

DOI: <https://doi.org/10.32782/2524-0072/2024-64-60>

UDC 330. 37.07

OPTIMIZATION OF INFORMATIONAL AND FINANCIAL FLOWS AS CRISIS MANAGEMENT'S TOOL

ОПТИМІЗАЦІЯ ІНФОРМАЦІЙНИХ ТА ФІНАНСОВИХ ПОТОКІВ ЯК ІНСТРУМЕНТ АНТИКРИЗОВОГО УПРАВЛІННЯ

Mykhailova Yelyzaveta

Ph.D., Associate Professor,

National University of Water and Environmental Engineering

ORCID: <https://orcid.org/0000-0002-1539-1548>**Savina Nataliia**

Doctor of Economics, Professor,

National University of Water and Environmental Engineering

ORCID: <https://orcid.org/0000-0001-8339-1219>**Radovenchuk Petro**

Master, the Acquirer of Education Degree,

National University of Water and Environmental Engineering

ORCID: <https://orcid.org/0009-0007-9371-6970>**Михайлова Єлизавета Вікторівна****Савіна Наталія Борисівна****Радовенчук Петро Володимирович**

Національний університет водного господарства та природокористування

Effective crisis management hinges on the optimized management of informational and financial flows, essential for mitigating impacts and facilitating recovery across various sectors. This paper explores the theoretical foundations and practical applications of informational and financial flows in crisis contexts, emphasizing their critical roles in preparedness, response, recovery, and mitigation phases. Through analysis of case studies it examines how timely and accurate information dissemination, coupled with swift financial interventions, can enhance crisis outcomes. Strategies such as integrated information systems, efficient financial mechanisms, and collaborative frameworks are proposed to optimize crisis response capabilities. Continued research and innovation are advocated to strengthen resilience and readiness in managing future crises, underscoring the importance of proactive approaches to build robust global systems and communities.

Keywords: efficient financial mechanisms, information flows, resilience, global economy.

Пропоноване наукове дослідження фокусується на антикризову управління, яке сьогодні є ефективним в умовах нестабільного зовнішнього середовища. Оптимізоване управління інформаційними та фінансовими потоками відіграє ключову роль у зменшенні впливу криз та сприянні швидкому відновленню суспільно-економічних систем. У цій статті розглядаються теоретичні засади та практичні аспекти використання оптимізованих інформаційних та фінансових потоків як інструмента антикризового управління. Окрема увага приділяється використанню цих інструментів на різних етапах антикризового управління. Визначаються ключові елементи, які впливають на ефективність цих потоків, такі як інтегровані інформаційні системи, що забезпечують швидке та точне поширення інформації, і фінансові механізми, що дозволяють оперативно розподіляти ресурси. Завдяки ретроспективному аналізу практики застосування оптимізації фінансових та інформаційних потоків, досліджується, як своєчасне та швидке управління інформацією у поєднанні із фінансовими інструментами дозволяє ефективно застосувати реактивне антикризове управління. Розробка концептуальних моделей інформаційних та фінансових потоків дозволило представити ідеальні умови антикризового управління та виявити можливі шляхи покращення. Такі моделі допомагають візуалізувати та оцінити вплив різних факторів



на ефективність управління кризами, сприяючи прийняттю обґрунтованих рішень. Таким чином, ефективне управління інформаційними та фінансовими потоками є критично важливим для ефективного антикризового управління, забезпечуючи оперативну реакцію, зменшення наслідків кризи та швидке відновлення. Для оптимізації можливостей реагування на кризи необхідною умовою є наявність інтегрованих інформаційних систем та ефективних фінансових механізмів. Інтегровані інформаційні системи забезпечують швидкий доступ до актуальних даних та їх оперативне розповсюдження, що є критично важливим для прийняття своєчасних і обґрунтованих рішень. Ефективні фінансові механізми дозволяють швидко мобілізувати та розподілити ресурси для підтримки антикризового управління, забезпечуючи належний рівень фінансування в умовах невизначеності. У статті також визначаються можливі напрями подальших досліджень, що можуть сприяти вдосконаленню стратегій антикризового управління і побудові стійких глобальних економічних систем.

