%</b>	

The results on this metric support the already identified pattern with two topics having effective media coverage. The higher engagement rate on these topics shows that preventive propaganda by informing the audience works effectively. Still, it fails to engage people on general topics observed over the whole period. Mobilization and corruption have been covered by Telegram channels throughout the war with spikes in interest when scandal news and events occur.

The analysis of three metrics by channel reveals that Ukrinform and Suspilne have higher views per message on three topics, while the other three channels have this metric higher on one topic. In terms of reactions per message, Ukrinform, Suspilne, and Hromadske stand out, with V\_Zelenskiy\_official and Ukraine Now having only one topic with a higher metric value compared to the averages. Though Ukraine Now has low results on the first two metrics, it is a leader in the reactions/views ratio dynamics, with all topics having positive percentage difference results. Hromadske has this difference positive on two topics, while Ukrinform and V\_Zelenskiy\_official have only one positive difference. The engagement dynamics represented by this metric in Suspilne are negative. In other words, its average value is higher. Thus, the channel is not sufficiently effective in preventive propaganda on any of the chosen topics.

The suggested indicators to evaluate the effectiveness of propaganda are original. They have not been used before in this context. The metrics on the data from Telegram channels are a unique opportunity to get quantifiable and credible data with little to no quality issues. The findings are based on the calculations described in detail in the previous section. Since only a few studies exist that evaluate the effectiveness of propaganda, it is challenging to determine whether the presented approach is consistent with the recognized practices and procedures in the

field. The reviewed research papers employ different methods that have many limitations. This methodology and suggested metrics constitute a data-based alternative to quantifying propaganda effectiveness.

## **5. Discussion**

### **5.1. Interpretation of Findings**

The study aims to research the preventive propaganda phenomenon and its application in Ukraine during the war with Russia. The findings from the preliminary review of the current and relevant literature demonstrate the massive and intensive employment of propaganda tools and techniques to influence the public in Ukraine. These insights have shaped and narrowed down the research, emphasizing the importance of investigating Telegram as an emerging popular social media platform in Ukraine. It was determined that preventive propaganda narratives and ideas could be spread through Telegram channels. They use news publications in the form of messages to promote the official position and interpretation of events on various topics within the national security interests.

The literature review of preventive propaganda in Ukraine reveals that the country less frequently engages in producing fake news and black propaganda against Russia. In turn, the goal is to follow moral principles to get public support (Ptaszek, Yuskiv, & Khomych, 2023). Thus, the paper focuses on the topics of events and activities related to the internal social, political, and economic life in Ukraine. They are covered in the selected Telegram channels with diverse frequency and effectiveness. The findings provide insights into those topics and can describe critical aspects and characteristics of preventive propaganda in Ukraine. After framing

the methodology with the presented analysis types and approaches four hypotheses have been developed. The interpretations of findings will help support or refute those assumptions.

### **Hypothesis 1**

*The target audience responds mostly positively and supportively to messages on the selected topics.*

The findings illustrate that there are more messages with positive reactions on each of the topics. The analysis of emoji reactions with the use of the prepared dictionary helps to support the hypothesis emphasizing the overall positive reaction and engagement. The share of positively perceived messages ranges between 60% and 73%, constituting an average two-thirds of the total. According to Pratkanis and Aronson (2001), propaganda should evoke strong emotions to be effective. Since the neutrally perceived messages have the lowest share in each of the selected topics, preventive propaganda is effective.

### **Hypothesis 2**

*The followers number does not determine the frequency of messages on the selected topics.*

Content analysis following Bardin's approach provides the comparison of the frequency of coverage of each topic by channels. Table 10 clearly supports the assumption because the channel with the lowest number of followers - Ukrinform has the highest frequency. On the contrary, V\_Zelensky\_official with the most followers has the lowest frequency results. Similarly, other channels have different ranking positions that do not correlate with the number of their followers. Van Eerten et al. (2017) claim that frequency is a necessary aspect of propaganda determining its effectiveness. Thus, the number of followers does not imply that the communication with the audience entails desired results.

