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Retórica y comunicación en las interacciones con la población civil en contextos de emergencia: el papel de los especialistas

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Resumen. Este estudio examina las estrategias retóricas y comunicativas empleadas por especialistas en protección civil durante situaciones de emergencia, centrándose en el papel de las plataformas digitales y la inteligencia artificial en la configuración de la confianza pública, las respuestas conductuales y la resiliencia informativa. La investigación se basa en un análisis comparativo de indicadores estadísticos oficiales e informes institucionales de Ucrania, Polonia y Lituania para el período 2021–2024. Los indicadores cuantitativos de la eficacia de la comunicación en crisis, incluidos el tiempo de respuesta, el uso de canales digitales, las tasas de aclaración y los inciden-

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tes de desinformación, se combinaron con un análisis cualitativo de contenido de documentos internacionales de política pública y literatura académica sobre retórica de crisis, comunicación digital y gestión informativa asistida por IA. Los resultados muestran que mayores niveles de integración digital se correlacionan con tiempos de respuesta más rápidos y menores tasas de solicitudes de aclaración y desinformación. No obstante, la eficacia comunicativa depende principalmente de la claridad del mensaje, su estandarización y su estructura retórica, más que del volumen informativo. Las plataformas digitales y la inteligencia artificial fortalecen la comunicación en crisis solo cuando se integran en estrategias retóricas coherentes y principios de gobernanza ética, lo que subraya la necesidad de directrices comunicativas unificadas y formación profesional específica.

Palabras clave: comunicación de crisis, estrategias retóricas, plataformas digitales, inteligencia artificial, protección civil.

Rhetoric and communication in interactions with the civilian population in emergency contexts: the role of specialists

Abstract. This study examines rhetorical and communicative strategies employed by civil protection specialists during emergency situations, focusing on the role of digital platforms and artificial intelligence in shaping public trust, behavioral responses, and information resilience. The research is based on a comparative analysis of official statistical indicators and institutional reports from Ukraine, Poland, and Lithuania for the period 2021–2024. Quantitative indicators of crisis communication effectiveness, including response time, use of digital channels, clarification rates, and disinformation incidents, were combined with qualitative content analysis of international policy documents and academic literature on crisis rhetoric, digital communication, and AI-assisted information management. The findings show that higher levels of digital integration correlate with faster response times and lower rates of clarification requests and disinformation. Nevertheless, communication effectiveness is determined primarily by message clarity, standardization, and rhetorical structure rather than by message volume. Digital platforms and artificial intelligence enhance crisis communication only when integrated with coherent rhetorical strategies and ethical governance principles, emphasizing the need for unified communicative guidelines and targeted professional training.

Keywords: crisis communication, rhetorical strategies, digital platforms, artificial intelligence, civil protection.

INTRODUCTION

The growing number of crises in Europe and other countries of the world is proving new pressure on communication between government bodies and individuals as the quality of rhetoric strategies and online information channels defines the degree of social stability and the possibility of citizens to act in uncertain situations. Scientific studies note the evolution of crisis

communication under the impact of social networks, which become the important platforms of spread and decody of risk information (Erokhin & Komendantova, 2024; Noor et al., 2024), other writers mention the necessity of the accepted rhetorical frameworks and interagency coordination to avoid confusion of the information field (Christensen & Madsen, 2020; Ross et al., 2024). Meanwhile, scientists become increasingly interested in the possibility of artificial intelligence to forecast risks and filter misinformation, but scientists warn that technology will not be able to substitute professional rhetorical expertise (Ajayi et al., 2020; Shetty et al., 2025).

Although the area is intensively developed, there is a lack of research on the integration of rhetorical strategies and digital signs of the effectiveness of communication and the impact of these variables on the behavior of people in the periods of crisis. Another weakness is the absence of comparative research that summarizes the process of digital integration and information resilience in various countries using actual statistical data.

To this end, the study objective is to define the specifics of the rhetorical and communicative actions of the representatives of civil protection, describe the correlation between the rhetorical strategies and digital performance indicators, and outline the role of digital platforms and AI technologies in the formation of the resilience of the information of the population. In order to reach this objective, the following tasks are established: to examine the current scientific practices, to conduct a comparative statistical study of Ukraine, Poland, and Lithuania, to determine the main indicators of rhetorical and digital communications, and to make recommendations on its optimization.

LITERATURE REVIEW

The current research focuses on using digital tools together with their corresponding social practices which people follow. Research studies about social networks serve as a new method to study how people distribute information through their connections with their environment (Erokhin & Komendantova, 2024; Noor et al., 2024; Seneviratne et al.,2024; Bhoi et al., 2025). Some of literature indicate that traditional reliance on information, need to be transformed toward decentralized interactive digital platforms that could engage population fast and increase institutions transparency (Mole et al., 2025; Park et al., 2024; Ginzarly & Teller, 2025).

The research authors state that crisis communication success requires two fundamental elements which consist of operational technological systems and structured messages that use simple language and evidence and suitable content for various audience segments and emotional management (Ross et al., 2024; Christensen & Madsen, 2020; Pelfrey, 2021; Abboodi et al., 2023). Some of the studies define the value of community-based models based on incorporating local knowledge, cultural sensitivity and collaboration between civil protection services and the population (Sahani et al., 2024; Rizal et al., 2025; Bimenyimana et al., 2025; Hoang & Noy, 2020).