Ключові слова: ефективні фінансові механізми, інформаційні потоки, стійкість, глобальна економіка.

Problem statement. In an increasingly interconnected and unpredictable world, crisis management has become an essential component across various sectors, including healthcare, finance, and natural disaster response. The ability to effectively manage crises can determine the survival and recovery of organizations, communities, and even entire economies.

Crisis management involves the identification, assessment, and prioritization of risks followed by the coordinated application of resources to minimize, monitor, and control the probability or impact of unfortunate events [3]. Effective crisis management encompasses a range of strategies and activities designed to mitigate the adverse effects of crises and ensure a swift return to normalcy. Central to the efficacy of crisis management are informational and financial flows.

Informational flows refer to the dissemination and exchange of data, insights, and knowledge among stakeholders. In the context of a crisis, timely and accurate information is crucial for decision-making, coordination, and communication. This includes the collection of real-time data, analysis of trends, and distribution of relevant information to those affected and those involved in the response efforts.

Financial flows pertain to the movement of funds required to address the crisis, including immediate response, recovery efforts, and long-term rebuilding. This includes the allocation of emergency funds, insurance payouts, government aid, and private sector contributions. Financial resources are indispensable for procuring supplies, deploying personnel, and sustaining operations during and after a crisis.

The synergy between informational and financial flows is vital for effective crisis management. While informational flows enable informed decision-making and efficient resource allocation, financial flows provide the necessary support to implement those decisions.

Understanding the dynamics and interplay of these flows can significantly enhance the preparedness, response, and recovery phases of crisis management.

In the following sections, we will explore the theoretical foundations and practical implications of informational and financial flows in crisis management. We will examine case studies from different sectors to illustrate their critical role and propose strategies for optimizing these flows to improve crisis outcomes.

Despite the recognized importance of crisis management, many organizations and sectors still struggle with optimizing the coordination and efficiency of informational and financial flows during crises. Inefficiencies and delays in the dissemination of critical information can lead to poorly informed decision-making, which can exacerbate the severity and duration of a crisis. Similarly, challenges in mobilizing and allocating financial resources can hinder timely response and recovery efforts, prolonging the adverse effects on affected populations and economies.

Analysis of recent scientific research. Economic processes are invariably accompanied by the continuous movement of products and material goods derived from nature, as well as their subsequent transformation [3]. While physical movement occurs in space, transformation requires time. At the microeconomic level, these movements are internal material and intangible flows associated with the activities of economic entities. At the macroeconomic level, the movement of material, financial, and informational resources can be viewed through the interconnections between different industries, sectors, and spheres, utilizing logistics infrastructure and its components. Structurally, these movements represent distinct material flows.

Recent scientific research [3; 2] has increasingly focused on understanding the dynamics of informational and financial flows within the context of crisis management. Studies

highlight the critical role of timely and accurate information dissemination in mitigating the impacts of crises. Researchers [1] have emphasized the necessity for integrated information systems that can efficiently aggregate and distribute data from diverse sources, ensuring that decision-makers have access to real-time insights. This integration is crucial for effective coordination and swift response during emergencies.

Financial flows, on the other hand, have been scrutinized for their efficiency in mobilizing and allocating resources during crises. Researchers [4] have pointed out the challenges associated with the rapid deployment of funds, including bureaucratic delays and transparency issues. The effectiveness of financial interventions often depends on pre-existing financial infrastructure and the readiness of institutions to manage large-scale financial distributions under pressure.

One significant area of focus has been the interplay between informational and financial flows. Studies have shown that enhanced informational flows can improve the efficiency of financial resource allocation, leading to more targeted and timely financial interventions. Conversely, adequate financial resources are necessary to support the infrastructure required for robust informational flow management.

Overall, the body of research [1] underscores the necessity for a holistic approach to crisis management, where informational and financial flows are optimized in tandem. Future research directions include developing advanced models and frameworks that can predict and manage these flows more effectively, leveraging technologies such as big data analytics, artificial intelligence, and blockchain to enhance transparency, speed, and accuracy in crisis response efforts.