### **Hypothesis 3**

*The audience reaction is higher on “hot propaganda topics” compared to the average reaction over the studied period.*

The findings on the audience reaction with the use of three metrics are contradictory. They show that the two topics are hot and have higher awareness and engagement rates. However, mobilization and corruption have become tedious and less interesting. Views per message, reactions per message, and reactions/views ratio are higher on the Bakhmut- and counter-offensive-related messages. The comparison with the averages is a crucial aspect allowing one to determine the differences and make informed conclusions. Thus, this hypothesis is partially confirmed. Findings emphasize the lack of interest in two of the selected topics and the need to specify the period under review instead of referring to a larger span of time like two years in this study. Another interpretation of these results is that preventive propaganda may not effectively cover every significant topic. The public is either ignorant or less engaged with a contradictory reaction to the news disseminated by the government or news Telegram channels. Hence, in-depth research into how the effectively covered topics are presented to the public can provide best practices and recommendations to improve the coverage of topics with worse results.

### **Hypothesis 4**

*Preventive propaganda effectiveness is significant on each selected topic.*

The findings refute this hypothesis because they vary depending on the channel and topic. Namely, mobilization and corruption enjoy lower engagement and awareness values compared to the averages over the observed period. It implies that preventive propaganda may not be effective

on each topic. Its effectiveness varies and requires a close analysis of the dynamics and public response. Reactions are less frequent and intensive on some topics. An alternative approach is to determine another point of comparison or methodology for the topic with engagement and awareness results below the average. Still, the frequency results conform to the average within the group of topics for mobilization and corruption. The other aspects and determinants of effectiveness show the opposite.

The sentiment analysis has provided insights into the general reactions of the Ukrainian public. They are mostly positive as discussed above in supporting Hypothesis 1. The positive reaction of the target audience conforms to the argument of Alberti & Di Serio (2020) regarding the use of Telegram as a social media marketing tool in Ukraine. Besides, it also shows that preventive propaganda in Ukraine is mostly white according to the classification presented in the literature review (Gray and Martin, 2007). The positive reactions prevail but the emoji reactions reflect various emotions that could be further studied with a complex classification.

The paper presents another insight from social media analysis that describes the public behaviors and overall dynamics of awareness and engagement. The changes in reactions per message and views per message over two years illustrate that Ukrainians have become tired of the war. It has been argued that they experience mental health issues and face stress, anxiety, and depression. Consuming information on debatable topics and war news is difficult psychologically. The cognitive dissonance theory may partially explain the moral exhaustion of people because propaganda is often connected with discomfort (Festinger, 1957). Eventually, they are likely to refrain from daily Telegram use to get news and information on the current war. Figures 1-10 emphasize those dynamics that are vividly noticed in Ukraine Now, Suspilne, and

Hromadske. It implies that using Telegram as a tool to employ preventive propaganda faces limitations. This tool effectiveness can decrease because of the general social trend. With the aim to maintain the public awareness, new engagement strategies and methods may be considered and applied immediately in the context of informational warfare.

Another finding that should be considered and properly interpreted is the lack of coverage as a part of preventive propaganda on counter-offensive in 2023. It is closely related to the agenda-setting theory. McCombs and Shaw (1972) claimed that the government may determine the topics that should be discussed in the informational space. Given that the counter-offensive operation was not supposed to attract much media attention, the government-related and professional journalist Telegram channels refrained from covering the topic and making the audience prone to discuss it actively. This interpretation holds that preventive propaganda may lack or miss topics, themes, and media coverage of events if it is necessary due to national security interests or crucial political or military reasons. Nonetheless, a careful injection of primary news and information is necessary to keep the audience aware and prevent them from consuming information from misleading sources.