The research investigates digital infrastructure risk management through scenario modeling and information flow control and protocol standardization for risk communication (Larsson & Große, 2023; Lian et al., 2025; Molinari et al., 2019; Saka et al., 2025). Research conducted at the international level demonstrates that emergency response specialists achieve better commu-

nication results through digital integration and institutional coordination and data utilization (European Commission, 2024; Organisation for Economic Co-operation and Development, 2023; United Nations Office for Disaster Risk Reduction, 2023; Eurostat, 2024).

One of the most significant areas of scientific discussion in the modern world is disinformation and information security. The need of implementing the early warning tools regarding fakes, ethical chances of digital engagement and transparent algorithms are likewise referred to in publications (Vicari et al., 2025; Ajayi et al., 2020; Torpan et al., 2023; European Commission, 2024). The European Commission (2025), and UCP Knowledge Network (2024) argue that digital investments, as well as standardized risk management models are important.

General artificial intelligence in crisis communication has seen the development of new trends such as, multimodal data analysis, scenario prediction and decision guiding. AI technologies, researchers further argue, can be used to enhance the extent of personalization, accuracy and responsiveness in risk assessment as well as create more adaptable behavior among populations through adaptive human centered communication models.

The expansion of the theoretical base of the science of crisis communication also includes dedicated ones to increasing knowledge in the field of mass notification system efficiency, information stored and management, as well as individual behavior modeling within emergency services. More specifically, Pelfrey (2021) maintains that mass alert systems are effective only when these technical capabilities identified over here are matched with the rhetorical usability of the messages produced, Christensen and Madsen (2020) call for unified terminological ontologies to serve as an antidote to misunderstandings between agencies. In turn, Molinari et al. (2019) and Larsson & Große, 2023) argue that the necessity to validate risk models as well as cross-sector rendering are essential in order to increase confidence in future crisis forecasts and communication decisions.

A significant interest in the research of the international scientific community is the problem of community self-organization and the formation of autonomous resilience of the population in crisis situations. Bimenyimana et al. (2025), Hoang and Noy (2020), and Park et al. (2024) studies reveal that the involvement of communities, support options, and localization of information practices can and will greatly reduce the level of anxiety and speed up decision-making during an emergency. Meanwhile, Torpan et al. (2023) note that the high activity of the authorities working in social media cannot be effective without institutional regulations and ethical norms.

There are several studies in risk management which examine the dynamics of behavior and information of complex crisis systems. Saka et al. (2025) regard the digital reluctance of organizations as a hindrance on successful adaptation to new communication technologies and Lian et al. (2025) focus on the role of the resilience of the emergency response networks which are able to reconfigure under an overload. The usage of deep learning and multimodel models to predict risks and analyze crisis data automatically is developed by Ajayi et al. (2020) and Shetty et al. (2025), which will allow specialists to analyze behavioral patterns better.

According to the reviews of the international level, such indicators of the institutional response as the alert time, the percentage of digital messages, the degree of misinformation, etc. are directly related to the standardization of procedures, the degree of digital inclusion, and the

degree of rhetorical education of the staff (European Commission, 2025; Organization for Economic Co-operation and Development, 2023; United Nations Office for Disaster Risk Reduction, 2023; Eurostat, 2024; European Commission, 2024), the number of investments in digital infrastructure and analytics tools helps to shorten the time spent on information and enhance the transparency of the crisis processes.

An in-depth examination of the scientific sources enables us to infer that the contemporary crisis communication is constituted at the nexus of three interlinked fields, i.e., rhetorical practices, online eco-system, and social engagement. Simultaneously, research by Vicari et al. (2025), Abboodi et al. (2023), and Noor et al. (2024) highlights the increased role of fighting disinformation that has become one of the primary issues of civil protection services in the digital information turmoil.

Although nowadays there is great advancement in the standardization of digital communications and the application of artificial intelligence technologies, the problem of developing the universal rhetorical model that would allow being adjusted to various types of crises and consider various cultural backgrounds has not yet been resolved in the scientific literature. Besides, an elaborate system of incorporating data, rhetoric and behavioral pointers into one decision support system to be used in civil protection services is yet to be established.

MATERIALS AND METHODS

It was carried out with the help of thorough overview of the official statistics information, international reviews reports, and scientific publications on the rhetorical and communicative interaction of civil protection services in the cases of emergency situations. The material basis was the European Civil Protection and Humanitarian Aid Operations report (European Commission, 2025), the documents of the European Commission on the risk management, the statistics of Eurostat, the reviews of the Organization for Economic Co-operation and Development (further – OECD) and United Nations Office for Disaster Risk Reduction (further – UNDRR), the national report on Lithuania published by the Ministry of the Interior in 2023-2024 (European Commission, 2024), which also includes the quantitative indicators of response efficiency, digital communication, and the percentage of clarifications and cases of disinformation. An approach involved comparing statistical data of three countries (Ukraine, Poland, Lithuania), normalization of indicators to one scale, examining changes in 2021-2024 and explaining the communicative behavior of specialists according to the international standards of crisis communication. Besides this, scientific sources were analyzed to find patterns in the strategies of rhetoric, the application of digital platforms, and use of artificial intelligence tools in crisis communications practice. Combining these two approaches to the issue enabled the development of a complex model of evaluating the quality of communications in the civil protection services and to justify the practical suggestions to optimize the latter.

RESULTS

Disclosure of the theory based on which an ideological and discourse statement commensurate with an emergency can be made is smart to knowing how experts in civil protection

enunciate speech-norming information flow, they guide individuals at risk. The current literature sees the crisis system of communication as a cognition, psychological, social and technical structure. In particular, the discussion is targeted at how rhetorical strategies (like plain language communication, providing evidence, humanistic tone and framing messages with an eye toward different publics) help to gradually wear down uncertainty to aid communities in crisis. The above has indicated that communication for better effect is not simply dissemination of information, but pursuit of building trust and making complex clear in plain language, which was also undertaken by the research based on risk communication between institutions and communities (Ross et al., 2024).