The aim of the research. This research aims to identify and analyze the key factors influencing the effectiveness of informational and financial flows in crisis management.

Presentation of the main research material. The concept of "flow" as an economic category refers to the movement of a certain quantity of material goods and economic and informational products within defined spatial and temporal parameters. The spatial and temporal constraints in the flows of material and intangible resources are determined by the infrastructure of the system that ensures their movement and processing. This infrastructure may include transportation networks, communication systems, logistics services,

and other components that ensure the efficient functioning of flows within the corresponding spatial and temporal frameworks.

Any movement of material flows is accompanied by the reverse movement of financial flows, which in financial activities are considered as the inflow and outflow of funds over a certain period of time [3]. Taking into account the infrastructure of economic activity processes, financial flows arise from transactions, banking services, insurance, and other financial operations. However, we will further focus on financial and informational flows and their role in crisis management in the education sector under conditions of informational externalities.

The study of informational and financial flows in crisis management rests on several theoretical underpinnings. At the core, crisis management theories emphasize the phases of preparedness, response, recovery, and mitigation [2]. Each phase relies heavily on the efficient flow of information and financial resources.

1. Informational Flows in Crisis Management. Informational flows refer to the systematic process of gathering, processing, and disseminating information crucial for decision-making during crises. These flows encompass:

- *Data Collection:* The initial phase involves gathering data from various sources such as sensors, reports, social media, and eyewitness accounts. The quality and timeliness of data collection are critical for forming an accurate situational awareness.

- *Information Processing:* Once collected, the data needs to be processed and analyzed to extract relevant insights. Advanced data analytics, machine learning algorithms, and real-time processing tools play a significant role in this phase.

- *Dissemination:* The processed information must be communicated to the relevant stakeholders promptly. This includes emergency responders, government agencies, affected communities, and the media.

2. Financial Flows in Crisis Management. Financial flows pertain to the movement of monetary resources necessary for implementing crisis management strategies. These flows are categorized into:

- *Emergency Funding:* Immediate financial resources required to address the urgent needs of a crisis, such as medical supplies, food, shelter, and logistics.

- *Recovery and Rebuilding Funds:* Longer-term financial resources aimed at restoring normalcy and rebuilding affected infrastructure.

– *Insurance and Aid*: Financial mechanisms such as insurance payouts and international aid that provide additional support during crises.

To illustrate the practical implications of informational and financial flows in crisis management, several case studies from different sectors are examined.

Healthcare Sector: COVID-19 Pandemic.

The COVID-19 pandemic highlighted the critical importance of informational and financial flows in managing a global health crisis. Efficient data collection and dissemination enabled governments and health organizations to track the spread of the virus and implement timely interventions. Simultaneously, substantial financial flows were mobilized to support healthcare systems, procure vaccines, and provide economic relief to affected populations [4].

Informational Flows:

- Rapid development and deployment of digital platforms for tracking and reporting cases.
- Use of social media and official channels to disseminate information on preventive measures, symptoms, and vaccination drives.
- Implementation of telemedicine services to provide remote healthcare consultations.

Financial Flows:

- Government stimulus packages to support healthcare infrastructure and economic stability.
- International aid and funding from organizations like the World Bank and IMF.
- Private sector contributions and fundraising efforts to support research and development of vaccines.

War in Ukraine 2022. The ongoing conflict in Ukraine has created a complex crisis situation where both informational and financial flows play crucial roles in humanitarian response and recovery efforts .

Informational Flows:

- Coordination of relief efforts through real-time information sharing among international agencies, NGOs, and local authorities.
- Use of satellite imagery and drones to assess damage and direct aid to affected areas.
- Communication campaigns to inform and educate the public about safety protocols and evacuation plans.

Financial Flows:

- Allocation of international aid and financial support from governments and organizations to address immediate humanitarian needs.
- Fundraising efforts by NGOs and the private sector to support displaced populations and rebuild infrastructure.

– Economic sanctions and financial regulations impacting the flow of funds and resources within the region.

Destruction of the Kakhovka Dam. The destruction of the Kakhovka Dam by Russian forces resulted in a significant environmental and humanitarian crisis, underscoring the need for efficient management of informational and financial flows.