## **5.2. Lessons Learned and General Principles**

### **5.2.1. Learned Lessons and General Principles to Address Propaganda**

The findings from the literature review and study provide insights and lessons to inform the principles of employing preventive propaganda. Overall, propagandist narratives during the war differed and were disseminated via various communication means. In the context of the war between Ukraine and Russia, social media has served a central role in the informational warfare between the countries. Given the rising media and digital literacy in these countries, social media

networks and platforms have become crucial means of communicating propagandist messages. Addressing propaganda also requires using the same tools and techniques. These conclusions are not limited to the context and this war. They are applicable to other societies and countries because of the global digitalization trend and improved access to the Internet, cutting-edge technologies, and electronic devices. Hence, one should consider the popular means of communication and key social networks to focus their attention and develop effective informational campaigns.

The literature review features the distinctions and similarities between various options to combat propaganda. These include counter-propaganda, preventive propaganda, prebunking, and debunking. The general approach to addressing propaganda depends on the strategy and context. The strategy can be proactive and reactive. Reactive tools include counter-propaganda and debunking. These are applicable when disinformation and misinformation campaigns have already been launched and affected the audience. Debunking serves to refute the false information and fake news immediately after their dissemination while counter-propaganda is a well-planned and continuous campaign to discredit the original propaganda source. They are necessary to cope with the consequences and minimize the negative effects.

However, the study focuses more on proactive methods, including prebunking and preventive propaganda. It is crucial to understand the differences between these approaches and apply them accordingly. Both methods are related to the inoculation theory. It suggests that “exposing people to a weakened version of an argument increases their resistance to that argument in the future” (Grace and Liang, 2023). In this regard, prebunking aims to equip people with skills, knowledge, and literacy to resist propaganda and informational attacks. It helps

decrease the likelihood of people believing in fake news. Roozenbeek and van der Linden (2019) demonstrate the effectiveness of prebunking in increasing resistance to subsequent misinformation. Prebunking includes recognizing and rejecting false information.

Preventive propaganda is a more complicated phenomenon. It inoculates the public against propagandist narratives and equips it with relevant information and news on topics of high interest that are intensively discussed in society. The government's efforts in implementing preventive propaganda should be based on the principles of national unity, cultural identity and shared values and goals. Ukraine is an excellent example of a country with effective and successful preventive propaganda. The reason is that the government has focused on the things that unite Ukrainians and determine their national and cultural identity. They refer to historical facts, national achievements, and cultural differences. These principles determine the Ukrainian approach to preventive propaganda from the ideology side.

The primary lessons derived from the findings of this paper are related to other characteristics. It is instrumental to regularly track the dynamics and changes in the audience's behavior regarding their use of social media as sources of information. The Ukrainian government managed to recognize the rising role of Telegram as a means of communication and spread of information and employed it as one of the preventive propaganda tools. Various official Telegram channels of governmental organizations, agencies, and officials are available for the Ukrainian people and spread credible and trustworthy information on social, political, economic, and war-related topics. Besides, the government has launched a media-branding campaign referred to as Ukraine Now. It has Telegram channels in different languages and also disseminates reliable information. Ukrinform is another example of a state agency to inform the

public about the most important and recent news. Therefore, countries should provide their populations with convenient tools and opportunities to get first-hand information from reliable and official sources.

The efforts to counter propaganda should be regular and effective. The best indicators of preventive propaganda effectiveness are grouped into two types: awareness and engagement indicators (Van Eerten et al., 2017). The findings in this paper demonstrate that frequency is crucial for keeping the audience interested. Still, integrating new features and allowing the audience to interact with the material is essential. Ukrinform turned on the emoji reactions in its Telegram channel and maintained a high message frequency rate. It has allowed the channel to retain its audience and maintain high levels of engagement and awareness. An important insight is that the channel size does not guarantee high awareness and engagement rates.