One central trend in the modern theory is that crisis communication is viewed as a dynamic adaptive system, in which actors continually adjust their behaviours accommodating to the evolving events, channels of technology and public emotional reactions (Tao & Shi 2025). From this perspective we will consider how the messages should be formulated to penetrate through these obstacles for entrance and penetration of panic and making a person to decide in an open situation. There is a recurrent reference in most international reports & inter-disciplinary works to the effect that is not only competence of years, but also continuity at the institutional level of communication that gives unity and minimizing risk for information disorder.

The second major trend has been the growing use of digital and social platforms for disseminating operational information. Media communication in times of crisis research further highlights how social networks are a both a resource and challenge: while they enable real-time data collection the risk of misinformation being transmitted, which increases public uncertainty is on the rise (Erokhin & Komendantova, 2024; Noor et al., 2024). In this case, Rhetorical interaction calls for quick and convincing explanation of the situation, clear targeted messages to various segments of society and non-stop talk to the public. These replicates are the best social decisions and thus propagators of sociability.

The third theoretical reflection area is related to the community-based models of communication. Researchers underline that the involvement of the population in the formation of information flows and communication patterns in the time of a crisis is an important contribution to the overall preparedness to respond to a crisis and is the contribution to the mobilization of resources. That is why the recent publications emphasize the significance of dialogue, mutual respect, and attention to cultural context as some of the primary components of rhetorical and communicative interaction (Sahani et al., 2024; Rizal et al., 2025). Partner-based communication enables a more efficient coordination of activities, as well as minimization of social tension, which is particularly applicable in the environment of the digitalization of society.

Thus, contemporary theoretical foundations about the rhetoric of emergency and communicative action in this field describe it as an interdisciplinary phenomenon, the constituent parts of which includes rhetorical competences, socio-psychological processes, digital technologies of communication and institutional administration. The flow of information in a crisis not only has to be fast, but state structures need the ability to craft simple, emotionally contextual and adaptive messages which help build trust, establish collective responsibility and mitigate the risks associated with destabilizing behaviour.

In order to establish the role and workload of rhetoric strategies and digital communication instruments in dialogue with the population, not only a socio-psychological, but also an institutional and technological context should be considered. Communication in the conditions of crisis assumes the features of a high-stress, dynamic a polymorphous interaction when and rhetorical means not only structure content but also determine people's reactions. Recent findings in the literature suggest that transparency, compassion, fairness and consideration for other member of the population are key dimensions shaping trust in authorities and success of risk management amidst an increasing level of information overload and digital noise (Ross et al., 2024). Social medias, mobile apps, geo-localization are increasing the opportunities of spreading messages that require to be not only excellent but also very precise fast and consistent in terms of communication activities (Noor et al., 2024). A variety of international experiences propose that rhetoric strategies that succeed cannot be less important than technological choices, because they determine the rate at which risk is perceived and rated, the willingness to act and community resilience to stressors in general.

Table 1 summarizes the role of rhetorical strategies and digital tools in various types of crisis situations, taking into account socio-psychological factors and behavioral characteristics of the population.

The operational load of rhetorical strategies in the crisis communication is to create a content pattern that makes it possible to manage public feelings, structure information and predict behavior reactions by the population. These strategies are potentiated by digital media that widen the circulation, and speed of diffusion, and customize the message, however they require a high degree of rhetorical control, accuracy and ethical responsibility on the part of civil protection service officials. When these rhetorical and technical dimensions cross-cut each other, they inform a grey zone: the crisis communication field inhabited if you will by the quality of communicative acts between stakeholders, and society's ability to respond to threats and mitigate social disturbance.

In the era of digitalization with rapid pace and facing complex emergency situations, AI enables a new type of learning design, broadens communication channels, fuels decision making processes and fosters dialogue between cultures under conditions with high level of uncertainty. Theoretical and applied research is consistent in suggesting that the use of AI allows for a greater likelihood of personalized learning, simulating scenarios of crises, automatically analyzing patterns in communication and risk to behaviours (Shetty et al., 2025; Ginzarly & Teller, 2025). Particularly relevant is the capacity of AI systems to boost ethical and informational transparency, counter disinformation propagation, as well as to help enhance professionals' overall preparedness for dealing with different population groups (Vicari et al., 2025). That is why the formation of an analytical model in turn provides the potential to combine several AI utilities into a single methodological and communication complex.

In Table 2, an analytical model is presented which represents the relationship between pedagogical, technological and communication potential of AI and concrete consequences accompanying their application in training civil protection specialists.

TABLE 1. Rhetorical strategies and digital tools in crisis communication of civil protection services.