Informational Flows:

- Immediate data collection and monitoring of water levels, flood impacts, and affected areas.
- Dissemination of evacuation alerts and safety instructions to communities in the path of the floodwaters.
- Coordination among emergency responders, government agencies, and international organizations for effective disaster response.

Financial Flows:

- Emergency funding for rescue operations, temporary shelters, and medical aid.
- Financial support for environmental cleanup and restoration efforts.
- Long-term investments in infrastructure rebuilding and strengthening of flood defenses.

Optimizing Informational and Financial Flows. Based on the insights from theoretical foundations and case studies, the following strategies are proposed to optimize informational and financial flows in crisis management:

1. Integrated Information Systems.

Developing integrated information systems that can seamlessly aggregate data from various sources and provide real-time insights to decision-makers is crucial. These systems should leverage advanced technologies such as big data analytics, artificial intelligence, and blockchain to enhance accuracy, speed, and transparency.

2. Efficient Financial Mechanisms.

Establishing efficient financial mechanisms that can rapidly mobilize and distribute funds is essential. This includes setting up emergency reserves, streamlining bureaucratic processes, and enhancing coordination between public and private sectors.

3. Collaborative Frameworks.

Fostering collaborative frameworks among stakeholders, including governments, non-governmental organizations, private sector entities, and communities, can improve the overall efficiency of crisis management efforts. Effective communication and cooperation are vital for ensuring that both informational and financial resources are utilized optimally.

Conclusions. In conclusion, the effective management of informational and financial flows stands as a cornerstone for successful crisis management across various sectors and scenarios. Through a deep understanding of the theoretical frameworks that underpin crisis management – emphasizing preparedness, response, recovery, and mitigation – organizations and governments can better navigate and mitigate the impacts of crises.

Analyzing real-world case studies, such as those of the COVID-19 pandemic, the war in Ukraine, and the destruction of the Kakhovka Dam, illustrates the critical role of informational and financial flows in diverse crisis contexts. These studies highlight the necessity of timely and accurate information dissemination, coupled with swift and targeted financial interventions, to minimize damage and facilitate effective recovery.

Implementing optimized strategies is key to enhancing our readiness to face future crises.

Integrated information systems that harness advanced technologies like big data analytics and artificial intelligence can improve decision-making by providing real-time insights. Efficient financial mechanisms, supported by streamlined processes and collaborative frameworks, ensure that resources are mobilized swiftly and effectively. Moreover, continued research and innovation in crisis management are essential. Advancements in technology, coupled with insights gained from ongoing research, will enable the development of more resilient systems and communities. This includes proactive measures to strengthen infrastructures, improve communication channels, and enhance global cooperation in crisis response efforts.

Ultimately, by prioritizing the optimization of informational and financial flows and investing in innovative solutions, we can better safeguard lives, protect livelihoods, and build a more resilient and prepared global community to face the challenges of tomorrow.

REFERENCES:

1. Del Rio-Chanona, R. M., Mealy, P., Pichler, A., Lafond, F., & Farmer, D. (2020). Supply and demand shocks in the COVID-19 pandemic: An industry and occupation perspective. Available at: <https://arxiv.org/abs/2004.06759>
2. Ian I., Shrivastava P., Udwadia F. Effective crisis management. *Academy of management Perspectives*, 1987. Vol 1. No 4. Available at: <https://journals.aom.org/doi/full/10.5465/ame.1987.4275639>
3. Karsantik I. (2021) Crisis Management on Education Policies during Covid-19: The Case of China, USA and Italy. *Uluslararası Toplum Araştırmaları Dergisi-International Journal of Society Researches*. Available at: <https://dergipark.org.tr/en/download/article-file/1398670>
4. Varnalii, Z., Nikytenko D. et al. (2020). Strategic priorities of budget policy of Ukraine in the conditions of the COVID-19 pandemic. *Financial and credit activity: problems of theory and practice, [S.l.]*, v. 4, n. 35, pp. 170–179. Available at: <http://fkd.org.ua/article/view/221964/222728>