The interpretation of results provides lessons for other countries that should be considered in crafting their preventive propaganda strategies. For instance, some topics may be omitted and the media coverage should be moderated depending on the relevant national security interests and dynamics. Another lesson is that the audience should have an option to interact with the messages or publications. Emoji reactions provide a great opportunity to analyze the effectiveness of preventive propaganda. Namely, they demonstrate the perception of separate messages on certain important topics. Emojis can be divided into negative, positive, or neutral but they reflect more sophisticated and diverse emotions and feelings. This tool has the potential to better understand the audience's sentiments. The metrics based on emoji reactions also represent the engagement level and dynamics. They can be compared to the averages over a certain period as done in this study by also used with other points of comparison. Emoji reactions

show how people generally react to a message. The example of Ukraine shows that the public mostly reacts positively. The majority of positive emoji reactions will increase source credibility and group thinking may occur. However, more research in this direction is necessary to confirm these interpretations.

### **5.2.2. Insights from Previous Research to Derive Lessons and General Principles**

The recent studies show that social media has gained a comparatively similar or even more powerful scope of support lately because it promotes public participation and faster information sharing. At the same time, social media may be deemed unreliable, especially if it is retranslated into the official platforms. Due to the sensitivity and lack of censorship on most social media platforms, propaganda can garner irreversible power and spread false information, which necessitates its careful use.

The legacy of the previous literature contributions, combined with the results of the following research, demonstrate that propaganda is one of the most powerful tools for influencing the international community and Ukrainians, as is evident in the recent military, political, and cultural rivalry. Made to influence public opinion, propaganda is spread through traditional and nontraditional media sources (Connelly et al., 2021) and social media as it becomes a leading communication tool for many individuals (Christensen & Khalil, 2021). Propaganda applies the principles of repetition, emotional appeal, and simplification as the basics that make it so influential, even for the users who might be typically more risk-averse. Therefore, Russia's propaganda aims at eliminating global support for Ukraine and show it as a false country not deserving of global public support (Kuzio, 2019). To make Ukrainians less resistant and more open to the idea of giving up in the current war, Russia's propaganda also spreads

feelings of abandonment and hopelessness, often even making Ukrainians engage in conflicts with the ally nations.

Contrastingly, the goal of preventive propaganda, especially the one Ukraine engages in, is to address the potential threats and disruption of thinking among Ukrainians and the international community to make them more resistant to possible destructive narratives. Literature has illustrated that preventive propaganda uses relatively similar techniques to propaganda and strongly employs appeals to logic to persuade their audience about the narrative, which seems suitable. However, there is a relative lack of evidence on how propaganda can be countered ethically. Bjola (2018) notes that it should be based on accountability and transparency that inform the users about the trustworthiness of reliable sources. However, some sources question the adequacy and efficiency of this solution, despite its moral focus. As it was mentioned earlier, asking social media users to be more conscious and informed only fuels distrust and can be seen as a failure of counter-propaganda and preventive propaganda (Twomey et al., 2023). Instead, the data and results of this examination show that preventive propaganda would be more practical due to its ability to educate various audiences about the key messages and make them more resilient when the new triggering information from the conflicting agent (Russia, in this case) enters the audience.

The diversification of channels of communication that allow Russia and Ukraine to engage in propaganda and preventive propaganda continues today to rival the audiences that matter to their messages. As evident from the literature and this study's findings, Telegram has become one of the central digital platforms for rivalry and competing for the audience's attention, and while it is unclear to what extent users consume propaganda daily, the existing literature shows

that it is significant. Aside from popular media sources like Sputnik and Russia Today, Russia regularly creates multiple channels on Telegram to spread disinformation and biased reporting portraying Russia in a positive light while undermining its adversaries. Kiforchuk (2023) comments that the beginning of the full-scale Russian invasion in 2022 began with social media narratives, especially in Telegram channels, to promote the notion of the “Russian world” and its appeal to Ukrainians. Many Russian platforms demonize Ukraine and glorify Russia, even arguing that the Russian invaders were the saviors of the Ukrainian nation in contrast to Ukraine’s official government, which is said to have attacked its civilians. Pro-Kremlin propaganda was found to have long-lasting effects on many Telegram users in Ukrainian, Russian, Romanian, French, and English (Solopova et al., 2023). Therefore, it has become evident that Russia uses Telegram as one of its most popular tools for myth-making.