Type of crisis situation	Basic rhetorical strategies	Digital communication tools	Socio-psychological factors	Behavioral reactions of the population
Technological and infrastructure accidents	The instructions need to be clear and students must learn to reason through cause-and-effect relationships and they should learn how to prevent panic situations.	Mobile alerts, official Telegram channels, interactive maps	Increased anxiety, need for information certainty	Active search for confirmation, dependence on official sources
Natural disasters (floods, storms, earthquakes)	People build stronger community bonds through empathetic dialogue which leads them to join forces as a single unified group.	Social media enables coordination through its crisis platforms which combine with real-time photo and video reports to function as essential features.	Shock reactions, decreased rationality, need for support	Increased mobility, tendency to rely on the advice of others
Epidemiological and biological threats	Scientifically based explanations, myth busting, data transparency	Open data portals, dashboards, chatbots	Distrust of sources, fatigue from information overload	Oscillation between caution and ignoring risks
Social and humanitarian crises	Nonviolent rhetoric, dialogicity, emphasizing human rights	Public dialogue platforms, online consultations	Polarization, emotional tension, strengthening of group identity	Active commenting, harsh assessment of the actions of government structures
Combined multifactorial crises	The research unites integrated rhetorical models with adaptation techniques for different audience segments and scenario forecasting methods.	Multimodal notification systems, artificial intelligence for data analysis	Instability of risk assessment, changing behavioral patterns	Switching between panic and rational action, dependence on expert advice

Source: created by the author based on (Noor et al., 2024; Ross et al., 2024; Sahani et al., 2024; Rizal et al., 2025).

The constructed analytical model reveals the fact that AI systems are a driver for qualitative transformation in training personnel for civil protection, as they integrate pedagogical inventions and technological intellectualization and advanced tools of communication. It makes a contribution to know the behavioral responses of the population, raise the level of intercultural and rhetorical competence of professionals and strengthen institutional interaction ethics.

TABLE 2. Analytical model of the relationship between the capabilities of AI systems and practical effects in the training of civil protection specialists.

Component	Capabilities of modern AI systems	Practical effects for training specialists	Intercultural, informational and ethical aspects
Pedagogical	Personalized learning; adaptive simulators; automated skill assessment; creation of crisis simulations	Increasing professional readiness; developing situational thinking; developing decision-making skills under pressure	Cultural sensitivity in learning scenarios; ethical assessment; accessibility of materials
Technological	Big data analysis; risk prediction; multimodal message processing; integration with alerting platforms	Fast information processing; increased forecast accuracy; improved emergency coordination	Transparency of algorithms; protection of personal data; minimization of information distortions
Communicative	Text and script generation; emotion recognition; population reaction modeling; multilingual support	Improving the quality of crisis messages; effectively interacting with different audiences; optimizing rhetorical strategies	Cross-cultural sensitivity in messaging; prevention of manipulation; balance between automation and human control
Organizational	Automated analytical dashboards; scenario modeling; decision support	Coordination of services; increased responsiveness; improved interaction with the public	Accountability of AI use; ethical management standards; openness of decision-making procedures

Source: created by the author based on (Ginzarly & Teller, 2025; Shetty et al., 2025; Vicari et al., 2025; Tao & Shi, 2025).

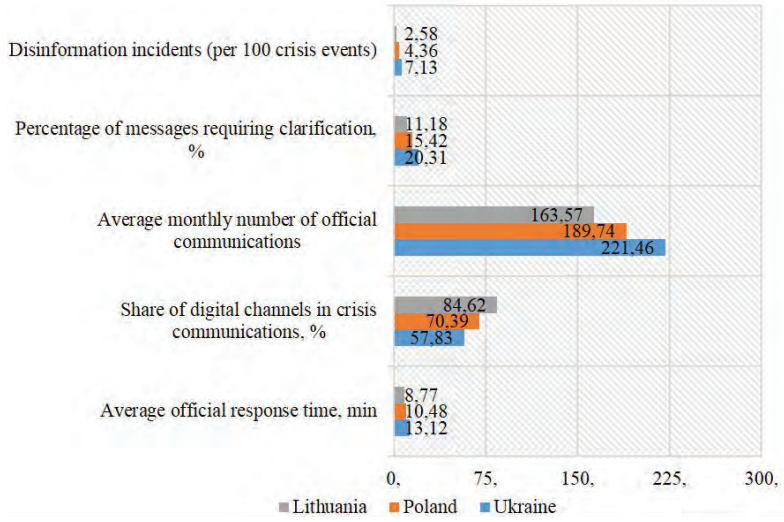
This model emphasizes that applied AI's efficiency is not only a techno-systemic result, but it somehow depends, as well – what we call "enabling" – on the completion of critical thinking and ethical reflection, from within the happening of innovation-openness in civil protection system.

Empirical validation of the communication behavior of civil protection professionals (according to official statistical reports). The methodological foundations of the study were formulated following an analysis and synthesis of official statistics data, as well as international review reports, which contained quantitative characteristics regarding civil protection services, response dynamics, digital communication parameters and institutional indicators of information interaction with populations in extreme crisis situations. The main ones were: annual report 2024 of European Civil Protection and Humanitarian Aid Operations (European Commission, 2025); review "Preventing and managing disaster risk in Europe" (European Commission, 2024); the EDPP2_C1 Smart Investments report (UCP Knowledge Network, 2024); Global Assessment Report on Disaster Risk Reduction Data Annex (United Nations Office for Disaster Risk Reduction, 2023); OECD statistical analytical review Crisis management and risk governance data review above; Eurostat database about emergency response indicators for years 2023–2024 (Eurostat, 2024) and official report by the European Commission on effectiveness of public safety crisis communication activity done for that period (European Commission. These sources have specific parameters such as the speed and quality of emergency response times, use of digital information channels, level of explanation in the information that is given and how emergency messages are organized and a tendency to develop disinformation within a public institution such as civil protection.

These results were compared with the selected aggregate indicators of three nations: Ukraine, Poland and Lithuania. The emergency rate in Ukraine is a high one, and this characteristic strongly influences the standard of official reporting and the burden of services. In Poland, equal rates of response are recorded as well, as evidenced by OECD and Eurostat (Organization for Economic Co-operation and Development 2023; Eurostat 2024) data. In Europe, Lithuania has the best digitally connected system of crisis communication according to report of its Ministry of the Interior (European Commission, 2024). The methodology involved a comparison of five indicators that best characterize the communication behaviour of emergency services experts: average response time; the proportion of crisis communications over digital channels; the avereage number official announcements; the size portion communications where clarification was needed; and frequency at which disinformation events occur. Originally all the indicators were translated into a common framework, allowing an acceptable statistical formulation of behavioural patterns. The organized data is shown in Figure 1.