Responding to Russian propaganda, Ukraine actively engages in social media prevention and counter-propaganda to counter misinformation and reach out to international and domestic viewers and listeners. Telegram is not the only source of its propaganda efforts, though, because Ukraine’s focus on official resources allows it to present more visible and official narratives across such platforms as Facebook, Twitter, YouTube, and others (Zasiekin et al., 2022). Ukraine creates personal and informative messages that are tailored to different audiences, specifically trying to evoke a desire to support Ukraine as a morally righteous party in the conflict. While Telegram channels give users regular updates from multiple formal sources, most members of the audience use them to gain data about recent military changes, firsthand accounts, images, and videos from the front lines. Russia uses Telegram as one of its focuses on propaganda, and Ukraine’s politics and official media adopt a more formal attempt to combat the influence of

misinformation and inspire users (Ghasiya & Sasahara, 2023). This mutual spread of propaganda makes it difficult for Ukrainian politicians and the broader public to understand how to handle new information, especially when it is not discussed clearly.

The information available nowadays clearly exemplifies that other social media remain victims of Russian propaganda and misinformation, especially due to the lack of clear regulations and the removal of questionable messages. Twitter and Facebook were found to be dangerous in terms of how little data is verified and checked before the users spread it; only up to 15% of untrustworthy information and propagandist messages were removed on both platforms (Pierrri et al., 2023). This apparent lack of management has devastating results for social media users, who become vulnerable to incoming information. Even more, it might signal a certain level of favoritism, though it should be studied in future studies. Russia's manipulation of public opinion has been recorded as highly disturbing by Hou, Fu, and Lai (2023); the authors argue that Twitter is such a productive tool for data sharing because its target goal is not to promote emotional connections but to spread information. However, it is undeniable that all types of social media, particularly those with a large Eastern European following, are exploited for propaganda via sharing textual, visual, audio, and video materials. Regardless of the platform used, the results of this publication's findings and the literature review indicate that Ukraine's preventive propaganda efforts might encompass broad state-wide efforts that require the collaboration of both governmental and private organizations. Internationally, the battle of narratives between Ukraine and Russia influences global public opinion and political stances, and losing it might be devastating for any of the parties.

### **5.3. Limitations and Future Research**

Since the study of emoji reactions in the context of preventive propaganda in Ukraine through Telegram channels is the first research of its kind, the limitations and drawbacks of the suggested approach require a separate discussion. The primary limitation is that analyzing preventive propaganda in Telegram does not provide sufficient findings to generally characterize and evaluate propaganda in Ukraine. Hence, alternative methods and platforms of disseminative narratives and information should be considered and separately studied. The limitations can be divided into a few groups pertaining to different parts of the research design. These include sampling, data collection, data analysis, and interpretation of findings.

Though the selection of the Telegram channels used for the purposes of preventive propaganda in Ukraine is explained in detail, it has been challenging to determine the topics to investigate. These were supposed to be examples to understand how the tool works and which indicators can reflect its effectiveness. Angeloska-Galevska (2023) argues that the limitations of this type of sample are bias and subjectivity of the researcher. The analysis of findings demonstrated that using general topics such as mobilization and corruption entails difficulties in calculating key awareness and engagement metrics. Hence, the solution is to narrow down the topic and determine the observation period within a year. While sampling the Telegram channels, the random approach was not suitable. According to Sukmawati et al. (2023), “the sampling method in qualitative research is not random, so it must be a non-probability method or determined by the research (purposeful sampling)”. Still, while sampling the Telegram channels, no information on their followers, including demographic and geographic characteristics, was available. This gap is significant and should be considered in future research.

Data collection in this paper also has limitations. The decision to collect total emoji reactions only on the top ten of them by popularity is based on assumptions and technical difficulties. The data may be expanded to include the count of all emoji reactions. Another aspect is their classification. Dividing emojis into negative, positive, and neutral involves bias and subjectivity. More structured and carefully investigated categorizations are necessary. Determining keywords has similar issues. The data-based approaches should be implemented to understand the most common words and use them to filter messages on the selected topics. The keywords have been chosen after the qualitative analysis of the content. It involves human error, bias, and subjectivity.

The limitations of data analysis are related to the lack of similar studies and methodologies for calculating new metrics. Though the metrics fall under the engagement and awareness groups, their calculations should be reviewed and improved. For instance, comparing the reactions to views ratio with the averages is a questionable method. It raises questions on the points of comparison. The metric for two topics with limited observation periods was compared with the averages of those periods. In turn, they could be compared with the average for the whole period of two years.

Future research may employ the same approach with the use of emoji reactions and data from Telegram channels to analyze the effectiveness of propaganda via this social network. It is paramount to consider the limitations of the topic sampling and calculations. Emoji classification may also be complicated. Separate research is necessary to understand the use of this type of reaction in Telegram channels and how they should be interpreted with little bias and subjectivity. Besides, the analysis of non-state actors in Telegram in the form of mainstream

channels disseminating propaganda narratives is necessary. This research focuses on the governmental or journalist channels that are credible sources of information. Studying other types of channels, their audiences, and awareness and engagement dynamics will provide new findings and insights.

## **6. Conclusion**

Informational warfare has become an integral part of the hostilities between countries in the global arena. Its employment requires effective responses that can mitigate negative implications. The 2022 Russian invasion in Ukraine has resulted in the intensive war in various forms between the countries, forcing both sides to apply new methods of propaganda to withstand on the informational front. The case of Ukraine demonstrates an interest from the perspective of applied measures against Russian propaganda. The prerequisites of the study are the increasing use of Telegram since the invasion and application of this social media in implementing preventive propaganda.

The research features the analysis of five Ukrainian-language and state-related channels and their use of preventive propaganda narratives on four topics to address the threats of Russian propaganda. The applied social media analysis, content analysis, and sentiment analysis discover the dynamics of the Telegram channels use and their effectiveness based on the awareness and engagement metrics. Given the limited number of methods to measure the effectiveness of propaganda, a brand new approach was suggested in this paper. Using the emoji reactions and metrics based on the views, reactions, and messages counts, engagement metrics were calculated.

### **6.1. Summary of Key Points**

The research aims to analyze and characterize preventive propaganda in the context of Ukrainian-language Russia-Ukraine information warfare. The study object has been narrowed down to governmental and non-governmental Telegram channels as social media platforms to spread propaganda narratives. It focuses on the use of Telegram to inform the public on the hot topics related to the current war. The goal is to understand how preventive propaganda works and evaluate its effectiveness using the mentioned social network as an example of its tools and techniques.

After conducting the research, four hypotheses have been reviewed. The study confirms two hypotheses and partially one hypothesis while one hypothesis is refuted. Namely, the results of sentiment analysis show that the audience responds mostly positively and supportively to the messages on hot topics in the Telegram channels with credible sources. The frequency of messages on those topics does not depend on the number of followers and is crucial to keep the audience engaged. The evaluation of the preventive propaganda effectiveness based on the three metrics based on the data from Telegram reveals that the hot topics with the specified observation period have higher metric values compared to the averages. However, preventive propaganda is not effective on each topic. Hence, its effectiveness varies depending on the topic covered in those channels.

The research shows that the response to propaganda may be complex and consist of different tools. Preventive propaganda and prebunking are proactive methods while counter-propaganda and debunking are reactive. Still, preventive propaganda should be more carefully and strategically planned because it is expected to provide better results at lower costs.

In its implementation, the Ukrainian government refers to national unity, cultural identity, shared values, and other sentiments to obtain public support and approval.