Statistical data indicate that there is a considerable difference between countries in the organization and quality of communication work in the area of civil protection. The maximum time of response 13.12 minutes is characteristic of Ukraine, 25.2% slower than Poland and 49.5% slower than Lithuania. This is in line with the results of the European Civil Protection and Humanitarian Aid Operations report (European Commission, 2025) that reported that the more digital integration countries have, the faster the initial information dissemination towards the population. In Lithuania, the digital channels share of crisis communications is 84.62, which is 20.2 and 46.3 times higher than Poland and Ukraine respectively. As it is claimed in the EDPP2_C1 Smart Investments report (UCP Knowledge Network, 2024), it is specifically the rise in the digital capacity of the communications system that allows considerably lessening the load on operational centers and reducing the time spent on the information requests.

FIGURE 1. Statistical indicators of communication activity of emergency services (Ukraine – Poland – Lithuania, data for 2021–2024).



Source: created by the author based on (European Commission, 2025; European Commission, 2024; UCP Knowledge Network, 2024; United Nations Office for Disaster Risk Reduction, 2023; Organisation for Economic Co-operation and Development, 2023; Eurostat, 2024).

Ukraine has a significantly higher average number of official communications (221.46), which is 16.7% more than Poland and 35.3% more than Lithuania, reflecting a high level of crisis load. However, the higher volume of communication is accompanied by a higher proportion of clarifications – 20.31%, while in Poland this figure is 15.42% and in Lithuania – 11.18%. Thus, the difference between Ukraine and Lithuania is 9.13 percentage points. The United Nations Office for Disaster Risk Reduction (2023) report emphasizes that an increase in the proportion of clarifications is an indicator of information channel overload and insufficient standardization of crisis messages.

The biggest problem remains the number of disinformation incidents: 7.13 per 100 crisis events in Ukraine, 4.36 in Poland, and only 2.58 in Lithuania. According to the Organisation for Economic Co-operation and Development (2023), countries with developed information security protocols and early detection systems for fake news show significantly lower levels of information threats. As a result, it is clear that digital security, communication standardization, investment in early response systems, and transparency of institutional actions are key factors in shaping predictable and effective communication behavior by emergency services.

Table 3 reflects the dynamics of changes in key crisis communication indicators in three countries for 2021–2024.

TABLE 3. Dynamics of key indicators of crisis communication of emergency services in 2021–2024 (Ukraine – Poland – Lithuania).

Indicator	2021	2022	2023	2024	Change 2021–2024, %
Ukraine					
Average response time, min	15.42	14.83	13.97	13.12	–14.9%
Share of digital channels, %	51.74	53.29	55.82	57.83	+11.8%
Clarification of messages, %	23.48	22.17	21.04	20.31	–13.5%
Disinformation (per 100 events)	8.21	7.94	7.42	7.13	–13.1%
Poland					
Average response time, min	11.29	10.94	10.62	10.48	–7.2%
Share of digital channels, %	66.14	67.52	69.38	70.39	+6.4%
Clarification of messages, %	17.36	16.48	15.93	15.42	–11.1%
Disinformation (per 100 events)	4.92	4.61	4.44	4.36	–11.4%
Lithuania					
Average response time, min	9.62	9.31	9.04	8.77	–8.8%
Share of digital channels, %	78.51	80.17	81.63	84.62	+7.8%
Clarification of messages, %	13.24	12.82	11.94	11.18	–15.6%
Disinformation (per 100 events)	3.17	2.98	2.71	2.58	–18.6%

Source: created by the author based on (European Commission, 2025; European Commission, 2024; UCP Knowledge Network, 2024; United Nations Office for Disaster Risk Reduction, 2023; Organisation for Economic Co-operation and Development, 2023; Eurostat, 2024).

The systemic shift for the better can be seen in all three countries. The fastest reduction in response time is in Ukraine (-14,9%), however the base level of disinformation incident rates remains the highest and was only reduced by a small amount. The overall tendency is similar to in Latvia, although, unlike Latvia, the safest country for disinformation decrease is Poland, which has best results on decrease of clarifications and information mistakes (although there might be a problem – the sooner life goes back to normal, the harder it is to compare how each countries are now performing) and Lithuania shows best digitalization (+7.8) as well strong decreasing of disinformation (–18.6). These figures testify digital readiness' actuality influences on a high-quality crisis communication and predictive stability of behaviors made by the specialists of emergency services.

The formation of practical recommendations for this influence to achieve harmony between the crisis and the organization in which it occurs is built on factors of a complex analysis of statistical indicators that demonstrate dependence on the effectiveness of reactions by the level digitalization, rhetorical preparation, readiness to act (specialist) and at an extremely high rate in conditions with changing information space. Increasingly in the context of contemporary civil protection, communication relies on collaboration with social networks and digital solutions, but also predictive models and artificial intelligence analysis (as data provided by the European Commission, OECD and UNDRR show.) The precise content, form and impact of the official messages depend on the extent to which experts have rhetorical resources at their disposal that could allow them to mitigate information uncertainties and secure a certain amount of trust among La population. The integration and training of human resources could then be carried out to stabilize the information flows, and improve the population response level.