This study has shown that methods of social media analysis, content analysis, and sentiment analysis can be applied to research preventive propaganda. Emoji reactions and other features of Telegram provide a great source of data that can be used to quantify the necessary metrics and evaluate propaganda effectiveness. The analysis of emoji reactions on separate topics may provide information on the public sentiments, feelings, and emotions regarding an event or phenomenon.

## **6.2. Implications and Recommendations**

The paper provides essential implications for the research of preventive propaganda. It introduces a brand new approach to measuring propaganda effectiveness in social media depending on the data availability. The study also introduces the in-depth sentiment analysis of people based on their emoji reactions and raises the importance of using this tool to better understand the audience, including the full complexity of human emotions, feelings, and behaviors. It also shows in the example of Telegram that new social media networks are necessary to investigate and understand, particularly if they have become popular and widely used.

The findings entail lessons and recommendations to inform policymakers and media practitioners. The recommendation is to pay attention to the features and tools of social media networks that provide information on the target audience's reaction. They reflect how people react to a message or topic. The data-informed decision to change the next message or topic coverage can adhere to the informational campaign and overall preventive propaganda to achieve

better results. Besides, the KPIs to evaluate propaganda have been proposed. Using the data on emoji reactions and views, one can evaluate the awareness and engagement dynamics and infer conclusions to inform their next steps. Working with media such as Telegram is dynamic and should involve regular assessment of the current techniques and approaches to interact with the audience. Another recommendation is to allow followers to interact with publications or messages to collect their responses and reactions and inform the next steps of the informational campaign.

This work is important for other researchers interested in studying preventive propaganda and its employment in social media. The research design with an original method of evaluating propaganda effectiveness may be applied in other papers and modified to improve the calculations and consider limitations and drawbacks. It provides new prospects to investigate the use of emoji reactions to understand the audience's overall sentiments and response to a message or topic. The variety of emojis requires many studies to determine how they should be classified considering the context and other influencing factors.

### **6.3. Final Thoughts**

The significance of this study is to demonstrate that policymakers, media practitioners, and researchers should regularly analyze the technological changes in popular social networks and consider new opportunities for collecting and interpreting the data from those media platforms. The research provides a unique design with a new approach to evaluating preventive propaganda effectiveness. Though it has limitations and drawbacks, the central importance is to show how the informational campaign on a certain topic can be observed and adjusted in real-time with the metrics reflecting its results. The focus on awareness and engagement is important because tons

of information is produced and consumed globally. Thus, preventive propaganda may be ideologically shaped once but its implementation mechanisms and tools should be adjusted to the ongoing changes. Awareness and engagement vary and tend to drop or increase. The study illustrates that people may become less interested or engaged in reading news and consuming information. The government in the context of the informational war should have the possibility to reach those people and keep them informed before propaganda reaches them.

The paper features different research methods, calculation approaches, and new metrics on emoji reactions. This design is crucial for advancing the research of preventive propaganda in social media. It will inform future research and allow others to examine limitations and flaws and consider them in more comprehensive studies. The thesis is the first to show that propaganda should be studied from the audience's perspective with a focus on its reaction and engagement metrics. It is challenging to qualitatively assess how the principles of the inoculation theory work in practice. Getting quantifiable data and understanding feedback from the audience in the framework of propaganda are new prospects to investigate in the future.