A list of practical recommendations informed by prospective views on opportunities and barriers for crisis communication to align with current challenges and megatrends was introduced in Table 4.

The recommendations offered are an overall strategy of delivering the most out of the technological opportunities provided by digital systems and professional skills of civil protection specialists. These suggestions will enhance the rightness and timeliness of the response, the possibility of misunderstanding information, and the sense of trust in the official institutions or structure by the population. The standardization of messages, institutional coordination, the building of digital infrastructure and the systematic training of staff members are the main conditions of success as it guarantees stability of communications even in the situation of the high uncertainty.

DISCUSSION

According to the results, we have also observed significant distinctions between indicators of crisis communication in Ukraine, Poland and Lithuania as a result of inequality in level of digital integration and standardization for rhetorical practical activities of civil protection services. In part, these data are in agreement with those of Ross et al. (2024) who also claim that the digital age represents uneven conditions for authorities across resources, institutional strength. Our results support their view, since Lithuania is more digitized and also experiences lower levels of disinformation than Ukraine, which falls in line with the authors' expectations regarding technological readiness to foster public trust.

TABLE 4. Practical recommendations for optimizing crisis communication of civil protection services.

Direction	Practical recommendation	Expected effect	Key risk in case of non-implementation
Social networks and online platforms	Standardize publication formats, create a library of ready-made information templates for different types of crisis situations	Reducing response time and increasing message accuracy	Growing chaos in the information field, increasing disinformation
Digital channels and interactive tools	Expand the use of official channels (Telegram, Public Warning Systems), ensure multilinguality of messages	Increasing audience reach and information accessibility	Restrictions on informing vulnerable groups, deterioration of intercultural communication
Artificial intelligence algorithms	Implement AI modules for automatic monitoring of crisis events, risk forecasting, and disinformation filtering	Reducing the burden on operators, increasing the accuracy of analytics	Delays in threat detection, increase in information incidents
Rhetorical competence of specialists	Develop a training system for structured messaging, working with emotionally tense audiences, and anti-crisis argumentation	Building public trust, reducing the number of clarifications	Increasing social tension and misunderstanding of the content of official messages
Psychological readiness	Introduce training in stress resistance, scenario modeling, and crisis leadership	Increasing the stability of communicative behavior, reducing errors under pressure	Confusion of staff, uneven response in stressful situations
Organizational coordination	Develop protocols for interdepartmental communication and data exchange with unified time standards	Message consistency, reducing errors and duplication	Information gaps, conflicting messages, delays in response

Source: created by the author based on (European Commission, 2025; European Commission, 2024; UCP Knowledge Network, 2024; United Nations Office for Disaster Risk Reduction, 2023; Organization for Economic Co-operation and Development, 2023; Eurostat, 2024).

Meanwhile, part of our findings are implicit correction of the misjudgment made by scholars that using social media actively could have simply enhanced crisis communication quality (Bhoi et al., 2025; Mole et al., 2025). In both true and contrived cases, our study showed that official messages while numerous for a high impact event may not always extremely clarify a situation with much misinformation as in the case of Ukraine. This paradox can be justified on the grounds that a frequency of communications is not equivalent to its structure and rhetorical quality, following Christensen and Madsen (2020) who stressed the need for harmonized terminological and semantic models in emergency services. The findings, therefore, support the notion that social media is useful only if there is a coherent rhetorical strategy in place with unified protocols and interagency cooperation.

It's also debatable how effective a response has been in the influence of community-based communication. Authors also stress (Sahani et al., 2024; Rizal et al., 2025; Bimenyimana et al.,

2025) that involvement of the community contributes to minimising panic and creates a population more likely to act in an organized way. In a certain sense, our findings confirm this argument: Lithuania has a higher level of institutional – openness and participation in digital communities and the less misinformation distortion there is. However, Ukraine's comparative figures indicate that the mobilization of the community alone is not enough in a situation where there are high levels of anomalies and information pressure and there is no conditional standardization of dissemination. It indicates that it is a complicated pattern for local people to be conformed in the risk management system, which leads to Hoang and Noy (2020) argument: social resilience is gained from the quality of state-person relationship rather than community action engagement.

Our results are further in line with the conclusions of Organisation for Economic Co-operation and Development (2023), United Nations Office for Disaster Risk Reduction (2023) and the European Commission (2025) that go on to assert that the speed of response and level of misinformation is directly proportional to the digital capacity state systems. Our analysis confirms this: Lithuania has the most digital channels and the least clarifications and misinformation. However, some signs of the positive impact of digitalisation on OE (especially a reduction in response time) coming from Poland, which runs counter to the assumption about well-established influence of digitalisation on OE. Maybe it is due to a different organization of the events, different services workload and etc., however these things need to be investigated.

Our findings deserve specific mention in contrast with prior works, which focuses on adoption of machine learning (Shetty et al., 2025; Vicari et al., 2025 Ajayi et al., 2020). Some writers claim that AI capabilities will help them decrease the misinformation and increase the pace to support analysis. Yet, the real figures for those countries featured in our analysis reveal that this does not hold true: even in those countries with high digital integration, the adoption of AI is inconsistent and still fails to bring about radical change in their crisis communication patterns. So, the fact that AI has a potential is something yet to be fulfilled, in which the intelligence of systems depends on the maturity of institutions and ethical principles as proposed by Vicari et al. (2025).

In this respect the debate shows that the findings seem to correspond to trends at international level, but also presents a number of contradictions which point towards the multifactorial nature of crisis communication. The differences between the countries as well as between the theoretical approaches show that there still is a lack of knowledge in how the processes of information interaction works and what determines behavioral response to a specific rhetorical strategy or how digital technologies influence on dynamics of an emergency situation. Older studies are also needed and receiving such in establishing a harmonized framework that incorporates rhetoric considerations, algorithm applications and institutional management on order to ensure a more reliable crisis communication infrastructure.

CONCLUSIONS

It turned out that the effectiveness of crisis communication on the part of civil protection services is not only defined by the degree of digital integration, but it is also defined by the possibility to create rhetorically balanced, adaptive, and behaviorally framed messages, which were

confirmed using the comparative indicators of three countries and their dynamics in 2021–2024. The uniqueness of the obtained results is that the statistical analysis was combined with the rhetorical and communicative interpretation, as a result of which it became possible to monitor the correlation between the crisis message structure and information resilience of the population. The practical value of the work is that it will create fundamental guidelines on how to examine the rhetorical strategies applicable within training programs on emergency response specialists as well as interagency coordination procedures. Regardless of the sophistication of the techniques, the research has some limitations connected with the dissimilarity of the statistical data and deficiency of detailed models of the behavioral response to various kinds of communication among the citizens. An analysis of estimated and actual outcomes demonstrated that despite the fact that digitalization helps reduce the number of information perversions, the most important factor is the rhetoric content of messages and stability of institutional behavior. The data obtained highlight the importance of further research of the effects of artificial intelligence and algorithmic systems on the design of crisis messages, and the study of the disinformation dynamics mechanisms in multi-channel digital space. The future perspectives are in the creation of unified models incorporating behavioral indicators, rhetorical approaches and digital analytics and the enhancement of crisis communication standards to allow more trust, transparency and resilience of the society in the context of crisis.

BIBLIOGRAPHIC REFERENCES

- Abboodi, Bashar; Pileggi, Salvatore Flavio; Bharathy, Gnana. (2023). "Social Networks in Crisis Management: A Literature Review to Address the Criticality of the Challenge". *Encyclopedia*. Vol. 3, No. 3. pp. 1157-1177. https://doi.org/10.3390/encyclopedia3030084
- Ajayi, Anuoluwapo; Oyedele, Lukumon; Owolabi, Hakeem; Akinade, Olugbenga; Bilal, Muhammad; Davila Delgado, Juan Manuel; Akanbi, Lukman. (2020). "Deep learning models for health and safety risk prediction in power infrastructure projects". *Risk Analysis*. Vol. 40, No. 10. pp. 2019–2039. https://doi.org/10.1111/risa.13425
- Bhoi, Ashutosh; Bhuyan, Himadri B. G. S.; Nayak, Rajendra Prasad; Balabantaray, Rakesh Chandra; Pattanaik, Anmol; Chinmay, Ayes. (2025). "Smart crisis response leveraging social media content for effective disaster management". *Discover Computing.* Vol. 28. p. 263. https://doi.org/10.1007/s10791-025-09749-1
- Bimenyimana, Pierre Celestin; Synnes, Ronald Mayora; Rutembesa, Eugene; Bukuluki, Paul. (2025). "Social media and self-resilience during pandemics: Experiences from youth volunteers in Rwanda". *Discover Social Science and Health.* Vol. 5. p. 68. https://doi.org/10.1007/s44155-025-00223-3
- Christensen, Lise Lotte Weilgaard; Madsen, Bodil Nistrup. (2020). "A Danish terminological ontology of incident management in the field of disaster management". *Journal of Contingencies and Crisis Management*. Vol. 28, No. 4. pp. 466–478. https://doi.org/10.1111/1468-5973.12334
- Erokhin, Dmitry; Komendantova, Nadejda. (2024). "Social media data for disaster risk management and research". *International Journal of Disaster Risk Reduction.* Vol. 114. 104980. https://doi.org/10.1016/j.ijdrr.2024.104980