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## Appendix A - Python Script for Data Collection from Telegram Channels

```

import asyncio
from telethon import TelegramClient
import csv
import json
from collections import Counter
from datetime import datetime, timezone
import re

api_id = 'YOUR ID'
api_hash = 'YOUR HASH'
phone_number = 'YOUR NUMBER'
client = TelegramClient('session_name', api_id, api_hash)

DATE_FORMAT = "%Y-%m-%d" # Define the date format
# Making start and end dates timezone-aware
START_DATE = datetime.strptime("2022-02-24",
DATE_FORMAT).replace(tzinfo=timezone.utc)
END_DATE = datetime.strptime("2024-02-24",
DATE_FORMAT).replace(tzinfo=timezone.utc)

async def fetch_messages():
    await client.start(phone=phone_number)
    # Replace 'channel_username' with your target channel's username or
ID
    channel = await client.get_entity('TELEGRAM_CHANNEL')
    messages = await client.get_messages(channel, limit=100000) # Adjust
limit as necessary
    all_reactions = Counter()
    filtered_messages = []
    # Helper function to get a reaction's representation
    def get_reaction_representation(reaction):
        if hasattr(reaction, 'custom_emoji_id') and
reaction.custom_emoji_id:
            return reaction.custom_emoji_id
        elif hasattr(reaction, 'emoticon') and reaction.emoticon:
            return reaction.emoticon
        return str(reaction)
    # Helper function to clean message text
    def clean_message(text):
        # Remove emojis
        text = re.sub(r'^\w\s_', '', text)
        # Remove links
        text = re.sub(r'http\S+', '', text)
        # Remove all punctuation except for "." and "_"
        text = re.sub(r'^\w\s_', '', text)
        # Remove newlines and paragraphs
        text = text.replace('\n', ' ').replace('\r', ' ')
        return text
    # Filter messages and collect reactions within the date range
    for message in messages:
        if START_DATE <= message.date <= END_DATE:

```

```

        filtered_messages.append(message)
        reactions = message.reactions
        if reactions:
            for reaction in reactions.results:
                emoji =
get_reaction_representation(reaction.reaction)
                all_reactions[emoji] += reaction.count
        # Get top ten most popular emoji reactions
        top_reactions = [emoji for emoji, count in
all_reactions.most_common(10)]
        # Process messages to count top reactions and collect additional data
        message_data = []
        for message in filtered_messages:
            reaction_counts = {reaction: 0 for reaction in top_reactions} #
Initialize all counts to 0
            total_reactions = 0 # To count total reactions for each message
            reactions = message.reactions
            if reactions:
                for reaction in reactions.results:
                    emoji = get_reaction_representation(reaction.reaction)
                    total_reactions += reaction.count # Sum all reactions
for the message
                    if emoji in top_reactions:
                        reaction_counts[emoji] = reaction.count # Update
count for top reactions
            cleaned_message = clean_message(message.text or '')
            message_data.append({
                'Message ID': message.id,
                'Date': message.date,
                'Message': cleaned_message,
                'Message Views': message.views or 0, # Default to 0 if views
are not available
                'Total Reactions': total_reactions,
                **reaction_counts,
            })
            # Creating columns for the CSV including dynamic reaction columns
            reaction_columns = [f'Reaction_{i+1}' for i in
range(len(top_reactions))]
            all_columns = ['Message ID', 'Date', 'Message', 'Message Views',
'Total Reactions'] + reaction_columns
            with open('CSVNAME.csv', mode='w', newline='', encoding='utf-8') as
file:
                writer = csv.DictWriter(file, fieldnames=all_columns,
quoting=csv.QUOTE_MINIMAL)
                writer.writeheader()
                for data in message_data:
                    row = {
                        'Message ID': data['Message ID'],
                        'Date': data['Date'],
                        'Message': data['Message'],
                        'Message Views': data['Message Views'],
                        'Total Reactions': data['Total Reactions'],
                    }
                    for i, reaction in enumerate(top_reactions):

```

```
        row[f'Reaction_{i+1}'] = data[reaction]
    writer.writerow(row)
    # Create dictionary to map reaction columns to emoji
    emoji_dict = {f'Reaction_{i+1}': emoji for i, emoji in
enumerate(top_reactions)}
    # Save the dictionary to a file
    with open('JSONNAME.json', 'w', encoding='utf-8') as f:
        json.dump(emoji_dict, f, ensure_ascii=False, indent=4)

# Check if the current event loop is running, and if so, use it
if 'asyncio' in globals() and asyncio.get_event_loop().is_running():
    await fetch_messages()
else:
    asyncio.run(fetch_messages())
```