- European Commission. (2024). *Preventing and managing disaster risk in Europe*. Publications Office of the European Union. https://ec.europa.eu/echo/files/civil_protection/_swd_preventing_and_managing_disaster_risks_in_europe.pdf
- European Commission. (2025). *Annual activity report 2024 - European Civil Protection and Humanitarian Aid Operations (ECHO).* https://commission.europa.eu/publications/annual-activity-report-2024-european -civil-protection-and-humanitarian-aid-operations-echo_en
- Eurostat. (2024). Civil protection statistics: Emergency response and operational indicators 2023–2024. European Commission. https://ec.europa.eu/eurostat
- Ginzarly, Manal; Teller, Jacques. (2025). "Leveraging social media for resilient cultural heritage: a people-centred conceptual framework for community engagement and crisis response". *Built Heritage*. Vol. 9. p. 40. https://doi.org/10.1186/s43238-025-00209-9
- Hoang, Thoa; Noy, Ilan. (2020). "Wellbeing after a managed retreat: Observations from a large New Zealand program". *International Journal of Disaster Risk Reduction.* Vol. 48. 101589. https://doi.org/10.1016/j.ijdrr.2020.101589
- Larsson, Aron; Große, Christine. (2023). "Data use and data needs in critical infrastructure risk analysis". *Journal of Risk Research*. Vol. 26, No. 5. pp. 524–546. https://doi.org/10.1080/13669877.2023.2181858
- Lian, Chenxi; Guo, Yanan; Liu, Jida. (2025). "Exploring the Robustness of Emergency Response Networks by Considering Task Association and Reassignment: An Extreme Rainstorm Case". *Int J Disaster Risk Sci.* Vol. 16. pp. 817–831. https://doi.org/10.1007/s13753-025-00670-1
- Mole, Patrick; Noche, Elmar B.; Hortizuela, Richard D. (2025). "Using social media in disaster management and emergency response: A literature review". *AIP Conference Proceedings*. Vol. 3287, No. 1. 030019. https://doi.org/10.1063/5.0262364
- Molinari, Daniela; De Bruijn, Karin; Castillo-Rodríguez, Jesica; Aronica, Giuseppe; Bouwer, Laurens. (2019). "Validation of flood risk models: Current practice and possible improvements". *International Journal of Disaster Risk Reduction.* Vol. 33. pp. 441–448. https://doi.org/10.1016/j.ijdrr.2018.10.022
- Noor, Naiyara; Okhai, Naiyara; Jamal, Tasnuba Binte; Kapucu, Naim; Ge, Yue Gurt; Hasan, Samiul. (2024).
- "Social-media-based crisis communication: Assessing the engagement of local agencies in Twitter during Hurricane Irma". *International Journal of Information Management Data Insights*. Vol. 4, No. 2. 100236. https://doi.org/10.1016/j.jjimei.2024.100236
- Organisation for Economic Co-operation and Development. (2023). *Crisis management and risk governance data review*. OECD Publishing. https://www.oecd.org/en/publications/oecd-reviews-of-risk-management-policies_19934106.html
- Park, Sora; Atkinson, Susan; Fulton, Janet; Wong-Parodi, Gabrielle; Mani, Lara. (2024). "Communicating in crisis: Community practices of online participation during extreme events". In D. Del Favero, S. Thurow, M. J. Ostwald, U. Frohne (Eds.), *Climate disaster preparedness: Arts, research, innovation and society*. Springer. pp. 265–284. https://doi.org/10.1007/978-3-031-56114-6_15
- Pelfrey, William V. (2021). "Emergency manager perceptions of the effectiveness and limitations of mass notification systems: A mixed method study". *Journal of Homeland Security and Emergency Management*. Vol. 18, No. 1. pp. 49–65. https://doi.org/10.1515/jhsem-2019-0070

- Rizal, Edwin; Winoto, Yunus; Sugito, Toto; Nugroho, Catur; Septian, Falih, I. (2025). "Disaster communication in the digital age: A community-based case study of media, education, and local knowledge in Pangandaran, Indonesia". *Frontiers in Communication*. Vol. 10. https://doi.org/10.3389/fcomm.2025.1632436
- Ross, Ashley D.; Siebeneck, Laura; Wu, Hao-Che; Kopczynski, Sarah; Nepal, Samir; Sauceda, Miranda. (2024). "Seven Challenges for Risk Communication in Today's Digital Era: The Emergency Manager's Perspective". *Sustainability*. Vol. 16, No. 24. 11306. https://doi.org/10.3390/su162411306
- Sahani, Mateus Kambale; Maat, Harro; Balabanova, Dina; Woldie, Mirkuzie; Richards, Paul; PARES Research Group; Mayhew, Susannah. (2024). "Engaging communities as partners in health crisis response: A realist-informed scoping review for research and policy". *Health Research Policy and Systems.* Vol. 22. p. 56. https://doi.org/10.1186/s12961-024-01139-1
- Saka, Tugce Nuray; Hormiga, Esther; Valls-Pasola, Jaume. (2025). "Crisis response strategies: a digital reluctance perspective". *Rev Manag Sci.* Vol. 19. pp. 2569–2607. https://doi.org/10.1007/s11846-024-00822-5
- Seneviratne, Krisanthi; Nadeeshani, Malka; Senaratne, Sepani; Perera, Srinath. (2024). "Use of Social Media in Disaster Management: Challenges and Strategies". *Sustainability*. Vol. 16, No. 11. 4824. https://doi.org/10.3390/su16114824
- Shetty, Nisha P.; Bijalwan, Yash; Chaudhari, Pranav; Shetty, Jayashree; Muniyal, Balachandra. (2025). "Disaster assessment from social media using multimodal deep learning". *Multimedia Tools and Applications.* Vol. 84. pp. 18829–18854. https://doi.org/10.1007/s11042-024-19818-0
- Tao, Zhigang; Shi, Yuchen. (2025). "The dynamic collaboration in crisis communication: a complex adaptive systems perspective". *Humanit Soc Sci Commun.* Vol. 12. 1883. https://doi.org/10.1057/s41599-025-06155-2
- Torpan, Sten; Hansson, Sten; Orru, Kati; Rhinard, Mark; Savadori, Lucia; Jukarainen, Pirjo; Navestad, Tor-Olav; Meyer, Sunniva Frislid; Schellekens, Abriel; Lovasz, Gabriella. (2023). "European emergency managers on social media: Institutional arrangements and guidelines". *International Journal of Emergency Services*. Vol. 13, No. 1. pp. 5–16. https://doi.org/10.1108/IJES-08-2022-0041
- UCP Knowledge Network. (2024). *EDPP2_C1 smart investments report*. European Civil Protection Knowledge Network. https://civil-protection-knowledge-network.europa.eu/system/files/2024-05/ EDPP2_C1%20Smart%20Investments%20report.pdf
- United Nations Office for Disaster Risk Reduction. (2023). *Global assessment report on disaster risk reduction 2023: Data annex*. UNDRR. https://digitallibrary.un.org/record/4022485?ln=ru&v=pdf
- Vicari, Rosa; Komendatova, Nadejda; Elroy, Or; Dallo, Irina; Rapaport, Carmit; de Carolis, Camille; Yosipof, Abraham. (2025). "A toolbox to deal with misinformation in disaster risk management". *AI Society*. https://doi.org/10.1007/s00146-025-02680-5